

Farm policy & trade commitments . . . Plant breeding activity . . .
Economic outlook . . . Tobacco industry . . . Livestock in Eastern Europe

Aligning U.S. Farm Policy with World Trade Commitments

The U.S. and other countries made commitments in 1994 under the Uruguay Round Agreement on Agriculture (URAA) to reduce the total amount of trade-distorting domestic subsidies provided to producers, to reduce export subsidies, and to increase import access to domestic markets. Thus far, the U.S. has been able to comply with its URAA commitments and still provide significant income support to producers. But surges in direct payments to producers after 1997 have caused domestic subsidy levels to approach the U.S. ceiling commitment. U.S. support is expected to remain below its ceiling under current farm programs, but increases in support under new programs, if not carefully crafted to utilize exemptions, could present a problem for compliance with URAA commitments.

U.S. Recession, Slow World Growth Leave Mixed Picture for Farm & Rural Economy

By November 2001 it was official. The U.S. economy was in recession—and had been since March. The recession ended a decade-long expansion, the most durable on record. World economic growth—both in 2001 and 2002—is expected to be sluggish, posting the lowest back-to-back growth rates since the world debt crisis of 1981-82.

Public-Sector Plant Breeding In a Privatizing World

Since 1970, the balance between public and private plant breeding activity in industrialized countries has shifted from the public to the private sector. Traditionally, the private sector has relied on public-sector research results. Today this is no longer the case; the public sector instead may utilize private-sector research results in some areas of biotechnology. Funding mechanisms, as well as institutional cooperation and competition, are often quite complex. This has led to debate on appropriate roles for public- and private-sector



activity. However, it is clear that public-sector plant breeding will yield the largest social returns if it continues to focus on research in carefully identified problem areas, with clear public-goods components.

Traceability for Food Marketing & Safety: What's the Next Step?

Traceability systems are recordkeeping systems used primarily to help keep foods with different attributes separate. When information about a particular attribute of a food product is systematically recorded, from creation through marketing, traceability for that attribute is established. Food suppliers and government have several motives for documenting the flow of food and food products through production and distribution channels—and a number of reasons for differentiating types of foods by characteristics and source. However, the area where traceability seems to be getting the most attention lately—government-mandated tracking of genetically engineered crops and food—is *not* among the practical or efficient uses of traceability. Recently, the European Union proposed government-mandated traceability to help distinguish genetically engineered crops and foods.

Pressures for Change in Eastern Europe's Livestock Sectors

Twelve years after the fall of Communism in Central and Eastern Europe (CEE), the meat and dairy processing sectors of CEE countries are undergoing rapid concentration and modernization. The process is most evident in Poland and Hungary, but similar trends can be observed in all the CEE countries. This restructuring has been accelerated by the pending CEE accession to the European Union (EU), both because of pressure to meet EU sanitary standards and because of assistance provided by the EU to the food processing industry.

Tobacco Industry Downsizing, Restructuring

A recent dramatic shift from auctioning to contract selling in the tobacco market is changing the character of the industry. By contracting directly with leaf producers, cigarette manufacturers have more influence over which qualities of leaf are available. In addition, already-existing restrictions on smoking areas and advertising and growing consciousness of the health risks of smoking are having a long-term effect on the industry.

U.S. Sheep Industry Continues to Consolidate

The U.S. sheep industry continues a long decline marked by shrinkage in inventories, prices, and revenues. The industry also bears the brunt of heightened concerns about sheep-borne animal diseases, as well as recent removal of a tariff-rate quota (TRQ) on imported lamb meat from Australia and New Zealand. And while 5 years have passed since the 3-year phase-out of the National Wool Act, the industry still feels the loss of the Act's price support programs. However, there are several positive currents: domestic lamb and mutton consumption has held fairly steady for the past decade, while production in major lamb exporting countries is on the decline.

Agricultural Economy



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With a larger percentage of jobs lost in nonmetro counties relative to metro counties, the U.S. and global economic slump appears to have had a disproportionately negative impact on the rural economy. But in the coming year, the combined world and domestic recessions will have mixed effects on farm operations. On the one hand, world recession and a strong dollar will dampen agricultural export growth, pressuring farm prices downward. Meanwhile, flat wages, lower interest rates, declining fertilizer prices, and negligible input price inflation will cut 2002 farm expenses from 2001. For farm households, the overall impact will be mixed, with net farm income up but off-farm income down due to the soft economy.

The National Bureau of Economic Research (NBER) declared on November 26,

2001 that the U.S. economy was officially in recession. According to the NBER, an academic nonprofit organization, “A recession is a significant decline in activity spread across the economy, lasting more than a few months, visible in industrial production, employment, real income, and wholesale-retail trade [indicators].” The NBER noted that before the attacks of September 11 the decline in the economy might have been too mild to qualify as a recession, but the attacks may have been a key factor pushing the economy into a recession.

The four monthly indicators used by NBER to determine the starting month of a recession—industrial production, wholesale-retail trade, personal income, and employment—did not point unambiguously to a specific beginning date for the recession. Based on industrial production (an indicator of manufacturing activity) and wholesale-retail trade alone, for example, the recession would have started as early as the fall of 2000. Partly as a result of the 2001 tax rebate, though, real personal income actually continues to grow as of late 2001. But overall weakness in the service sector in early 2001 and employment data—often considered the single

best indicator of overall economic activity—led the NBER to conclude that the recession started in March 2001.

The U.S. recession occurred despite an accommodative monetary policy by the Federal Reserve Board beginning in December 2000, but lower short-term interest rates could not overcome a slump in investment spending on business plant and equipment as financial intermediaries continued to tighten credit conditions. Nor did reduced short-term rates buoy sluggish retail sales. Normally, a sharp drop in short-term interest rates generates a noticeable drop in long-term interest rates, which can help stimulate investment. But as of early November 2001, a 4 percentage-point drop in the Federal funds rate—the overnight rate at which banks lend each other money—generated only a 0.66 percentage-point drop in long-term AAA corporate bond rates.

During an economic expansion, imbalances inevitably develop that set the stage for the next recession. With the benefit of hindsight it is possible to locate the excesses, but predicting when a recession will start and how long it will last is next to impossible. In any event, few economists believed the U.S. economy could maintain annual growth rates of 4 percent or above that occurred during 1996-2000.

In retrospect, excesses were most evident in the technology sector. Fueled by expansion of business Internet use, home computing, and dramatic growth in use of mobile cell phones, the new technology revolution enhanced productivity growth, but household and business demand for high-tech equipment eventually reached saturation. The technology bubble was the first to burst after technology-company earnings growth peaked in early 2000.

Three Stages Lead to Recession

The collapse of the technology sector inaugurated the first of three stages (broad economic developments) that eventually led to a full-fledged U.S. recession. In the first stage, collapse of the technology sector quickly reverberated through the financial markets, wholesale trade, and manufacturing sectors. In stage two, increasing energy prices combined with

tighter credit and falling U.S. exports to cause a drop in manufacturing profits, output, and jobs. The third stage was the spread of the recession in the manufacturing sector to the larger services sector, making the downturn economywide.

Financial markets hit by falling technology-sector profits and employment (Stage 1).

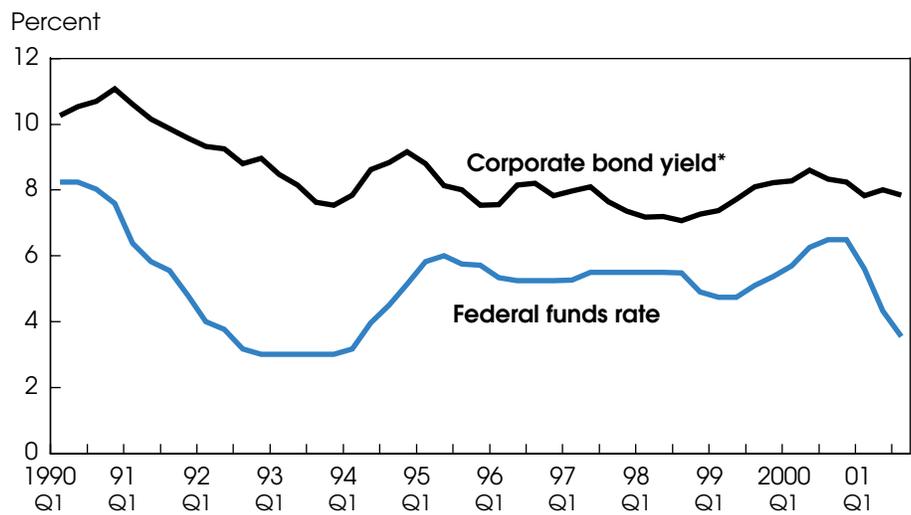
In early March 2000, the technology-laden NASDAQ stock index had soared above 5,000, about double the level of just a year earlier. By the end of 2000, however, the NASDAQ gains had evaporated, and the index dipped below 2,500.

The NASDAQ had been bid up as the technology companies that dominate the index saw earnings and sales growth boom following double-digit growth rates in equipment and software investment during the late 1990s. The investment was driven largely by nontechnology companies exploiting the cost-saving potential of the Internet and the personal computer, and by the expansion of the world telecommunications network.

Despite the NASDAQ plunge, overall demand for computer-based office equipment in 2000 was strong, and output during the year actually grew. But price cuts were required to keep sales volume up, so earnings declined, and by the fourth quarter, employment in the technology sector also shrank. So in contrast to the earnings growth through the late 1990s, many Internet backbone companies saw deteriorating balance sheets and employee layoffs. New technology companies with growth prospects predicated on rapidly increasing computer or telecommunications sales, or on other unrealistic assumptions, went bankrupt, causing further layoffs. Prices of high-technology stocks that dominate the NASDAQ index fell as the technology bubble burst, with the new lower stock prices reflecting more reasonable potential long-term sales and earnings prospects.

The financial markets were not reacting negatively just to exigencies experienced by dot.com and new technology companies. Electronic equipment manufacturers, for example, had an unexpected drop in operating income of over \$3 billion in the last quarter of 2000, despite increasing sales volume, and employment in that

Despite Fed Interest Rate Cut, Corporate Borrowing Costs Remained High



Quarterly data.

*Corporate yield on BAA rated bonds, the lowest rated bonds that can be held in a bank portfolio. Ratings are by Moody's.

Sources: Federal Reserve Board; Moody's Investors Service; Haver Analytics.

Economic Research Service, USDA

sector dropped in 4 of the last 5 months of 2000. Starting in late 2000, declining profit margins and the beginning of widespread technology company layoffs contributed to a tightening of credit conditions as loan standards were raised and the spread between corporate bonds and U.S. Treasury bonds widened.

By usual standards, the enormous drop in household wealth caused by stock market losses could well have been large enough to trigger a recession as early as mid-2000, especially given other weaknesses then present in the economy (as in the housing, and car and truck markets). The wealthiest 10 percent of the U.S. population ignored their large paper losses in the stock market, however, and instead used the trillion-dollar gain in the real estate market to finance new consumer spending in excess of household income. In addition, while technology and related manufacturing jobs were lost, other sectors of the U.S. economy continued to create jobs.

Manufacturing output recession begins in late 2000 (Stage 2).

A second catalyst to the recession was the runup of energy prices between 1999 and the end of 2000. Continued overall strength in the U.S. and Asian economies,

along with substantial drops in oil production among OPEC and foreign non-OPEC oil producers, combined to cause wholesale energy prices to more than double. The price of wellhead natural gas more than quadrupled between early 1999 and the end of 2000, reflecting both continuing strength in U.S. industrial demand during much of this period, and the increasing use of natural gas in electricity generation. In some parts of the country, gasoline prices rose more than 70 percent.

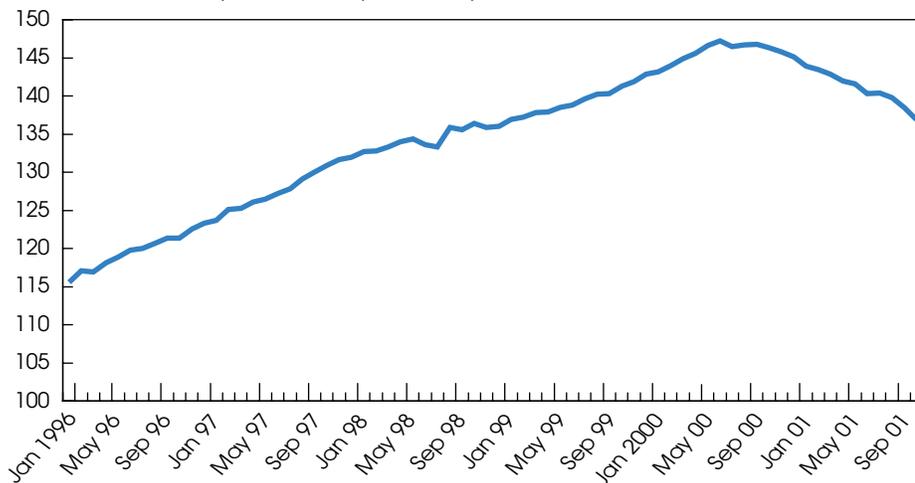
Rising crude oil prices and higher demand caused a shortage of refinery capacity in the Midwest, which caused higher than average gasoline price increases in that region. Sharp energy price increases hampered consumer and business budgets and, coupled with tighter credit conditions, slowed the adoption of new technologies for home and business use. This further lowered technology companies' profit margins, but the greatest impact was on more prosaic goods—output of textiles and domestically manufactured cars and trucks dropped far more sharply than new technology goods.

Manufacturing employment drops in most years, driven by rapid productivity growth in auto and other mature industries. But

Agricultural Economy

Industrial Production Falls Sharply from September 2000, Foreshadowing Recession

Index of industrial production (1992=100)



Source: Federal Reserve Board; Haver Analytics.
Economic Research Service, USDA

the magnitude of the decline in manufacturing employment and the drop in industrial output in late 2000 indicated a clear-cut manufacturing recession was underway. The drop in industrial production in October 2000 marked the start of a lasting slowdown in manufacturing. In late 2000 and early 2001, the largest consecutive-quarter employment drop since the 1990-91 recession confirmed that manufacturing was in bad shape.

The bellwether “real manufacturing and trade sales” indicator declined in 3 of the last 4 months of 2000, presaging a full-blown recession despite continued growth of retail sales. The drop in wholesale and manufacturing sales was especially pronounced. Manufacturing sales declined more than \$10 billion in the last quarter of 2000, driven largely by plummeting sales of machinery.

Although the technology-stock bull market collapsed through 2000 and technology-company earnings dropped, the boom in total equipment investment continued into early 2001. This boom largely drew on imports and inventory depletion, however, and domestic production of electronic goods and equipment started to decline in January 2001.

As general credit conditions tightened and it became increasingly difficult for medium and small businesses to obtain credit, demand for computer-based equipment and other business products finally fell. This exacerbated the drop in technology-sector profits as the volume of product sales dropped despite lower prices. World-wide demand for manufactured goods stagnated, resulting in lower corporate earnings for technology-using companies as well as technology-making companies, particularly since wage and energy costs had accelerated. These factors in turn caused further weakness in the technology sector, pushing down the NASDAQ and the Dow stock indexes, and generating a second and third wave of technology layoffs.

Manufacturing recession spreads to rest of economy (Stage 3).

By the end of the first quarter of 2001, the service sector could not generate enough new jobs to offset the increasing loss of U.S. manufacturing jobs. The disappearance of a total of 165,000 jobs in March 2001 signaled the beginning of the U.S. recession. As the third wave of technology and nontechnology manufacturing layoffs began and wholesale trade workers were added to the layoff lists, the drop in employment accelerated.

By late November, numbers for September 2001 showed continuing drops in industrial production, overall private nonfarm employment, and wholesale-retail trade. With no sign of an upturn, there was little doubt that the slowdown that started in March indeed qualified as a recession. Although real consumer spending on manufactured goods was actually up in this 6-month period, it did not induce any new U.S. manufacturing output, as inventories were tapped and imports rose. But real consumer spending on services was flat from March to September, quite consistent with a broad-based shrinkage in the domestic economy.

World Growth Slows As Locomotives Falter

World economic growth prospects depend to a large degree on the economic growth of the leading economies, the so-called locomotives. During the 1996-2000 period as a whole, the U.S. did help pull the world economy along, growing faster than the global average. In fact, except for Canada, the U.S. had the fastest growth rate of all of the leading industrial “G-7” countries (U.S., Japan, Germany, France, the United Kingdom, Italy, and Canada) for each year of 1996-2000. However, as of the last half of 2001, the U.S. and Japan were both in recession; Germany contracted in the third quarter.

Weakness in the world’s three largest economies made world recession in 2001 almost inevitable. The estimated world GDP growth of just above 1 percent in 2001 is considerably less than the 2.5 percent considered necessary by the International Monetary Fund (IMF) to keep the world out of recession. World growth below that rate causes key standard-of-living indicators, such as individual country unemployment rates, to deteriorate.

Contributing to the global slowdown was a general weakness in leading East Asian economies. Just as East Asia was helped out of the 1998 crisis by low oil prices, the region received a negative hit from the recent runup in oil prices and a sharp drop in demand for parts by U.S. computer and telecommunications manufacturers. Besides Japan, Taiwan and several other major customers of U.S. farm and manufactured goods exports were in recession

by early 2001. U.S. technology and manufacturing companies, facing weak bottom lines, were forced into major layoffs in Asian and European operations as well as in the U.S. The result was lower demand for U.S. goods exports and deepening of the worldwide manufacturing recession.

Concentration of the manufacturing recession in the technology sector contributed to a sharp slowdown in the economies of Asia, particularly in East Asia. Japan's recession, coupled with the decline in U.S. computer equipment demand, resulted in a slowdown of Asian economic growth in 2001 almost as sharp as in the Asian financial crisis during 1997-98. U.S. exports to Asia in goods, such as machine tools, dropped, and by early 2001, total U.S. machine production fell to less than half the level of early 2000.

A strong dollar exacerbated the recession in U.S. goods production. The dollar, expected to fall in value against the yen and euro, instead appreciated in 2001. Japan, expected to pick up in 2001, instead went into full recession, causing the yen to fall in value relative to the dollar. Similarly, when European Union growth fell below expectations, the euro declined, largely because financial investment prospects appeared better in the U.S. The net result was a 5-percent appreciation of the dollar in late 2001, a trend likely to aggravate the already huge \$500-billion U.S. trade deficit. For the farm sector overall, slow economic growth and a strong dollar kept commodity prices relatively low. Some markets, such as textiles, simply collapsed with sharp drops in world cotton prices.

U.S. & World Growth Prospects for 2002

A reflection of the potential depth of the domestic recession was the fall in U.S. industrial production by late 2001. The industrial production index, a broad-gauge index of output from U.S. factories, mines, and gas and electric utilities, fell for 14 months in a row (as of October 2001) for the first time since World War II. The domestic industrial decline was concentrated in the high-technology sec-

tor as business computer equipment production dropped over 10 percent between November 2000 and October 2001.

In the coming months, the strength of personal income growth, low energy prices, the lagged effects of loose Fed monetary policy, and the combined impact of a fiscal stimulus package and the 2001 tax cut are expected to bring the country out of recession. This is expected to occur by spring 2002, with trend growth restored by late 2002. The current Blue Chip consensus forecast of 1 percent U.S. GDP growth for 2002 reflects that outlook.

Prospects for world economic growth in 2002 are likely to be driven by the three largest economies. The U.S. is expected to be back to further growth in 2002, but not to reach full throttle until late 2002. Japan, the world's second-largest economy, is expected, by many private economists, to remain in recession in 2002 as problems in the banking system limit credit expansion for new business ventures. Germany is expected to grow less than 1 percent in 2002, and the entire 12-country Euro zone to grow less than 2 percent.

With these potential economic locomotives growing so slowly, overall world GDP growth in 2002 is expected, by most analysts, to be between 1 and 1.5 percent, still a recession by global standards. Asia is forecast to have GDP growth of less than 2 percent for 2001 and 2002. Not since 1981 and 1982, when the world debt crisis began, have Asian and world growth been so sluggish for 2 consecutive years.

Outlook is Mixed For Rural Economy

The recession has likely affected the average income of rural households more than the average income of U.S. households at large. The manufacturing slump, which started in late 2000 (at least 4 months before the start of the general recession), hurt the rural and farm economies more quickly and sharply than the economy as a whole, reflecting their dependence on the manufacturing sector for off-farm

income. Further, with the world recession expected to last longer than the U.S. recession, and with the dollar expected to remain relatively strong, the manufacturing sector is likely to recover less rapidly than the overall U.S. economy. The gap between nonmetro and metro unemployment rates has already widened and is expected to widen further as manufacturing takes longer to recover fully than other sectors.

The one bright prospect for most (non-energy producing) rural areas is that energy prices are expected to remain relatively low until at least the middle of next year. This should partly offset the impact of reduced income from overtime pay, an important component of rural income.

Farm exports are projected up for fiscal 2002 but most farm commodity prices are weak. However, weak commodity prices in 2002 are likely to be partially offset by lower energy and fertilizer prices early in 2002, and those with ample storage facilities can probably obtain diesel fuel at very low prices for next year's farm operations, noticeably reducing expenses. With wholesale natural gas prices close to the 1999 low, nitrogen-based fertilizer prices are expected to continue to drop sharply compared with 2000. Combined fuel and fertilizer expenses, while not expected to drop below the low levels of 1999, should be down sharply from 2001.

Further news on the positive side is that farm interest rates, especially in the first half of 2002, should be quite favorable for those with good credit, significantly cutting farm interest expenses compared with 2000 and 2001. Farmers largely dependent on off-farm income will likely have a harder time getting loans and will likely face reduced hours or earnings for part-time off-farm employment. But the going rate for farm labor will likely be lower in 2002 than in 2001, and as the general rural job market deteriorates, fewer fringe benefits will be necessary to attract farm workers. 

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Briefs

Livestock, Dairy, & Poultry**U.S. Sheep Industry Continues To Consolidate**

The U.S. sheep industry continues a long decline marked by shrinkage in inventories, prices, and revenues. The industry also bears the brunt of heightened concerns about sheep-borne animal diseases, as well as recent removal of a tariff-rate quota (TRQ) on imported lamb meat from Australia and New Zealand. And while 5 years have passed since the 3-year phaseout of the National Wool Act, the industry still feels the loss of the Act's price support programs.

However, there are several positive currents: domestic lamb and mutton consumption has held fairly steady for the past decade, while production in major lamb exporting countries is on the decline. In addition, U.S. sheep producers recently received Federal funding for new marketing, promotion, and animal health improvement programs.

It is clear that the glory years for the U.S. sheep industry have passed. From a 1942 peak of 56 million head, the number of sheep in the U.S. shrank to 6.9 million head on January 1, 2001, 2 percent below the 2000 level, and will likely contract a further 2 percent in 2002. The number of sheep operations is also declining, though at a slower rate than the sheep inventory. Sheep operations, totaling 66,000 in 2000, are expected to continue declining in 2001 and 2002.

Production, like inventory, is on a downswing. For the first half of 2001, output of lamb and mutton was nearly 7 percent below a year earlier, even with dressed weights averaging 2-4 pounds heavier and with strong slaughter lamb prices averaging in the low \$80s per cwt. Expectations of continued price strength had encouraged producers to keep lambs on feed longer, resulting in overfinished, less desirable market animals at higher-than-normal dressed weights. The result was rapidly declining prices. Lamb prices are expected to recover in early 2002 when the problem of overweight lambs abates

and when seasonal demand begins accelerating in midwinter.

The seasonal price change defied the usual pattern for lamb prices, which generally rise in spring due to increased lamb consumption during religious celebrations. This year, high prices convinced producers to feed lambs to heavier weights, expecting strong prices to continue into the third quarter when production typically declines. But first-quarter production was only 6.3 percent below a year earlier, due largely to an average gain of 5 pounds above the normal dressed weight. Dressed weights remained fairly high for the second, third, and fourth quarters of 2001, keeping production slightly ahead of a year earlier. Despite slight spurs to lamb consumption during the Muslim holy month of Ramadan and the U.S. holiday season, price gains were negligible.

Imports Spike In the 1990s

Lamb and mutton imports have trended upward since the mid-1980s, with very sharp increases since 1994. Australia and New Zealand, the primary U.S. suppliers of imported lamb, provide 98 percent of all of U.S. imports. Lamb supplied by these countries, which comes from smaller, grass-fed animals, has found favorable consumer acceptance in the U.S.

Following the rapid rise in lamb imports in the mid-1990s, in July 1999, the U.S. established a 3-year TRQ on lamb imports from New Zealand and Australia, fated to be struck down by a World Trade Organization (WTO) ruling in less than 2 years. Despite implementation of the TRQ, imports from Australia and New Zealand did not slow; effects of the tariffs were largely offset by weak Australian and New Zealand currencies.

The TRQ for the first year (July 22, 1999-July 21, 2000) was 70.2 million pounds product weight, with an *ad valorem* duty of 9 percent, and an over-quota duty of 40

percent. During the first year of the TRQ, approximately 76 million pounds of lamb was imported from Australia and New Zealand. During the second year (July 22, 2000-July 21, 2001) the TRQ increased to 72.1 million pounds product weight, and the duties declined to 6 percent and 32 percent. Growth of lamb imports accelerated in the second year by about 23 percent. According to customs data, over-quota imports from Australia and New Zealand were 22.8 million pounds and 3.2 million pounds, respectively.

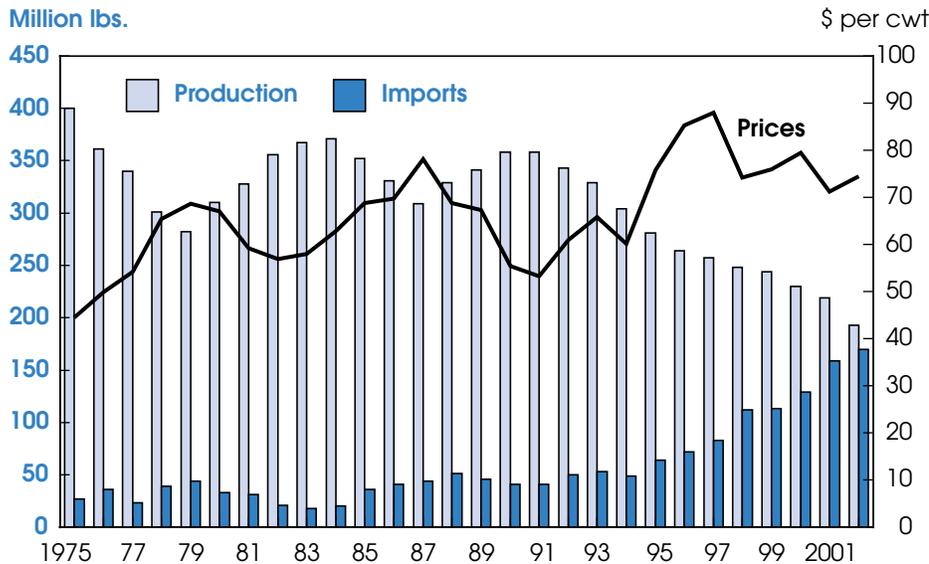
In 2000, imported lamb and mutton comprised nearly 37 percent of consumption, compared with 10 to 12 percent in the early 1990s. Imports in 2000 were 14.7 percent higher than in 1999 and 102 percent higher than 5 years earlier.

Currency exchange rates made the U.S. market profitable for Australia and New Zealand, particularly in 1998 when the U.S. dollar appreciated against the Australian and New Zealand currencies by more than 18 percent and 24 percent. For example, in January 1998, U.S. lamb prices of \$74 per cwt meant an equivalent return to Australian lamb exporters of \$114 per cwt in Australian currency. By December 1998, U.S. lamb prices had declined to \$71 per cwt, but the return to Australian exporters in Australian currency was up 4.3 percent from January. Again in 1999 and 2000, further appreciation of the U.S. dollar allowed Australia and New Zealand to effectively manage the TRQ, even at over-quota tariffs of 40 percent in 1999 and 32 percent in 2000.

In May 2001, a WTO panel, acting on complaints filed by New Zealand and Australia, ruled against the U.S. tariffs. The appellate body recommended that the U.S. bring its tariff restriction on lamb meat imports into conformity with its obligations under the WTO agreement on safeguards and the General Agreement on Tariffs and Trade (GATT) of 1994. The U.S. complied with the WTO ruling and removed the tariffs on November 15, 2001.

Imports of lamb and mutton are expected to total 150 million pounds in 2001, up 16 percent over 2000. In the first 9 months of 2001, imports totaled nearly 110 million pounds, up 15 percent from the same

Rising U.S. Imports of Lamb and Mutton Are Converging with Domestic Production Levels



2001 and 2002 forecast.
Economic Research Service, USDA

period last year, nearly equivalent to imports for the entire year in 1998. Imports of lamb and mutton will continue to increase at least well into 2002.

The U.S. sheep industry is still strongly affected by elimination of the National Wool Act program in 1993. Elimination of the wool and mohair programs resulted in loss of a guaranteed portion of income for sheep producers. Public Law 103-130, signed into law November 1, 1993, mandated a 3-year phaseout of the National Wool Act programs, including direct price support payments to producers.

In the 4 years prior to termination (1990-93), direct payments to wool producers based on quantity produced averaged \$122 million per year. Market value of the wool produced in those years averaged \$53 million per year, equivalent to just 43 percent of the direct payments. In the 5-year period following elimination of the program, wool inventory declined 22 percent. Wool production and prices have since remained flat. Because of the strong U.S. dollar, wool imports have increased while U.S. exports of fine wool have declined. In addition, the drop in sheep numbers will continue to cause decline in

the domestic wool industry into the near future.

The sheep industry continues to benefit from several cooperative initiatives between the private and public sectors. In December 1999, USDA and the sheep industry embarked on a number of improvement efforts, including the 3-year, \$100 million Lamb Industry Assistance Package, instituted in January 2000 to help the industry become more competitive in the global economy. The package includes four major elements: direct payments to producers; animal health; marketing and promotion; and government purchase of lamb meat. The package was designed to increase the competitiveness of domestic lamb.

On November 15, 2001, when the U.S. acted to comply with the WTO ruling by removing tariffs on Australian and New Zealand lamb, USDA's Lamb Meat Adjustment Program was extended through July 31, 2003, and \$37.7 million in federal aid was added to boost the domestic sheep industry. Of that amount, \$26 million will be allocated to purchase or retain ewe lambs, while the remainder

is restricted to direct payments to producers for slaughter and feeder lambs.

Sheep numbers are declining not only in the U.S., but also in the world's primary lamb exporting countries, Australia and New Zealand. At the same time, demand for specialized prime lamb cuts geared to different export markets is on the increase. With declining production, Australia and New Zealand will be hard-pressed to increase exports and at the same time fulfill domestic requirements. Given the biology of the sheep, it will take Australia and New Zealand at least 2 years to recover to the point where production can comfortably meet expected domestic and export demands. For the U.S. sheep industry, the production lag in Australia and New Zealand presents temporary relief from competition—an opportunity to rebuild its stock and recover some of its lost market share. **AO**

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Upcoming Reports—USDA's Economic Research Service

The following reports are issued electronically at the times indicated.

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January

- 11** *World Agricultural Supply and Demand Estimates*
(8:30 a.m.)
- 14** *Oil Crops Outlook* (4 p.m.)**
Rice Outlook (4 p.m.)**
- 15** *Wheat Outlook* (9 a.m.)**
Feed Outlook (9 a.m.)**
- 16** *Livestock, Dairy, and Poultry Situation and Outlook*
(4 p.m.)
- 22** *U.S. Agricultural Trade Update*
(4 p.m.)
- 24** *Sugar and Sweeteners Outlook*
(4 p.m.)*
- 31** *Fruit and Tree Nuts Outlook*
(4 p.m.)
Sugar and Sweeteners Outlook (4 p.m.)

*Release of summary.

**Available electronically only.

Commodity Spotlight



Tobacco Industry Downsizing, Restructuring

A recent dramatic shift from auctioning to contract selling in the tobacco market is changing the character of the industry. In addition, already-existing restrictions on smoking areas and advertising and the growing consciousness of the health risks of smoking are having a long-term effect on the industry.

Among tobacco producing nations, the U.S. ranks third in output behind China and Brazil. A major exporter of tobacco leaf, the U.S. ranks second behind Brazil, after many years of being the largest exporter. Paradoxically, the U.S. also imports more tobacco leaf than any other country. To achieve economical blends with desired smoking characteristics, U.S. manufacturers import lower quality leaf from overseas to blend with domestic leaf. The U.S. is the second-largest manufacturer of cigarettes after China, and the largest exporter. About a third of cigarettes produced in the U.S. are exported.

Of the 16 states that grow tobacco, North Carolina and Kentucky account for 67 percent of total U.S. volume. Annual marketings of tobacco leaf total about 1 billion pounds. Although tobacco acreage is small compared with many other crops, it is a high-value crop, ranking ninth in value of production, just behind potatoes.

Flue-cured tobacco accounts for 65 percent of tobacco produced in the U.S.; burley makes up the remainder. Flue-cured tobacco is so named because it is cured in an airtight barn or container with a flue or chimney exposing the leaf to heat. Burley

tobacco is cured by hanging the entire plant in an open-sided barn exposing the leaf to the atmosphere. Nearly all, 93 percent, of tobacco output is used for cigarettes. The remaining 7 percent is used for cigars, snuff, chewing tobacco, and loose smoking tobacco.

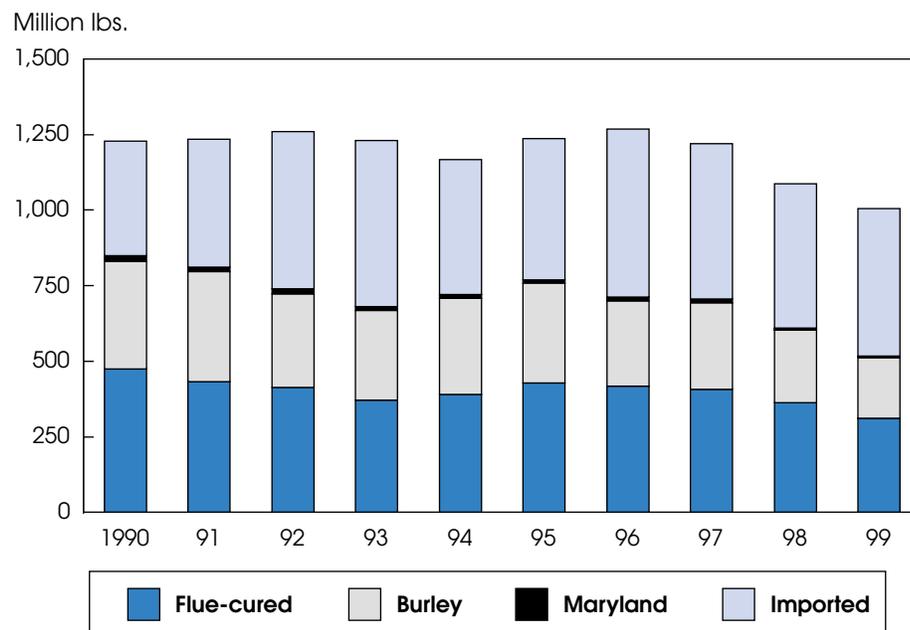
Contracting Is Revolutionizing Tobacco Marketing

Auction markets have dominated tobacco marketing since the 1800s. Many towns and cities in the Southeast depend not only on tobacco production for their livelihood but also on the marketing of tobacco.

As the dominant crop in both small and large southeastern towns, tobacco auctions represent more than just a means of marketing tobacco. The opening of the auction markets has been a traditional day of celebration that brought together the entire community. It was an occasion for parades and gatherings, and promoted a sense of community in a way other agricultural commodities did not.

The Tobacco Inspection Act of 1935 mandated inspection and market news services at auction markets designated by the

Portion of Imported Tobacco in Domestic Cigarettes Rising



Economic Research Service, USDA

USDA Tobacco Program in Brief

The USDA tobacco program consists of marketing quotas and price supports. Growers of each type of tobacco vote every 3 years whether or not that type of tobacco will be part of the program. The outcome is applied to all growers of that type of tobacco. Flue-cured and burley producers have approved the program every year except one since 1938.

Marketing quotas under the program determine the quantity of tobacco a producer is allowed to sell each season. The Agricultural Adjustment Act of 1938 (as amended over the years) provides that total flue-cured and burley basic quotas equal the sum of 1) the buying intentions of domestic cigarette manufacturers, 2) the 3-year average of unmanufactured tobacco exports, and 3) adjustments of loan association inventories needed to reach the specified reserve stock level. The Secretary of Agriculture may adjust this three-part total either up or down by a maximum of 3 percent.

The effective quota determines the quantity of tobacco a producer may sell. The effective quota for each type of tobacco is the basic quota adjusted by the individual marketings from previous seasons for each quota holder. Overmarketings and undermarketings carried over in each season can be as much as 3 percent of that year's effective quota.

Price supports are the other component of the tobacco program. They enhance the income-stabilizing capacity of quotas by providing a minimum or floor price for each grade of leaf. Knowing what floor price to expect well ahead of the tobacco season helps producers make informed planting decisions. Since 1987, the annual flue-cured and burley price support has been the level for the preceding year, adjusted by changes in the 5-year moving average of prices (two-thirds weight) and in the cost of production index (one-third weight). Costs include variable costs, but exclude costs of land, quota, risk, overhead, management, marketing contributions or assessments, and other costs not directly related to tobacco production. The Secretary can set the price support between 65 and 100 percent of the calculated adjusted change from the previous year.

Support prices are guaranteed through nonrecourse loans that are available on each farmer's marketed crop. Each grade of flue-cured and burley tobacco is assigned a support price. In 2001, the flue-cured support price averaged \$1.66 for each pound of tobacco. The support price for burley was \$1.83 per pound. Loan rates range from \$1.24 to \$1.92 per pound,

depending on grade, for flue-cured and \$1.14 to \$1.85 per pound for burley. Price supports for other supported types of tobacco range from \$1.25 to \$1.74 per pound. Price supports for each grade are announced before the auction season begins.

At the auction sale barn, each individual lot of tobacco is sold to the highest bidder, unless bids do not exceed the government's loan price. If the bid is below the loan price, the farmer may accept the support price (loan rate) from a designated cooperative. The tobacco is consigned to the cooperative (known as a price stabilization cooperative), which redries, packs, and stores the tobacco as collateral for USDA's Commodity Credit Corporation (CCC). The cooperative later sells the tobacco and the proceeds are used to repay the CCC loan plus interest.

Since 1982, no-net-cost assessments cover projected losses to the CCC in operating the tobacco price-support program. U.S. flue-cured and burley growers have paid no-net-cost fees since 1982, while purchasers have paid fees on U.S.-grown tobacco since 1986. Beginning in 1994, no-net-cost assessments have been levied on importers of flue-cured and burley tobacco.

Both flue-cured and burley reserve stock levels are currently lower than they might have been because of legislation forgiving CCC loans on 1999-crop tobacco. Because the loans are forgiven, this tobacco (88 million pounds of flue-cured and 230 million pounds of burley) is not considered part of the reserve stock component of the quota calculation and has been effectively removed from the supply of leaf available for use by the tobacco industry. It is likely this tobacco will be destroyed. Legislation forbids selling the tobacco domestically, and international trade agreements will make it difficult to export.

Repaying the CCC \$637 million for the 1999 loan stocks means the government will have large expenditures for the tobacco program that would normally be covered by the no-net-cost assessments. However, without the forgiveness of the loans, quotas would have fallen further since the reserve stocks would have been high and the consequent negative adjustment to the quota formula would have been large. Additionally, the cost of carrying the 1999 tobacco would ultimately have been borne by the growers in the no-net-cost assessment, lowering grower income.

Secretary of Agriculture. Since the inception of the tobacco program in 1938, nonrecourse loans known as price supports have been available for many types of tobacco. To receive price support, however, leaf must be sold in USDA-approved auction warehouses and inspected by USDA graders.

Tobacco has been sold at auctions because, unlike many commodities, tobacco leaf is not a homogeneous product that can be graded by taking a moisture sample or observing color. The qualities that make tobacco leaf desirable are less tangible. The feel of the leaf is important, but so are its smell and color. Elasticity of the

leaf is considered, among many other characteristics. Individual buyers require markedly different leaf characteristics, depending on the final use.

Until recently, tobacco was sold in small lots called sheets. A sheet of tobacco is a square piece of burlap with up to 250

Commodity Spotlight

pounds of leaf wrapped in it. The four corners of the sheet can be tied together so the tobacco can be easily moved and transported. Untied, the tobacco can be easily inspected by graders and buyers.

In the past decade, bales have become more popular as a means of marketing tobacco. A bale consists of about 700 pounds of compressed tobacco. Bales permit more efficient movement of tobacco through the marketing chain.

Contracting Supplants Auctions in 2001

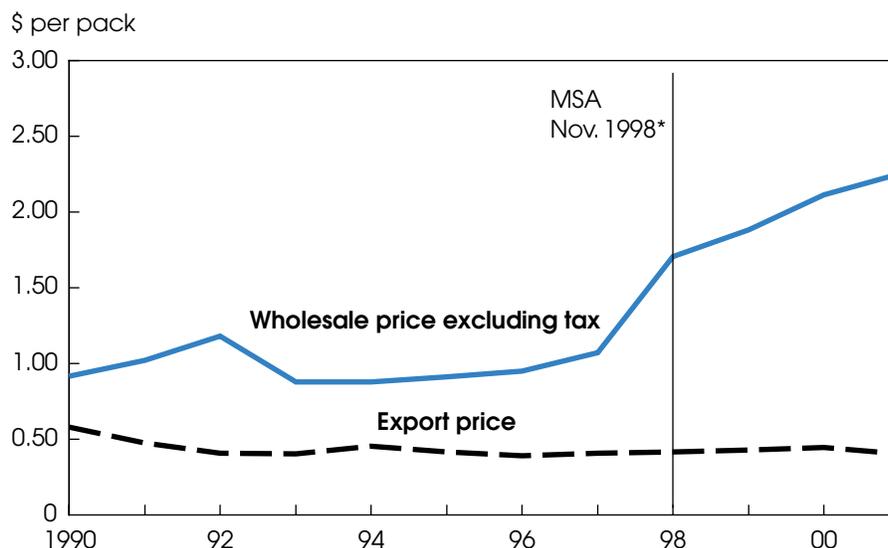
Cigarette manufacturers have been proposing contract marketing as an alternative to auction markets for a number of years. Manufacturers assert that auction markets are not providing the combination of grades and characteristics they need to manufacture cigarettes. By contracting directly with leaf producers, manufacturers will have more influence over what qualities of leaf are available. These factors are more critical today because lower quotas mean less tobacco is produced, shrinking the pool from which manufacturers can pick and choose in their search for needed grades.

Most contracts are marketing contracts, not production contracts, and stipulate a delivery point and other details of the transaction. Some current contracts give the grower the right to reject the price offered under the contract and sell the leaf at auction.

During the 2000 marketing season (July 2000-June 2001), flue-cured leaf sold under contract accounted for about 50 million pounds out of a total 564 million pounds sold. Burley producers sold 87 million out of 311 million pounds through contracts outside of auction warehouse channels.

The magnitude of contract sales in 2001 has turned tobacco markets upside down. Flue-cured growers sold 440 million pounds through contracts out of a total 545 million pounds, or 81 percent of total sales. Burley growers began selling leaf in early November, and after 3 weeks of sales, 73 out of 111 million pounds were sold under contract.

Domestic Cigarette Prices Soar After Master Settlement Agreement



*Master Settlement Agreement limited manufacturers' advertisements and mandated payments to states for costs of treating smoking-related illnesses and reducing underage smoking.

Economic Research Service, USDA

The dramatic shift to contract marketing has had a significant impact on tobacco warehouses. In North Carolina alone, 69 of the 129 warehouses closed before the season began. It is estimated that 28 out of 78 warehouses may close in Kentucky.

Some warehouses have become collection centers for companies buying under contracts. Warehouses were already suffering from 3 years of large quota cuts that reduced the quantity of leaf they marketed and caused some less competitive warehouses to close. An additional 60- to 80-percent reduction in the amount of leaf available at auction will leave so little tobacco that it may not be economically viable for most warehouses to remain in business.

Contracting also calls the future of the tobacco program into question. For many years some types of tobacco in the program have been sold mainly through contracts. When selling under contract, growers relinquish their right to price support but are still bound by the marketing quota for their type of tobacco.

Many growers feel that without auction markets the tobacco program will become obsolete. And, if auctions cease to exist, many producers fear that contract buyers

may lower leaf prices and growers would then face lower incomes. However, contracting appeals to many growers because they are paid immediately. The contract price currently exceeds expected auction prices, and all of a grower's leaf is sold to one buyer in one transaction. Growers selling under contract avoid paying warehouse commissions and fees.

Cigarette Output & Consumption Continue Steady Decline

The cigarette industry has stabilized after higher prices and tax increases during the past few years. Declining tobacco leaf production has also led to lower cigarette production. Cigarette output in 2000 reached 594.7 billion pieces, below 1999 but higher than expected. Domestic taxable removals (the volume of cigarettes for which manufacturers paid tax and subsequently shipped) totaled 423.3 billion pieces compared with 429.8 billion in 1999. Exports for the year were 148.3 billion pieces, 3.1 billion fewer than 1999.

In 2000, cigarette consumption slipped 5 billion pieces (250 million packs) to 430 billion pieces (21.5 billion packs of 20 cigarettes), continuing the long-term slide since peaking in 1981. Higher prices and taxes have been a major cause of declin-

ing cigarette consumption. Manufacturers raised wholesale cigarette prices twice in 2001, so continued declines are expected. Cigarette consumption in 2001 is forecast at 425 billion pieces, or 21.3 billion packs.

During the past decade, numerous states have increased cigarette taxes. Taxes range from 2.5 cents per pack in Virginia to \$1.41 in Oregon. In 2001, Maine raised its cigarette tax from 74 cents to \$1 per pack and Rhode Island raised its tax from 71 cents to \$1. Wisconsin's cigarette tax increased from 59 cents per pack to 77 cents. As a result of a voter referendum, Washington's cigarette tax will increase as of January 1, 2002, from 82 cents per pack to \$1.42, making it the highest in the nation. As of July 2001, 20 states have tax rates of at least 50 cents per pack, and six states have rates \$1 or greater. Virginia and Kentucky remain the lowest cigarette taxing states at 2.5 and 3 cents per pack.

Cigarette exports peaked in 1996 at 244 billion pieces. Since then, declining consumption in some importing countries and movement of U.S. production offshore have reduced U.S. cigarette shipments to about 150 billion in 1999, 2000, and 2001. Japan, Saudi Arabia, Cyprus, and the European Union are major buyers of U.S. cigarettes.

The impact of the Master Settlement Agreement (MSA) between cigarette manufacturers and state attorneys general continues to be another agent of change. The MSA, signed November 1998, further limited advertisements by manufacturers and mandated payments to states for the costs of treating smoking-related illnesses and reducing underage smoking.

After the MSA, cigarette manufacturers raised prices to cover the costs of the settlement and passed them on to consumers. In November 1998 when the agreement was signed, manufacturers raised cigarette prices 45 cents per pack, the largest increase ever.

In spite of the price increases and the restrictions resulting from the MSA, the proportion of Americans who smoke remains fairly steady, at about 25 percent. But smokers are smoking less. Annual per capita consumption has dropped from 2,834 cigarettes per adult over age 18 in 1991 to 2,014 in 2000 (includes smokers and nonsmokers). Restrictions on where people can smoke, higher prices, advertising restrictions, and greater awareness of health risks are having a long-term effect on the tobacco industry. **AO**

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The next issue of *Agricultural Outlook* will appear in March

Text-only version available on the
Economic Research Service web site February 21.

www.ers.usda.gov/publications/so/view.asp?f=/economics/ao-bb/

January 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

January

- 3** Weather - Crop Summary (noon)
Broiler Hatchery
- 4** Dairy Products Prices (8:30 a.m.)
Milkfat Prices (8:30 a.m.)
Dairy Products
Poultry Slaughter
- 8** Weather - Crop Summary (noon)
- 9** Broiler Hatchery
- 10** Turkeys Raised
Vegetables
- 11** Cotton Ginnings (8:30 a.m.)
Crop Production (8:30 a.m.)
Crop Production - Ann. (8:30 a.m.)
Dairy Products Prices (8:30 a.m.)
Grain Stocks (8:30 a.m.)
Rice Stocks (8:30 a.m.)
Winter Wheat Seedings (8:30 a.m.)
- 14** Egg Products
Turkey Hatchery
- 15** Weather - Crop Summary (noon)
- 16** Broiler Hatchery
Potato Stocks
- 17** Milk Production
- 18** Dairy Products Prices (8:30 a.m.)
Milkfat Prices (8:30 a.m.)
Cattle on Feed
Cold Storage
- 22** Catfish Processing
Monthly Agnews
- 23** Weather - Crop Summary (noon)
Broiler Hatchery
- 25** Cotton Ginnings (8:30 a.m.)
Dairy Products Prices (8:30 a.m.)
Livestock Slaughter
Monthly Hogs and Pigs
Noncitrus Fruits and Nuts - Prelim.
- 28** Capacity of Refrig. Wareh.
- 29** Weather - Crop Summary (noon)
Chickens and Eggs - Ann.
Vegetables - Ann.
- 30** Broiler Hatchery
Peanut Stocks and Processing
- 31** Agricultural Prices
Chickens and Eggs

World Agriculture & Trade



Aligning U.S. Farm Policy With World Trade Commitments

Farm income support and trade programs will probably continue to be subject to restrictions established under international trade agreements. The U.S. and other countries made commitments in 1994 under the Uruguay Round Agreement on Agriculture (URAA) to reduce the total amount of trade-distorting domestic subsidies provided to producers, to reduce export subsidies, and to increase import access to domestic markets. The implementation period for the commitments was 1995 to 2000, and existing commitments will continue at 2000 levels until a new agricultural trade agreement is reached under the new multilateral trade negotiations initiated in Doha, Qatar, on November 15, 2001.

The U.S. has so far met commitments under the URAA, but surges in direct payments to producers after 1997 in response to low market prices have raised concerns that domestic subsidy levels might eventually exceed the ceiling on domestic support established under the URAA. U.S. support is expected to remain below its ceiling under current farm programs, but increases in support under new programs could cause a compliance problem with the URAA commitments. A compliance problem could hamper efforts in the new multilateral trade talks to accomplish U.S.

goals for liberalizing international trade and getting other countries to reduce domestic support to their agriculture sectors and increase market access. Support can be provided without affecting compliance, however, if programs are designed to be consistent with certain URAA exemption provisions.

How Compliance Is Determined

Domestic subsidies under the URAA are measured using a specially defined indicator, the "aggregate measurement of support" (AMS). In 1994, 28 countries established ceiling levels for their AMS and agreed to reduce them by 20 percent by the year 2000. Countries must document in official notifications to the World Trade Organization (WTO), the governing body for the URAA, their calculated AMS for each year, 1995 to 2000. The U.S. has, so far, officially notified for marketing years 1995 to 1998. Information for 1999 and 2000 is under internal review for later notification.

Domestic support to agriculture is classified into three basic categories for purposes of AMS calculations and WTO notifications:

Green box support is the least trade distorting. As such, it is exempt from support reduction commitments and thus not included in the AMS. This category includes certain types of support received directly by producers in the form of government payments or input subsidies, as well as certain government outlays not received directly by producers, but that provide benefits to the agricultural sector in general. Three types of green box support of particular interest to lawmakers drafting new farm legislation are decoupled income support (i.e., support not tied to current production level or current market prices), income insurance and safety-net payments, and environmental payments.

Blue box support has supply-control features that partially offset trade-distorting effects, and is also exempt from inclusion in the AMS. The U.S. currently makes no direct payments to farmers that fit into this category. U.S. deficiency payments were linked to compliance with acreage reduction programs prior to 1996, so they were in the blue box in 1995. Deficiency payments were eliminated after 1995 under the 1996 Farm Act.

Amber box support is the most trade-distorting type. It includes all direct support to agriculture that is not eligible for the green or blue boxes. All amber box subsidies must be included in the AMS calculation, except those qualifying for what is known as the *de minimis* exemption. This exemption permits product-specific support to be excluded from the AMS if the product's total support does not exceed 5 percent of its value of production (10 percent for developing countries). Also, non-product-specific support, e.g., input subsidies and direct payments not related to current production of specific commodities, can be excluded from the AMS if the total value is less than 5 percent of the total value of all agricultural commodities produced (10 percent in the case of developing countries).

Examples of the largest amber box support included in the U.S. AMS in 1998 were market price support benefits for dairy and sugar, and benefits related to marketing assistance loans, especially loan deficiency payments.

Total domestic support to agriculture can be defined to include all the benefit measures included in the above three boxes, before any exemptions and regardless of the *de minimis* status. However, the remainder of this article focuses only on the support measures received directly by producers, called “total direct support to agricultural producers,” or simply “total direct support.”

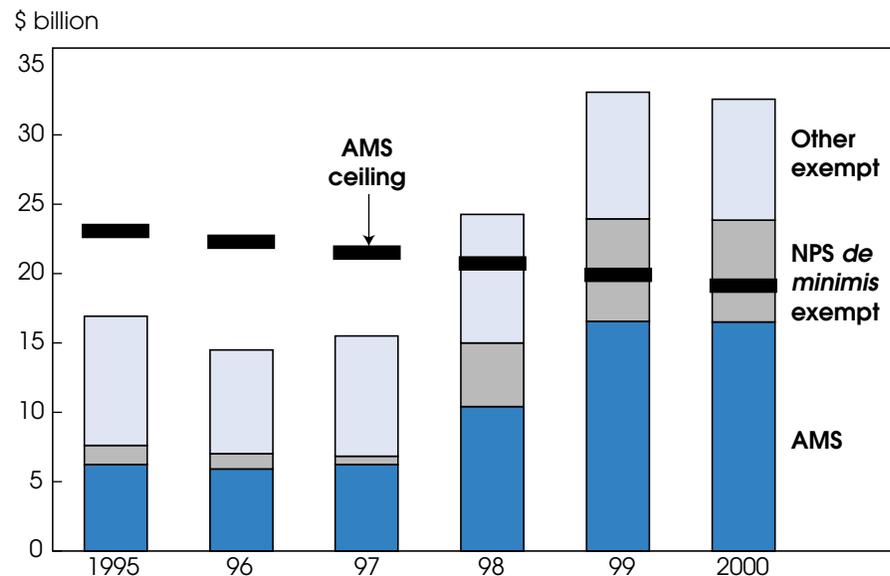
This total includes all of the amber box and blue box support measures plus green box outlays that involved payments made directly to producers. This total therefore excludes green box outlays notified to the WTO as domestic food aid and outlays for general government services such as research, inspection, and marketing. These latter items must be notified to the WTO but do not involve direct payments to producers.

Total direct support to U.S. agricultural producers before subtracting the exempt blue, green, and *de minimis* payments was less than the AMS ceiling in 1995-97. Direct payments increased enough after 1997 to cause total direct support to exceed the AMS ceiling each year, making the exemptions essential to meeting URAA commitments.

The U.S. AMS in 1998 was \$10.4 billion, just 50 percent of the \$20.7-billion ceiling. Preliminary estimates for 1999 and 2000 indicate that the average AMS during these years was nearly 60 percent higher than in 1998. This means the AMS for these years would now be much closer to the ceiling, perhaps as much as 80 percent.

This increase in the AMS reflects primarily the larger loan deficiency payments and marketing loan gains received by producers as a result of low market prices relative to commodity loan rates. There were also increases in the AMS due to payments related to emergency programs for various commodities. The implication for lawmakers is that some future programs may need to be carefully crafted to assure they fall into an exempt category in order to keep the AMS within the ceiling.

Total Direct Support Reported to the WTO— U.S. AMS Approaches the Ceiling



AMS (aggregate measurement of support) is the actual U.S. direct support to farmers minus the exemptions allowed by the World Trade Organization (WTO). 1999 and 2000 estimates are from *Food and Agricultural Policy: Taking Stock for the New Century*, USDA.

Economic Research Service, USDA

Criteria for Green Box Inclusion

For support programs to qualify for the green box category, and thus be exempt from the AMS, they must meet both general and policy-specific criteria. Under the general criteria, support provided by the program:

- shall be provided by a publicly-funded government program and not involve transfers from consumers,
- shall not have the effect of providing price support to producers, and
- shall have no, or at most minimal, trade-distorting effects on production (this criterion is subject to considerable interpretation since “minimal” is not defined).

Green box provisions do not set any upper constraints on the total amount of green box support that can be given to agriculture. The three largest direct payment categories in the U.S. green box in 1998 (in value terms) were decoupled income support (production flexibility contract payments), resource retirement payments (Conservation Reserve Program pay-

ments), and payments for natural disasters (crop and livestock disaster payments).

Decoupled income support. Direct payments to producers are considered decoupled payments if they are not related to or based on market prices, the type or volume of production, or factors of production in any year after a defined and fixed base period. The U.S. included production flexibility contract (PFC) payments as decoupled payments in the 1996-98 notifications to the WTO. These payments were the largest single category value-wise, representing 23 percent of total direct payments to producers in 1998.

The PFC totals were largely predetermined by the 1996 Farm Act using acreage and program yields that would have been in effect for 1996 under previous legislation. Current prices, resource use, and production decisions did not affect the amount of PFC payments received by a farmer under the 1996 Act unless PFC land was used for nonfarm purposes or for producing fruits and vegetables. Consequently, one may argue, current production decisions and cropping patterns are not significantly distorted by current PFC payments. There may be

World Agriculture & Trade

U.S. Direct Support to Agricultural Producers in 1998 Notified to WTO

WTO category	Qualifying U.S. program or payment name	1998 total amount	AMS exempt	1998 AMS ¹
<i>\$ billion</i>				
Amber box support				
Product-specific-- (exempt from AMS when support for a commodity does not exceed 5% of commodity's total value of production)	Dairy market price support	4.33	0.00	4.33
	Loan deficiency payments	2.78	0.01	2.77
	Sugar market price support	1.09	0.00	1.09
	Marketing loan gains	1.04	0.02	1.02
	Peanut market price support	0.35	0.00	0.35
	Commodity loan interest subsidies	0.34	0.00	0.34
	All other product specific, less fees	0.61	0.08	0.53
	Subtotal	10.55	0.16	10.39
Nonproduct-specific-- (exempt from AMS when subtotal does not exceed 5% of total value of agricultural products for the year)	Crop market loss payments	2.81	2.81	0.00
	Crop and revenue insurance benefits	0.75	0.75	0.00
	All other	1.03	1.03	0.00
	Subtotal	4.58	4.58	0.00
Blue box support (AMS exempt)	Deficiency payments (ended in 1995)	0.00	0.00	0.00
Subtotal	0.00	0.00	0.00	
Green box support² (AMS exempt)				
Decoupled income support	Production flexibility contract payments	5.66	5.66	0.00
	Conservation Reserve Program payments	1.69	1.69	0.00
Resource retirement payments ³	Payments for crop disaster, non-insured assistance program, and other crop, livestock, and tree disaster assistance and subsidized loans	1.41	1.41	0.00
	Environmental program payments ³	Program payments for wetland reserve, environmental quality incentives, emergency conservation, and other environmental and conservation programs	0.26	0.26
Structural adjustment investment aids	Farm credit programs	0.09	0.09	0.00
	All other payments to producers	0.00	0.00	0.00
Subtotal	9.11	9.11	0.00	
Total direct support to producers		24.24	13.85	10.39
WTO ceiling		Na	Na	20.70
Excess of WTO ceiling over the AMS		Na	Na	10.30

Na = Not applicable. WTO = World Trade Organization. AMS = Aggregate measurement of support.

1. Excludes the blue and green box entries, and any amber box amounts that are exempt under the 5 percent *de minimis* rule. .2. In this article, green box excludes outlays notified to the WTO as green box outlays not received directly by producers, such as domestic food aid and general government services (research, inspection, marketing, and other services) . 3. Revised to exclude technical assistance.

Economic Research Service, USDA

longrun effects on production, however, since PFC payments increase the business income of farm families no matter what they produce, even if they completely idle their PFC land.

A key issue arising from farm bill proposals for income safety nets, or counter-cyclical payments, concerns the interpretation of the URAA condition stating that decoupled payments must not be based on or related to market prices in any year after the base period. Payments in many income safety-net program proposals are triggered by variations in commodity revenue or farm income. Since revenue and income are related to prices, such payments would have to be carefully crafted

to qualify as "decoupled" income support. If the payments do not qualify as decoupled income support, could they qualify for the green box under income insurance provisions?

Income insurance and income safety nets. Direct payments to producers can be considered income insurance or safety-net payments under the green box category if they meet four policy-specific criteria:

- eligible producers must have experienced a loss that exceeds 30 percent of average gross income, or the equivalent in net income terms, during the preceding 3-5 year period;

- the amount of current payments must not exceed 70 percent of the current income loss;
- payments shall relate solely to income, and not to prices, production, or factor use; and
- payments from this provision combined with that for natural disaster relief shall not total more than 100 percent of the total loss for individual farmers.

The U.S. green box does not currently include any programs based on the above safety-net criteria, but some farm bill proposals for income safety nets seemed similar in concept to green box income insurance. Whether or not these proposals, if

adopted, would actually qualify for any green box category has yet to be determined. The language of the URAA provisions for income insurance contains some ambiguities and significant benefit limitations. In 1995-98, U.S. income and revenue insurance benefits were combined with multiperil crop insurance benefits and notified to the WTO as nonproduct-specific, amber box support.

URAA income insurance provisions cover programs that make payments to producers based on their unique individual income experiences. Income insurance or safety-net programs, such as those in some farm bill proposals that base payments on national-level indicators, would not qualify for the income insurance category of the green box. If they were not carefully crafted to qualify for the green box as decoupled payments, they would probably have to be included in the amber box and could make it harder for the U.S. to remain within its AMS ceiling.

Environmental program payments.

Direct payments to producers under environmental programs qualify as green box payments if they require producers to meet clearly defined specific conditions related to production methods or inputs. The amount of the payments shall be limited to the extra cost or loss of income from complying with such conditions. U.S. funding for environmental programs in the green box category has been relatively small compared to total farm program spending, but some farm bill proposals called for increasing such outlays.

The green box condition that limits the amount of payments to the cost of compliance might be an issue for policymakers to consider. Payments to landowners under the U.S. Conservation Reserve Program (CRP) have been notified in the green box under the resource retirement rather than environmental programs category.

Resource retirement payments. Payments made conditional on retirement of land from marketable agricultural production for at least 3 years may be placed in the green box category called “structural adjustment assistance provided through resource retirement programs.” Such payments cannot be related to current prices, type or quantity of production, or

to remaining resources. To qualify as green box, a program also cannot require that the retired resources be used for any alternative production of marketable agricultural products. In 1998, the CRP was listed as a resource retirement program in the U.S. green box. The CRP, which would be expanded under farm bill proposals, was the fifth-largest component of total direct support to U.S. agricultural producers in 1998.

Other green box programs. The third-largest green box category that involved direct payments in 1998 was payments to farmers for relief from natural disasters—accounting for \$1.4 billion in support provided in response to widespread weather-related crop damage. A small amount of U.S. farm credit subsidy was notified in the category for “structural adjustment payments involving investment aids” (interest rate subsidies). The U.S. reported nothing in the other direct payment categories of the green box—those for producer retirement or regional assistance payments.

Amber Box Support Exclusions

The U.S. included several programs in the amber box nonproduct-specific (NPS) category of support since they were multi-product in scope, the implementation provisions were generic, or the payment amount was not based on current production of any specific commodity. (The URAA does not define “nonproduct spe-

cific”). Since the total value of the NPS category of payments for the U.S. was \$4.6 billion in 1998, or only 2.4 percent of total value of production (and thus below the 5 percent *de minimis* level for developed countries), the entire \$4.6 billion was excluded from the U.S. AMS. The largest two examples of NPS support in the U.S. in 1998 were the crop market loss payments and the net benefits from crop and revenue insurance.

Crop market loss assistance payments.

Producers who received fiscal 1998 PFC payments also received additional payments allocated to producers in proportion to the amount of their PFC. These additional payments, called crop market loss payments, were mandated by legislation enacted in October 1998 partly in response to generally low agricultural market prices. The payments were not tied to current production of any specific product, and the proportionality factor was the same (generic) for each PFC commodity. But since payments were based on or related to recent market-price conditions, they could not be classified as green box decoupled payments. Crop year 1998 payments amounted to \$2.8 billion.

Crop and revenue insurance benefits.

Insurance benefits were measured as the amount of insurance indemnities paid to producers, minus the producers’ share of the insurance premiums. Producers are offered generic, or common, provisions for participation in various insurance programs operated by USDA’s Risk Manage-

Find more information on the Economic Research Service website

Food and Agricultural Policy—Taking Stock for the New Century

www.usda.gov/news/pubs/farmpolicy01/fpindex.htm

WTO: Uruguay Round Agreement on Agriculture—Domestic Support

(World Trade Organization Briefing Room)

www.ers.usda.gov/briefing/WTO/domsupport.htm

U.S. Ag Policy—Well Below WTO Ceilings on Domestic Support

(Agricultural Outlook)

www.ers.usda.gov/publications/agoutlook/oct1997/ao245h.pdf

U.S. WTO Domestic Support Reduction Commitments and Notifications

(Farm and Commodity Policy Briefing Room)

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

U.S. Farm Program Benefits: Links to Planting Decisions and Agricultural Markets

(Agricultural Outlook)

www.ers.usda.gov/publications/agoutlook/oct2000/ao275e.pdf

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ment Agency. The Federal government subsidizes the insurance premium. Taken as a whole, insurance program provisions do not comply with all the green box provisions for payment for relief from natural disasters, which includes qualifying crop insurance programs. In particular, the requirement for the green box that recipients of crop and revenue insurance payments must have at least a 30-percent loss is not always met. Crop-year net insurance payments amounted to \$747 million in 1998.

Other NPS programs. Other NPS benefits notified to the WTO include input subsidies (for irrigation, grazing livestock, and state credit programs) and 1998 multiyear disaster payments. This disaster payment program did not fully comply with the 30-percent loss threshold criteria for disaster relief in the green box, so it was notified in the amber box as NPS, since the provisions are generic, or common provisions, similar to crop insurance. The input subsidies are clearly not limited to any specific products.

U.S. Farm Support At a Crossroads

As the U.S. enters the 21st century, many policymakers are struggling to reshape the nature of U.S. agricultural policy. Significant public interest in market-oriented policy, environmental policy, and URAA commitments is encouraging the development of “decoupled” income support programs, safety-net and risk management tools, and environmentally focused incentives. Programs with payments tied to current levels of production, prices, or resource use are limited under the URAA.

Thus far, the U.S. has been able to comply with the conditions established by its URAA commitments and still provide significant income support to producers. U.S. support under current farm programs is expected to remain below its ceiling, but any increases in support under new programs, if not carefully crafted to utilize exemptions, could present a problem for compliance with the URAA commitments. **AO**

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Upcoming Reports—USDA's Economic Research Service

The following reports are issued electronically at the times indicated.

www.ers.usda.gov

February

- 8** *World Agricultural Supply and Demand Estimates (8:30 a.m.)*
- 11** *Oil Crops Outlook (4 p.m.)**
Cotton and Wool Outlook (4 p.m.)**
Rice Outlook (4 p.m.)***
- 12** *Wheat Outlook (9 a.m.)**
Feed Outlook (9 a.m.)***
- 13** *Livestock, Dairy, and Poultry Situation and Outlook (4 p.m.)*
- 20** *Vegetables and Melons Outlook (4 p.m.)
Agricultural Outlook (3 p.m.)**
- 21** *Outlook for U.S. Agricultural Trade (4 p.m.)*
- 25** *U.S. Agricultural Trade Update (4 p.m.)*
- 26** *Agricultural Income and Finance Situation and Outlook (4 p.m.)**

*Release of summary.

**Available electronically only.

What's ahead in 2002

- ✱ **Calculating trade damages in WTO disputes**
- ✱ **Report on farm labor**
- ✱ **Issues in animal waste disposal**
- ✱ **The economics of farmland protection**
- ✱ **Intellectual property rights: the impact on global agriculture**

All in upcoming issues of *Agricultural Outlook*

World Agriculture & Trade



Nancy Cochran

Pressures for Change in Eastern Europe's Livestock Sectors

Twelve years after the fall of Communism in Central and Eastern Europe (CEE), the meat and dairy processing sectors of the CEE countries are undergoing a rapid process of concentration and modernization. The process is most evident in Poland and Hungary, but similar trends can be observed in all the CEE countries. This restructuring has been accelerated by the European Union (EU) accession process, both because of pressure to meet EU sanitary standards and because of generous assistance provided by the EU to the food processing industry.

Drastic declines in livestock inventories and production during the early years of the transition have been well documented. There are still few signs of significant growth in livestock output in most of the CEE countries. In general, cattle inventories and beef output are still declining, although at a slower rate. Output of poultry meat has begun to grow in several countries, especially Poland, and pork output is also turning around. Many of the other CEE countries have also seen some growth in poultry, while pork has stabilized at lower levels. The principal exception to these positive developments is Romania, where inventories of all species continue their decline.

Structural changes are underway that could eventually lead to significant shifts in production and trade patterns in CEE countries. A combination of pressures is leading to a steady increase in concentration in CEE meat sectors. This trend is most apparent at the processing level, but there is evidence of farm consolidation as well. The result could be a dramatic reshaping of these sectors in the next 5 to 10 years.

The main driving force behind the changes is the preparation for membership in the EU. Once the CEE countries become members, all CEE meat and dairy plants will have to meet strict EU standards or close down. With the help of foreign investment and EU assistance, the larger CEE plants are gradually retooling to meet these standards. Smaller plants are already being closed.

Other factors have reinforced these changes. The loss of Russian markets following the 1998 ruble devaluation forced CEE countries to seek alternative markets in the West. However, Western markets remain difficult to penetrate because of the generally low or uneven quality of CEE output. The BSE crisis in the EU has led to tighter standards for cattle imported into the EU and is forcing a restructuring

of the cattle/beef sector throughout the CEE countries.

Decline & Recovery

The early years of transition saw steep declines in livestock inventories and production in all CEE countries. Between 1989 and 1993, cattle inventories in Poland fell by 29 percent; hog inventories fell by 36 percent in Hungary and 31 percent in Romania. Meat output declined similarly, and for a brief period the CEE countries, formerly net meat exporters, became net importers. In brief, the following factors contributed to the decline.

- Elimination of subsidies caused prices of feed and other inputs to rise substantially.
- Real income of the population was falling.
- Liberalization of retail prices caused meat prices to rise, as consumer purchasing power fell. The result was a drastic decline in demand for meat.
- In many of the countries, state and collective farms were privatized or liquidated. As part of the liquidation process, animals belonging to the state farms were given to former landowners. These new private farmers were often unable to feed the animals and simply slaughtered them.
- With the opening of international borders, domestic meat products could not compete with attractively packaged imports from the West.

Since the early 1990s, the situation has been changing. By 1997, declines in pork and poultry sectors had virtually stopped; only cattle numbers were still declining.

Output of poultry meat has stabilized nearly everywhere, and output is growing rapidly in Poland. Other countries, including Hungary, Bulgaria, and Romania are seeing some increases in poultry meat output. This growth is in part due to changing preferences of consumers, who increasingly substitute poultry for beef because of price and health concerns. In 2001, consumer fears of BSE in cattle have accelerated this trend. Stronger demand has led to higher domestic poultry prices, which in turn has stimulated output.

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In addition, the poultry sector has attracted a great deal of investment recently at both the production and processing levels. Investors have been attracted to the sector by increased demand, the short growing cycle of broilers, and the ease with which the technology can be transferred across borders within CEE.

Hog inventories and pork output have also stabilized. Output has increased in several of the countries in recent years, but, there is no clear trend of sustained growth. Rather, this sector is experiencing cyclical increases and downturns in response to fluctuating grain prices and changes in government policy.

Cattle numbers and beef output are still in decline throughout the region. Cattle are still mainly dairy animals, and beef comes from young bulls and culled dairy cattle. The resulting meat is thus of a relatively low quality, and consumers prefer pork and poultry.

In contrast, the dairy sectors in Poland, Hungary, and a few other countries are beginning to see some growth. Some significant increases in milk yields have increased output even as cattle numbers continue to decline, and quality has also improved. In Poland, for example, half the milk now produced meets the highest EU standard (known as "extra class"). These improvements are the result of significant investment and foreign technical assistance to the sector.

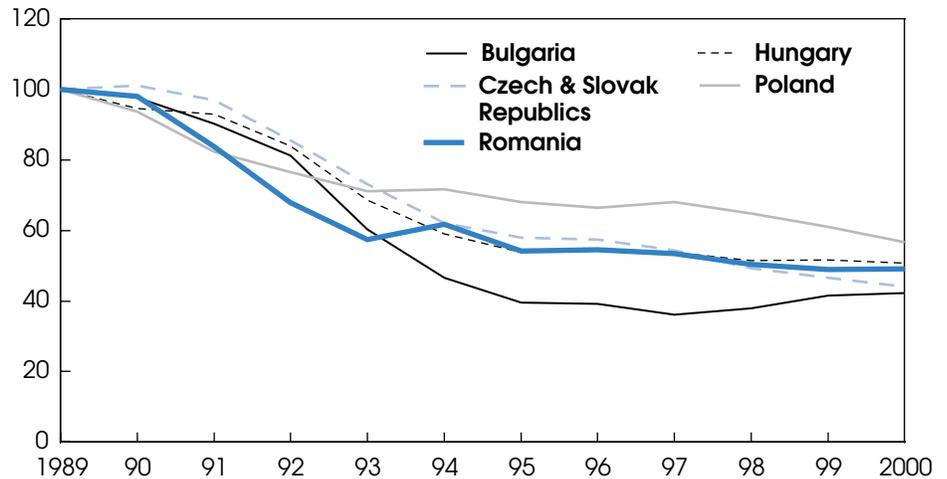
Preparing for EU Accession

Ten of the CEE countries are officially candidates for EU membership. Poland, Hungary, the Czech Republic, Estonia, and Slovenia are in the so-called first wave that began negotiations in 1998. Slovakia, Latvia, Lithuania, Bulgaria, and Romania constitute the second wave. Some of the second wave has caught up and it is entirely possible that as many as eight CEE countries could join the EU by 2005.

Livestock production and processing sectors throughout the CEE continue to be divided between modern commercial operations, subsistence farms, and small one-room slaughterhouses. The large enterprises have received considerable investment in recent years and will have

CEE Cattle Inventories Stagnant

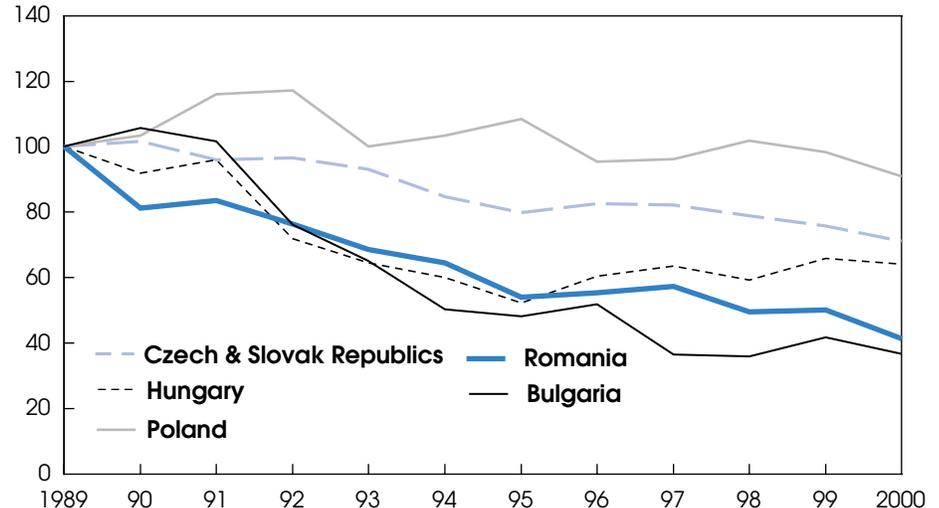
Index: 1989=100



Economic Research Service, USDA

Hog Inventories Rise Slightly in Hungary; Stagnant or Falling Elsewhere

Index: 1989=100



Economic Research Service, USDA

little difficulty meeting EU standards. Smaller units will find it much more difficult to meet the strict standards.

Regulations that meat plants will face include animal welfare rules, sanitary requirements at the plant, and environmental rules.

- Animal welfare rules will restrict the animals time in transit, regulate the number of hens kept in a cage, prohibit

tethering of cattle and pigs, and strictly regulate slaughtering procedures.

- EU rules require a thorough system of identification and tagging of animals to assure the ability to trace the animal back to the farm of origin.
- "Dirty" phases of processing (slaughter and evisceration) must take place in a separate room from "clean" phases (cutting and further processing.) Many

small plants have only one room and cannot expand.

- Live animals must enter the plant on a separate road from which finished meat exits. Owners of the smallest plants do not own sufficient land to build new driveways.
- Plants must have equipment for measuring back fat of hogs and must apply the European grading system (known as EUROP).
- Environmental regulations require plants to have water purification systems. EU environmental regulations will force some plants to close because their locations are too environmentally sensitive.

The CEE governments have all been phasing in some of the EU regulations over the past 5 years. For example, slaughterhouses in Hungary and Poland are required to have equipment for measuring back fat. Dairy plants are not allowed to buy milk that is below the second class as defined by EU standards.

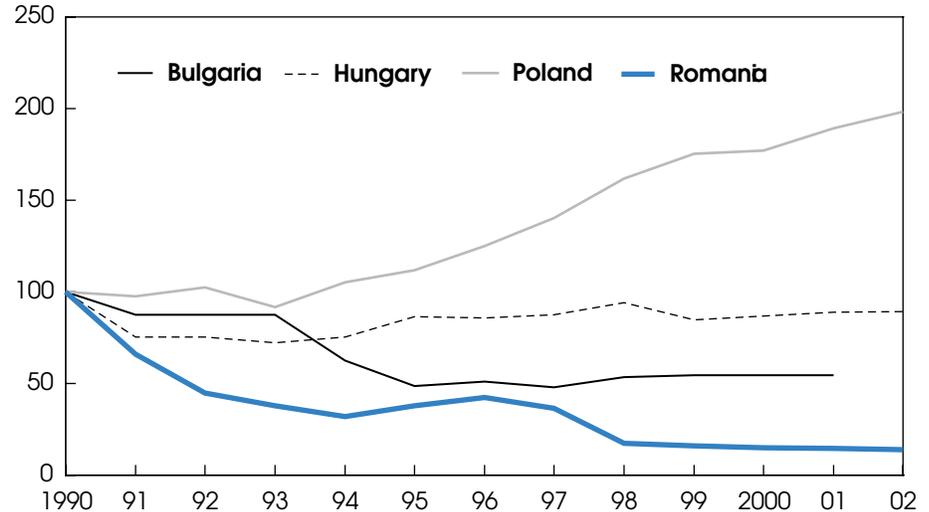
Hungary has made more progress than its neighbors. But even there, only a third of the 600 meat plants meet all EU requirements. The situation is more critical elsewhere. In Poland, of 4,150 meat plants operating in 2001, only 19 slaughterhouses and 23 processing plants were licensed for export to the EU—between 40 and 60 others are applying for EU export licenses. Bulgaria has only three EU-approved slaughterhouses for sheep and lamb, none for broiler chickens, and six for ducks and geese.

Polish officials estimate that the total investment needed to bring the nation's meat plants into compliance with EU regulations will be about \$900 million, or about \$300 million per year. Of this, EU preaccession funds are expected to provide only \$35 million a year, including cofinancing from the Polish side. The Polish Agency for Reconstruction and Modernization is providing some subsidized credit, but the bulk of the required capital will have to come from the plants' own profits or from foreign investors.

Some CEE countries—Poland for example—have negotiated a 3-year transition period following accession, during which

Poultry Output Rises in Poland, Holds Steady in Other CEE Countries

Index: 1990=100



2001 and 2002 forecast.

Economic Research Service, USDA

plants that do not meet EU requirements can continue to operate as long as they sell only on the domestic market. Accession will almost certainly mean the eventual closure of hundreds of smaller plants.

Fallout Remains from Russia's Financial Crisis

As early as 1993, many CEE countries resumed their positions as net meat exporters. But their largest export market turned out to be Russia. Because of dependence on the Russian market, the Russian financial crisis of 1998 had severe negative impacts on CEE livestock sectors, particularly in Poland. Polish pork exports to Russia for 1998 were down by 26 percent from 1997, and producer prices for live hogs fell by 40 percent during 1998. Poultry prices dropped similarly, depressed by the sudden oversupply of pork on the domestic market.

Hungary's food exports to Russia fell by 20-25 percent in 1998, and meat exports to Russia ceased. Live hog prices in January 1999 were 36 percent below year-earlier levels. Romania's exports of livestock products were down by 20-25 percent in 1998.

Three years later, Poland and Hungary have partially recovered from the negative

impacts of Russia's financial crisis. Polish pork and poultry prices in 2000 had returned to the pre-crisis level, and output of both meats rose in response. Meat exports to Russia have also risen.

CEE countries have not fully recovered the lost markets in Russia, mainly because Russian import demand remains well below pre-1998 levels. Poland has regained some of its pre-crisis market in Russia, but Russian imports of Polish half carcasses and sausage in 2000 were still only half the 1997 level. Hungary's pork exports to Russia were only 37 percent of the 1997 level.

The CEE countries have attempted to reorient their trade toward the EU. The "double-zero trade agreements" the CEE countries signed with the EU in 2000 have had some positive impact. In particular, CEE poultry exports to the EU have risen since the agreements were signed. But in many cases the tariff-rate quotas granted by the EU have remained unfilled because of quality problems. The EU has banned imports of fresh or frozen pork from Poland and Bulgaria because of swine fever outbreaks. More generally, the EU allows meat imports only from plants that have been inspected by EU veterinarians and found to meet all EU sanitary standards; few CEE plants meet those standards. The EU permanent vet-

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Double-Zero Trade Agreements

Between July and September 2000 the EU signed so-called “double-zero” trade agreements with all the CEE candidate countries. These agreements establish three lists of goods: tariffs are abolished for goods on the first list; for goods on the second list, the agreement calls for zero tariffs within quotas; for the third list preferential tariffs are granted within quotas. For most CEE countries, pork and poultry are on the second list. For these goods, the two sides not only grant zero tariffs within the quotas, but also refrain from subsidizing exports. For more information see *Agricultural Outlook*, December 2000.

erinary committee now recognizes Poland as free from swine fever, which may improve Poland's exports.

BSE Forces Restructuring Of Cattle Sectors

During the recent outbreak of BSE in Western Europe, most CEE countries did not experience a single case. Two cases occurred in the Czech Republic, four in Slovakia, and one in Slovenia. Even so, the presence of BSE in Western Europe had significant short-term impacts on CEE cattle sectors. The BSE crisis will also accelerate the restructuring of the CEE meat industry that was already underway.

In April 2001, the EU, reluctant to trust testing procedures in CEE countries, declared all CEE countries to be “at risk” of BSE. This meant a temporary ban on all cattle imports from the CEE until governments could demonstrate they had valid testing procedures in place. Most CEE countries have traditionally exported large numbers of live cattle to the EU, their largest customer. The result of the ban was a virtual halt of live cattle exports.

In an effort to resume cattle exports to the EU, nearly all the CEE countries have now imposed mandatory testing of all slaughtered cattle. The EU requires that all cattle above 30 months of age be tested for BSE. Poland went one step further and now requires testing of all cattle over 24 months that are to be slaughtered.

The cost of testing reportedly ranges from \$22 per animal in Poland to \$55 per animal in Hungary. The Hungarians estimate that their testing program will cost the cattle industry \$10 million per year. Polish authorities estimate the cost of their testing program for the remainder of 2001 to be 68 million zlotys (US\$17 million). Both governments are allocating funds to

offset these costs at least partially. But in the long run, these measures will greatly increase the cost of beef production.

Production costs will also rise as a result of a ban on use of meat and bone meal in feed and the need to build specialized rendering plants for all cattle carcasses. These new regulations will accelerate concentration in the processing sector, as smaller plants will find these costs prohibitive.

The Move to Greater Concentration

These changes are already creating a trend of increasing concentration, particularly in the processing sector. For example, the current number of red meat plants in Poland—4,150—is down from nearly 7,000 in 1997. About 350 produce 60 percent of meat output. Four large capital groups control an ever larger share of the industry.

Poland's poultry industry is even more concentrated than red meat production and is better prepared for EU accession. There are about 25-30 large poultry plants that account for 60-70 percent of all birds slaughtered. As with red meats, four capital groups control most of this market, and there is a substantial share of foreign ownership in the poultry sector. The Poultry Producers Council expects that all poultry plants will meet EU standards in 2 or 3 years. Those that are unable to meet EU standards are already being closed down.

Hungary's meat and dairy industries have been highly concentrated since the beginning of the economic transition. In the dairy sector, the six largest plants control 70 percent of the milk market, and one Dutch-owned capital group accounts for 27 percent of the market. Three poultry processing companies control over 90 percent of Hungary's poultry market.

Experts in Poland and Hungary believe that the small number of larger plants meeting EU standards will be able to produce enough meat to satisfy domestic demand and allow for exports. The principal concern is that many of the smaller plants are in rural areas where unemployment is already high. CEE concerns about the social costs of this restructuring are also having a strong influence on the direction of negotiations. For CEE countries, accession will be politically difficult without some assurance of a stronger social safety net for workers displaced by this process.

The phenomena of concentration and modernization adds a new dimension to projections of the impacts of EU enlargement on livestock production and trade. Analysis by USDA's Economic Research Service suggests a potential for significant increases in beef and pork output in CEE countries once they join the EU. CEE prices are currently well below EU prices, and as prices rise to EU levels, it will stimulate increased output. At the same time, CEE producers will be subject to stringent regulations regarding product quality and animal welfare. But compliance will raise production costs, which may, in turn, dampen expected output increases.

Compliance with these regulations will significantly increase production costs, and many smaller producers could be forced out of business. But restructuring of the industry already underway could raise the efficiency of the CEE meat and dairy industries to the point where they can compete in the enlarged EU despite higher costs. **AO**

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More details on the ERS web site

Livestock Sectors in the Economies of Eastern Europe and the Former Soviet Union: Transition from Plan to Market and the Road Ahead (forthcoming report)
www.ers.usda.gov

Enlargement to the East, Europe-International Agriculture and Trade Report (details on model results)
www.ers.usda.gov/publications/Wrs992/Enlargement.pdf

Food & Marketing



Traceability for Food Marketing & Food Safety: What's the Next Step?

When information about a particular attribute of a food product is systematically recorded from creation through marketing, traceability for that attribute is established. Recording and transmitting information about food products at specific points along the marketing chain can have a number of practical purposes, including product quality control and supply-side management. However, the area where traceability seems to be getting the most attention lately—mandatory tracking of genetically engineered crops and food—is *not* among the practical or efficient uses of traceability.

Information on any number of the attributes of a food product can be recorded and passed along the food marketing chain. A coffee producer, for example, may maintain records on bean variety, location of cultivation, labor conditions on the farm, whether the bean was grown organically or in the shade, and on the shipping firm. Records such as these might later prove useful to the coffee producer in tracking quality or in replicating a top-selling shipment. These records could be used to distinguish one type of coffee from another. Recently, the European Union (EU) proposed government-

mandated traceability for genetically engineered crops and foods to help distinguish them from their conventional counterparts.

Traceability systems are recordkeeping systems. In practice, traceability systems are used primarily to help keep foods with different attributes separate from one another. There are two primary approaches for separating attributes:

- A segregation system separates one crop or batch of food ingredients from others. Though segregation implies that specific crops and products are kept apart, segregation systems do not typically entail a high level of precision and do not necessarily require traceability. In the U.S., though white corn is channeled through the bulk commodity infrastructure, it is segregated from other types of corn.
- An identity preservation (IP) system identifies the source and/or nature of the crop or batch of food ingredients. IP systems are stricter than segregation systems and tend to require documentation, that is, traceability, to guarantee that certain traits or qualities are maintained throughout the food supply chain.

Tofu-quality soybeans are put into containers to preserve their identity.

Food suppliers and government have several motives for documenting the flow of food and food products through production and distribution channels—and a number of reasons for differentiating types of foods by characteristics and source. In some cases, the benefits of establishing detailed traceability may not warrant the costs. For example, consumers may not be willing to pay for information on specific government-approved pesticides used on each apple in a bin of apples.

In other cases, the benefits of IP and traceability may exceed the costs. For example, if a large-scale canned fruit manufacturer could profitably produce both a line of organic applesauce and conventionally produced apple sauce, the firm would want to separate organic and conventionally produced apples and document the source of each. Traceability systems will vary widely depending on the motivations driving their development and the degree of assurance desired (increasing reliability usually increases costs).

Private-Sector Motivations For Traceability

Food suppliers who operate in the private sector have three distinct motives for establishing traceability systems: to differentiate and market foods with subtle or undetectable quality attributes; to facilitate traceback for food safety and quality; and to improve supply-side management. A firm may establish a traceability system to achieve any number of these objectives, and as a result, the private sector has a significant capacity for tracing.

Differentiate and market foods with undetectable or subtle quality attributes.

While the U.S. food market successfully mass-produces homogenous commodities such as grains and meats, it also offers goods and services tailored to the tastes and preferences of narrow segments of the consumer population. The growth in micromarkets reflects an increased ability to satisfy variations in consumer food preferences as well as rivalry among food manufacturers.

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Food producers differentiate products for micromarkets over a wide variety of quality attributes including taste, texture, nutritional content, cultivation techniques, and origin. Consumers easily detect some quality innovations—green ketchup is hard to miss. However, other differences involve credence attributes—characteristics that consumers cannot discern even after consumption of the product. The claim that a product contains no genetically engineered ingredients asserts a credence attribute: consumers cannot taste or otherwise sense a difference between food products containing genetically engineered ingredients and those made with non-genetically engineered ingredients.

Credence attributes can be content attributes or process attributes:

- *Content attributes* affect the actual physical properties of a product, although they can be difficult for consumers to perceive. For example, consumers are unable to determine the amount of isoflavones in a glass of soy milk or the amount of calcium in a glass of enriched orange juice by drinking the beverages.
- *Process attributes* do not affect final product content but refer to characteristics of the production process. These reflect consumer concerns about the production process, including environmental stewardship, animal welfare, and labor conditions. Process attributes include organic, free-range, dolphin-safe, shade-grown, earth-friendly, and fair trade. In general, neither consumers nor specialized testing equipment can discern process attributes. No test conducted on the contents of a can of tuna, for example, could ascertain that the tuna had been caught using dolphin-safe technologies.

The task of producing credence attributes may prompt some firms to segregate or establish IP and traceability systems—in fact, where attribute testing is not possible, IP and traceability may be the only way to differentiate these attributes. Some firms may differentiate production by establishing separate product lines within the same plant or by sequencing production and thoroughly cleaning production facilities between differentiated product batches. Other firms may dedicate a

whole plant to the production of one specific product line.

Firms that produce foods with process attributes by contracting with ingredient suppliers for commodities with particular attributes have, de facto, established traceability and IP systems. For example, firms that market dolphin-safe tuna segregate (sometimes exclusively buying dolphin-safe tuna) and keep records of their transactions.

Food suppliers have a strong economic interest in quickly isolating the source of food safety or quality problems.

Likewise, because no test can now distinguish between highly processed oils derived from genetically engineered commodities and those derived from conventional commodities, these products are usually differentiated through tracking. The incentives to develop segregation or IP systems and to document transactions are the same for process and content attributes in cases where testing for content attributes would be costly, inaccurate, or difficult.

Once a firm has produced a product differentiated by a credence attribute, it then faces the difficult task of establishing market credibility. Consumers are often skeptical about the existence of credence attributes. In response, a firm can acquire credibility like it acquires other inputs—by making or buying it. Some firms build credibility by establishing a reputation for delivering the attributes they advertise. Other firms purchase the services of third party entities (neither the buyer nor the seller) to provide objective validation of quality attributes. Third parties offer four primary services to help verify quality claims: establish product quality standards and/or traceability standards; test products, and/or review traceability documentation to verify that traceability and/or technical standards have been met; provide certification that standards have been met; and report violations of standards.

Third-party services can be provided by a wide variety of entities, including consumer groups, producer associations, private third-party entities, and international organizations. The following are examples of third parties:

- The Good Housekeeping Institute, founded for the purpose of consumer education and product evaluation, sets product standards and provides consumer guarantees for a wide range of goods, including foods.
- The American National Standards Institute (ANSI), a nonprofit membership organization, facilitates development of voluntary private-sector standards for a wide range of products.
- Underwriters Laboratories (UL), a private nonprofit entity, provides standards and certification, primarily for electrical appliances.
- The Council of Better Business Bureaus works with the National Advertising Review Board to investigate questions of truth and accuracy in national commercial advertising.
- ISO, a worldwide federation of national standards bodies, promotes the development of standardization and international standards for a wide range of products.

Governments can also provide voluntary third-party verification services. For example, to facilitate marketing, producers may voluntarily abide by government established and monitored commodity grading systems.

Facilitate traceback for food safety and quality. Many firms use traceability systems to minimize potential damage from deficiencies in their food safety systems. Food suppliers have a strong economic interest in quickly isolating the source of food safety or quality problems, before the food item reaches consumers; all firms want to avoid the association of their brands with safety hazards or compromised quality. A traceability system can help producers reduce the time required to identify and remove contaminated foods from production lines and from the market.

Most food producers put coded information on food packaging to facilitate prod-

European Union Proposes Mandatory Traceability Standard For Genetically Engineered Foods & Feeds

The European Union's (EU) proposed regulations for mandatory traceability and labeling of genetically engineered foods and feeds, unveiled in July 2001, could take effect by the end of 2003.

The EU mandatory traceability proposal contains the following requirements.

- **EU handlers** of genetically engineered foods or feeds must document from whom they received those items and must retain and transmit information related to genetic engineering. Handlers would be required to keep records for 5 years.
- **EU farmers** must indicate that the commodity was grown using genetic engineering methods and further delineate each type of biotech transformation event that may be present in each delivery. For imported commodities, this information must be provided by the importer. For imported processed products, the importer must indicate which ingredients are genetically engineered.
- **Each genetically engineered transformation event** must have a specific unique identifier.
- **Retail-level foods** must be labeled as containing genetically engineered ingredients on an ingredient-by-ingredient basis.

A traceability system may add to the costs to growing, handling, storage, transport, processing, and administering the sale of genetically engineered food products. Estimating the magnitude of the costs of identity preserving, tracing, and labeling is complex and subject to varying assumptions. Some key determinants of the costs include the stringency of the tolerance level, the ease of cross-pollination at the farm level, and the volume of the product transported, stored, and processed.

uct identification. For example, most voluntary recalls listed on the USDA's Food Safety and Inspection Service website refer consumers to coded information on products' packaging. Some firms use detailed coded information. For example, one milk processor uniquely codes each item to identify time of production, line of production, place of production, and sequence. With such specific information, the processor can identify faulty product to the minute of production. If a food safety or quality problem were encountered, the information could help contain the costs of damage control.

The struggle to control BSE in cattle in the United Kingdom has warranted the development of various traceability systems to document the distribution of beef products. One example is the traceback system adopted by an Irish supermarket which uses DNA testing capable of tracing meat to animal of origin rather than to farm or herd.

Improve supply-side management. For many firms, traceability systems have

already proven their value in managing production flows and tracking retail activity. In the U.S., the vast majority of packaged food products, as well as a growing number of bulk foods like bagged apples and oranges, bear codes that enable stores and manufacturers to collect data on retail trade patterns. These codes, known as bar codes, are composed of a series of numbers detailing standard information on type of product and manufacturer (the UPC code), and a series of numbers assigned by the manufacturer to nonstandard production or distribution details. While the original purpose of bar codes was to facilitate tracking of retail sales by item and to generate information on food consumption trends and patterns, their use is not restricted to that purpose. The bar code technology is also used to manage inventory flow.

Manufacturers have developed other high-tech tracing systems for managing input and output flows. For example, ranchers have been using electronic identification eartags and corresponding data collection cards to track information on animals' lin-

age, vaccination records, and other health data. The advantage of electronic tags is that producers and packers can use transponder readers to track individual animal characteristics. This allows for efficiency gains by sorting individual cattle in feed yards, recording preconditioning and other health regimes, and conducting disease surveillance and monitoring. Additionally, the resulting chain of documentation enables producers to sell their cattle at a price that reflects quality.

Motives for Government-Mandated Traceability

A government may have three reasons for considering making some traceability systems mandatory: to facilitate and monitor traceback to enhance food safety; to address consumer information about food safety and quality; and to protect consumers from fraud and producers from unfair competition.

Monitor and enhance food safety. To help protect the public's health, the Federal government, along with State and local public health departments, plays an active role in tracing foodborne illness outbreaks. Both USDA and the U.S. Food and Drug Administration (FDA) rely ultimately on documentation maintained by private firms.

In a traceback investigation, public health officials attempt to identify the source of a foodborne illness outbreak and then trace the flow of the contaminated food throughout the food supply system. When investigation units trace diseases to their origin and contaminated foods are removed from the food supply, illnesses can be prevented and lives saved. In the cases of some types of foodborne illnesses, such as those caused by *E. coli* 0157:H7, no cure is known; identifying and removing the source of illness is the only means of preventing the spread of disease. The faster the disease-causing bacteria can be detected, the faster investigators can respond to outbreaks and the more lives that can be saved.

Federal government and other public health officials have taken strides in building the infrastructure for tracking the incidence and sources of foodborne illness. The Foodborne Diseases Active Surveil-

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lance Network (*FoodNet*) combines active surveillance for foodborne diseases with related epidemiologic studies to help public health officials better respond to new and emerging foodborne diseases. *FoodNet* is a collaborative project of the Centers for Disease Control and Prevention (CDC), nine states, USDA, and the FDA.

Another network, *PulseNet*, based at CDC, connects public health laboratories in 26 states, Los Angeles County, New York City, the FDA, and USDA to a system of standardized testing and information sharing. *PulseNet* helps reduce the time it takes disease investigators to find and respond to foodborne outbreaks.

Both *Foodnet* and *Pulsenet* differ from passive surveillance systems that rely on reporting of foodborne diseases by clinical laboratories to state health departments, which in turn report to CDC. Under passive information gathering, only a fraction of foodborne illnesses are routinely reported to CDC.

Once investigators have identified a contaminated food source, the Federal government works with food manufacturers to isolate the cause of contamination and to remove the contaminated food from the market. Two Federal agencies may take action: USDA and FDA. USDA, which regulates the safety of meat and poultry, does not have authority to require that manufacturers recall contaminated foods; recalls handled by USDA are voluntary—although USDA can detain or seize adulterated or misbranded products. USDA may also remove inspectors from federally inspected plants that are recalcitrant about addressing safety problems, effectively halting plant operations. Recalls handled by FDA, which regulates all domestic and imported food except meat and poultry, are conducted voluntarily, sometimes by FDA request.

Both USDA and FDA rely ultimately on documentation maintained by private firms to trace the flow of inputs into the final food product and to track the distribution of final food products throughout the retail sector. A firm's traceback documentation is constructed from its traceability system: the documentation used to trace a food from farm (or point of production) to plate (or retail or eating estab-

lishment) is used to trace a food product back from plate to farm. The Federal government does not monitor private firms' traceback ability, and such systems are not mandatory. Mandatory, government-monitored traceability of private industry production would be needed only if private firms fail to supply enough traceback capacity.

Both USDA and FDA rely ultimately on documentation maintained by private firms to trace the flow of inputs into the final food product.

Private firms provide the optimal amount of traceback capability if markets function properly. If all benefits as well as the costs of traceability are borne by private firms, then the market supply of traceback will be optimal: the net benefits of traceability systems for food safety will be maximized. However, when markets fail, as when the benefits firms actually reap are not equal to social benefits, the amount of traceback capacity may not be optimal. Where the market fails to give food suppliers incentives to maintain traceback or other food safety systems, and consumers are willing to pay for more safety, there could be a need for intervention to increase traceability.

But, even assuming that the operations of the marketplace do not provide sufficient food safety, is a government-mandated traceability system the best or least-cost solution? Usually, performance standards—rather than process standards—ensure the most efficient compliance systems. With performance safety standards, such as standards for pathogen contamination or recall speed, the individual firm can choose the most efficient process to achieve a particular standard. For some firms, plant closure and total product recall may be the most efficient method for isolating production problems and removing contaminated food from the market. For other firms, detailed traceback, allowing the firm to pinpoint the production problem and minimize the extent of recall may be the most efficient solution. Other firms may be able to maintain safety at less expense by adopt-

ing new technologies, such as irradiation, and dispensing with recordkeeping.

Process standards such as mandatory traceability require that firms adhere to a common set of production or management systems, regardless of the size or technological characteristics of the firm. As a result, process standards tend to be less efficient than performance standards. Likewise, mandatory government monitored traceability is likely to be a less efficient mechanism for building food safety than enforcement of food safety performance standards.

Address consumer knowledge about food safety and quality. Where markets produce all the information that consumers are willing to pay for, mandatory traceability systems would be superfluous and introduce unwarranted costs. However, sometimes consumers would like more information about the safety and quality standards maintained by food manufacturers. It is possible that mandatory, publicized traceability systems could help reduce such asymmetry by providing additional safety and quality information so that consumers could more readily choose food products to match their preferences. For example, various government agencies mandate that oyster producers document the time and place of oyster harvest. However, a general mandatory traceability system may not be the most efficient way to enhance food safety—enforcement of food safety performance standards is generally a better option.

Protect consumers from fraud and producers from unfair competition. To protect consumers from fraud, and producers from unfair competition, the government may require that firms producing foods with credence attributes substantiate their claims through traceability systems. If firms are not required to establish proof that credence attributes exist, some may try to pass off standard products as those having credence attributes, in order to gain price premiums. In these cases, the government may require that firms producing valuable credence attributes verify their claims. For example, the government may require that firms producing organic foods verify the claim. No such verification would be necessary, of course, for conventional foods because consumers

typically are not willing to pay more for these foods.

Similar but Distinct Concerns For Private, Public Sectors

In the private sector, the goals for traceability of food supplies are mainly to assure buyers of the existence of quality attributes, to facilitate traceback for food safety and quality, and to improve supply chain management.

The main goal of the public sector for traceability is to ensure that recordkeeping is sufficient for traceback, with the objective of mitigating foodborne public health problems. Additionally, when markets fail, the public sector may have an interest in providing consumers with access to information about safety or quality standards maintained by private firms, and in protecting consumers and producers from fraudulent claims.

Proponents of the EU proposal for mandatory traceability of genetically engineered food and feed argue that such a system is necessary

- to ensure the government's ability to recall genetically engineered products in case of unforeseen food safety or environmental problems;
- to enhance consumer choice; and
- to control and verify labeling claims.

However, it is doubtful that mandatory traceability will prove to be the most efficient mechanism for achieving any of these objectives.

Performance standards, which allow firms to determine the most efficient mechanism for compliance, are usually more efficient than process standards for ensuring food safety or environmental quality. With government-mandated food safety performance standards, all food, including genetically engineered food, that did not meet the standards could be subject to recall and/or seizure. A strictly enforced

performance standard would enhance firms' incentive to maintain efficient food safety systems.

When there are process attributes that are valued by consumers—like non-genetically engineered foods—then food suppliers may have the incentive to market those attributes. Consumer surveys have indicated that many EU consumers are opposed to the purchase of genetically engineered foods. Manufacturers and retailers can opt to market non-genetically engineered foods. Consumers' choice of products would then be enhanced without imposing government-mandated traceability. Many retailers and food establishments are doing this—both in the U. S. and in Europe.

Mandatory traceability for all foods is also unlikely to be the most efficient mechanism for verifying quality claims for the subset of foods with credence quality attributes valued by some consumers, such as non-biotech foods. A government may indeed have an incentive to require that producers of non-genetically engineered foods verify that these foods are actually not genetically engineered, if the non-genetically engineered attribute is of value to some consumers. However, no such verification would be necessary for the genetically engineered foods currently on the market, because this attribute is not of value to consumers (most biotech products currently on the market boast producer, not consumer attributes).

A mandatory traceability system for both genetically engineered and non-genetically engineered foods is unnecessary to protect consumers from fraud. Such a system could raise costs without generating compensating benefits. **AO**

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February 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

February

- 1** Dairy Products Prices (8:30 a.m.)
Milkfat Prices (8:30 a.m.)
Cattle
Poultry Slaughter
Sheep and Goats
- 4** Dairy Products
- 5** Weather - Crop Summary (noon)
Egg Products
- 6** Broiler Hatchery
- 7** Catfish Production
- 8** Cotton Ginnings (8:30 a.m.)
Crop Production (8:30 a.m.)
Dairy Products Prices (8:30 a.m.)
- 12** Weather - Crop Summary (noon)
- 13** Broiler Hatchery
Crop Values
Turkey Hatchery
- 14** Potato Stocks
- 15** Dairy Products Prices (8:30 a.m.)
Milkfat Prices (8:30 a.m.)
Cattle on Feed
Farm Labor
Milk Production
- 20** Weather - Crop Summary (noon)
Broiler Hatchery
- 21** U.S. and Canadian Cattle (noon)
Cold Storage
Cold Storage - Ann.
- 22** Dairy Products Prices (8:30 a.m.)
Catfish Processing
Chickens and Eggs
Farms and Land in Farms
Livestock Slaughter
Monthly Hogs and Pigs
Monthly Agnews
- 26** Weather - Crop Summary (noon)
- 27** Broiler Hatchery
- 28** Agricultural Prices
Honey
Peanut Stocks and Processing
Trout Production

Public-Sector Plant Breeding In a Privatizing World

Public and private plant breeding sectors have developed and coexisted for more than a century in many industrialized countries, but since 1970 the balance between these sectors has shifted. The last third of the 20th century witnessed an acceleration in the type and level of biology applicable to plant breeding, as well as enhanced intellectual property protection for plant varieties. Meanwhile, the forces of globalization and the pressures on public budgets have shifted the balance of plant breeding activity from the public to the private sector.

Throughout the world, a variety of economic forces determine the amount of investment in scientific plant breeding and the relative shares of public and private sector efforts. Private investment in plant breeding is most affected by:

- the cost of research innovation;
- structural market conditions;
- organization of the seed industry;
- the ability of firms to capture the returns to research; and
- the constraint that seed must be sold at a price that will enable the farmer to make a profit.

While public investment in plant breeding is also strongly affected by the cost of innovation, several unique considerations serve to further justify public plant breeding:

- Private firms may not consistently produce a freely available supply of scientific knowledge at a socially optimal level.
- Private and social returns from plant breeding may diverge in cases where firms are unable to profit from the benefits of their research. For example, plant breeding in the past for self-pollinating crops such as wheat was often done by the public sector because private sector firms could not charge enough for seed to make plant breeding profitable. This is largely because farmers could replant seed saved from the previous harvest.
- The desire to earn profits in the near term may lead private firms to operate on a shorter time horizon than would be necessary to attain the broadest basic research objectives.
- Other traits of plant varieties (environmental suitability, including disease resistance and nutritional characteristics) may remain under-researched by private breeding programs.

Today, despite the varying dominance of private plant breeding across crops and countries, mixed linkages between public and private systems are the rule rather than the exception. In the U.S., for example, the public sector maintains the national plant germplasm system, but the private sector does more of the breeding of finished varieties. Traditionally, the private sector relied on public-sector research results. Until the 1970s, for



Scott Bauer, Agricultural Research Service, USDA

example, public sector inbreds played an important role in U.S. private-sector corn hybrids. Today this is no longer the case. Presently, the public sector may instead utilize private-sector research results in some areas of biotechnology. Funding mechanisms, as well as institutional cooperation and competition in plant breeding, are often quite complex. This has led to considerable discussion of the appropriate roles for public- and private-sector activity.

Although data on investment in plant breeding are hard to come by—even for the public sector—available information for several industrialized countries shows that, in absolute amounts, the U.S. probably invests more in plant breeding than any other country. In the mid- to late 1990s, annual plant breeding investment for U.S. field crops was an estimated \$150-\$340 million in the public sector and \$260-\$410 million in the private sector. These estimates exclude many of the biotechnology investments related to plant breeding. In contrast, Australian public investment in plant breeding for field crops in the early 1990s was valued at just over \$30 million. However, if plant breeding investment is divided by the value of output, the U.S. dominance suggested by the absolute totals disappears. For most countries and crops, annual investment in plant breeding is less than 1 percent of the gross value of production—the notable exception is Canadian canola.

In the late 1990s, fueled by huge private and public sector investment in canola breeding, plant breeding investment for major Canadian field crops was valued at over \$130 million annually. This canola investment may not be strictly comparable to estimates for other industrialized countries or crops because it includes more expenditures on biotechnology.

In the early 1990s, wheat breeding research expenditures per ton of wheat produced in the United Kingdom were considerably higher than the same estimates for the U.S. On the other hand, wheat breeding investment per ton of wheat is lower in Australia, Germany, and Canada than it is in the U.S.

Public vs. Private: A Case-by-Case Distinction

Crop-specific technical and market factors often determine the relative shares of public and private plant breeding investment. These factors, however, vary over time as well as from country to country.

Real inflation-adjusted investment in public-sector plant breeding in the U.S. rose until the 1980s but began to stagnate during the mid-1990s, followed by a decline. In contrast, from the mid-1960s to the mid-1990s, real private-sector investment in plant breeding grew at a remarkable 7 percent annually. Comprising only one-sixth of the public-sector total in the 1960s, private-sector plant breeding surpassed public investment by the mid-1990s.

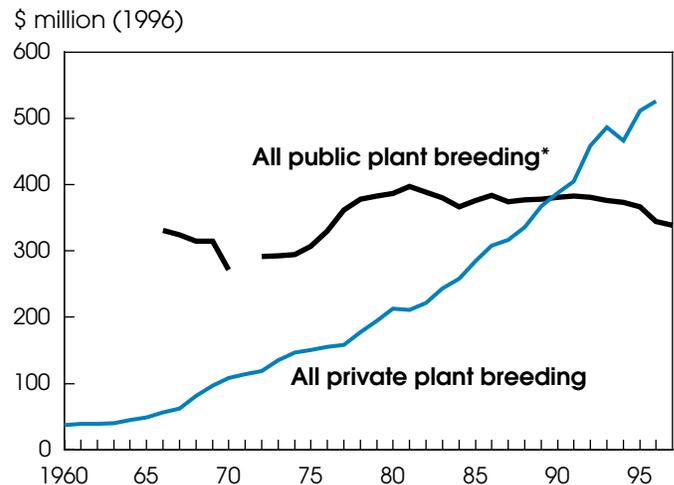
Trends in other industrialized countries are more difficult to trace, but in some European countries, such as France and Germany, private-sector plant breeding has long had a very strong presence. In the United Kingdom, the Plant Breeding Institute at Cambridge, notable for its development of wheat and barley varieties, was privatized in 1987, signaling a general trend. Given the large private-sector investment in canola breeding in Canada, the private-sector total there may now be higher than the public sector's, although public sector breeding is still dominant for the other major prairie crop, wheat. Australian plant breeding still appears to be conducted primarily in the public sector.

Because hybrid crop seed cannot be duplicated, private-sector investors have incentives to favor research that produces hybridized seed. As might be expected, the area of the U.S. planted to field corn is dominated by hybrids developed in the private sector. Private sector hybrids also dominate in the European Union and in Canada. Public-sector inbreds—genestocks which are combined to form hybrids—played an important role in U.S. private-sector hybrids until the 1970s, when their direct influence began a sharp decline.

Public-sector breeding has long prevailed for improving self-pollinating crops, which farmers may replant from seed saved from a previous crop. Yet even in the case of self-pollinating crops, plant breeding has shifted to the private sector over the past 20 years or more. This has happened especially in the U.S. for soybeans and in Canada for canola. Already by 1970, the majority of the U.S. area planted to cotton was planted to private-sector varieties, and today the share has increased to over 90 percent.

Though the private sector's emergence has been abetted by increased intellectual property protection for plant varieties, each crop illustrates the influence of outside factors as well. These include:

Between 1960 and 1997, Private-Sector Outlays for U.S. Plant Breeding Rose More Than Tenfold



1996 dollars are deflated.

*Data for 1971 not available.

Economic Research Service, USDA

- popularity of the corn-soybean rotation, which has led farmers accustomed to buying private-sector corn seed to begin buying private-sector soybean seed as well. The shift from public- to private-sector soybean varieties began at least 20 years ago, well in advance of the introduction of herbicide-tolerant soybeans in the mid-1990s.
- growing impracticability of farmer-saved seed in cotton; and
- payoffs of earlier research in canola sponsored by the edible-oil processing industry, which applied several types of intellectual property mechanisms to protect varieties grown in the field.

Most Australian and Canadian wheat area is still planted to varieties that were developed in the public sector, although a rapidly growing percentage (around 10 percent in Australia and just under 40 percent in Canada) is sown to varieties which are subject to some sort of intellectual property protection. In contrast, European wheat acreage is increasingly dominated by private varieties, reflecting the different breeding histories and stronger plant variety protection of many European countries.

The U.S. situation is intermediate. Over the past 20 years, an increasing proportion of the U.S. wheat area has come to be planted to private varieties. However, private varieties are far more prominent in the soft red winter wheat areas where wheat is grown primarily as a rotation crop, than in the major hard red winter, hard red spring, and white growing areas where public varieties still dominate in farmers' fields. As in the case of soybeans, farmers using purchased seeds for a rotation crop such as corn are more likely to buy private-sector wheat seed.

Special Article

Public-Sector Research Still Finding Its Place

Many prominent plant breeders, as well as some research policy analysts, are in general agreement about the future role of public plant breeding. In many cases, there is clear economic justification for public-sector investment in activities related to plant breeding. Considerably less consensus exists on determining an appropriate public stance on intellectual property issues. Given the growing role played by the private sector, public research may increasingly respond to voids left by private-sector research, and may be increasingly directed toward the interests of the scientific community at large. Such roles could include the following:

- *Educating and training plant breeders.* By coordinating training efforts between the public and private sectors, the public sector might continue to foster the public goods component of human capital development. To the extent that plant breeding skills are not firm-specific, firms will not invest optimally in training, given the likelihood a scientist might jump to a rival firm. At the same time, private-sector firms require a steady supply of plant breeders with skills that may extend to molecular biology, and even some knowledge of general business theory and intellectual property.
- *Refining and testing methodologies for variety selection.* This would include developing and testing molecular-based systems and developing new methods of selection for desirable traits such as pest resistance. Despite private-sector enthusiasm for some elements of genomics and proteomics (the study of proteins encoded by an organism's genes), scientists still lack a complete understanding of gene action, interaction, promotion, and silencing, which could be used in crop improvement. All life sciences express the need for further advances and more training in computational biology—and knowledge has a public goods component. The public sector does appear to be increasing the proportion of resources directed to more fundamental research.
- *Increasing public commitment to germplasm preservation and development.* Both research analysts and the private sector advocate this role. Germplasm-related activities include collection and preservation of germplasm from crop species and their wild relatives, and incorporation of useful traits from this germplasm into material adapted agronomically to the target region. Social returns are very likely greater than private returns in the germplasm maintenance and pre-breeding areas, unlike the relative returns for variety development. This may be because of differences between social and private discount rates and risk preferences. Furthermore, there are larger barriers to appropriating research returns in germplasm maintenance and pre-breeding than there are in producing finished varieties.
- *Attending to minor crops.* It is somewhat more difficult to argue, with economic reasoning, for public breeding applied to minor crops (i.e., those with small markets). While such specialty crops grow well only in a modest area and are saddled with a limited seed market, their production may still benefit

consumers nationwide, and in some cases public breeding may be justified. Since many fruits and vegetables fall under the heading of minor crops, nutritional considerations may direct some public-sector resources to these crops. As it becomes feasible for research on one plant to address plant breeding problems in another plant, at least some of the plant breeding needs of minor crops may be addressed by research on major crops.

- *Solving technological bottlenecks.* The public sector may “invent around” technological bottlenecks due to private ownership of intellectual property. However, public institutions may want to guard against overinvolvement in near-market, product-focused research, at the expense of fundamental research that does not have immediate market applicability. Besides, private firms may also have strong incentives to invent around technological bottlenecks.
- *Identifying problems and limitations of existing agricultural technology, including existing crop varieties.* While the private sector can play a role in the identification of such limitations, the public sector is likely to take a more long-term view, and to represent a broader constituency. For example, the public sector may place more emphasis on the environmental suitability of varieties.

Intellectual Property: Important, But Imperfectly Understood

As plant breeding research moves from conceptual development to later stages, its value may be affected by the intellectual property regime. In the U.S., this regime consists of at least three legal components, as well as the interpretation that has developed around the legislation:

- Plant patents for asexually reproducing species were instituted in 1930.
- Plant varietal protection certificates for sexually reproducing species that are genetically stable—that is, plants that breed true to type—became available with the Plant Variety Protection Act of 1970, which was amended in 1994.
- The U.S. Supreme Court ruled in 1980 that standard utility patents—the major type of patent granted by the Patent and Trademark Office—could be granted to living material, and in 1985 utility patents were explicitly made applicable to plants. Today, utility patents are sometimes granted not only for genetic engineering constructs, but also for entire plants, such as corn inbred lines, corn hybrids, and soybean varieties, even if these plants were developed without the use of “modern” biotechnology. In December, 2001, the Supreme Court upheld the applicability of utility patenting to plants.

Intellectual property regimes affect private-sector efforts both in near-market variety development and investment in more “basic” research such as genomics. More specific recommendations on problems or potential changes in the intellectual property system affecting the life sciences have come more often from lawyers than from economists or, for that matter, from plant breeders.

Economists clearly have a role to play in making theoretical and empirical headway in answering questions about industrial organization and intellectual property, addressing questions such as the following:

- Will the dominant form of private-sector activity in plant breeding come from firms that are considered “life sciences giants” or from those more specialized in agriculture?
- Will large multinational firms supplying new plant varieties be like the pharmaceutical industry, looking for blockbuster products, or like the semiconductor/computer/software industries where a “cumulative innovation” model prevails?

Whatever the answers to these questions, society benefits when the public sector has “freedom to operate”—for example, when it maintains public access to research tools subject to intellectual property protection by the private sector, and when it engages in fruitful collaborative research. In its interaction with the private sector, public-sector plant breeding will benefit from continuous and careful performance review. This review might consider the ways in which public sector research complements, rather than substitutes for, private-sector plant breeding.

Across all the life sciences, precedent determined by internal policy in patent-granting institutions such as the U.S. Patent and

Trademark Office, as well as by court decisions, is likely to be at least as important as formal policy revisions by national legislatures. As many of the policy changes in the area of intellectual property will be directed primarily to human health research, agricultural science policymakers are well advised to debate larger science policy issues.

Economists have not reached complete consensus on the economic models of the influence of institutions (such as the intellectual property regime) on both private-sector plant breeding investment and the public sector’s freedom to operate and to collaborate with the private sector. Nor have they fully determined the data and methods necessary to test these models. Thus, there is ample room for future economic research to contribute to policy debates over the roles of public- and private-sector plant breeding. Nonetheless, it is clear that public-sector plant breeding will yield the largest social returns if it continues to focus on research directed at carefully identified problem areas, with clear public goods components. **AO**

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Farm business and farm policy prospects for 2002

At USDA's 78th Outlook Forum

Agricultural Outlook Forum 2002



February 21-22, 2002

Crystal Gateway Marriott Hotel

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Just minutes from Washington, DC

A sampling of topics for the 2002 Forum

- Farm policy principles and proposals
- A new role for conservation in U.S. farm policy
- Globalization of food safety
- Strategies for rural community prosperity
- Emergence of middle-class consumers in developing nations
- Commodity-by-commodity outlook sessions

For Forum program at a glance, see page 68

www.ers.usda.gov/publications/AgOutlook/Jan2002/ao288j.pdf

Statistical Indicators

Summary Data

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

	Annual			2000		2001				2002	
	2000	2001	2002	IV	I	II	III	IV	I	II	
Prices received by farmers (1990-92=100)	96	103	--	97	99	106	107	--	--	--	
Livestock & products	97	108	--	99	103	110	111	--	--	--	
Crops	96	99	--	95	96	102	103	--	--	--	
Prices paid by farmers (1990-92=100)											
Production items	116	120	--	118	120	120	119	--	--	--	
Commodities and services, interest, taxes, and wage rates (PPITW)	120	124	--	121	124	124	123	--	--	--	
Cash receipts (\$ bil.)	194	206	--	57	49	46	52	60	--	--	
Livestock	99	109	--	25	27	27	28	27	--	--	
Crops	94	97	--	32	22	19	24	32	--	--	
Market basket (1982-84=100)											
Retail cost	171	--	--	173	175	177	--	--	--	--	
Farm value	97	--	--	100	102	106	--	--	--	--	
Spread	210	--	--	212	215	215	--	--	--	--	
Farm value/retail cost (%)	20	--	--	20	20	21	--	--	--	--	
Retail prices (1982-84=100)											
All food	168	174	178	170	172	173	174	175	176	177	
At home	168	174	178	170	172	173	174	175	176	177	
Away from home	169	174	179	171	172	173	175	176	177	178	
Agricultural exports (\$ bil.) ¹	50.9	53.5	57.0	14.4	13.8	12.5	12.8	14.2	14.2	--	
Agricultural imports (\$ bil.) ¹	38.9	38.5	39.0	9.7	9.9	10.0	8.9	9.3	9.5	--	
Commercial production											
Red meat (mil. lb.)	46,150	45,591	44,883	11,634	11,096	11,145	11,367	11,983	11,276	11,143	
Poultry (mil. lb.)	36,427	37,136	38,025	9,050	9,007	9,437	9,348	9,345	9,250	9,680	
Eggs (mil. doz.)	7,035	7,146	7,270	1,786	1,756	1,775	1,785	1,830	1,800	1,790	
Milk (bil. lb.)	167.7	165.4	169.7	40.7	41.3	42.7	40.6	40.8	42.2	43.9	
Consumption, per capita											
Red meat and poultry (lb.)	219.5	217.7	216.4	55.5	53.1	53.4	54.5	56.6	53.5	54.1	
Corn beginning stocks (mil. bu.) ²	1,717.5	1,898.7	--	3,585.9	1,717.5	8,522.2	6,043.0	3,924.0	1,898.7	--	
Corn use (mil. bu.) ²	9,794.2	9,880.0	--	1,870.7	3,165.0	2,480.1	2,122.2	2,026.9	--	--	
Prices ³											
Choice steers--Neb. Direct (\$/cwt)	69.65	72.52	74-80	72.26	79.11	75.13	70.33	65-66	65-69	74-80	
Barrows and gilts--IA, So. MN (\$/cwt)	44.70	45.86	42-45	40.78	42.83	52.05	51.05	37-38	41-43	45-49	
Broilers--12-city (cents/lb.)	56.20	59.20	57-61	57.60	57.80	59.20	61.10	58-59	56-58	57-61	
Eggs--NY gr. A large (cents/doz.)	68.90	67.80	62-67	83.10	75.80	63.30	61.40	70-71	66-70	56-60	
Milk--all at plant (\$/cwt)	12.33	14.90-	12.85-	12.70	13.37	15.30	16.53	14.50-	12.90-	12.15-	
		15.00	13.65					14.70	13.40	12.95	
Wheat--KC HRW ordinary (\$/bu.)	3.08	--	--	3.44	3.45	3.41	3.18	--	--	--	
Corn--Chicago (\$/bu.)	1.97	--	--	2.01	2.03	1.96	2.10	--	--	--	
Soybeans--Chicago (\$/bu.)	4.86	--	--	4.70	4.48	4.48	4.89	--	--	--	
Cotton--avg. spot 41-34 (cents/lb)	57.47	--	--	61.24	52.66	39.86	35.58	--	--	--	
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	
Farm real estate values ⁴											
Nominal (\$ per acre)	713	740	798	844	887	926	974	1,020	1,080	1,130	
Real (1996 \$)	795	806	848	879	904	926	955	988	1,031	1,057	
U.S. civilian employment (mil.) ⁵	128.1	129.2	131.1	132.3	133.9	136.3	137.7	139.4	140.9	--	
Food and fiber (mil.)	23.1	23.5	24.1	24.5	24.2	24.1	24.2	24.4	24.1	--	
Farm sector (mil.)	1.9	1.8	1.9	2.0	2.0	1.9	1.8	1.8	1.7	--	
U.S. gross domestic product (\$ bil.)	6,318.9	6,642.3	7,054.3	7,400.5	7,813.2	8,318.4	8,781.5	9,268.6	9,872.9	--	
Food and fiber--net value added (\$ bil.)	924.8	957.6	1,026.6	1,048.2	1,078.9	1,101.9	1,132.7	1,180.6	1,264.5	--	
Farm sector--net value added (\$ bil.) ⁶	75.5	70.2	77.8	73.5	85.7	82.6	74.0	66.9	82.0	--	

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

U.S. & Foreign Economic Data

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

	Annual			2000				2001		
	1998	1999	2000	I	II	III	IV	I	II	III
<i>Billions of current dollars (quarterly data seasonally adjusted at annual rates)</i>										
Gross Domestic Product	8,781.5	9,268.6	9,872.9	9,668.7	9,857.6	9,937.5	10,027.9	10,141.7	10,202.6	10,224.9
Gross National Product	8,778.1	9,261.8	9,860.8	9,650.7	9,841.0	9,919.4	10,032.1	10,131.3	10,190.9	10,213.8
Personal consumption expenditures	5,856.0	6,250.2	6,728.4	6,581.9	6,674.9	6,785.5	6,871.4	6,977.6	7,044.6	7,057.6
Durable goods	693.2	760.9	819.6	820.7	813.8	825.4	818.7	838.1	844.7	840.6
Nondurable goods	1,708.5	1,831.3	1,989.6	1,942.5	1,978.3	2,012.4	2,025.1	2,047.1	2,062.3	2,057.5
Food	852.6	899.8	957.5	937.8	953.5	967.2	971.4	982.0	987.0	993.5
Clothing and shoes	284.8	300.9	319.1	314.4	317.0	321.6	323.5	325.7	322.4	318.5
Services	3,454.3	3,658.0	3,919.2	3,818.7	3,882.8	3,947.7	4,027.5	4,092.4	4,137.6	4,159.4
Gross private domestic investment	1,538.7	1,636.7	1,767.5	1,709.0	1,792.4	1,788.4	1,780.3	1,722.8	1,669.9	1,624.8
Fixed investment	1,465.6	1,578.2	1,718.1	1,678.1	1,717.0	1,735.9	1,741.6	1,748.3	1,706.5	1,682.6
Change in private inventories	73.1	58.6	49.4	30.9	75.4	85.5	38.7	-25.5	-36.6	-57.8
Net exports of goods and services	-151.7	-250.9	-364.0	-333.9	-350.8	-380.6	-390.6	-363.8	-347.4	-294.4
Government consumption expenditures and gross investment	1,538.5	1,632.5	1,741.0	1,711.8	1,741.1	1,744.2	1,766.8	1,805.2	1,835.4	1,836.9
<i>Billions of 1996 dollars (quarterly data seasonally adjusted at annual rates)</i>										
Gross Domestic Product	8,508.9	8,856.5	9,224.0	9,102.5	9,229.4	9,260.1	9,303.9	9,334.5	9,341.7	9,310.4
Gross National Product	8,508.4	8,853.0	9,216.4	9,089.1	9,217.7	9,247.2	9,311.7	9,329.1	9,335.5	9,304.9
Personal consumption expenditures	5,683.7	5,968.4	6,257.8	6,171.7	6,226.3	6,292.1	6,341.1	6,388.5	6,428.4	6,443.9
Durable goods	726.7	817.8	895.5	892.1	886.5	904.1	899.4	922.4	938.1	940.2
Nondurable goods	1,686.4	1,766.4	1,849.9	1,823.8	1,844.9	1,864.1	1,866.8	1,878.0	1,879.4	1,882.0
Food	819.4	847.8	881.3	871.2	881.5	886.2	886.4	887.3	886.1	883.8
Clothing and shoes	290.4	312.1	335.3	328.2	333.3	339.8	339.9	342.7	344.1	344.7
Services	3,273.4	3,393.2	3,527.7	3,472.2	3,509.6	3,540.2	3,588.8	3,605.1	3,629.8	3,640.4
Gross private domestic investment	1,558.0	1,660.1	1,772.9	1,722.9	1,801.6	1,788.8	1,778.3	1,721.0	1,666.2	1,620.5
Fixed investment	1,480.0	1,595.4	1,716.2	1,683.4	1,719.2	1,730.1	1,732.1	1,740.3	1,696.4	1,671.6
Change in private inventories	76.7	62.1	50.6	28.9	78.9	51.7	42.8	-27.1	-38.3	-61.9
Net exports of goods and services	-221.1	-316.9	-399.1	-371.1	-392.8	-411.2	-421.1	-404.5	-406.7	-411.0
Government consumption expenditures and gross investment	1,483.3	1,531.8	1,572.6	1,560.4	1,577.2	1,570.0	1,582.8	1,603.4	1,623.0	1,624.1
GDP implicit price deflator (% change)	1.2	1.4	2.3	3.9	2.2	1.9	1.8	3.3	2.1	2.2
Disposable personal income (\$ bil.)	6,355.6	6,618.0	7,031.0	6,859.1	6,993.7	7,081.3	7,189.8	7,295.0	7,363.2	7,576.9
Disposable pers. income (1996 \$ bil.)	6,168.6	6,320.0	6,539.2	6,431.6	6,523.7	6,566.5	6,634.9	6,679.0	6,719.2	6,919.3
Per capita disposable pers. income (\$)	23,031	23,708	24,889	24,392	24,801	25,029	25,331	25,634	25,798	26,459
Per capita disp. pers. income (1996 \$)	22,354	22,641	23,148	22,872	23,164	23,209	23,376	23,470	23,541	24,163
U.S. resident population plus Armed Forces overseas (mil.) ²	270.5	272.9	275.4	274.4	275.0	275.6	276.3	--	--	--
Civilian population (mil.) ²	269.0	271.5	273.9	273.0	273.5	274.2	274.9	--	--	--
<i>Monthly data seasonally adjusted</i>										
	1998	1999	2000	2000	2001	2001	2001	2001	2001	2001
				Oct	May	Jun	Jul	Aug	Sep	Oct
Total industrial production (1992=100)	138.8	144.7	151.6	152.0	146.4	145.0	145.2	144.4	142.9	141.1
Leading economic indicators (1996=100)	105.4	108.8	109.9	109.4	109.3	109.5	109.8	109.7	109.1	109.2
Civilian employment (mil. persons)	131.5	133.5	135.2	135.5	135.1	134.9	135.4	134.4	135.2	134.6
Civilian unemployment rate (%)	4.5	4.2	4.0	3.9	4.4	4.5	4.5	4.9	4.9	5.4
Personal income (\$ bil. annual rate)	7,426.0	7,777.3	8,319.2	8,478.7	8,709.3	8,737.6	8,768.7	8,775.3	8,773.3	8,770.1
Money stock-M2 (daily avg.) (\$ bil.) ³	4,384.1	1,124.8	1,088.1	4,886.3	5,143.7	5,186.2	5,225.5	7,679.9	5,378.4	5,371.7
Three-month Treasury bill rate (%)	4.81	4.66	5.85	6.10	3.67	3.48	3.54	3.39	2.87	2.22
AAA corporate bond yield (Moody's) (%)	6.53	7.04	7.62	7.55	7.29	7.18	7.13	7.02	7.17	7.03
Total housing starts (1,000) ⁴	1,616.9	1,640.9	1,568.7	1,527	1,610	1,634	1,660	1,559	1,572	1,552
Business inventory/sales ratio ^{5 6}	1.44	1.41	1.40	1.42	1.42	1.43	1.42	1.42	1.45	--
Retail & food services sales (\$ bil.) ^{6 7}	2,906.7	3,149.2	3,388.82	285.2	291.7	291.7	292.2	292.9	286.4	304.9
Food and beverage stores (\$ bil.)	421.6	441.4	465.29	39.2	40.0	39.9	40.0	40.2	40.4	40.5
Clothing & accessory stores (\$ bil.)	149.4	159.7	168.48	14.4	14.2	14.1	14.3	14.2	13.3	14.2
Food services & drinking places (\$ bil.)	272.6	286.3	306.07	25.8	26.7	26.9	26.9	27.0	26.4	26.7

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

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Table 3—World Economic Growth

	Calendar year									
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
	<i>Real GDP, annual percent change</i>									
World	1.5	3.0	2.8	3.5	3.4	1.9	2.7	3.7	1.3	1.1
less U.S.	1.1	2.7	2.8	3.4	3.0	1.0	2.3	3.8	1.4	1.2
Developed economies	0.9	2.7	2.3	3.1	3.0	2.1	2.5	3.1	1.0	0.5
less U.S.	0.1	2.1	2.2	2.8	2.3	1.0	1.9	3.0	1.0	0.4
United States	2.7	4.0	2.7	3.6	4.4	4.4	3.6	3.3	1.1	0.8
Canada	2.3	4.7	2.7	1.5	4.4	3.3	4.6	4.3	1.3	0.8
Japan	0.3	0.6	1.5	5.1	1.6	-2.5	0.2	2.2	-0.4	-1.8
Australia	4.1	4.5	4.5	3.8	4.7	4.5	4.4	2.3	2.1	3.3
European Union	-0.4	2.7	2.5	1.6	2.5	2.8	2.6	3.4	1.6	1.4
Transition economies	-6.3	-8.1	-1.3	-0.8	1.4	-1.4	3.4	6.3	4.5	3.9
Eastern Europe	1.2	3.9	5.6	4.0	2.7	2.6	2.4	3.8	2.8	3.2
Poland	3.8	5.2	7.0	6.0	6.8	4.8	4.1	4.2	1.5	2.5
Former Soviet Union	-9.6	-14.1	-5.4	-4.0	0.5	-4.4	4.2	8.2	5.7	4.3
Russia	-8.7	-12.6	-4.1	-3.4	0.9	-4.9	5.0	8.3	4.9	4.1
Developing economies	5.8	6.3	5.3	5.8	5.3	1.2	3.4	5.8	2.2	3.0
Asia	8.0	8.8	8.3	7.4	5.8	0.4	6.3	7.2	3.4	4.1
East Asia	9.1	9.7	8.7	7.7	7.0	1.9	7.4	8.1	3.9	4.5
China	13.5	12.8	10.5	9.6	8.8	7.8	7.1	8.0	7.5	7.1
Taiwan	7.0	7.1	6.4	6.1	6.7	4.6	5.4	5.9	-2.5	0.1
Korea	5.5	8.2	8.9	6.8	5.0	-6.7	10.7	9.0	2.7	3.4
Southeast Asia	7.9	8.3	8.3	7.3	4.0	-7.5	3.5	5.9	1.4	2.3
Indonesia	7.3	7.5	8.2	7.8	4.7	-13.2	0.7	4.8	3.0	2.7
Malaysia	9.9	9.2	9.8	10.0	7.3	-7.4	5.8	8.4	0.4	2.3
Philippines	2.1	4.4	4.7	5.8	5.2	-0.8	3.2	4.0	2.9	2.4
Thailand	8.4	9.0	8.9	5.9	-1.7	-10.2	4.2	4.4	1.3	2.9
South Asia	4.5	6.6	7.1	6.3	4.2	6.1	6.1	5.5	4.2	4.6
India	5.0	7.3	7.7	7.0	4.6	6.8	6.5	6.1	4.5	4.8
Pakistan	1.9	3.9	5.1	3.9	1.0	2.5	4.0	3.4	2.6	3.2
Latin America	4.3	5.3	1.4	3.7	5.2	1.8	0.0	3.8	0.7	1.1
Mexico	2.0	4.4	-6.2	5.2	6.8	4.9	3.5	6.9	-0.2	1.5
Caribbean/Central	4.8	4.1	3.8	3.6	6.4	6.8	6.9	4.9	1.3	2.4
South America	4.8	5.6	3.1	3.3	4.8	1.0	-1.1	3.0	1.0	1.0
Argentina	5.9	5.8	-2.8	5.5	8.1	3.9	-3.2	-0.3	-2.9	-3.6
Brazil	4.9	5.9	4.2	2.8	3.2	-0.1	0.8	3.9	1.7	1.8
Colombia	5.4	5.8	5.2	2.1	3.4	0.5	-4.3	2.2	1.8	2.5
Venezuela	0.3	-2.3	3.7	-0.5	6.5	-0.7	-6.1	3.2	4.9	2.7
Middle East	4.0	-0.3	4.4	4.7	4.4	2.7	-0.8	5.0	-1.4	2.5
Israel	5.6	6.9	7.0	5.1	3.2	2.6	2.2	5.9	0.5	2.1
Saudi Arabia	-0.6	0.5	0.5	1.4	1.9	2.3	-1.1	3.5	3.0	2.5
Turkey	8.0	-5.5	7.2	7.0	7.5	3.1	-4.7	7.2	-9.0	2.6
Africa	1.0	3.2	2.9	5.2	2.8	3.1	2.6	3.8	3.4	3.1
North Africa	0.5	3.9	1.5	6.5	2.6	5.6	3.9	4.0	4.4	4.1
Egypt	2.9	3.9	4.7	5.0	5.5	5.6	6.0	5.2	3.3	4.2
Sub-Sahara	1.4	2.6	3.9	4.3	3.0	1.3	1.7	3.5	2.7	2.4
South Africa	1.2	3.2	3.1	4.2	2.5	0.6	1.2	3.4	2.1	1.8
	<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

-- = Not available.

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			2000			2001			
	1999	2000	2001	Nov	Jun	Jul	Aug	Sep	Oct	Nov
	<i>1990-92=100</i>									
Prices received										
All farm products	95	96	103	98	107	107	109	105	94	93
All crops	96	96	99	96	101	102	107	101	88	88
Food grains	90	86	91	92	91	88	90	92	90	90
Feed grains and hay	86	86	91	85	91	95	96	92	86	86
Cotton	85	82	68	96	67	66	59	64	57	51
Tobacco	102	107	105	112	--	107	104	108	109	114
Oil-bearing crops	83	85	80	84	80	86	87	81	74	77
Fruit and nuts, all	111	97	106	99	117	121	126	121	120	105
Commercial vegetables	110	123	131	141	119	119	142	132	101	101
Potatoes and dry beans	100	93	100	76	107	125	114	102	93	106
Livestock and products	95	97	108	99	112	112	111	110	104	98
Meat animals	83	94	100	92	104	102	100	96	91	85
Dairy products	110	94	116	96	123	124	126	130	120	109
Poultry and eggs	110	107	117	119	117	119	120	122	121	117
Prices paid										
Commodities and services, interest, taxes, and wage rates (PPITW)	115	120	124	121	124	123	123	123	123	122
Production items	111	116	120	118	120	120	120	119	118	117
Feed	100	102	108	103	107	108	111	110	109	108
Livestock and poultry	95	110	111	112	113	114	113	112	113	107
Seeds	121	124	131	125	134	134	134	134	134	134
Fertilizer	105	110	126	116	125	120	116	111	109	107
Agricultural chemicals	121	120	121	120	120	118	118	121	121	121
Fuels	93	134	126	149	133	117	117	127	103	96
Supplies and repairs	121	124	127	126	127	127	127	129	129	129
Autos and trucks	119	119	118	119	118	117	117	116	117	118
Farm machinery	135	139	141	141	143	143	143	140	141	143
Building material	120	121	121	121	122	121	121	121	121	121
Farm services	116	119	121	119	121	122	122	122	120	120
Rent	113	110	116	110	116	116	116	116	116	116
Interest payable per acre on farm real estate debt	106	112	116	112	116	116	116	116	116	116
Taxes payable per acre on farm real estate	120	123	123	123	123	123	123	123	123	123
Wage rates (seasonally adjusted)	135	140	145	143	144	143	143	143	148	148
Prod. items, interest, taxes & wage rates (PITW)	113	118	122	120	122	122	122	121	121	120
Ratio, prices received to prices paid (%)*	83	80	84	81	86	87	89	85	76	76
Prices received (1910-14=100)	606	611	657	620	677	678	693	668	598	589
Prices paid, etc. (1910-14=100)	1,531	1,594	1,646	1,617	1,650	1,643	1,642	1,642	1,635	1,625
Parity ratio (1910-14=100) (%)*	40	38	40	38	41	41	42	41	37	36

-- = Not available.

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			2000		2001				
	1998	1999	2000	Nov	Jun	Jul	Aug	Sep	Oct	Nov
Crops										
All wheat (\$/bu.)	2.65	2.48	2.65	2.82	2.74	2.63	2.73	2.85	2.86	2.94
Rice, rough (\$/cwt)	8.89	5.93	5.75	5.63	5.01	5.25	5.10	4.78	4.36	4.23
Corn (\$/bu.)	1.94	1.82	1.85	1.86	1.77	1.88	1.90	1.91	1.84	1.85
Sorghum (\$/cwt)	2.97	2.80	3.15	3.27	3.63	3.72	3.50	3.46	3.30	3.35
All hay, baled (\$/ton)	84.60	76.90	83.00	84.00	95.80	96.30	97.70	98.60	99.40	97.10
Soybeans (\$/bu.)	4.93	4.63	4.75	4.55	4.46	4.79	4.83	4.53	4.09	4.18
Cotton, upland (¢/lb.)	60.20	45.00	56.00	58.00	40.40	40.00	36.00	38.50	34.50	30.70
Potatoes (\$/cwt)	5.56	5.77	4.95	4.31	6.47	7.83	6.84	6.05	5.28	6.04
Lettuce (\$/cwt) ²	16.10	13.30	17.50	18.70	12.00	16.40	26.90	26.20	11.30	10.50
Tomatoes, fresh (\$/cwt) ²	35.20	25.80	31.40	47.50	27.00	24.90	28.20	20.80	28.80	30.30
Onions (\$/cwt)	13.80	9.78	11.40	11.00	17.60	16.80	14.80	13.20	10.40	10.00
Beans, dry edible (\$/cwt)	19.00	16.40	15.30	15.50	16.30	16.80	17.50	18.10	19.20	21.80
Apples for fresh use (¢/lb.)	17.30	21.30	17.90	18.50	15.30	14.40	16.90	18.70	24.20	23.30
Pears for fresh use (\$/ton)	291.00	294.00	264.00	323.00	399.00	570.00	533.00	463.00	413.00	350.00
Oranges, all uses (\$/box) ³	4.29	5.54	--	2.69	4.30	6.23	5.57	6.53	5.12	3.19
Grapefruit, all uses (\$/box) ³	2.00	3.27	--	2.80	5.27	8.81	3.69	6.89	5.29	3.06
Livestock										
Cattle, all beef (\$/cwt)	59.60	63.40	68.60	69.10	73.50	71.90	70.70	69.00	66.60	62.80
Calves (\$/cwt)	78.80	87.70	104.00	106.00	109.00	107.00	106.00	106.00	99.20	96.20
Hogs, all (\$/cwt)	34.40	30.30	42.30	36.80	52.20	51.70	50.60	45.10	40.50	34.90
Lambs (\$/cwt)	72.30	74.50	79.40	71.50	71.60	65.00	55.40	53.40	52.90	--
All milk, sold to plants (\$/cwt)	15.46	14.38	12.40	12.60	16.10	16.20	16.40	17.00	15.70	14.30
Milk, manuf. grade (\$/cwt)	14.24	12.84	10.54	10.40	15.10	15.00	15.40	16.20	14.80	12.40
Broilers, live (¢/lb.)	39.30	37.10	33.60	38.00	41.00	42.00	42.00	43.00	41.00	39.00
Eggs, all (¢/doz.) ⁴	66.80	62.20	61.80	72.00	55.80	55.10	57.60	56.70	62.60	65.80
Turkeys (¢/lb.)	38.00	40.80	40.70	47.10	38.50	38.60	38.80	40.40	44.00	44.30

-- = Not available.

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

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

Producer & Consumer Prices

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

	Annual		2000			2001				
	1998	1999	2000	Nov	Jun	Jul	Aug	Sep	Oct	Nov
	<i>1982-84=100</i>									
Consumer Price Index, all items	163.0	166.6	172.1	174.1	178.0	177.5	177.5	178.3	177.7	177.4
CPI, all items less food	163.6	167.0	172.9	175.0	179.0	178.2	178.2	179.0	178.2	177.8
All food	160.7	164.1	167.8	168.9	173.0	173.5	173.9	174.1	174.9	174.6
Food away from home	161.1	165.1	169.0	170.4	173.6	174.1	174.7	175.1	175.6	175.8
Food at home	161.1	164.2	167.9	168.8	173.3	173.9	174.2	174.3	175.2	174.7
Meats ¹	141.6	142.3	150.7	152.5	160.2	160.8	160.7	161.5	161.8	161.2
Beef and veal	136.5	139.2	148.1	149.3	162.5	162.1	161.0	161.1	161.0	161.0
Pork	148.5	145.9	156.5	158.0	162.6	164.8	166.3	167.8	167.2	164.7
Poultry	157.1	157.9	159.8	157.2	164.5	166.6	167.5	165.4	169.6	166.4
Fish and seafood	181.7	185.3	190.4	189.6	191.5	191.0	189.7	189.1	189.5	189.2
Eggs	135.4	128.1	131.9	140.4	130.8	129.6	133.0	131.4	132.3	138.4
Dairy and related products ²	150.8	159.6	160.7	161.4	166.9	168.3	168.9	169.4	170.8	171.2
Fats and oils ³	146.9	148.3	147.4	146.5	156.7	157.8	158.5	158.5	159.5	155.6
Fresh fruits	246.5	266.3	258.3	262.8	268.3	263.8	258.9	266.0	268.7	268.6
Fresh vegetables	215.8	209.3	219.4	224.6	226.4	226.3	224.9	228.2	229.1	228.6
Potatoes	185.2	193.1	196.3	181.2	205.0	213.4	224.5	218.3	216.3	203.4
Cereals and bakery products	181.1	185.0	188.3	189.0	194.2	194.9	195.9	195.1	195.2	194.9
Sugar and sweets	150.2	152.3	154.0	153.0	155.7	156.1	156.1	156.6	156.4	154.9
Nonalcoholic beverages ⁴	133.0	134.3	137.8	137.9	138.6	138.9	140.0	139.2	139.9	139.5
Apparel										
Footwear	128.0	125.7	123.8	125.4	122.1	121.3	121.9	122.9	124.9	123.7
Tobacco and smoking products	274.8	355.8	394.9	411.0	421.0	441.2	424.6	444.0	429.9	446.7
Alcoholic beverages	165.7	169.7	174.7	176.4	179.1	179.7	180.0	180.4	180.8	181.2

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			2000			2001			
	1998	1999	2000	Nov	Jun	Jul	Aug	Sep	Oct	Nov
	<i>1982=100</i>									
All commodities	124.4	125.5	132.7	135.0	135.5	133.4	133.5	133.4	130.2	130.1
Finished goods ¹	130.6	133.0	138.0	140.0	142.2	140.5	141.1	141.7	139.6	138.4
All foods ²	132.4	132.2	133.0	133.8	138.0	137.5	138.9	139.2	137.8	136.2
Consumer foods	134.3	135.1	137.2	138.2	142.0	141.4	142.6	142.9	141.8	140.5
Fresh fruits and melons	90.0	103.6	91.4	93.3	100.6	85.8	86.2	94.9	100.3	101.7
Fresh and dry vegetables	139.5	118.0	126.7	149.2	120.5	105.4	122.2	125.1	110.8	107.2
Dried and dehydrated fruits	124.4	121.2	122.9	124.3	118.4	118.4	118.4	118.5	118.5	119.0
Canned fruits and juices	134.4	137.8	140.0	139.7	144.3	144.4	144.0	144.2	143.7	143.3
Frozen fruits, juices and ades	116.1	123.0	120.9	116.4	112.3	111.6	114.4	112.2	112.0	113.0
Fresh vegetables except potatoes	137.9	117.7	135.0	173.9	129.4	109.7	127.2	132.3	112.3	105.9
Canned vegetables and juices	121.5	120.9	121.2	121.7	121.9	124.1	124.1	125.4	126.1	128.2
Frozen vegetables	125.4	126.1	126.0	126.1	127.7	128.9	128.6	128.1	129.5	128.8
Potatoes	122.5	126.9	100.5	91.9	147.6	140.0	171.7	151.3	140.1	141.2
Eggs for fresh use (1991=100)	90.1	77.9	84.9	99.7	71.8	69.9	75.9	71.7	77.0	86.6
Bakery products	175.8	178.0	182.3	184.5	188.1	188.6	188.7	188.7	189.3	189.2
Meats	101.4	104.6	114.3	112.2	123.1	122.7	123.6	120.8	118.2	113.5
Beef and veal	99.5	106.3	113.7	114.5	122.5	118.7	119.4	117.6	116.2	111.0
Pork	96.6	96.0	113.4	105.5	124.7	129.9	131.6	125.7	119.5	113.7
Processed poultry	120.7	114.0	112.9	116.6	117.6	117.2	118.7	121.6	121.3	120.5
Unprocessed and packaged fish	183.0	190.9	198.1	190.0	182.2	185.9	185.1	191.9	182.9	183.2
Dairy products	138.1	139.2	133.7	135.2	150.4	151.2	152.0	153.5	150.6	145.4
Processed fruits and vegetables	125.8	128.1	128.6	127.9	128.8	129.6	129.2	129.7	130.1	130.8
Shortening and cooking oil	143.4	140.4	132.4	132.9	131.1	132.5	143.3	136.7	134.4	132.2
Soft drinks	134.8	137.9	144.1	144.6	147.4	147.6	149.7	149.3	148.6	148.6
Finished consumer goods less foods	126.4	130.5	138.4	141.3	144.1	140.9	141.6	142.7	139.0	137.3
Alcoholic beverages	135.2	136.7	140.6	142.0	145.5	145.4	145.6	145.3	145.9	146.2
Apparel	126.6	127.1	127.4	127.5	126.7	126.7	126.6	126.4	126.2	126.3
Footwear	144.7	144.5	144.9	144.9	145.7	145.7	146.6	145.6	145.7	145.7
Tobacco products	283.4	374.0	397.2	403.9	447.8	447.4	447.4	447.6	447.6	455.5
Intermediate materials ³	123.0	123.2	129.2	130.5	131.4	130.0	129.8	130.1	127.6	126.7
Materials for food manufacturing	123.1	120.8	119.2	118.9	125.7	126.3	128.1	127.5	126.1	123.9
Flour	109.2	104.3	103.8	106.1	110.9	110.5	108.9	109.6	111.0	111.3
Refined sugar ⁴	119.8	121.0	110.6	106.0	109.2	109.5	109.9	111.5	111.3	110.4
Crude vegetable oils	131.1	90.2	73.6	66.0	71.0	72.9	83.8	78.4	70.8	73.8
Crude materials ⁵	96.7	98.2	120.6	128.4	120.6	113.8	113.4	108.0	97.7	104.8
Foodstuffs and feedstuffs	103.8	98.7	100.2	100.4	109.8	109.6	108.9	108.5	104.7	98.3
Fruits and vegetables and nuts ⁶	117.2	117.4	111.1	121.6	114.6	99.9	106.9	113.1	110.6	109.3
Grains	93.4	80.1	78.3	81.2	77.6	81.0	83.1	81.7	78.5	80.2
Slaughter livestock	82.3	86.4	96.5	94.3	106.0	102.9	100.1	97.6	93.5	84.3
Slaughter poultry, live	141.4	129.9	124.7	134.7	131.9	133.8	132.6	139.5	137.2	134.5
Plant and animal fibers	110.4	86.5	93.9	101.2	63.5	62.7	59.4	56.6	48.3	54.2
Fluid milk	112.6	106.3	92.0	90.1	121.2	121.9	122.7	125.7	121.2	106.6
Oilseeds	114.4	90.8	93.8	90.0	91.3	97.4	98.6	90.6	86.7	86.4
Leaf tobacco	104.6	101.6	--	104.3	--	109.6	105.2	110.2	112.0	116.4
Raw cane sugar	117.2	113.7	101.8	111.4	109.8	111.4	110.9	110.6	110.6	111.0

-- = 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		2000			2001				
	1998	1999	2000	Nov	Jun	Jul	Aug	Sep	Oct	Nov
Market basket¹										
Retail cost (1982-84=100)	163.1	167.3	170.6	171.9	177.2	177.7	177.9	178.3	179.3	178.9
Farm value (1982-84=100)	103.3	98.3	96.9	100.4	107.5	107.9	110.3	110.6	109.6	110.6
Farm-retail spread (1982-84=100)	195.4	204.5	210.3	210.5	214.8	215.3	214.3	214.8	216.8	215.7
Farm value-retail cost (%)	22.2	20.6	19.9	20.4	21.2	21.3	21.7	21.7	21.4	21.7
Meat products										
Retail cost (1982-84=100)	141.6	142.3	150.4	152.5	160.2	160.8	160.7	161.5	161.8	161.2
Farm value (1982-84=100)	84.8	81.6	88.4	90.7	98.8	99.4	99.5	100.2	100.6	100.5
Farm-retail spread (1982-84=100)	200.0	204.7	214.0	215.9	223.2	223.8	223.5	224.4	224.6	223.5
Farm value-retail cost (%)	30.3	29.0	29.8	30.1	31.2	31.3	31.4	31.4	31.5	31.6
Dairy products										
Retail cost (1982-84=100)	150.8	159.6	160.7	161.4	166.9	168.3	168.9	169.4	170.8	171.2
Farm value (1982-84=100)	113.0	107.9	98.8	102.1	127.4	126.4	129.1	133.8	123.2	128.4
Farm-retail spread (1982-84=100)	185.6	207.2	217.7	216.1	203.3	206.9	205.6	202.3	214.7	210.6
Farm value-retail cost (%)	36.0	32.4	29.5	30.3	36.6	36.0	36.7	37.9	34.6	36.0
Poultry										
Retail cost (1982-84=100)	157.1	157.9	159.8	157.2	164.5	166.6	167.5	165.4	169.6	166.4
Farm value (1982-84=100)	126.1	119.0	117.4	125.7	129.8	132.5	132.6	136.1	132.4	127.1
Farm-retail spread (1982-84=100)	192.9	202.7	208.7	193.4	204.5	205.8	207.6	199.1	212.4	211.6
Farm value-retail cost (%)	42.9	40.3	39.3	42.8	42.2	42.6	42.4	44.0	41.8	40.9
Eggs										
Retail cost (1982-84=100)	137.1	128.1	131.9	140.4	130.8	129.6	133.0	131.4	132.3	138.4
Farm value (1982-84=100)	89.6	74.9	80.6	100.4	61.5	60.2	66.0	64.6	76.6	83.4
Farm-retail spread (1982-84=100)	222.5	223.7	223.9	212.3	255.2	254.4	253.4	251.4	232.3	237.3
Farm value-retail cost (%)	42.0	37.6	39.3	45.9	30.2	29.8	31.9	31.6	37.2	38.7
Cereal and bakery products										
Retail cost (1982-84=100)	181.1	185.0	188.3	189.0	194.2	194.9	195.9	195.1	195.2	194.9
Farm value (1982-84=100)	94.4	82.5	75.2	79.6	77.7	78.1	79.1	79.2	77.9	78.3
Farm-retail spread (1982-84=100)	193.2	199.2	204.0	204.3	210.5	211.2	212.2	211.3	211.6	211.2
Farm value-retail cost (%)	6.4	5.5	4.9	5.2	4.9	4.9	4.9	5.0	4.9	4.9
Fresh fruit										
Retail cost (1982-84=100)	258.2	294.3	284.3	290.4	295.4	289.2	283.7	293.0	296.3	296.4
Farm value (1982-84=100)	141.3	153.7	141.3	140.5	128.7	127.2	142.5	136.3	173.1	168.7
Farm-retail spread (1982-84=100)	312.2	359.3	350.3	359.6	372.4	364.0	348.9	365.3	353.2	355.4
Farm value-retail cost (%)	17.3	16.5	15.7	15.3	13.8	13.9	15.9	14.7	18.5	18.0
Fresh vegetables										
Retail cost (1982-84=100)	215.8	209.3	219.4	224.6	226.4	226.3	224.9	228.2	229.1	228.6
Farm value (1982-84=100)	124.5	118.1	121.4	126.9	135.7	133.1	144.0	124.9	108.9	111.5
Farm-retail spread (1982-84=100)	262.7	256.2	269.8	274.8	273.0	274.2	266.5	281.3	290.9	288.8
Farm value-retail cost (%)	19.6	19.2	18.8	19.2	20.4	20.0	21.7	18.6	16.1	16.6
Processed fruits and vegetables										
Retail cost (1982-84=100)	150.6	154.8	153.6	152.6	159.5	160.6	161.1	160.8	161.6	160.5
Farm value (1982-84=100)	115.1	113.5	106.4	105.9	106.6	107.0	107.7	110.0	110.6	111.2
Farm-retail spread (1982-84=100)	161.7	167.7	168.3	167.2	176.0	177.3	177.8	176.6	177.5	175.9
Farm value-retail cost (%)	18.2	17.4	16.5	16.5	15.9	15.8	15.9	16.3	16.3	16.5
Fats and oils										
Retail cost (1982-84=100)	146.9	148.3	147.4	146.5	156.7	157.8	158.5	158.5	159.5	155.6
Farm value (1982-84=100)	118.9	89.0	80.9	76.2	74.4	86.7	88.9	78.3	74.6	78.6
Farm-retail spread (1982-84=100)	157.2	170.0	171.9	172.4	187.0	184.0	184.1	188.0	190.7	183.9
Farm value-retail cost (%)	21.8	16.2	14.8	14.0	12.8	14.8	15.1	13.3	12.6	13.6

See footnotes at end of table, next page.

Table 8—Farm-Retail Price Spreads (continued)

	Annual			2000		2001				
	1998	1999	2000	Nov	Jun	Jul	Aug	Sep	Oct	Nov
Beef, all fresh retail value (cents/lb.)	253.3	260.5	275.3	279.6	304.7	302.9	301.7	301.2	303.6	304.2
Beef, Choice										
Retail value (cents/lb.) ²	277.1	287.8	306.4	310.3	347.6	345.4	339.3	337.6	338.0	337.6
Wholesale value (cents/lb.) ³	153.8	171.6	182.3	182.8	198.3	185.9	188.1	186.6	180.4	174.3
Net farm value (cents/lb.) ⁴	130.8	141.1	149.0	152.4	156.2	150.5	148.8	147.2	141.8	136.3
Farm-retail spread (cents/lb.)	146.3	146.7	157.4	157.9	191.4	194.9	190.5	190.4	196.2	201.3
Wholesale-retail (cents/lb.) ⁵	123.3	116.2	124.1	127.5	149.3	159.5	151.2	151.0	157.6	163.3
Farm-wholesale (cents/lb.) ⁶	23.0	30.5	33.3	30.4	42.1	35.4	39.3	39.4	38.6	38.0
Farm value-retail value (%)	47.2	49.0	48.6	49.1	44.9	43.6	43.9	43.6	42.0	40.4
Pork										
Retail value (cents/lb.) ²	242.7	241.5	258.2	259.3	270.9	270.5	276.3	278.1	276.4	271.3
Wholesale value (cents/lb.) ³	97.3	99.0	114.5	108.1	128.4	126.2	129.2	123.9	113.5	105.7
Net farm value (cents/lb.) ⁴	61.2	60.4	79.4	67.0	97.0	95.2	92.6	82.7	73.1	62.9
Farm-retail spread (cents/lb.)	181.5	181.1	178.8	192.3	173.9	175.3	183.7	195.4	203.3	208.4
Wholesale-retail (cents/lb.) ⁵	145.4	142.5	143.7	151.2	142.5	144.3	147.1	154.2	162.9	165.6
Farm-wholesale (cents/lb.) ⁶	36.1	38.6	35.1	41.1	31.4	31.0	36.6	41.2	40.4	42.8
Farm value-retail value (%)	25.2	25.0	30.8	25.8	35.8	35.2	33.5	29.7	26.4	23.2

1. Retail costs are based on CPI-U of retail prices for domestically produced farm foods, published monthly by the Bureau of Labor Statistics (BLS). Farm value is the payment for the quantity of farm equivalent to the retail unit, less allowance for by-product. Farm values are based on prices at first point of sale, and may include marketing charges such as grading and packing for some commodities. The farm-retail spread, the difference between the retail value and farm value, represents charges for assembling, processing, transporting, and distributing. 2. Weighted-average value of retail cuts from pork and Choice yield grade 3 beef. Prices from BLS. 3. Value of wholesale (boxed beef) and wholesale cuts (pork) equivalent to 1 pound of retail cuts adjusted for transportation costs and by-product values. 4. Market value to producer for live animal equivalent to 1 lb. of retail cuts, minus value of by-products. 5. Charges for retailing and other marketing services such as wholesaling and in-city transportation. 6. Charges for livestock marketing, processing, and transportation. *Information contacts: Veronica Jones (202) 694-5387, William F. Hahn (202) 694-5175*

Table 9—Price Indexes of Food Marketing Costs

	Annual			2000				2001		
	1998	1999	2000	I	II	III	IV	I	II	III
	1987=100*									
Labor—hourly earnings and benefits	490.4	503.3	514.0	508.2	512.0	514.1	521.7	527.5	531.8	534.4
Processing	499.3	511.4	525.0	518.1	523.4	526.9	531.3	536.4	542.7	546.8
Wholesaling	552.5	564.6	589.4	578.9	586.4	587.3	601.0	606.4	611.3	618.4
Retailing	454.1	465.8	469.9	467.1	467.8	465.2	477.2	483.8	485.8	484.8
Packaging and containers	395.5	399.4	412.0	410.3	410.6	413.5	413.7	414.2	417.8	416.6
Paperboard boxes and containers	365.2	373.0	407.7	391.9	413.0	412.4	413.5	412.0	413.1	412.1
Metal cans	487.9	486.6	452.5	489.5	440.1	440.1	440.1	441.5	444.3	446.0
Paper bags and related products	432.9	440.9	470.4	457.3	472.4	477.6	474.5	474.2	481.3	474.6
Plastic films and bottles	322.8	324.2	336.7	329.4	330.6	342.4	344.3	344.0	345.8	344.4
Glass containers	446.8	447.1	450.8	450.1	451.1	451.1	450.8	460.2	471.7	473.7
Metal foil	232.0	227.3	232.4	229.8	231.3	233.8	234.8	235.5	246.1	242.7
Transportation services	428.3	394.0	394.3	392.3	393.3	394.6	396.9	401.0	403.1	406.6
Advertising	624.5	623.7	635.7	633.6	635.0	635.7	638.6	644.3	645.6	646.0
Fuel and power	619.7	651.5	841.1	816.5	822.2	866.1	859.6	830.3	826.6	826.4
Electric	492.1	489.4	498.2	477.2	487.0	523.8	504.9	514.3	526.1	559.9
Petroleum	457.0	565.9	1,135.8	1,114.0	1,102.2	1,160.6	1,166.4	998.5	974.7	937.2
Natural gas	1,239.4	1,235.6	1,275.4	1,235.3	1,259.8	1,300.7	1,305.7	1,403.3	1,391.5	1,363.3
Communications, water and sewage	307.6	309.3	309.1	310.3	307.8	308.7	309.5	312.6	312.5	314.2
Rent	260.5	256.9	258.2	256.8	258.0	259.1	259.0	259.2	257.7	257.7
Maintenance and repair	529.3	541.6	561.2	552.2	558.3	564.7	569.7	574.8	578.8	585.2
Business services	522.9	531.9	544.6	540.3	543.2	545.9	548.8	555.3	558.0	559.7
Supplies	332.3	327.7	348.5	365.6	338.2	344.5	345.8	349.2	347.0	342.8
Property taxes and insurance	598.3	619.7	654.6	639.8	647.4	658.6	672.6	680.9	687.5	695.1
Interest, short-term	103.7	103.7	115.4	111.3	116.6	117.7	116.0	91.0	64.1	55.0
Total marketing cost index	467.2	472.2	491.5	486.7	488.8	493.1	497.1	499.5	502.1	503.6

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

Livestock & Products

Table 10—U.S. Meat Supply & Use

	Beg. stocks	Production ¹	Imports	Total supply	Exports	Ending stocks	Consumption		Conversion factor ³	Primary market price ⁴
							Total	Per capita ²		
							Million lbs. ⁵		Lbs.	
									\$/cwt	
Beef										
1998	465	25,760	2,643	28,868	2,171	393	26,305	68	0.700	61.48
1999	393	26,493	2,874	29,760	2,417	411	26,932	69	0.700	65.56
2000	411	26,888	3,032	30,331	2,516	525	27,290	69	0.700	69.65
2001	525	26,159	3,182	29,866	2,211	480	27,175	68	0.700	72.52
2002	480	25,481	3,245	29,206	2,160	385	26,661	67	0.700	76.75
Pork										
1998	408	19,011	705	20,124	1,230	584	18,309	53	0.776	34.72
1999	584	19,308	827	20,720	1,278	489	18,952	54	0.776	34.00
2000	489	18,952	967	20,408	1,305	477	18,626	52	0.776	44.70
2001	477	19,151	952	20,580	1,510	500	18,570	52	0.776	45.86
2002	500	19,155	960	20,615	1,430	500	18,685	52	0.776	43.50
Veal⁶										
1998	8	262	0	270	0	5	265	1	0.83	82.29
1999	5	235	0	240	0	5	235	1	0.83	89.62
2000	5	225	0	230	0	5	225	1	0.83	105.67
2001	5	204	0	209	0	4	205	1	0.83	105.83
2002	4	200	0	204	0	5	199	1	0.83	107.46
Lamb and mutton										
1998	14	251	112	377	6	12	360	1	0.89	74.20
1999	12	248	113	372	5	9	358	1	0.89	75.97
2000	9	234	129	372	6	13	353	1	0.89	79.40
2001	13	226	150	389	6	13	370	1	0.89	71.85
2002	13	196	155	364	4	13	347	1	0.89	74.50
Total red meat										
1998	894	45,284	3,461	49,639	3,407	994	45,239	123	--	--
1999	994	46,284	3,813	51,092	3,700	914	46,477	125	--	--
2000	914	46,299	4,128	51,341	3,827	1,020	46,494	124	--	--
2001	1,020	45,740	4,284	51,044	3,727	997	46,320	122	--	--
2002	997	45,032	4,360	50,389	3,594	903	45,892	120	--	--
<i>¢/lb</i>										
Broilers										
1998	607	27,612	5	28,225	4,673	711	22,841	73	0.859	63
1999	711	29,468	4	30,183	4,920	796	24,468	77	0.859	58
2000	796	30,209	6	31,011	5,548	798	24,665	77	0.859	56
2001	798	30,803	11	31,612	6,127	675	24,810	77	0.859	59
2002	675	31,583	8	32,266	6,350	700	25,216	77	0.859	59
Mature chickens										
1998	7	525	0	533	426	6	101	1	1.0	--
1999	6	554	0	562	393	8	162	1	1.0	--
2000	8	531	0	541	223	9	308	1	1.0	--
2001	9	507	0	519	160	8	350	1	1.0	--
2002	8	500	0	510	140	10	359	1	1.0	--
Turkeys										
1998	415	5,215	0	5,630	446	304	4,880	18	1.0	62
1999	304	5,230	1	5,535	379	254	4,902	18	1.0	69
2000	254	5,333	1	5,589	458	241	4,889	18	1.0	71
2001	241	5,427	1	5,670	504	250	4,915	18	1.0	67
2002	250	5,527	1	5,778	495	275	5,007	18	1.0	66
Total poultry										
1998	1,029	33,352	6	34,387	5,545	1,022	27,821	91	--	--
1999	1,022	35,252	7	36,281	5,692	1,058	29,531	96	--	--
2000	1,058	36,073	9	37,140	6,229	1,048	29,863	96	--	--
2001	1,048	36,738	15	37,801	6,792	933	30,074	96	--	--
2002	933	37,610	11	38,554	6,985	985	30,582	96	--	--
Red meat and poultry										
1998	1,923	78,637	3,467	84,027	8,951	2,016	73,060	214	--	--
1999	2,016	81,537	3,820	87,372	9,392	1,972	76,008	220	--	--
2000	1,972	82,372	4,137	88,481	10,056	2,068	76,357	219	--	--
2001	2,068	82,478	4,299	88,845	10,519	1,930	76,394	218	--	--
2002	1,930	82,642	4,371	88,943	10,579	1,888	76,474	216	--	--

-- = 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	
<i>Million doz.</i>								<i>No.</i>		<i>¢/doz.</i>
1995	14.9	6,215.6	4.1	6,234.6	208.9	847.2	11.2	5,167.3	235.6	72.9
1996	11.2	6,350.7	5.4	6,367.3	253.1	863.8	8.5	5,241.8	236.8	88.2
1997	8.5	6,473.1	6.9	6,488.5	227.8	894.7	7.4	5,358.6	240.1	81.2
1998	7.4	6,657.9	5.8	6,671.2	218.8	921.8	8.4	5,522.2	244.9	75.8
1999	8.4	6,912.0	7.4	6,927.8	161.7	941.7	7.6	5,816.7	255.7	65.6
2000	7.6	7,034.9	8.4	7,051.0	171.8	940.2	11.4	5,927.5	258.3	68.9
2001	11.4	7,145.6	9.1	7,166.0	179.0	951.7	13.0	6,022.3	260.0	67.8
2002	13.0	7,270.0	8.0	7,291.0	165.0	985.0	12.0	6,129.0	262.4	64.8

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			Total commercial supply	CCC net removals	Commercial			CCC net removals			
	Farm use	Farm marketings	Beg. stocks			Imports	Ending stocks	Disappearance	All milk price ¹	Skim solids basis	Total solids basis ²	
<i>Million lbs. (milkfat basis)</i>												
<i>\$/cwt</i>										<i>Billion lbs.</i>		
1994	153.6	1.7	151.9	4.5	2.9	159.3	4.8	4.3	150.3	12.97	3.7	4.2
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	167.7	1.3	166.3	6.1	4.4	176.9	0.8	6.9	169.2	12.40	8.6	5.5
2001	165.4	1.3	164.2	6.8	5.5	176.5	0.2	6.7	170.7	14.95	5.5	3.4
2002	169.7	1.2	168.5	6.7	4.7	179.9	0.2	6.4	173.3	13.25	2.7	1.7

Values for latest year are forecasts. Values for the preceding year are preliminary. 1. Delivered to plants and dealers; does not reflect deductions.

2. Arbitrarily weighted average of milkfat basis (40 percent) and solids basis (60 percent). Information contact: Jim Miller (202) 694-5184

Table 13—Poultry & Eggs

	Annual			2000		2001				
	1998	1999	2000	Oct	May	Jun	Jul	Aug	Sep	Oct
Broilers										
Federally inspected slaughter certified (mil. lb.)	27,862.7	29,741.4	30,495.2	2,632.5	2,809.2	2,619.2	2,575.7	2,827.7	2,427.9	2,891.8
Wholesale price, 12-city (cents/lb.)	63.0	58.1	56.2	57.2	59.4	59.9	60.4	60.9	61.9	60.2
Price of grower feed (\$/ton) ¹	128.6	103.1	104.7	98.6	98.8	98.8	106.3	107.7	102.4	95.3
Broiler-feed price ratio ²	6.3	7.2	6.6	7.8	8.1	8.3	7.9	7.8	8.4	8.6
Stocks beginning of period (mil. lb.)	606.8	711.1	795.6	810.3	647.0	660.8	681.3	633.7	615.5	616.7
Broiler-type chicks hatched (mil.)	8,491.9	8,715.4	8,792.1	711.3	775.7	756.6	760.2	761.2	730.0	739.7
Turkeys										
Federally inspected slaughter certified (mil. lb.)	5,280.6	5,296.5	5,402.2	499.6	488.9	463.9	471.9	493.1	423.4	541.4
Wholesale price, Eastern U.S. 8-16 lb. young hens (cents/lb.)	62.2	69.0	70.5	78.7	65.7	66.0	66.1	66.4	68.8	72.9
Price of turkey grower feed (\$/ton) ¹	115.6	95.0	95.9	92.2	94.6	92.8	97.7	99.5	97.3	91.7
Turkey-feed price ratio ²	6.7	8.6	8.7	10.0	8.1	8.3	7.9	7.8	8.3	9.6
Stocks beginning of period (mil. lb.)	415.1	304.3	254.3	528.1	392.6	454.6	506.7	534.2	545.3	542.0
Poults placed in U.S. (mil.)	297.8	296.1	297.3	23.7	26.7	26.0	27.0	25.0	22.4	23.8
Eggs										
Farm production (mil.)	79,927.0	82,943.0	84,412.0	7,130.0	7,231.0	6,979.0	7,180.0	7,207.0	7,032.0	7,329.0
Average number of layers (mil.)	313.0	322.9	328.2	328.2	334.8	332.4	331.6	332.2	334.5	336.3
Rate of lay (eggs per layer on farms)	255.3	256.8	257.2	21.7	21.6	21.0	21.7	21.7	21.0	21.8
Cartoned price, New York, grade A large (cents/doz.) ³	75.8	65.6	68.9	73.0	58.1	57.3	59.8	62.8	61.5	66.1
Price of laying feed (\$/ton) ¹	137.7	124.5	123.9	109.5	131.7	131.3	141.3	137.1	133.4	117.0
Egg-feed price ratio ²	9.8	9.8	10.6	12.2	8.4	8.5	7.8	8.4	8.5	10.7
Stocks, first of month										
Frozen (mil. doz.)	7.4	8.4	7.6	11.0	12.1	12.0	10.9	12.6	13.5	13.2
Replacement chicks hatched (mil.)	438.3	451.7	429.7	36.1	42.6	40.6	37.9	35.2	36.6	36.5

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			2000				2001			
	1998	1999	2000	Oct	May	Jun	Jul	Aug	Sep	Oct	
Class III (BFP before 2000) 3.5% fat (\$/cwt.)	14.20	12.43	9.74	10.02	13.83	15.02	15.46	15.55	15.90	14.60	
Wholesale prices											
Butter, Central States (cents/lb.) ¹	177.6	125.2	118.5	116.9	190.4	197.4	192.4	204.5	219.7	151.9	
Am. cheese, Wis. assembly pt. (cents/lb.)	158.1	142.3	116.2	109.4	160.3	166.8	168.4	171.8	173.9	139.7	
Nonfat dry milk (cents/lb.) ²	106.9	103.5	101.6	102.3	104.0	102.5	100.3	99.0	99.3	98.8	
USDA net removals											
Total (mil. lb.) ³	365.6	343.5	841.4	33.8	11.3	7.7	15.6	11.1	3.7	-12.3	
Butter (mil. lb.)	6.3	3.7	8.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Am. cheese (mil. lb.)	8.2	4.6	28.0	1.2	0.0	0.0	0.8	0.8	0.2	-1.7	
Nonfat dry milk (mil. lb.)	326.4	540.6	692.6	50.4	51.2	34.8	39.2	14.9	7.5	16.4	
Milk											
Milk prod. 20 states (mil. lb.)	134,900	140,062	144,528	11,813	12,638	12,057	12,020	11,772	11,387	11,732	
Milk per cow (lb.)	17,502	18,109	18,532	1,511	1,632	1,556	1,552	1,522	1,474	1,520	
Number of milk cows (1,000)	7,708	7,734	7,799	7,817	7,745	7,749	7,745	7,737	7,723	7,719	
U.S. milk production (mil. lb.) ⁴	157,348	162,716	167,658	13,714	14,632	13,955	13,889	13,597	13,148	13,560	
Stocks, beginning ³											
Total (mil. lb.)	4,907	5,301	6,186	9,058	9,004	9,553	10,172	10,238	9,246	8,893	
Commercial (mil. lb.)	4,889	5,274	6,142	8,925	8,749	9,299	9,907	9,968	8,967	8,646	
Government (mil. lb.)	18	27	44	133	255	254	265	270	279	247	
Imports, total (mil. lb.) ³	4,588	4,772	4,445	359	420	727	604	598	319	--	
Commercial disappearance (mil. lb.) ³	159,779	164,947	169,222	15,000	14,383	13,961	14,308	15,077	13,679	--	
Butter											
Production (mil. lb.)	1,168.0	1,277.1	1,273.6	103.9	109.1	86.9	79.9	76.8	88.7	111.1	
Stocks, beginning (mil. lb.)	20.5	25.9	24.9	84.6	106.9	131.7	147.0	144.7	112.2	105.5	
Commercial disappearance (mil. lb.)	1,222.5	1,310.7	1,297.6	132.6	90.1	87.4	94.7	121.7	97.0	--	
American cheese											
Production (mil. lb.)	3,314.7	3,532.6	3,633.9	285.6	309.8	308.1	298.4	285.9	282.5	294.7	
Stocks, beginning (mil. lb.)	410.3	407.6	458.0	576.5	509.1	503.8	528.0	534.3	505.0	486.3	
Commercial disappearance (mil. lb.)	3,338.6	3,542.2	3,588.1	315.6	318.7	292.3	295.2	320.6	304.4	--	
Other cheese											
Production (mil. lb.)	4,177.5	4,361.5	4,620.6	402.9	399.0	374.3	380.7	377.5	362.0	386.1	
Stocks, beginning (mil. lb.)	70.0	109.5	163.3	203.9	208.8	214.7	217.6	224.6	222.1	221.2	
Commercial disappearance (mil. lb.)	4,452.0	4,672.1	4,963.3	459.1	420.2	405.0	409.3	410.7	389.4	--	
Nonfat dry milk											
Production (mil. lb.)	1,135.4	1,359.7	1,451.6	101.0	139.9	131.3	117.2	95.7	94.8	101.3	
Stocks, beginning (mil. lb.)	103.3	56.9	150.9	154.4	126.9	134.2	165.9	147.0	108.9	102.9	
Commercial disappearance (mil. lb.)	866.9	737.2	770.4	59.5	81.9	65.6	97.4	119.2	93.3	--	
Frozen dessert											
Production (mil. gal.) ⁵	1,324.3	1,301.0	1,312.2	103.5	124.8	131.8	127.9	124.8	106.2	101.4	

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

Table 15—Wool

	Annual			2000				2001		
	1998	1999	2000	I	II	III	IV	I	II	III
U.S. wool price (¢/lb.) ¹	162	110	107	97	120	117	96	101	130	125
Imported wool price (¢/lb.) ²	164	136	137	133	139	139	136	151	155	167
U.S. mill consumption, scoured										
Apparel wool (1,000 lb.)	98,373	65,468	60,294	17,443	16,064	14,620	13,914	16,590	13,009	11,197
Carpet wool (1,000 lb.)	16,331	15,017	14,514	3,885	3,668	3,766	3,886	4,278	3,791	2,904

-- = 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: Mae Dean Johnson (202) 694-5299

Table 16—Meat Animals

	Annual			2000			2001			
	1998	1999	2000	Nov	Jun	Jul	Aug	Sep	Oct	Nov
Cattle on feed (7 states, 1000+ head capacity)										
Number on feed (1,000 head) ¹	9,455	9,021	9,752	10,192	9,660	9,466	9,387	9,383	9,613	10,231
Placed on feed (1,000 head)	19,697	21,446	21,875	1,678	1,690	1,730	1,906	1,806	2,310	1,581
Marketings (1,000 head)	19,440	20,124	20,644	1,568	1,824	1,758	1,854	1,536	1,635	1,541
Other disappearance (1,000 head)	691	676	907	89	60	51	46	40	57	68
Market prices (\$/cwt)										
Slaughter cattle										
Choice steers, 1,100-1,300 lb.										
Texas	61.75	65.89	69.86	72.19	72.64	70.71	69.07	68.75	66.30	63.60
Neb. direct	61.47	65.56	69.65	72.16	72.81	71.60	70.16	69.16	66.58	64.71
Boning utility cows, Sioux Falls	36.20	38.40	41.71	39.83	50.00	43.25	48.00	44.13	43.25	37.75
Feeder steers										
Medium no. 1, Oklahoma City										
600-650 lb.	78.13	82.64	94.36	93.73	98.87	97.80	95.27	97.14	87.99	86.40
750-800 lb.	71.79	76.39	88.58	89.79	91.12	91.32	90.44	91.64	88.03	83.63
Slaughter hogs										
Barrows and gilts, 51-52 percent lean										
National Base converted to live equal.	34.72	34.00	34.02	37.84	54.53	53.75	52.47	46.93	41.27	35.49
Sows, Iowa, S.MN 1-2 300-400 lb.	20.29	19.26	29.79	26.90	41.88	40.75	40.75	33.12	31.60	25.01
Slaughter sheep and lambs										
Lambs, Choice, San Angelo	74.20	75.96	79.40	76.70	75.21	69.82	54.47	56.50	57.67	59.00
Ewes, Good, San Angelo	40.86	42.45	46.23	45.85	43.89	44.07	40.25	26.92	38.50	39.83
Feeder lambs										
Choice, San Angelo	79.86	80.74	95.86	103.65	81.29	78.50	73.19	69.13	68.50	70.67
Wholesale meat prices, Midwest										
Boxed beef cut-out value										
Choice, 700-800 lb.	98.60	110.90	117.45	119.09	127.85	118.96	119.40	117.65	113.58	108.70
Select, 700-800 lb.	92.19	101.99	101.99	110.29	113.42	112.77	113.62	108.21	104.64	101.46
Canner and cutter cow beef	61.49	66.51	72.57	72.11	--	--	--	--	--	--
Pork cutout	53.08	53.45	64.07	56.75	75.33	74.47	75.14	69.61	60.68	56.74
Pork loins, bone-in, 1/4 " trim,14-19 lb.	101.63	100.38	117.13	104.19	132.51	126.41	121.22	116.21	108.69	97.57
Pork bellies, 12-14 lb.	52.38	57.12	77.46	51.97	91.45	102.42	98.39	81.91	61.30	63.58
Hams, bone-in, trimmed, 20-23 lb.	45.85	45.18	52.02	51.02	61.08	64.35	70.25	72.23	66.67	65.87
All fresh beef retail price	253.28	260.50	275.30	279.60	304.70	302.90	301.70	301.20	303.60	304.20
Commercial slaughter (1,000 head) ²										
Cattle	35,465	36,150	36,247	2,929	3,120	2,941	3,239	2,807	3,161	2,903
Steers	17,428	17,932	18,060	1,391	1,583	1,500	1,628	1,379	1,522	1,373
Heifers	11,448	11,868	12,041	972	1,036	943	1,064	948	1,036	953
Cows	5,983	5,710	5,522	516	446	445	487	429	544	527
Bulls and stags	606	639	624	50	55	53	60	51	59	50
Calves	1,458	1,282	1,132	93	77	83	94	79	94	87
Sheep and lambs	3,804	3,701	3,455	297	233	242	273	243	289	287
Hogs	101,029	101,544	97,955	8,757	7,483	7,446	8,374	7,811	9,330	8,716
Barrows and gilts	97,025	97,732	94,585	8,458	7,211	7,178	8,087	7,544	9,019	8,436
Commercial production (mil. lb.)										
Beef	25,653	26,386	26,776	2,169	2,269	2,176	2,424	2,120	2,388	2,201
Veal	252	226	216	18	16	16	17	15	18	16
Lamb and mutton	248	244	230	20	16	17	19	16	20	20
Pork	18,981	19,278	18,905	1,714	1,457	1,434	1,600	1,513	1,838	1,733
		Annual		2000			2001			
	1998	1999	2000	II	III	IV	I	II	III	IV
Hogs and pigs (U.S.) ³										
Inventory (1,000 head) ¹	61,158	62,206	59,342	57,782	59,117	59,495	59,138	57,524	58,223	58,642
Breeding (1,000 head) ¹	6,957	6,682	6,234	6,190	6,234	6,246	6,270	6,232	6,186	6,158
Market (1,000 head) ¹	54,200	55,523	53,109	51,593	52,884	53,250	52,868	51,292	52,037	52,484
Farrowings (1,000 head)	12,061	11,641	11,462	2,885	2,889	2,838	2,749	2,844	2,838	2,877
Pig crop (1,000 head)	105,004	102,354	101,354	25,565	25,548	25,119	23,969	25,170	25,028	--
Cattle on Feed, 7 states (1,000 head) ^{1 4}										
Steers and steer calves	5,803	5,432	5,432	5,746	5,326	5,584	5,936	5,885	5,521	5,690
Heifers and heifer calves	3,615	3,552	3,552	3,810	3,602	3,877	4,081	3,913	3,894	3,882
Cows and bulls	59	37	37	37	31	41	59	61	51	41

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

Crops & Products

Table 17—Supply & Utilization^{1,2}

	Area			Yield	Production	Total supply ⁴	Feed & residual	Other domestic use	Exports	Total use	Ending stocks	Farm price ⁵
	Set-aside ³	Planted	Harvested									
	<i>Mil. acres</i>		<i>Bu./acre</i>	<i>Mil. bu.</i>								<i>\$/bu.</i>
Wheat												
1997/98	--	70.4	62.8	39.5	2,481	3,020	251	1,007	1,040	2,298	722	3.38
1998/99	--	65.8	59.0	43.2	2,547	3,373	394	990	1,042	2,427	946	2.65
1999/00	--	62.7	53.8	42.7	2,299	3,339	279	1,021	1,090	2,390	950	2.48
2000/01*	--	62.6	53.1	42.0	2,232	3,272	298	1,036	1,061	2,396	876	2.62
2001/02*	--	59.6	48.7	40.2	1,958	2,924	200	1,037	1,000	2,237	687	2.75-2.95
		<i>Mil. acres</i>	<i>Lb./acre</i>	<i>Mil. cwt (rough equiv)</i>								<i>\$/cwt</i>
Rice ⁶												
1997/98	--	3.1	3.1	5,897.0	183.0	219.5	--	6/ 103.9	87.7	191.6	27.9	9.70
1998/99	--	3.3	3.3	5,663.0	184.4	223.0	--	6/ 114.0	86.8	200.9	22.1	8.89
1999/00	--	3.5	3.5	5,866.0	206.0	238.2	--	6/ 121.9	88.9	210.7	27.5	5.93
2000/01*	--	3.1	3.0	6,281.0	190.9	229.2	--	6/ 117.2	83.5	200.7	28.5	5.56
2001/02*	--	3.3	3.3	6,374.0	209.7	249.2	--	6/ 121.0	86.0	207.0	42.2	4.00-4.50
		<i>Mil. acres</i>	<i>Bu./acre</i>	<i>Mil. bu.</i>								<i>\$/bu.</i>
Corn												
1997/98	--	79.5	72.7	126.7	9,207	10,099	5,482	1,805	1,504	8,791	1,308	2.43
1998/99	--	80.2	72.6	134.4	9,759	11,085	5,471	1,846	1,981	9,298	1,787	1.94
1999/00	--	77.4	70.5	133.8	9,431	11,232	5,664	1,913	1,937	9,515	1,718	1.82
2000/01*	--	79.5	72.7	137.1	9,968	11,693	5,890	1,967	1,937	9,794	1,899	1.85
2001/02*	--	76.0	69.2	138.0	9,546	11,454	5,800	2,030	2,050	9,880	1,574	1.85-2.15
		<i>Mil. acres</i>	<i>Bu./acre</i>	<i>Mil. bu.</i>								<i>\$/bu.</i>
Sorghum												
1997/98	--	10.1	9.2	69.2	634	681	365	55	212	632	49	2.21
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	284	55	256	595	65	1.57
2000/01*	--	9.2	7.7	60.9	470	535	220	35	239	494	42	1.89
2001/02*	--	10.0	8.8	61.2	537	579	240	45	240	525	54	1.85-2.15
		<i>Mil. acres</i>	<i>Bu./acre</i>	<i>Mil. bu.</i>								<i>\$/bu.</i>
Barley												
1997/98	--	6.7	6.2	58.1	360	510	144	172	74	390	119	2.38
1998/99	--	6.3	5.9	60.0	352	501	161	170	28	360	142	1.98
1999/00	--	5.2	4.7	59.2	280	450	136	172	30	338	111	2.13
2000/01*	--	5.9	5.2	61.1	319	459	123	172	58	353	106	2.11
2001/02*	--	5.0	4.3	58.2	250	381	95	172	30	297	84	2.15-2.35
		<i>Mil. acres</i>	<i>Bu./acre</i>	<i>Mil. bu.</i>								<i>\$/bu.</i>
Oats												
1997/98	--	5.1	2.8	59.5	167	332	185	72	2	258	74	1.60
1998/99	--	4.9	2.8	60.2	166	348	196	69	2	266	81	1.10
1999/00	--	4.7	2.5	59.6	146	326	180	68	2	250	76	1.12
2000/01*	--	4.5	2.3	64.2	150	332	189	68	2	259	73	1.10
2001/02*	--	4.4	1.9	61.3	117	280	155	68	2	225	55	1.30-1.40
		<i>Mil. acres</i>	<i>Bu./acre</i>	<i>Mil. bu.</i>								<i>\$/bu.</i>
Soybeans ⁷												
1997/98	--	70.0	69.1	38.9	2,689	2,826	156	1,597	873	2,626	200	6.47
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	165	1,578	973	2,716	290	4.63
2000/01*	--	74.3	72.4	38.1	2,758	3,052	164	1,641	998	2,804	248	4.54
2001/02*	--	75.2	74.1	39.4	2,923	3,175	175	1,670	1,000	2,845	330	4.00-4.80
								<i>Mil. lbs.</i>				<i>¢/lb.</i>
Soybean oil												
1997/98	--	--	--	--	18,143	19,723	--	15,262	3,079	18,341	1,382	25.84
1998/99	--	--	--	--	18,081	19,546	--	15,655	2,372	18,027	1,520	19.90
1999/00	--	--	--	--	17,825	19,427	--	16,056	1,376	17,432	1,995	15.60
2000/01*	--	--	--	--	18,434	20,502	--	16,223	1,402	17,625	2,877	14.15
2001/02*	--	--	--	--	18,760	21,715	--	16,700	2,500	19,200	2,515	14.00-17.00
								<i>1,000 tons</i>				<i>\$/ton⁸</i>
Soybean meal												
1997/98	--	--	--	--	38,176	38,443	--	28,895	9,329	38,225	218	185.5
1998/99	--	--	--	--	37,792	38,109	--	30,657	7,122	37,779	330	138.5
1999/00	--	--	--	--	37,591	37,970	--	30,346	7,331	37,678	293	167.7
2000/01*	--	--	--	--	39,389	39,733	--	31,713	7,636	39,349	383	173.6
2001/02*	--	--	--	--	39,942	40,375	--	32,350	7,750	40,100	275	150-170

See footnotes at end of table, next page

Table 17—Supply & Utilization (continued)

	Area		Yield	Production	Total supply ⁴	Feed & residual	Other domestic use	Exports	Total use	Ending stocks	Farm price ⁵	
	Set-aside ³	Planted										Harvested
		<i>Mil. acres</i>										<i>Lb./acre</i>
Cotton ⁹												
1997/98	1.7	13.9	13.4	673	18.8	22.8	--	11.3	7.5	18.8	3.9	65.2
1998/99	0.3	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	17.0	3.9	45.0
2000/01*	--	15.5	13.1	632	17.2	21.1	--	8.9	6.8	15.6	6.0	49.8
2001/02*	--	16.2	13.9	691	20.1	26.1	--	7.9	9.8	17.7	8.4	--

-- = Not available or not applicable. *December 11, 2001 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 soybean meal. 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 diversion, acreage reduction, 0/92 & 50/92 programs. 0/92 & 50/92 set-aside includes idled acreage and acreage planted to minor oilseeds, sesame, and crambe. 4. Includes imports. 5. Marketing-year weighted average price received by farmers. Does not include an allowance for loans outstanding and government purchases. 6. Residual included in domestic use. 7. Includes seed. 8. Simple average of 48 percent protein, Decatur. 9. Upland and extra-long staple. Stocks estimates based on Census Bureau data, resulting in an unaccounted difference between supply and use estimates and changes in ending stocks. Average for August 2000-February 2001. USDA is prohibited by law from publishing cotton price projections. *Information contact: Mae Dean Johnson (202) 694-5299*

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

	Marketing year ¹			2000		2001				
	1998/99	1999/00	2000/01	Nov	Jun	Jul	Aug	Sep	Oct	Nov
Wheat, no. 1 HRW, Kansas City (\$/bu.) ²	3.08	2.87	3.30	3.45	3.32	3.20	3.15	3.18	3.28	3.37
Wheat, DNS, Minneapolis (\$/bu.) ³	3.83	3.65	3.62	3.77	3.81	3.72	3.54	3.52	3.71	3.69
Rice, S.W. La. (\$/cwt) ⁴	16.79	12.99	12.46	12.69	12.38	12.38	12.19	10.97	10.58	10.41
Corn, no. 2 yellow, 30-day, Chicago (\$/bu.)	2.06	1.97	--	2.06	1.89	2.07	2.13	2.10	1.98	2.00
Sorghum, no. 2 yellow, Kansas City (\$/cwt)	3.29	3.10	--	3.41	3.56	3.59	3.65	3.55	3.38	3.44
Barley, feed, Duluth (\$/bu.)	--	--	1.47	1.42	1.50	1.49	1.49	1.48	1.50	1.50
Barley, malting Minneapolis (\$/bu.)	--	--	2.37	2.39	--	--	2.35	2.34	2.42	2.44
U.S. cotton price, SLM, 1-1/16 in. (¢/lb.) ⁵	60.12	52.36	51.56	62.16	37.38	37.48	36.05	33.22	28.42	31.23
Northern Europe prices cotton index (¢/lb.) ⁶	58.97	52.85	57.25	64.07	47.33	45.55	43.31	41.13	37.35	38.13
U.S. M 1-3/32 in. (¢/lb.) ⁷	74.08	59.64	62.54	68.95	51.44	50.56	51.25	46.06	40.63	42.55
Soybeans, no. 1 yellow, 15-day ⁸ Central Illinois (\$/bu)	4.85	4.76	4.61	4.74	4.69	5.09	4.98	4.59	4.26	4.31
Soybean oil, crude, Decatur (¢/lb.)	19.90	20.50	--	13.37	14.20	16.49	17.68	15.46	14.38	15.23
Soybean meal, high protein, Decatur (\$/ton)	138.50	165.45	--	179.95	172.60	184.52	178.46	171.67	165.45	166.10

-- = 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 meal and oil. 2. Ordinary protein. 3. 14 percent protein. 4. Long grain, milled basis. 5. Average spot market. 6. Liverpool Cotlook "A" Index; average of 5 lowest priced growth. 7. Cotton, Memphis territory growth. 8. Soybean 30-day price discontinued. *Information contact: Wilma Davis (202) 694-5304.*

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

	Marketing assistance loan rate	Marketing loan benefit ¹	Flexibility contract payment rate	Acres under contract	Contract payment yields
				<i>Mil. acres</i>	<i>Bu./acre</i>
Wheat					
		<i>\$/bu.</i>			
1997/98	2.58	0.01	0.631	76.7	34.70
1998/99	2.58	0.19	0.663	78.9	34.50
1999/2000	2.58	0.41	0.637	79.0	34.50
2000/2001	2.58	--	0.588	78.9	34.50
2001/2002 ²	2.58	--	0.474	78.2	34.60
<i>Cwt/acre</i>					
Rice					
		<i>\$/cwt</i>			
1997/98	6.50	0.00	2.710	4.2	48.17
1998/99	6.50	0.08	2.921	4.2	48.17
1999/2000	6.50	1.94	2.820	4.2	48.15
2000/2001	6.50	--	2.600	4.1	48.15
2001/2002 ²	6.50	--	2.100	4.1	48.15
<i>Bu./acre</i>					
Corn					
		<i>\$/bu.</i>			
1997/98	1.89	0.01	0.486	80.9	102.80
1998/99	1.89	0.14	0.377	82.0	102.60
1999/2000	1.89	0.26	0.363	81.9	102.60
2000/2001	1.89	--	0.334	81.9	102.60
2001/2002 ²	1.89	--	0.269	81.5	102.70
<i>Bu./acre</i>					
Sorghum					
		<i>\$/bu.</i>			
1997/98	1.76	0.00	0.544	13.1	57.30
1998/99	1.74	0.12	0.452	13.6	56.90
1999/2000	1.74	0.26	0.435	13.7	56.90
2000/2001	1.71	--	0.400	13.6	57.00
2001/2002 ²	1.71	--	0.324	13.5	57.00
<i>Bu./acre</i>					
Barley					
		<i>\$/bu.</i>			
1997/98	1.57	0.01	0.277	10.5	47.20
1998/99	1.56	0.23	0.284	11.2	46.70
1999/2000	1.59	0.14	0.271	11.2	46.60
2000/2001	1.62	--	0.251	11.2	46.60
2001/2002 ²	1.65	--	0.206	11.0	46.60
<i>Bu./acre</i>					
Oats					
		<i>\$/bu.</i>			
1997/98	1.11	0.00	0.031	6.2	50.80
1998/99	1.11	0.18	0.031	6.5	50.70
1999/2000	1.13	0.19	0.030	6.5	50.60
2000/2001	1.16	--	0.028	6.5	50.60
2001/2002 ²	1.21	--	0.022	6.5	50.60
<i>Bu./acre</i>					
Soybeans³					
		<i>\$/bu.</i>			
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	--	--	--	--
<i>Lb./acre</i>					
Upland cotton					
		<i>¢/lb.</i>			
1997/98	51.92	0.00	7.625	16.2	608.00
1998/99	51.92	0.09	8.173	16.4	604.00
1999/2000	51.92	0.20	7.880	16.4	604.00
2000/2001	51.92	--	7.330	16.3	604.00
2001/2002 ²	51.92	--	5.990	16.2	605.80

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

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

Table 20—Fruit

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Citrus¹										
Production (1,000 tons)	12,452	15,274	14,561	15,799	15,712	17,270	17,770	13,633	17,288	16,300
Per capita consumpt. (lb.) ²	24.4	26.0	25.0	24.1	25.2	27.5	27.3	21.0	24.5	--
Noncitrus³										
Production (1,000 tons)	17,124	16,554	17,339	16,348	16,103	18,382	16,545	17,316	18,818	--
Per capita consumpt. (lb.) ²	73.7	73.8	75.6	73.6	73.9	76.1	76.5	81.6	78.7	--
	2000					2001				
	Oct	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Grower prices										
Apples (¢/pound) ⁴	21.8	15.2	14.2	15.8	15.4	15.3	14.4	16.9	18.7	24.2
Pears (¢/pound) ⁴	18.10	12.55	13.70	15.20	18.20	19.95	28.50	26.65	23.15	20.7
Oranges (\$/box) ⁵	1.09	3.29	4.13	5.02	4.80	4.30	6.23	5.57	6.53	5.1
Grapefruit (\$/box) ⁵	5.17	2.07	1.53	1.36	1.94	5.27	8.81	3.69	6.89	5.3
Stocks, ending										
Fresh apples (mil. lb.)	6,348	3,408	2,603	1,891	1,330	898	487	143	2,806	5,365
Fresh pears (mil. lb.)	426	181	113	55	18	0	18	93	554	518
Frozen fruits (mil. lb.)	1,626	1,372	1,270	1,122	1,000	1,046	1,184	1,148	1,102	1,196
Frozen conc. orange juice (mil. single-strength gallons)	477	745	708	768	842	831	781	690	628	574

-- = 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

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Production¹										
Total vegetables (1,000 cwt)	565,754	689,070	692,022	785,798	751,715	765,645	763,532	732,803	834,654	798,773
Fresh (1,000 cwt) ^{2,4}	242,733	389,597	390,528	416,173	397,125	412,010	436,459	420,012	450,715	454,990
Processed (tons) ^{3,4}	16,151,030	14,973,630	15,074,707	18,481,238	17,729,497	17,681,732	16,353,639	15,639,548	19,196,942	17,189,152
Mushrooms (1,000 lbs) ⁵	746,832	776,357	750,799	782,340	777,870	776,677	808,678	847,760	854,394	838,611
Potatoes (1,000 cwt)	417,622	425,367	430,349	469,425	445,099	499,254	467,091	475,771	478,216	513,621
Sweet potatoes (1,000 cwt)	11,203	12,005	11,027	13,380	12,821	13,216	13,327	12,382	12,234	13,794
Dry edible beans (1,000 cwt)	33,765	22,615	21,862	28,950	30,689	27,912	29,370	30,418	33,085	26,440
	2000					2001				
	Oct	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Shipments (1,000 cwt)										
Fresh	18,197	23,799	20,494	23,645	37,308	30,270	20,761	22,934	15,340	22,433
Iceberg lettuce	3,505	3,517	3,270	3,017	4,626	3,436	3,060	3,773	2,976	4,097
Tomatoes, all	3,164	4,892	3,495	4,294	4,189	3,240	2,271	2,702	2,223	3,396
Dry-bulb onions	4,473	3,774	2,983	3,819	4,563	3,212	3,448	4,311	3,844	4,563
Others ⁶	7,055	11,616	10,746	12,515	23,930	20,382	11,982	12,148	6,297	10,377
Potatoes, all	12,433	15,572	14,624	18,926	21,139	12,947	9,646	11,653	10,063	12,646
Sweet potatoes	325	327	242	310	239	189	161	226	266	412

-- = Not available. 1. Calendar year except mushrooms. 2. Includes fresh production of asparagus, broccoli, carrots, cauliflower, celery, sweet corn, lettuce, honeydews, onions, & tomatoes through 1991. 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		2000								
	1997	1998	1999	Mar	Apr	May	Jun	Jul	Aug	Sep	
Tobacco											
Avg. price to grower ³											
Flue-cured (\$/lb.)	1.73	1.76	1.74	--	--	--	--	--	1.69	1.82	
Burley (\$/lb.)	1.91	1.90	1.90	1.77	--	--	--	--	--	--	
Domestic taxable removals											
Cigarettes (bil.)	471.4	457.9	432.6	38.8	29.3	40.8	39.6	34.2	40.8	33.1	
Large cigars (mil.) ⁴	3,552	3,721	3,844	333.9	314.0	345.7	365.8	319.6	352.7	314.4	

-- = 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. 4. Includes imports of large cigars. *Information contacts: sugar and coffee, Fanny Jolly (202) 694-5249; tobacco, Tom Capehart (202) 694-5245*

World Agriculture

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

	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/00	2000/01 F	2001/02 F
	<i>Million units</i>									
Wheat										
Area (hectares)	222.9	221.9	214.5	218.7	230.0	228.0	224.7	216.6	218.9	214.7
Production (metric tons)	562.1	558.6	524.0	538.4	581.9	609.2	588.7	585.9	582.3	577.0
Exports (metric tons) ¹	113.1	101.6	101.5	99.1	100.1	104.0	101.9	112.3	102.9	107.2
Consumption (metric tons) ²	549.8	556.2	546.9	548.4	575.8	583.4	584.3	591.6	589.5	596.0
Ending stocks (metric tons) ³	170.0	172.4	149.4	139.5	145.6	171.3	175.8	170.0	163.0	144.0
Coarse grains										
Area (hectares)	325.9	318.7	324.0	313.9	322.7	311.2	307.3	300.7	296.4	299.7
Production (metric tons)	871.6	798.9	871.3	802.9	908.5	883.9	889.0	876.5	856.9	873.2
Exports (metric tons) ¹	93.4	86.3	98.4	87.9	91.2	85.6	96.4	104.3	103.9	101.3
Consumption (metric tons) ²	844.9	838.6	859.6	841.8	875.0	873.4	869.9	881.9	879.5	892.4
Ending stocks (metric tons) ³	218.7	179.0	190.6	151.8	185.3	195.8	215.0	209.6	187.0	167.7
Rice, milled										
Area (hectares)	146.4	144.9	147.4	148.1	149.7	151.3	152.3	154.8	152.1	150.9
Production (metric tons)	355.6	355.3	364.5	371.4	380.2	386.8	394.1	408.4	396.9	392.8
Exports (metric tons) ¹	14.9	16.5	21.0	19.7	18.9	27.7	24.9	22.9	23.4	22.6
Consumption (metric tons) ²	358.6	359.3	366.0	372.0	378.9	379.5	387.4	398.4	402.6	404.4
Ending stocks (metric tons) ³	123.9	120.0	118.4	117.8	119.0	126.3	133.1	143.1	137.3	125.7
Total grains										
Area (hectares)	695.2	685.5	685.9	680.7	702.4	690.5	684.3	672.1	667.4	665.3
Production (metric tons)	1,789.3	1,712.8	1,759.8	1,712.7	1,870.6	1,879.9	1,871.8	1,870.8	1,836.1	1,843.0
Exports (metric tons) ¹	221.4	204.4	220.9	206.7	210.2	217.3	223.2	239.5	230.2	231.1
Consumption (metric tons) ²	1,753.3	1,754.1	1,772.5	1,762.2	1,829.7	1,836.3	1,841.6	1,871.9	1,871.6	1,892.8
Ending stocks (metric tons) ³	512.6	471.4	458.4	409.1	449.9	493.4	523.9	522.7	487.3	437.4
Oilseeds										
Crush (metric tons)	184.4	190.1	208.1	217.5	216.7	226.4	240.7	247.5	254.9	263.5
Production (metric tons)	227.5	229.4	261.9	258.9	261.4	286.5	294.7	303.2	311.0	322.8
Exports (metric tons)	38.2	38.7	44.1	44.3	49.6	54.0	54.9	64.5	71.2	70.7
Ending stocks (metric tons)	23.6	20.3	27.2	22.2	19.1	28.6	31.8	34.1	33.2	33.4
Meals										
Production (metric tons)	125.2	131.7	142.1	147.3	147.8	153.9	164.6	168.7	176.2	182.2
Exports (metric tons)	40.8	44.9	46.7	49.8	50.7	52.0	54.0	56.2	56.5	57.8
Oils										
Production (metric tons)	61.1	63.7	69.6	73.1	73.7	75.2	80.6	85.9	88.7	90.6
Exports (metric tons)	21.3	24.3	27.1	26.0	28.3	29.8	31.5	32.8	34.4	35.2
Cotton										
Area (hectares)	32.6	30.7	32.2	35.9	33.8	33.8	33.0	32.4	31.9	34.3
Production (bales)	82.5	77.1	86.0	93.1	89.6	91.8	85.0	87.4	88.4	96.9
Exports (bales)	25.5	26.8	28.4	27.3	28.8	26.7	23.7	27.3	26.4	28.1
Consumption (bales)	85.9	85.4	84.7	86.0	88.0	87.2	85.4	91.9	91.8	91.6
Ending stocks (bales)	34.7	26.8	29.8	36.7	40.1	43.9	45.1	41.6	38.9	44.4
	1992	1993	1994	1995	1996	1997	1998	1999	2000 E	2001 F
Beef and Pork⁴										
Production (metric tons)	111.6	111.6	116.7	122.1	116.6	122.1	127.1	130.4	131.8	133.1
Consumption (metric tons)	109.9	110.6	115.7	120.7	114.1	119.7	124.6	128.4	129.8	131.3
Exports (metric tons) ¹	6.6	6.6	7.2	7.4	7.7	8.2	8.0	9.2	9.1	8.8
Poultry⁴										
Production (metric tons)	38.0	40.5	43.2	47.5	50.4	52.7	53.5	56.5	58.0	59.6
Consumption (metric tons)	37.0	39.4	42.0	47.0	49.6	51.8	52.6	55.3	56.8	58.5
Exports (metric tons) ¹	2.4	2.8	3.6	4.5	5.1	5.6	5.7	6.0	6.6	6.8
Dairy										
Milk production (metric tons) ⁵	--	--	--	--	364.4	365.6	368.4	372.0	375.9	376.3

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

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

U.S. Agricultural Trade

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

	Annual			2000			2001			
	1998	1999	2000	Nov	Jun	Jul	Aug	Sep	Oct	Nov
Export commodities										
Wheat, f.o.b. vessel, Gulf ports (\$/bu.)	3.44	3.04	3.17	3.52	3.50	3.40	3.40	3.39	3.39	3.46
Corn, f.o.b. vessel, Gulf ports (\$/bu.)	2.58	2.29	2.24	2.26	1.91	2.30	2.36	2.27	2.19	2.28
Grain sorghum, f.o.b. vessel, Gulf ports (\$/bu.)	2.49	2.14	2.23	2.44	1.98	2.36	2.43	2.40	2.40	2.41
Soybeans, f.o.b. vessel, Gulf ports (\$/bu.)	6.37	5.02	5.26	5.06	4.97	5.39	5.35	5.06	4.46	4.73
Soybean oil, Decatur (¢/lb.)	25.78	17.51	15.01	13.37	14.21	16.49	17.08	15.46	14.38	15.23
Soybean meal, Decatur (\$/ton)	162.74	141.52	174.69	179.95	172.60	184.43	178.46	171.49	165.45	166.10
Cotton, 7-market avg. spot (¢/lb.)	67.04	52.30	57.47	62.16	37.38	37.48	36.05	33.22	28.42	31.23
Tobacco, avg. price at auction (¢/lb.)	179.77	177.82	182.73	195.96	--	--	179.06	188.49	190.58	198.03
Rice, f.o.b., mill, Houston (\$/cwt)	18.95	16.99	14.84	15.00	15.00	15.00	14.81	14.25	14.00	13.75
Inedible tallow, Chicago (¢/lb.)	17.67	12.99	9.92	--	10.00	15.00	16.25	14.15	11.18	--
Import commodities										
Coffee, N.Y. spot (\$/lb.)	1.39	1.05	0.92	0.72	0.54	0.47	0.47	0.44	0.38	0.42
Rubber, N.Y. spot (¢/lb.)	40.57	36.66	37.72	37.04	35.00	34.80	34.48	33.08	31.97	31.14
Cocoa beans, N.Y. (\$/lb.)	0.72	0.47	0.36	0.33	0.42	0.42	0.45	0.44	0.47	0.54

-- = Not available. Information contact: Mae Dean Johnson (202) 694-5299

Table 25—Trade Balance

	Fiscal year			2000			2001			
	2000	2001	2002 F	Oct	May	Jun	Jul	Aug	Sep	Oct
\$ million										
Exports										
Agricultural	50,798	52,783	54,500	4,945	4,143	4,092	3,939	4,468	3,891	5,253
Nonagricultural	650,853	639,083	--	58,452	54,773	53,755	45,948	50,296	46,486	50,089
Total ¹	701,651	691,866	--	63,397	58,916	57,847	49,887	54,764	50,377	55,342
Imports										
Agricultural	38,864	39,030	39,000	3,225	3,346	3,245	3,223	3,163	3,039	3,515
Nonagricultural	1,128,904	1,136,637	--	101,950	92,832	92,103	90,616	92,700	85,795	96,658
Total ²	1,167,768	1,175,667	--	105,175	96,178	95,348	93,839	95,863	88,834	100,173
Trade balance										
Agricultural	11,934	13,753	15,500	1,720	797	847	716	1,305	852	1,738
Nonagricultural	-478,051	-497,554	--	-43,498	-38,059	-38,348	-44,668	-42,404	-39,309	-46,569
Total ³	-466,117	-483,801	--	-41,778	-37,262	-37,501	-43,952	-41,099	-38,457	-44,831

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		2000		2001					
	1998	1999	2000	Oct	May	Jun	Jul	Aug	Sep	Oct
	1995 = 100									
Total U.S. Trade	114.0	114.2	119.0	122.6	125.1	126.2	126.2	123.9	125.8	126.3
U.S. markets										
All agricultural trade	119.2	117.5	120.2	123.1	127.5	129.5	129.3	126.4	128.2	128.8
Bulk commodities	118.3	116.6	121.2	124.0	129.3	131.6	131.1	127.9	129.9	130.4
Corn	122.1	116.3	119.2	120.4	127.4	130.0	130.2	127.1	129.2	129.6
Cotton	113.6	112.4	118.3	120.9	127.4	128.9	126.5	123.7	126.4	127.3
Rice	111.5	112.5	117.8	121.0	125.4	126.4	126.1	123.9	126.0	126.9
Soybeans	121.8	119.4	127.3	131.7	134.8	137.9	137.2	132.7	133.7	134.3
Tobacco, raw	108.1	112.8	134.3	142.1	146.5	150.0	149.3	143.9	145.0	146.6
Wheat	125.6	124.6	120.2	122.0	127.1	128.5	128.2	126.4	128.9	129.1
High-value products	119.9	118.3	119.4	122.3	126.1	127.7	127.9	125.1	126.8	127.4
Processed intermediates	115.9	115.1	120.2	123.5	126.7	128.4	128.2	125.3	126.9	127.3
Soymeal	106.6	107.2	117.0	117.3	116.4	116.8	116.7	115.1	117.2	117.1
Soyoil	89.1	98.1	105.2	107.9	109.9	109.9	109.3	108.5	109.7	109.6
Produce and horticulture	118.4	117.3	122.0	126.2	129.6	131.0	131.0	128.5	130.1	130.9
Fruits	120.4	116.8	119.2	122.4	127.4	129.0	129.1	126.9	128.8	129.7
Vegetables	115.9	113.6	114.4	117.3	120.4	120.0	120.8	120.5	122.7	123.4
High-value processed	123.9	121.4	117.8	120.0	124.4	126.1	126.5	123.8	125.6	126.4
Fruit juices	122.9	120.1	123.4	127.3	131.8	133.4	133.6	131.0	132.5	133.6
Poultry	139.2	155.0	116.9	116.4	114.5	114.4	114.7	114.0	114.7	114.8
Red meats	135.4	124.0	121.7	123.6	134.0	137.8	138.6	133.7	135.6	137.3
U.S. competitors										
All agricultural trade	115.7	122.1	135.5	143.7	143.4	145.7	144.4	139.9	140.9	141.6
Bulk commodities	122.2	130.4	134.0	140.0	141.6	142.6	140.7	137.8	140.0	140.8
Corn	113.1	120.5	134.0	141.3	140.1	142.1	141.4	138.1	138.6	139.6
Cotton	128.1	130.7	133.4	128.2	131.2	132.3	131.9	128.8	131.1	130.3
Rice	118.9	120.5	131.1	139.4	142.7	143.9	143.2	139.8	141.0	141.4
Soybeans	106.4	132.1	134.6	137.0	150.1	153.1	155.3	155.7	160.8	162.7
Tobacco, raw	115.3	127.3	121.8	126.7	126.8	127.4	126.3	123.5	125.2	125.1
Wheat	115.6	118.5	129.8	138.1	137.8	138.6	138.4	134.8	137.2	137.2
High-value products	118.4	125.2	139.1	147.9	146.9	149.5	148.3	143.3	144.3	145.0
Processed intermediates	119.9	127.1	138.2	146.1	147.1	149.3	147.9	143.7	145.6	146.3
Soymeal	107.8	132.0	136.9	140.9	152.8	155.7	156.6	155.9	160.2	161.9
Soyoil	107.1	123.3	130.0	134.2	142.3	144.8	145.3	144.1	146.9	148.4
Produce and horticulture	114.2	120.0	133.3	140.8	138.5	140.8	139.7	135.2	135.7	136.4
Fruits	121.0	123.5	135.9	143.6	144.6	145.9	145.1	141.2	142.2	142.9
Vegetables	102.4	109.2	121.7	128.2	126.7	128.6	127.7	124.1	124.4	124.7
High-value processed	118.7	125.7	141.3	151.1	149.3	152.3	151.1	145.5	146.0	146.7
Fruit juices	116.6	122.1	137.0	145.8	144.3	146.4	145.8	141.3	142.4	143.2
Poultry	109.5	121.6	134.9	142.7	144.9	147.0	146.6	143.0	143.9	145.0
Red meats	116.3	122.3	137.8	147.8	147.3	150.0	149.1	143.6	146.1	146.1
U.S. suppliers										
All agricultural trade	111.4	113.5	120.0	125.1	125.4	126.1	125.2	122.9	125.6	125.9
High-value products	108.8	111.6	118.2	123.6	122.5	123.3	123.2	120.9	123.4	123.2
Processed intermediates	112.3	114.8	121.4	127.6	127.3	127.8	127.6	125.5	128.1	128.1
Grains and feeds	112.5	113.0	117.9	122.7	123.6	123.1	123.6	122.7	124.7	125.1
Vegetable oils	123.1	120.9	130.1	138.1	139.1	140.3	139.3	136.1	138.2	138.8
Produce and horticulture	98.4	101.1	103.7	105.5	102.9	103.2	103.3	102.1	104.4	103.7
Fruits	96.5	97.2	98.0	101.6	100.3	101.2	103.3	101.9	105.7	105.4
Vegetables	88.7	84.1	81.3	82.7	78.4	78.1	78.9	78.2	80.4	78.8
High-value processed	111.8	114.9	123.7	130.4	129.9	131.0	130.8	127.9	130.4	130.3
Cocoa and products	120.3	126.1	137.6	144.3	143.9	144.6	140.5	137.2	139.6	141.2
Coffee and products	101.6	111.6	116.4	117.8	118.8	119.2	118.6	117.6	120.4	120.4
Dairy products	117.2	122.5	137.9	148.7	145.3	148.0	146.9	140.9	143.3	142.7
Fruit juices	109.2	122.3	127.8	133.4	138.8	140.8	141.9	140.2	144.1	145.1
Meats	102.1	105.6	115.4	128.5	127.9	128.3	128.3	125.8	129.7	129.0

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-11 are obtained from the Board of Governors of the Federal Reserve System. Full historical series are available back to January 1970 at

<http://usda.mannlib.cornell.edu/data-sets/international/88021/>

1. A major revision to the weighting scheme and commodity definitions was completed in May 2000. This significantly altered the series from previous versions.

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

Table 27—U.S. Agricultural Exports & Imports

	Fiscal year			Oct		Fiscal year			Oct	
	2000	2001	2002F	2000	2001	2000	2001	2002 F	2000	2001
	1,000 units					\$ million				
Exports										
Animals, live	--	--	--	--	--	609	727	--	253	228
Meats and preps., excl. poultry (mt) ¹	2,439	2,454	1,800	190	237	5,429	5,199	4,600	403	474
Dairy products	--	--	--	--	--	998	1,118	1,100	96	114
Poultry meats (mt)	2,781	3,089	3,200	286	257	1,943	2,218	2,300	198	211
Fats, oils, and greases (mt)	1,207	1,046	1,000	112	104	421	319	--	30	36
Hides and skins, incl. furskins	--	--	--	--	--	1,428	1,943	2,000	136	156
Cattle hides, whole (no.)	20,904	22,602	--	1,629	2,168	1,117	1,446	--	99	121
Mink pelts (no.)	4,352	4,277	--	166	135	111	122	--	6	5
Grains and feeds (mt) ²	103,653	98,844	--	8,519	8,208	13,789	13,830	15,500	1,133	1,207
Wheat (mt) ³	27,838	25,187	27,900	2,215	2,566	3,384	3,238	4,000	264	341
Wheat flour (mt)	837	496	600	70	59	134	107	--	14	14
Rice (mt)	3,307	3,158	3,100	228	212	905	778	700	62	46
Feed grains, incl. products (mt) ⁴	57,199	55,791	58,800	4,685	4,241	5,483	5,460	6,200	428	434
Feeds and fodders (mt)	12,951	12,741	12,900	1,203	983	2,483	2,775	2,800	239	230
Other grain products (mt)	1,521	1,472	--	119	147	1,400	1,471	--	126	143
Fruits, nuts, and preps. (mt)	3,748	3,969	--	372	373	3,877	4,097	4,800	478	475
Fruit juices, incl.										
froz. (1,000 hectoliters)	11,899	10,785	--	927	757	715	681	--	59	49
Vegetables and preps.	--	--	--	--	--	4,440	4,513	3,100	389	384
Tobacco, unmanufactured (mt)	180	176	200	9	17	1,227	1,181	1,200	68	128
Cotton, excl. linters (mt) ⁵	1,473	1,656	2,100	82	141	1,809	2,080	2,100	111	139
Seeds (mt)	720	703	--	58	55	772	727	700	66	71
Sugar, cane or beet (mt)	113	98	--	6	7	40	38	--	3	3
Oilseeds and products (mt)	36,053	37,093	38,100	4,661	5,253	8,391	8,708	8,800	1,034	1,095
Oilseeds (mt)	--	--	--	--	--	--	--	--	--	--
Soybeans (mt)	26,045	26,659	26,900	3,848	4,196	5,071	5,106	4,900	712	762
Protein meal (mt)	6,867	7,186	--	580	675	1,258	1,419	--	114	134
Vegetable oils (mt)	2,134	2,067	--	131	245	1,349	1,175	--	83	130
Essential oils (mt)	53	55	--	4	5	592	675	--	49	52
Other	--	--	--	--	--	4,318	4,728	--	438	432
Total	--	--	--	--	--	50,798	52,783	54,500	4,945	5,253
Imports										
Animals, live	--	--	--	--	--	1,735	2,198	2,200	205	239
Meats and preps., excl. poultry (mt)	1,555	1,600	1,600	121	151	3,723	4,091	4,200	297	391
Beef and veal (mt)	1,027	1,056	--	74	95	2,405	2,645	--	175	249
Pork (mt)	402	399	--	36	44	958	1,038	--	87	106
Dairy products	--	--	--	--	--	1,653	1,727	1,700	147	176
Poultry and products	--	--	--	--	--	287	258	--	24	26
Fats, oils, and greases (mt)	105	107	--	7	11	69	63	--	5	6
Hides and skins, incl. furskins (mt)	--	--	--	--	--	160	162	--	10	8
Wool, unmanufactured (mt)	25	21	--	2	2	66	53	--	4	4
Grains and feeds	--	--	--	--	--	3,038	3,187	3,200	305	366
Fruits, nuts, and preps.,										
excl. juices (mt) ⁶	8,367	8,123	8,300	588	589	4,545	4,615	5,400	310	332
Bananas and plantains (mt)	4,396	4,093	4,100	370	343	1,128	1,156	1,200	100	98
Fruit juices (1,000 hectoliters)	32,226	29,284	29,200	2,676	2,335	783	649	--	63	50
Vegetables and preps.	--	--	--	--	--	4,660	5,182	5,300	372	417
Tobacco, unmanufactured (mt)	220	211	200	14	24	651	649	700	33	54
Cotton, unmanufactured (mt)	34	49	--	6	3	28	23	--	3	2
Seeds (mt)	444	307	--	21	23	491	431	--	33	25
Nursery stock and cut flowers	--	--	--	--	--	1,165	1,156	1,100	90	91
Sugar, cane or beet (mt)	1,368	1,382	--	140	122	484	528	--	47	40
Oilseeds and products (mt)	4,075	4,077	3,800	366	287	1,871	1,689	1,900	163	135
Oilseeds (mt)	1,103	997	--	55	30	310	280	--	15	12
Protein meal (mt)	1,205	1,150	--	105	87	152	152	--	13	12
Vegetable oils (mt)	1,767	1,930	--	207	170	1,410	1,257	--	134	110
Beverages, excl. fruit										
juices (1,000 hectoliters)	--	--	--	--	--	4,701	4,991	--	454	507
Coffee, tea, cocoa, spices (mt)	2,841	2,489	--	201	214	5,218	3,978	--	346	338
Coffee, incl. products (mt)	1,411	1,213	1,200	95	90	2,906	1,761	1,700	151	120
Cocoa beans and products (mt)	1,045	898	900	76	87	1,465	1,390	1,300	121	149
Rubber and allied gums (mt)	1,249	1,059	1,000	100	94	841	668	600	65	54
Other	--	--	--	--	--	2,694	2,733	--	248	253
Total	--	--	--	--	--	38,864	39,030	39,000	3,225	3,515

F = Forecast. -- = Not available. Projections are fiscal years (Oct.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. 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			2000		2001				
	2000	2001	2002 F	Oct	May	Jun	Jul	Aug	Sep	Oct
	<i>\$ million</i>									
Region and country										
Western Europe	6,546	6,779	6,700	793	460	413	417	474	398	735
European Union ¹	6,206	6,267	6,300	708	397	385	388	455	382	700
Belgium-Luxembourg	516	626	--	54	40	32	40	49	46	57
France	348	352	--	28	20	25	36	16	21	38
Germany	912	906	--	96	72	49	69	72	55	113
Italy	559	508	--	45	27	31	28	43	46	70
Netherlands	1,390	1,397	--	154	75	98	54	68	59	125
United Kingdom	1,032	1,051	--	144	84	76	87	73	80	93
Portugal	134	138	--	11	11	5	6	9	4	18
Spain, incl. Canary Islands	642	591	--	87	26	21	17	61	32	99
Other Western Europe	340	512	400	84	63	28	30	19	16	35
Switzerland	250	422	--	75	54	22	23	8	8	25
Eastern Europe	168	191	200	16	13	11	14	12	11	14
Poland	47	83	--	5	5	4	8	6	4	5
Former Yugoslavia	67	34	--	3	1	2	1	1	1	2
Romania	12	24	--	3	3	1	1	1	1	2
Former Soviet Union	921	1,029	1,000	103	113	113	82	106	95	128
Russia	659	823	800	78	90	86	73	88	81	96
Asia	21,931	22,321	23,500	1,949	1,735	1,721	1,618	1,823	1,600	2,186
West Asia (Mideast)	2,364	2,194	2,300	249	140	180	161	225	160	310
Turkey	701	569	600	30	39	70	43	46	38	81
Iraq	8	8	--	--	--	--	--	--	--	--
Israel, incl. Gaza and W. Bank	459	436	--	39	28	24	20	48	22	48
Saudi Arabia	481	470	500	45	37	36	44	57	41	22
South Asia	415	571	700	48	62	68	68	60	59	90
Bangladesh	82	105	--	6	12	11	8	9	7	28
India	185	294	--	22	32	35	36	38	34	40
Pakistan	93	97	--	8	11	19	9	13	10	13
China	1,466	1,884	2,300	210	73	86	69	75	74	220
Japan	9,304	8,953	9,000	705	812	723	615	699	652	774
Southeast Asia	2,581	2,923	3,100	265	227	224	219	228	187	290
Indonesia	675	879	900	83	86	88	71	69	62	96
Philippines	866	838	900	77	54	50	55	71	52	67
Other East Asia	5,800	5,796	6,100	471	422	439	486	537	468	502
Korea, Rep.	2,532	2,552	2,700	180	180	203	221	250	204	202
Hong Kong	1,249	1,253	1,400	115	91	92	93	110	107	126
Taiwan	2,010	1,985	2,000	171	151	144	172	177	156	175
Africa	2,237	2,125	2,300	247	89	160	168	185	204	208
North Africa	1,522	1,467	1,600	189	49	83	116	134	149	129
Morocco	139	120	--	30	2	8	4	11	8	4
Algeria	254	211	--	21	11	13	11	12	18	26
Egypt	1,056	1,008	1,100	134	34	52	97	104	106	89
Sub-Saharan	715	659	700	58	40	77	52	51	55	79
Nigeria	160	233	--	17	16	36	26	20	23	26
S. Africa	165	108	--	10	8	11	10	11	7	7
Latin America and Caribbean	10,626	11,572	11,800	968	961	904	940	1,140	892	1,092
Brazil	253	219	200	18	17	18	21	18	14	23
Caribbean Islands	1,463	1,399	1,300	132	111	111	103	117	109	134
Central America	1,132	1,185	1,100	88	92	93	95	120	95	108
Colombia	427	442	500	39	33	44	38	39	34	39
Mexico	6,317	7,289	7,700	613	618	551	584	745	570	697
Peru	200	182	--	8	19	16	21	21	17	27
Venezuela	405	416	400	42	38	45	44	51	26	33
Canada	7,525	8,011	8,500	727	723	724	649	664	624	768
Oceania	488	473	500	48	39	36	32	38	41	51
Total	50,798	52,783	54,500	4,945	4,143	4,092	3,939	4,468	3,891	5,253

F = Forecast. -- = Not available. Based on fiscal year beginning Oct. 1 and ending Sep. 30. 1. Austria, Finland, and Sweden are included in the European Union. Note: Adjusted for transshipments through Canada for 1998 and 1999 through December 1999, transshipments are not distributed by country for 2000 and 2001, 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

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001F
	<i>\$ billion</i>									
Final crop output	89.0	82.6	100.3	95.7	115.5	112.3	101.5	93.2	95.3	97.3
Food grains	8.5	8.3	9.5	10.4	10.8	10.4	8.8	7.0	6.6	6.7
Feed crops	20.1	20.2	20.3	24.5	27.3	27.1	22.7	19.6	20.0	21.4
Cotton	5.2	5.3	6.7	6.9	7.0	6.3	6.1	4.7	4.6	4.0
Oil crops	13.3	13.2	14.7	15.5	16.3	19.7	17.4	13.6	13.9	14.8
Tobacco	3.0	2.9	2.7	2.5	2.8	2.9	2.8	2.3	2.3	1.8
Fruits and tree nuts	10.2	10.3	10.3	11.1	11.9	13.1	11.6	12.3	12.7	13.4
Vegetables	11.8	13.7	14.1	15.0	14.5	14.7	15.2	15.2	15.9	16.2
All other crops	13.7	13.7	14.7	15.0	15.8	16.9	17.2	17.9	18.2	18.7
Home consumption	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Value of inventory adjustment ¹	3.2	-5.3	7.2	-5.3	9.0	1.0	-0.3	0.4	1.0	0.2
Final animal output	87.2	92.1	89.8	87.8	92.1	96.5	94.2	95.3	99.3	108.9
Meat animals	47.7	51.0	46.7	44.9	44.2	49.7	43.3	45.6	53.0	55.0
Dairy products	19.7	19.3	20.0	19.9	22.8	20.9	24.1	23.2	20.6	25.3
Poultry and eggs	15.5	17.4	18.5	19.1	22.5	22.3	22.9	22.9	21.8	24.2
Miscellaneous livestock	2.7	3.0	3.2	3.4	3.6	3.6	3.7	3.8	4.1	4.1
Home consumption	0.5	0.4	0.4	0.4	0.3	0.4	0.3	0.4	0.4	0.4
Value of inventory adjustment ¹	1.0	1.1	1.1	0.2	-1.1	-0.4	-0.3	-0.6	-0.6	0.0
Services and forestry	15.2	17.0	18.1	19.9	20.8	22.2	23.7	25.4	24.0	24.3
Machine hire and customwork	1.8	1.9	2.1	1.9	2.2	2.4	2.2	2.0	2.2	2.2
Forest products sold	2.2	2.5	2.6	2.8	2.7	2.9	3.1	2.7	2.8	2.8
Other farm income	4.1	4.6	4.3	5.8	6.2	6.9	8.7	10.2	8.7	8.8
Gross imputed rental value of farm dwellings	7.2	8.1	9.0	9.4	9.8	10.1	9.8	10.4	10.4	10.5
Final agricultural sector output²	191.4	191.6	208.2	203.5	228.4	231.0	219.5	213.8	218.6	230.6
<i>Minus</i> Intermediate consumption outlays:	93.4	100.7	104.9	109.7	113.2	121.0	118.6	119.6	122.4	127.2
Farm origin	38.6	41.3	41.3	41.8	42.7	46.9	44.8	45.6	47.7	48.6
Feed purchased	20.1	21.4	22.6	23.8	25.2	26.3	25.0	24.5	24.5	25.6
Livestock and poultry purchased	13.6	14.7	13.3	12.5	11.3	13.8	12.6	13.8	15.8	15.4
Seed purchased	4.9	5.2	5.4	5.5	6.2	6.7	7.2	7.2	7.3	7.5
Manufactured inputs	22.7	23.1	24.4	26.1	28.6	29.2	28.2	27.1	28.7	30.8
Fertilizers and lime	8.3	8.4	9.2	10.0	10.9	10.9	10.6	9.9	10.0	11.8
Pesticides	6.5	6.7	7.2	7.7	8.5	9.0	9.0	8.6	8.5	8.5
Petroleum fuel and oils	5.3	5.4	5.3	5.4	6.0	6.2	5.6	5.6	7.2	7.3
Electricity	2.6	2.7	2.7	3.0	3.2	3.0	2.9	3.0	3.0	3.2
Other intermediate expenses	32.1	36.2	39.2	41.7	41.9	44.9	45.6	46.9	46.0	47.7
Repair and maintenance of capital items	8.5	9.2	9.1	9.5	10.3	10.4	10.4	10.5	10.8	11.2
Machine hire and customwork	3.8	4.4	4.8	4.8	4.7	4.9	5.4	5.3	5.0	5.2
Marketing, storage, and transportation	4.5	5.6	6.8	7.2	6.9	7.1	6.9	7.3	7.5	7.8
Contract labor	1.7	1.8	1.8	2.0	2.1	2.5	2.4	2.5	2.7	2.8
Miscellaneous expenses	13.6	15.2	16.7	18.3	17.9	19.9	20.6	21.4	20.0	20.7
<i>Plus</i> Net government transactions:	2.7	6.9	1.0	0.1	0.1	0.1	4.9	14.2	15.5	12.5
+ Direct government payments	9.2	13.4	7.9	7.3	7.3	7.5	12.4	21.5	22.9	20.0
- Motor vehicle registration and licensing fees	0.4	0.4	0.4	0.5	0.4	0.5	0.5	0.4	0.5	0.5
- Property taxes	6.1	6.2	6.5	6.7	6.8	7.0	7.0	6.8	6.9	7.0
Gross value added	100.7	97.8	104.3	93.9	115.3	110.1	105.7	108.4	111.7	115.9
<i>Minus</i> Capital consumption	18.3	18.3	18.6	19.2	19.4	19.6	20.0	20.3	20.6	20.7
Net value added²	82.4	79.5	85.7	74.8	95.9	90.5	85.8	88.1	91.1	95.1
<i>Minus</i> Factor payments:	34.6	34.8	36.8	37.8	41.1	42.0	42.9	43.8	44.7	45.8
Employee compensation (total hired labor)	12.3	13.2	13.5	14.3	15.2	16.0	16.9	17.5	17.3	18.1
Net rent received by nonoperator landlords	11.2	10.9	11.8	10.9	13.0	12.9	12.7	12.8	13.2	13.4
Real estate and non-real estate interest	11.0	10.7	11.6	12.6	13.0	13.1	13.4	13.6	14.1	14.2
Net farm income²	47.8	44.7	48.9	36.9	54.8	48.5	42.9	44.3	46.4	49.4

Values in last two columns are preliminary or forecast. 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 and is the sum of income from production earned by all factors of production. Net farm income is farm operators' share of income from the sector's production activities. The concept presented is consistent with that employed by the Organization for Economic Cooperation and Development. *Information contact: Roger Strickland: rogers@ers.usda.gov*
To confirm that this table contains the current forecast, go to <http://www.ers.usda.gov/briefing/farmincome/fore/fore.htm>

Table 30—Farm Income Statistics

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001F
<i>\$ billion</i>										
Cash income statement										
1. Cash receipts	171.4	178.2	181.3	188.0	199.3	207.6	195.8	188.1	193.6	205.5
Crops ¹	85.7	87.7	93.0	100.8	106.3	111.2	101.7	92.6	94.1	97.0
Livestock	85.8	90.5	88.3	87.2	92.9	96.5	94.1	95.5	99.5	108.5
2. Direct Government payments	9.2	13.4	7.9	7.3	7.3	7.5	12.4	21.5	22.9	20.0
3. Farm-related income ²	8.0	9.0	9.0	10.5	11.0	12.1	13.9	15.0	13.6	13.8
4. Gross cash income (1+2+3)	188.6	200.6	198.2	205.9	217.7	227.3	222.1	224.6	230.1	239.3
5. Cash expenses ³	133.5	141.2	147.5	153.3	159.9	168.7	167.4	168.9	172.6	178.5
6. Net cash income (4-5)	55.1	59.4	50.7	52.5	57.7	58.5	54.8	55.7	57.5	60.8
Farm income statement										
7. Gross cash income (4)	188.6	200.6	198.2	205.9	217.7	227.3	222.1	224.6	230.1	239.3
8. Noncash income ⁴	7.8	8.7	9.6	9.9	10.2	10.6	10.3	10.9	11.0	11.1
9. Value of inventory adjustment	4.2	-4.2	8.3	-5.0	7.9	0.6	-0.6	-0.2	0.5	0.2
10. Gross farm income (7+8+9)	200.6	205.0	216.0	210.8	235.8	238.5	231.8	235.3	241.5	250.6
11. Total production expenses	152.8	160.4	167.2	173.8	181.0	190.0	189.0	191.0	195.1	201.2
12. Net farm income (10-11)	47.8	44.7	48.9	36.9	54.8	48.5	42.9	44.3	46.4	49.4

Values for last 2 years are preliminary or forecast. Numbers in parentheses indicate the combination of items required to calculate an item. Totals may not add due to rounding. 1. Includes commodities placed under CCC loans and profits made on loans redeemed. 2. Income from custom labor, machine hire, recreational activities, forest product sales, and other farm sources. 3. Excludes depreciation and perquisites to hired labor. Excludes farm operator dwellings. 4. Value of farm products consumed on farms where produced plus the imputed rental value of farm dwellings.

Information contact: Roger Strickland: rogers@ers.usda.gov

To confirm that this table contains the current forecast, go to <http://www.ers.usda.gov/briefing/farmincome/fore/fore.htm>

Table 31—Average Income to Farm Operator Households¹

	1993	1994	1995	1996	1997	1998	1999	2000P ²	2001F
<i>\$ per farm</i>									
Net cash farm business income ²	11,248	11,389	11,218	13,502	12,676	14,357	13,194	11,175	11,093
Less depreciation ³	6,219	6,466	6,795	6,906	6,578	7,409	7,027	7,357	--
Less wages paid to operator ⁴	454	425	522	531	513	637	499	608	--
Less farmland rental income ⁵	534	701	769	672	568	543	802	757	--
Less adjusted farm business income due to other household(s) ⁶	872	815	649	1,094	*1,505	1,332	1,262	801	--
<i>\$ per farm operator household</i>									
Equals adjusted farm business income	3,168	2,981	2,484	4,300	3,513	4,436	3,603	*1,652	--
Plus wages paid to operator	454	425	522	531	513	637	499	608	--
Plus net income from farmland rental ⁷	--	--	1,053	1,178	945	868	1,312	--	--
Equals farm self-employment income	3,623	3,407	4,059	6,009	4,971	5,941	5,415	*2,260	--
Plus other farm-related earnings ⁸	1,192	970	661	1,898	1,234	1,165	944	339	--
Equals earnings of the operator household from farming activities	4,815	4,376	4,720	7,906	6,205	7,106	6,359	2,598	2,725
Plus earnings of the operator household from off-farm sources ⁹	35,408	38,092	39,671	42,455	46,358	52,628	57,988	58,709	59,296
Equals average farm operator household income	40,223	42,469	44,392	50,361	52,562	59,734	64,347	61,307	62,021
<i>\$ per U.S. household</i>									
U.S. average household income ¹⁰	41,428	43,133	44,938	47,123	49,692	51,855	54,842	--	--
<i>Percent</i>									
Average farm operator household income as percent of U.S. average household income	97.1	98.5	98.8	106.9	105.8	115.2	117.3	--	--
Average operator household earnings from farming activities as percent of average operator household income	12.0	10.3	10.6	15.7	11.8	11.9	9.9	5.2	--

-- = Not available. Values in last two columns are preliminary or forecast. 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. A component of farm-sector income. Excludes income 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 income of farms organized as proprietorships, partnerships, and family corporations. 3. Consistent with the CPS definition of self-employed income, reported depreciation expenses are subtracted from net cash farm income. The ARMS collects data on farm business depreciation used for tax purposes. 4. Wages paid to the operator are excluded 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. 5. Gross rental income is excluded because net rental income from farm operation is added below to income received by the household. 6. 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. 7. Includes net rental income from the farm business. Also includes net rental income from farmland held by household members that is not part of the farm business. In 1992, gross rental income from the farm business was used because net rental income data were not collected. In 1993 and 1994, net rental income data were collected as part of off-farm income. 8. Wages paid to other operator household members by the farm business, and net income from a farm business other than the one surveyed. In 1996, also includes the value of commodities provided to household members for farm work. 9. Wages, salaries, net income from nonfarm businesses, interest, dividends, transfer payments, etc. In 1993 and 1994, also includes net rental income from farmland. 10. From the CPS. Sources: U.S. Department of Agriculture, Economic Research Service, 1992, 1993, 1994, and 1995 Farm Costs and Returns Survey (FCRS), and 1996 and 1997 Agricultural Resource Management Study for farm operator household data. U.S. Department of Commerce, Census Bureau Current Population Survey (PCS), for 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

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001F
	<i>\$ billion</i>									
Farm assets	868.3	910.2	936.1	967.6	1,004.8	1,053.0	1,085.3	1,140.8	1,188.3	1,222.1
Real estate	640.8	677.6	704.1	740.5	769.5	808.2	840.4	886.4	929.5	957.3
Livestock and poultry ¹	71.0	72.8	67.9	57.8	60.3	67.1	63.4	73.2	76.8	81.2
Machinery and motor vehicles	85.4	86.4	88.1	89.4	89.8	90.4	91.7	92.3	92.0	92.7
Crops stored ^{2,3}	24.2	23.3	23.3	27.4	31.7	32.7	29.9	28.3	27.9	27.8
Purchased inputs	3.9	3.8	5.0	3.4	4.4	4.9	5.0	4.0	4.9	5.0
Financial assets	43.1	46.3	47.6	49.1	49.0	49.7	54.8	56.6	57.1	58.2
Total farm debt	139.1	142.0	146.8	150.8	156.1	165.4	172.9	176.4	184.0	185.6
Real estate debt ³	75.4	76.0	77.7	79.3	81.7	85.4	89.6	94.2	97.5	98.8
Non-real estate debt ⁴	63.6	65.9	69.1	71.5	74.4	80.1	83.2	82.2	86.5	86.8
Total farm equity	729.3	768.2	789.3	816.8	848.7	887.6	912.4	964.4	1,004.3	1,036.5
	<i>Percent</i>									
Selected ratios										
Debt to equity	19.1	18.5	18.6	18.5	18.4	18.6	18.9	18.3	18.3	17.9
Debt to assets	16.0	15.6	15.7	15.6	15.5	15.7	15.9	15.5	15.5	15.2

Last update: October 24, 2001. F = forecast. P = preliminary. Numbers may not add due to rounding. 1. As of December 31. 2. Non-CCC crops held on farms plus value above loan rates for crops held under CCC. 3. Includes CCC storage and drying facilities loans, but excludes debt on operator dwellings. 4. Excludes debt for nonfarm purposes. *Information contacts: Ken Erickson, 202-694-5565, email: erickson@ers.usda.gov, and Jim Ryan, 202-694-5586, email: jimryan@ers.usda.gov*

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

Table 33—Cash Receipts from Farming

	Annual			2000		2001				
	1998	1999	2000	Sep	Apr	May	Jun	Jul	Aug	Sep
	<i>\$ million</i>									
Commodity cash receipts¹	195,816	188,132	193,586	18,037	14,873	15,408	14,871	17,305	16,446	18,010
Livestock and products	94,121	95,547	99,473	8,157	8,290	9,196	8,839	9,828	8,719	8,623
Meat animals	43,339	45,614	52,994	4,395	4,180	4,947	4,466	4,930	4,277	4,150
Dairy products	24,114	23,207	20,622	1,623	2,021	2,195	2,223	2,218	2,160	2,182
Poultry and eggs	22,947	22,898	21,789	1,769	1,856	1,811	1,872	1,923	1,993	1,921
Other	3,720	3,828	4,067	370	234	242	279	757	290	370
Crops	101,695	92,585	94,113	9,880	6,582	6,212	6,032	7,476	7,726	9,387
Food grains	8,822	6,965	6,639	772	293	358	814	1,309	759	748
Feed crops	22,655	19,622	19,960	1,949	1,058	940	1,113	1,465	1,908	2,207
Cotton (lint and seed)	6,073	4,698	4,555	352	83	82	61	90	135	196
Tobacco	2,803	2,273	2,315	573	1	0	0	192	363	353
Oil-bearing crops	17,377	13,608	13,857	1,415	541	441	447	747	806	1,303
Vegetables and melons	15,160	15,236	15,889	1,909	1,814	1,895	1,454	1,329	1,372	1,677
Fruits and tree nuts	11,649	12,287	12,692	1,250	689	911	1,163	1,318	1,389	1,241
Other	17,156	17,894	18,206	1,661	2,104	1,583	980	1,028	996	1,661
Government payments	12,380	21,513	22,896	8,314	317	--	--	--	--	--
Total	208,196	209,645	216,482	26,351	15,190	15,408	14,871	17,305	16,446	18,010

-- = Not available. Annual values for the most recent year and monthly values for current year are preliminary. 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			
	1999	2000	Aug 2001	Sep 2001	1999	2000	Aug 2001	Sep 2001	1999	2000	Aug 2001	Sep 2001
<i>\$ million</i>												
North Atlantic												
Maine	286	262	23	21	208	242	34	20	494	504	57	41
New Hampshire	63	60	5	5	92	94	8	11	155	154	13	15
Vermont	472	441	44	44	69	67	3	5	541	508	46	49
Massachusetts	101	91	8	7	279	301	30	43	380	392	37	50
Rhode Island	8	8	1	1	39	40	2	4	47	48	2	5
Connecticut	180	165	13	12	303	337	12	96	483	503	25	109
New York	2,049	1,934	202	196	1,098	1,189	93	153	3,148	3,123	295	349
New Jersey	193	193	8	20	536	619	46	57	729	812	54	78
Pennsylvania	2,890	2,781	250	250	1,189	1,252	80	117	4,079	4,033	330	367
North Central												
Ohio	1,777	1,751	166	152	2,695	2,654	193	330	4,472	4,405	359	483
Indiana	1,583	1,695	167	167	2,814	2,886	187	361	4,397	4,581	354	528
Illinois	1,525	1,710	177	125	5,086	5,312	421	466	6,611	7,022	598	591
Michigan	1,328	1,335	129	128	2,139	2,140	167	218	3,467	3,475	297	346
Wisconsin	4,136	3,804	386	379	1,362	1,416	135	160	5,498	5,221	520	538
Minnesota	3,550	3,875	334	316	3,543	3,647	332	324	7,093	7,522	665	640
Iowa	4,713	5,747	440	593	5,036	5,027	500	383	9,749	10,774	940	976
Missouri	2,480	2,677	213	195	1,796	1,890	159	235	4,276	4,567	372	430
North Dakota	633	639	42	44	2,091	2,050	187	264	2,724	2,689	228	309
South Dakota	1,830	2,035	148	139	1,743	1,755	156	124	3,573	3,790	304	263
Nebraska	5,426	5,923	489	427	2,996	3,029	202	266	8,422	8,952	690	693
Kansas	5,012	5,488	467	412	2,464	2,417	212	165	7,477	7,905	678	577
Southern												
Delaware	566	557	54	56	159	184	30	26	725	741	84	82
Maryland	937	848	78	83	559	625	42	78	1,496	1,473	120	161
Virginia	1,579	1,549	136	131	702	732	62	113	2,281	2,281	198	244
West Virginia	334	339	31	31	53	51	9	3	387	391	40	35
North Carolina	3,840	4,275	370	395	2,861	3,135	341	410	6,700	7,410	711	804
South Carolina	774	792	66	65	638	752	89	91	1,412	1,544	156	157
Georgia	3,329	3,105	289	293	1,901	1,945	172	194	5,230	5,050	461	487
Florida	1,361	1,378	120	107	5,495	5,573	117	192	6,856	6,951	237	299
Kentucky	2,254	2,335	106	216	1,301	1,271	31	102	3,554	3,605	137	318
Tennessee	1,002	990	71	67	956	1,030	68	94	1,958	2,020	139	161
Alabama	2,746	2,684	258	272	658	588	21	46	3,404	3,272	278	318
Mississippi	2,145	2,037	185	189	1,012	886	37	74	3,156	2,922	222	264
Arkansas	3,397	3,248	290	290	1,816	1,639	87	249	5,213	4,887	377	539
Louisiana	622	653	50	51	1,197	1,167	45	97	1,819	1,820	94	148
Oklahoma	3,136	3,441	287	258	842	779	101	55	3,978	4,220	389	312
Texas	8,484	9,162	767	697	4,588	4,181	334	372	13,071	13,344	1,100	1,069
Western												
Montana	932	1,102	107	82	787	704	55	65	1,719	1,806	161	147
Idaho	1,616	1,628	170	165	1,666	1,761	199	221	3,282	3,389	369	387
Wyoming	679	795	103	79	171	160	23	14	850	954	126	93
Colorado	3,016	3,332	240	252	1,305	1,229	101	130	4,321	4,561	341	382
New Mexico	1,441	1,613	153	151	529	473	47	45	1,969	2,086	200	196
Arizona	991	1,063	95	96	1,233	1,226	142	165	2,224	2,290	236	261
Utah	713	770	63	71	244	240	19	27	957	1,010	82	98
Nevada	212	237	22	18	126	149	19	20	338	386	41	38
Washington	1,648	1,710	172	160	3,201	3,339	299	449	4,849	5,050	471	609
Oregon	793	826	72	63	2,195	2,223	261	339	2,988	3,049	332	403
California	6,651	6,269	646	640	18,346	19,241	1,780	1,876	24,997	25,510	2,426	2,516
Alaska	29	32	3	3	21	20	2	2	50	52	5	5
Hawaii	88	87	7	7	444	444	37	36	532	530	45	43
U.S.	95,547	99,473	8,719	8,623	92,585	94,113	7,726	9,387	188,132	193,586	16,446	18,010

Annual values for the most recent year are preliminary. Estimates as of end of current month. 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									
	1993	1994	1995	1996	1997	1998	1999	2000	2001 ⁴	2002 ⁴
	<i>\$ million</i>									
Commodity/Program										
Feed grains:										
Corn	5,143	625	2,090	2,021	2,587	2,873	5,402	10,135	4,355	3,434
Grain sorghum	410	130	153	261	284	296	502	979	268	313
Barley	186	202	129	114	109	168	224	397	147	104
Oats	16	5	19	8	8	17	41	61	60	24
Corn and oat products	10	10	1	0	0	0	0	5	14	8
Total feed grains	5,765	972	2,392	2,404	2,988	3,354	6,169	11,577	4,844	3,883
Wheat and products	2,185	1,729	803	1,491	1,332	2,187	3,435	5,320	1,645	1,225
Rice	887	836	814	499	459	491	911	1,774	950	1,026
Upland cotton	2,239	1,539	99	685	561	1,132	1,882	3,808	1,095	1,871
Tobacco	235	693	-298	-496	-156	376	113	634	24	-97
Dairy	253	158	4	-98	67	291	480	684	1,232	100
Soybeans	109	-183	77	-65	5	139	1,289	2,839	3,029	2,765
Peanuts	-13	37	120	100	6	-11	21	35	65	0
Sugar	-35	-24	-3	-63	-34	-30	-51	465	-45	-37
Honey	22	0	-9	-14	-2	0	2	7	31	-10
Wool and mohair	179	211	108	55	0	0	10	-2	23	-1
Operating expense ¹	6	6	6	6	6	5	4	60	5	5
Interest expenditure	129	-17	-1	140	-111	76	210	736	319	546
Export programs ²	2,193	1,950	1,361	-422	125	212	165	216	171	641
1988-2000 Disaster/tree/ livestock assistance	944	2,566	660	95	130	3	2,241	1,452	2,799	0
Conservation Reserve Program	0	0	0	2	1,671	1,693	1,462	1,511	1,700	1,796
Other conservation programs	0	0	0	7	105	197	292	263	366	283
Other	949	-137	-103	320	104	28	588	886	1,820	1,287
Total	16,047	10,336	6,030	4,646	7,256	10,143	19,223	32,265	20,073	15,283
Function										
Price support loans (net)	2,065	527	-119	-951	110	1,128	1,455	3,369	3,125	3,813
Cash direct payments: ³										
Production flexibility contract	0	0	0	5,141	6,320	5,672	5,476	5,057	4,074	3,949
Market loss assistance	0	0	0	0	0	0	3,011	11,046	853	0
Deficiency	8,607	4,391	4,008	567	-1,118	-7	-3	1	0	0
Loan deficiency	387	495	29	0	0	478	3,360	6,419	5,565	4,908
Oilseed	0	0	0	0	0	0	0	460	496	0
Cotton user marketing	114	149	88	34	6	416	280	446	203	85
Other	35	22	9	61	1	0	1	460	553	14
Conservation Reserve Program	0	0	0	2	1,671	1,693	1,435	1,476	1,672	1,796
Other conservation programs	0	0	0	0	85	156	247	215	306	233
Noninsured Assistance (NAP)	0	0	0	2	52	23	54	38	169	159
Total direct payments	9,143	5,057	4,134	5,807	7,017	8,431	13,861	25,618	13,891	11,144
1988-2000 crop disaster	872	2,461	577	14	2	-2	1,913	1,251	2,250	0
Emergency livestock/tree/DRAP livestock indem./forage assist.	72	105	83	81	128	5	328	201	549	0
Purchases (net)	525	293	-51	-249	-60	207	668	120	-1,334	-1,792
Producer storage payments	9	12	23	0	0	0	0	0	0	0
Processing, storage, and transportation	136	112	72	51	33	38	62	81	109	86
Export donations ocean transportation	352	156	50	69	34	40	323	370	448	335
Operating expense ¹	6	6	6	6	6	5	4	60	5	5
Interest expenditure	129	-17	-1	140	-111	76	210	736	319	546
Export programs ²	2,193	1,950	1,361	-422	125	212	165	216	171	641
Other	545	-326	-105	100	-28	3	234	243	540	505
Total	16,047	10,336	6,030	4,646	7,256	10,143	19,223	32,265	20,073	15,283

1. Does not include CCC Transfers to General Sales Manager. 2. 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. 3. Includes cash payments only. Excludes generic certificates in FY 1986-96. 4. Estimated in FY 2002 Mid-Session Review Budget which was released on August 22, 2001 based on May 2001 supply & demand estimates. The CCC outlays shown for 1996-2002 include the impact of the Federal Agriculture Improvement and Reform Act of 1996, which was enacted on April 4, 1996, and FY 2000-FY 2002 outlays include the impact of the Agricultural Risk Protection Act of 2000, which was enacted on June 20, 2000. FY 2001 outlays do not include the impact of the \$5.5 billion of payments mandated by P.L. 107-25.

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			2001			Year-to-date cumulative		
	1998	1999	2000	Sep	Oct	Nov	Sep	Oct	Nov
	<i>\$ billion</i>								
Sales ¹									
At home ²	390.1	407.6	442.4	36.8	37.6	37.4	332.6	370.3	407.7
Away from home ³	310.4	332.7	359.9	29.7	30.6	29.4	276.8	307.3	336.8
	<i>1998 \$ billion</i>								
Sales ¹									
At home ²	390.1	400.0	424.4	34.0	34.6	34.5	310.0	344.5	379.1
Away from home ³	310.4	324.3	341.7	27.4	28.1	27.0	257.4	385.5	312.4
	<i>Percent change from year earlier (\$ billion)</i>								
Sales ¹									
At home ²	3.9	4.5	8.5	1.2	2.9	-0.7	2.8	2.8	2.5
Away from home ³	4.4	7.2	8.2	0.9	2.8	4.1	4.6	4.4	4.4
	<i>Percent change from year earlier (1998 \$ billion)</i>								
Sales ¹									
At home ²	1.6	2.5	6.1	-1.9	-0.7	-4.0	-0.5	-0.5	-0.8
Away from home ³	1.7	4.5	5.4	-2.0	-0.3	0.9	1.7	1.5	1.5

-- = 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			2000			2001			
	1998	1999	2000	Nov	Jun	Jul	Aug	Sep	Oct	Nov
Rail freight rate index ¹ (Dec. 1984=100)										
All products	113.4	113.0	114.5	115.4	116.0	116.1	116.3	116.3	120.6	119.1
Farm products	123.9	121.7	123.1	124.6	122.4	123.9	124.6	124.7	124.6	125.0
Grain food products	107.4	99.7	100.4	101.1	102.8	102.9	103.8	103.4	103.0	103.4
Grain shipments										
Rail carloadings (1,000 cars) ²	22.8	24.2	23.2	21.4	20.1	20.2	21.4	20.7	26.1	23.1
Barge shipments (mil. ton) ³	3.0	3.5	3.1	3.8	4.2	4.3	3.9	2.4	2.6	--
Fresh fruit and vegetable shipments ⁴										
Piggy back (mil. cwt)	0.9	0.7	0.8	0.8	1.0	1.0	0.7	0.7	0.6	0.8
Rail (mil. cwt)	1.2	1.1	1.4	2.1	2.2	1.2	0.9	0.9	1.3	1.7
Truck (mil. cwt)	42.2	45.2	45.0	39.9	56.8	43.9	42.5	37.1	40.9	40.3

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

-- = Not available. Values for latest year preliminary. 1. Includes miscellaneous items not shown separately. 2. Source: Economic Research Service.

3. Source: Bureau of Labor Statistics. *Information contact: John Jones (202) 694-5614*

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Food Supply & Use

Table 39—Per Capita Consumption of Major Food Commodities¹

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
	Lbs.									
Red meats ^{2,3,4}	112.3	111.9	114.0	112.1	114.7	115.1	112.8	111.0	115.6	117.7
Beef	63.9	63.1	62.8	61.5	63.6	64.4	65.0	63.8	64.9	65.8
Veal	0.9	0.8	0.8	0.8	0.8	0.8	1.0	0.9	0.7	0.6
Lamb & mutton	1.0	1.0	1.0	1.0	0.9	0.9	0.8	0.8	0.9	0.9
Pork	46.4	46.9	49.4	48.9	49.5	49.0	45.9	45.5	49.2	50.5
Poultry ^{2,3,4}	56.3	58.3	60.8	62.5	63.3	62.9	64.1	64.2	65.0	68.3
Chicken	42.4	44.2	46.7	48.5	49.3	48.8	49.5	50.3	50.8	54.2
Turkey	13.8	14.1	14.1	14.0	14.1	14.1	14.6	13.9	14.2	14.1
Fish and shellfish ³	15.0	14.8	14.7	14.9	15.1	14.9	14.7	14.5	14.8	15.2
Eggs ⁴	30.2	30.1	30.3	30.4	30.6	30.2	30.4	30.7	31.8	32.8
Dairy products										
Cheese (excluding cottage) ^{2,5}	24.6	25.0	26.0	26.2	26.8	27.3	27.7	28.0	28.3	29.8
American	11.1	11.1	11.3	11.4	11.5	11.8	12.0	12.0	12.2	13.0
Italian	9.0	9.4	10.0	9.8	10.3	10.4	10.8	11.0	11.3	11.8
Other cheeses ⁶	4.5	4.6	4.7	5.0	5.0	5.0	5.0	5.0	4.8	5.0
Cottage cheese	3.4	3.3	3.1	2.9	2.8	2.7	2.6	2.7	2.7	2.7
Beverage milks ²	221.8	221.1	218.2	213.4	213.6	209.8	210.0	206.8	204.6	203.8
Fluid whole milk ⁷	90.4	87.3	84.0	80.1	78.8	75.3	74.6	72.7	71.6	72.4
Fluid lower fat milk ⁸	108.5	109.9	109.2	106.6	106.0	102.6	101.7	99.8	98.6	98.2
Fluid skim milk	22.9	23.9	25.0	26.7	28.8	31.9	33.7	34.3	34.4	33.2
Fluid cream products ⁹	7.6	7.7	8.0	8.0	8.1	8.4	8.7	9.0	9.2	9.7
Yogurt (excluding frozen)	4.0	4.2	4.2	4.3	4.7	5.1	4.8	5.1	5.1	4.9
Ice cream	15.8	16.3	16.3	16.1	16.1	15.7	15.9	16.4	16.6	16.8
Lowfat ice cream ¹⁰	7.7	7.4	7.1	6.9	7.6	7.5	7.6	7.9	8.3	7.9
Frozen yogurt	2.8	3.5	3.1	3.5	3.5	3.5	2.6	2.1	2.2	2.1
All dairy products, milk equivalent, milkfat basis ¹¹	568.3	565.6	565.8	574.1	585.9	583.8	574.6	577.6	581.7	597.9
Fats and oils--total fat content	63.0	64.8	66.8	69.7	68.0	66.3	65.3	64.9	65.6	68.5
Butter and margarine (product weight)	15.3	15.0	15.4	15.8	14.7	13.7	13.5	12.8	12.8	12.9
Shortening	22.2	22.4	22.4	25.1	24.1	22.5	22.3	20.9	21.0	21.6
Lard and edible tallow (direct use)	2.2	1.8	3.5	3.4	4.2	4.3	4.8	4.1	5.2	5.7
Salad and cooking oils	25.3	26.4	27.2	26.9	26.2	26.9	26.1	28.6	27.9	29.4
Fruits and vegetables ¹²	656.0	650.2	677.5	691.4	705.6	694.3	710.8	717.9	702.4	719.0
Fruit	272.6	255.3	283.7	283.2	290.9	284.9	290.2	296.9	284.4	297.9
Fresh fruits	116.3	113.0	123.5	124.5	126.3	124.1	128.1	131.9	131.3	132.5
Canned fruit	21.0	19.8	22.9	20.7	21.0	17.5	18.8	20.4	17.4	19.6
Dried fruit	12.1	12.3	10.8	12.6	12.8	12.8	11.3	10.8	12.4	10.5
Frozen fruit	3.8	3.8	3.9	3.7	3.8	4.2	4.0	3.7	4.2	3.7
Selected fruit juices	119.0	106.0	121.9	121.3	126.6	125.9	127.8	129.3	118.8	131.0
Vegetables	383.5	394.9	393.9	408.2	414.6	409.4	420.6	421.0	418.0	421.2
Fresh	167.1	167.4	171.1	178.1	184.5	179.1	184.1	188.9	185.5	192.1
Canning	111.5	114.3	112.2	112.8	112.3	110.8	109.5	107.8	109.3	105.7
Freezing	66.8	72.6	70.9	76.0	78.4	79.9	84.6	83.0	81.8	82.5
Dehydrated and chips	31.0	32.8	31.5	33.6	31.0	31.3	34.5	33.3	33.4	32.3
Pulses	7.1	7.8	8.1	7.7	8.4	8.4	8.0	8.1	7.9	8.6
Peanuts (shelled)	6.0	6.5	6.2	6.1	5.8	5.7	5.7	5.9	5.9	6.4
Tree nuts (shelled)	2.4	2.2	2.2	2.4	2.3	1.9	2.0	2.1	2.3	2.7
Flour and cereal products ¹³	181.0	182.7	185.7	190.7	194.0	192.8	199.2	200.9	198.4	201.9
Wheat flour	136.0	137.0	138.9	143.3	144.5	141.8	148.7	149.5	146.0	148.4
Rice (milled basis)	15.8	16.2	16.7	16.7	18.1	18.9	17.8	18.4	18.9	19.4
Caloric sweeteners ¹⁴	136.9	137.9	141.2	144.5	147.4	149.8	150.7	154.0	155.1	158.4
Coffee (green bean equiv.)	10.3	10.3	10.0	9.1	8.2	8.0	8.9	9.3	9.5	10.0
Cocoa (chocolate liquor equiv.)	4.3	4.6	4.6	4.3	3.9	3.6	4.2	4.1	4.4	4.6

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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- *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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 Rural economy, U.S.: 1997—11/22; 1998—2/9, 4/16; 2000—6-7/19 (and agriculture), 10/15 (farm payments); 2001—8/18
 Russia: 1997—1-2/8 (grain and meat), 12/8 (beef); 1998—6-7/12 (livestock trade), 6-7/24 (livestock); 1999—6-7/15 (economic crisis); 2001—3/7 (reform), 3/19, 11/3 (poultry) (see also Former Soviet Union)
- S**
 Safety net, farm: 2000—1-2/19, 5/19; 2001—4/20
 Salmon: 1998—5/10 (see also Aquaculture)
 Sanitary and phytosanitary restrictions: 1997—6/17,23, 11/30; 1998—12/31
 Saudi Arabia: 1997—5/18
 Savings: 1999—5/22
 Segregation (biotech): 2000—4/29
 Sheep and lambs: 2001—4/9
 Shipping: 1999—1-2/18
 Shrimp: 1998—5/10 (see also Aquaculture)
 Slotting fees: 2001—3/14
 Small farms (see Farms, small)

Subject Index 1997-2001

Smart growth: 2001—4/24 (*see also* Sprawl)
 Social Security: 1998—12/24
 Soil erosion (*see* Erosion)
 South Korea (*see* Korea)
 Southeast Asia: 1997—11/18
 Soviet Union (*see* former Soviet Union, New Independent States)
 Soybeans: 1997—3/3, 5/6, 9/6; 1998—4/3, 5/2, 5/34 (Brazil), 9/18, 12/18 (transportation), 12/22 (Indonesia); 1999—3/18 (biotechnology), 5/3, 9/9; 2000—4/24 (biotechnology), 5/10, 9/5; 2001—5/5, 5/8 (farm programs and plantings), 9/7, 9/31 (Argentina, Brazil) (*see also* Oilseeds; Trade)
 Sprawl: 2001—8/15 (*see also* Smart growth)
 Spring plantings, U.S.: 1997—5/6, 8/2; 1998—5/2, 6-7/4,6, 9/10; 1999—5/2, 6/2; 2001—5/5, 6-7/2
 State trading enterprises: 1997—6/11, 11/31; 1999—6-7/27 (China)
 Sugar: 1997—1-2/17 (Australia), 3/11, 7/7; 1998—3/10; 1999—9/17 (Mexico-U.S. trade); 2000—9/8
 Sunflower seed: 1999—3/19 (biotechnology)
 Supermarkets: 1998—8/14 (Mexico); 2000—8/18 (retail consolidation); 2001—3/16
 Surface Transportation Board: 1998—3/2
 Sustainable agriculture: 1997—3/21
 Swampbuster and sodbuster: 2001—9/24
 Sweeteners: 1997—3/13; 1999—9/17 (Mexico-U.S. trade)
 Sweet corn: 2001—8/11
 Sweet potatoes: 1998—12/2

T

Taiwan: 1997—6/3, 7/18 (WTO); 1998—3/15 (animal waste); 2000—10/20 (hogs); 2001—11/5 (WTO)
 Tariffs: 1997—1-2/19 (dairy), 3/11 (sugar); 1998—12/28; 1999—4/13 (rice, Japan), 8/28, 11/26 (Uruguay Round); 2000—11/13 (India), 11/22 (WTO); 2001—12/19 (EU)
 Tariff-rate quotas: 2000—11/22
 Tax policy: 1997—10/12; 1998—5/25, 12/24; 1999—5/22 (savings); 2000—10/19; 2001—9/2
 Taxpayer Relief Act of 1997: 1998—12/24
 Technology: 1998—8/17 (hard white wheat); 1999—1-2/18 (transportation); 2000—12/21
 Terminology (*see* Glossaries)
 Textiles: 1998—11/9, 12/20 (Indonesia) (*see also* Cotton)
 Thailand: 1997—11/18
 Tilapia: 1998—5/9 (*see also* Aquaculture)
 Tillage: 1998—2/25,26; 1999—1-2/15, 8/19; 2001—3/5 (conservation)
 Tobacco: 1997—9/3, 11/37 (import policy); 1999—1-2/8; 2000—1-2/12; 2001—1-2/8 (*see also* Cigarettes)
 Tomatoes: 1997—1-2/6; 2000—3/3
 Trade: 1997—1-2/34 (processed food), 4/7 (baseline), 5/15, 9/12 (rice); 1998—4/28 (baseline); 1999—4/13 (Japan), 4/34 (baseline), 6-7/19 (Middle East and North Africa), 6-7/27 (China), 8/11 (Korea); 2000—1-2/15 (and global financial crisis), 3/7,10 (meat), 3/17 (railway mergers), 4/20 (developing countries), 5/19 (environmental policy); 2001—5/10 (global forces), 9/7 (oilseeds), 11/9 (rice), 12/9 (cotton)
 Trade barriers: 2000—3/7 (meat), 4/5
 Trade blocs: 1997—1-2/23, 11/16; 1998—4/11; 2000—4/15, 17 (*see also* Regional trade agreements)
 Trade issues: 2000—4/20 (developing countries); 2001—4/21, 5/10, 12/16 (EU)
 Trade (by commodity)—
 Beef: 1999—8/12 (Korea)
 Grains: 1999—6-7/27 (China), 8/12 (Korea)
 Oilseeds: 1997—9/7; 1999—8/12 (Korea)
 Meat: 2000—3/7, 3/10, 8/4
 Pork: 1999—8/12 (Korea)

Wheat: 1999—8/8; 2001—8/8
 (*see also* Exports; Imports; individual commodities)
 Trade liberalization: 1997—11/14,29; 2000—4/15 (FTAA), 11/13 (India), 11/22
 Transportation: 1998—3/2, 12/16; 1999—1-2/18; 2000—317 (railways), 9/24 (U.S.-Mexico); 2001—5/15 (Canada)
 Transportation, U.S. Department of: 1998—12/15 (peanut allergies)
 Tree nuts: 1998—12/3; 2000—1-2/9
 Turkey industry: (*see* Poultry)
 Turkey: 1997—5/16; 2001—10/14 (*see also* Middle East)
 Typology, farm: 1999—1-2/6, 11/7, 11/11; 2000—1-2/19, 5/23; 2001—5/27, 6-7/15

U

Urbanization: 2001—4/24, 5/12, 8/15
 Uruguay Round: 1998—12/28; 1999—4/13 (tariffs), 11/26 (tariffs); 2000—11/16; 2001—1-2/11 (*see also* GATT, World Trade Organization)
 U.S.-Canada Free Trade Agreement: 1997—9/20; 1999—9/13 (*see also* North American Free Trade Agreement)
 U.S. Trade Representative: 1999—9/19 (sweeteners)

V

Value-added crops:2001—10/23
 Vegetable oils: 1998—9/20, 12/23 (Indonesia), 2001—9/7
 Vegetables: 1997—3/7 (winter fresh, Florida freeze), 6/5 (safety); 1999—5/7 (trade); 2001—6-7/10 (*see also* Horticulture; Produce; individual vegetables)
 Vegetables, leafy green: 1998—2/5
 Vertical coordination: 1997—12/20

W

Walnuts: 2000—1-2/10 (*see also* Tree nuts)
 Water supplies: 2000—1-2/25 (China); 2001—11/12 (APEC)
 Water quality: 1998—10/23; 2000—9/12, 19 (livestock operations) (*see also* Conservation; Clean Water Act; and Clean Water Action Plan)
 Water Quality Incentives Projects: 1999—11/20 (*see also* Conservation and Clean Water Act)
 Water Quality Program: 1997—5/28
 Weather (crop impact): 1997—3/6,7, 9/12 (rice), 10/8; 1998—4/4,6 (*see also* Floods and Hurricanes)
 Western Europe (*see* European Union)
 Western Grain Transportation Act: 2001—5/15
 Western Hemisphere: 1998—4/11 (trade)
 Wetlands: 1998—6-7/20; 1999—11/20 (*see also* Water quality)
 Wetlands Reserve Program: 2001—9/24
 Wheat: 1997—1-2/14 (Australia; global prices), 3/2, 6/2, 8/8, 9/2 (durum); 1998—5/4, 8/7, 8/17 (hard white), 12/22 (Indonesia); 1999—3/20 (durum); 2000—8/7, 12; 2001—5/5, 5/18 (Canada), 8/7 (*see also* Grain; Trade; Durum)
 Wheat (U.S.-Canada trade): 1999—6-7/9
 WIC (Supplemental Nutrition Program for Women, Infants, and Children): 1999—5/27
 Wine: 1997—8/12
 Wood products: 1997—12/4 (*see also* Forest products)
 World Trade Organization: 1997—7/18 (candidates), 10/26 (compliance), 11/16, 11/26 (candidates), 11/31; 1998—9/25, 11/12 (environment), 12/28; 1999—6-7/30 (China), 8/28 (tariffs), 10/15, 11/26 (tariffs); 2000—3/11 (China), 4/19 (and FTAA); 2001—1-2/11 (and farm policy), 4/9; 6-7/11 (China), 8/19 (Canada), 9/17 (China), 11/5 (Taiwan) (*see also* GATT, Uruguay Round)
 World Trade Organization mini-round: 1998—11/13, 12/33

Y

Yield variation: 1999—3/12, 4/27

Agricultural Outlook Forum 2002



February 21-22, 2002
Crystal Gateway Marriott Hotel
Arlington, Virginia

PROGRAM (updated)

Thursday, February 21

7:30 a.m. **Continental Breakfast and Registration**

8:30 a.m. **Market and Policy Prospects for 2002**
Moderator: Deputy Secretary of Agriculture **James Moseley**

2002 Agricultural Prospects
Keith Collins, Chief Economist, USDA

U.S. Trade and Agricultural Policy
J. B. Penn, Under Secretary for Farm and Foreign
Agricultural Services, USDA

10:15 a.m. **Keynote Address**
Secretary of Agriculture **Ann M. Veneman**

10:45 a.m. **Panel: Future of Agricultural Biotechnology in World Trade**
Moderator: Julian Morris, Co-Director, International Policy
Network
Topics: European, South American, and African perspectives;
U.S. diplomacy and worldwide biotechnology issues; future
prospects for agricultural biotechnology

12:30 **Lunch and Opening of Exhibit Hall**

1:00 p.m. **Food Price Briefing**
The outlook for retail food prices in 2002

1:45 p.m. **Concurrent Sessions**

Farm Finance Outlook: Changing Farmer-Lender Relationships
Moderator: John M. Blanchfield, Director, Center for Agricultural
and Rural Banking, American Bankers Association
Topics: Farm income, finance, and credit outlook for 2002;
prospects for farm financial conditions; the changing farm
lending scene; the market for farmland

U.S. Farm Women: Leaders in Rural Prosperity
Moderator: Carolyn E. Sachs, Professor of Rural Sociology and
Director of Women's Studies, Pennsylvania State University
Topics: National Survey of Women on Farms; Farm Women's
Network of West Central Minnesota—dealing with the
challenges of agriculture; value-added agriculture and
entrepreneurship

Farm Policy Principles and Proposals
Topics: Trade programs, rural development policy, and a view
of commodity program principles and proposals from produc-
ers and from Capitol Hill

Competing in Global Markets for Processed Products
Moderator: Sarah Fogarty, Director, International Trade, Gro-
cery Manufacturers of America
Questions: Why would U.S. companies choose to invest in
overseas processing rather than export their products? Can
small U.S. agricultural processing firms and U.S. value-added
products compete globally? *Plus* an industry's comments on
procurement, processing, and exports

Agriculture's Role in Offsetting Greenhouse Gas Emissions
Moderator: William Hohenstein, Director, Global Change Pro-
gram Office, USDA
Topics: An overview of agriculture's role in addressing climate
change; partnerships in accessing the potential of "carbon
credits"; practical experience in offsetting greenhouse gases

3:45 p.m. **Concurrent Sessions**

Feasibility and Cost of Marketing Identity-Preserved Crops
Moderator: Joan Rothenberg, Senior Program Associate, Pew
Initiative on Food and Biotechnology
Topics: Producer opportunities and specialized grain markets;
challenges to changing the infrastructure; support for quality
assurance (GIPSA)

Promoting Value-Added Marketing for Sustainable Rural Development
Moderator: Randall Torgerson, Deputy Administrator, Rural
Business-Cooperative Service, USDA
Topics: New center for value-added agriculture, Iowa State;
value-added marketing in domestic and international markets;
new-generation cooperatives and niche opportunities; direct
marketing to chefs in upscale restaurants

A New Role for Conservation in U.S. Farm Policy
Moderator: Deputy Secretary of Agriculture James Moseley
Topics: Policy choices and directions: what Congress has
requested; realistic expectations from the new farm bill; con-
servation operations and USDA's challenge to make them
work; a farmer's view of conservation on the landscape

Middle-Class Consumers in Developing Nations
Topics: Emerging markets' economic growth; prospects for
continued economic growth in China; economic future and
market barriers of India; Mexico's new leadership and growth
potential

Seasonal Climate Forecasts in Agriculture
Moderator: James Jones, Professor, University of Florida
Topics: Mission of the International Research Institute for Cli-
mate Prediction; a primer on seasonal climate fluctuations; use
of climate forecasts in agriculture in the Americas; climate
forecasts, global agriculture, and food security; implications
for agricultural practice, policy, and development

6:30 p.m. **Forum Dinner**
Address: The Economic Outlook; **Lawrence Chimerine**,
President, Radnor International Consulting, Inc.
Moderator: **Keith Collins**, Chief Economist, USDA
Preceded by cash bar at 5:30 p.m.



**For details on program or registration:
www.usda.gov/oce**

Friday, February 22

7:15 a.m. **Registration and Continental Breakfast**

8:15 a.m. **Concurrent Sessions**

Outlook Sessions

Grains and Oilseeds Domestic and Global Outlook
Consolidation and Competition in Dairy Markets

Issues and Strategies for Rural and Community Prosperity

Moderator: John C. Allen, Director, Center for Applied Rural Innovation and Professor of Rural Sociology, University of Nebraska-Lincoln
Topics: What workers and entrepreneurs need to succeed in today's markets; knowledge for community-led development; rural-urban interdependence and agriculture's future; translating new agricultural and forestry products and uses into rural economic viability

Globalization of Food Safety

Topics: Safety challenges in industrialized countries; safety challenges in developing countries; emerging issues

Streamlining Government for Today's Marketplace: Techniques and Stories from USDA's Commodity Re-Engineering Project

Moderator: Les Johnson, Director, Food Distribution Division, Food and Nutrition Service, USDA
Stories from the front line: From USDA's Agricultural Marketing Service poultry programs; Food Safety and Inspection Service district enforcement operations; Farm Service Agency procurement and donation division; and the American School Food Service Association

10:30 a.m. **Concurrent Sessions**

Producer Initiatives to Deal with Production Contracts

Moderator: Dan Looker, Business Editor, *Successful Farming* Magazine
Topics: Negotiating contracts in the specialty crop industry; need for organizations to represent broiler growers; contract bargaining for potatoes and other crops; new negotiation efforts in the fed-beef industry

Meat-Sector Outlook in a Time of Uncertainty

Moderator: Howard Wetzel, Director, Dairy, Livestock and Poultry Division, Foreign Agricultural Service, USDA
Topics: The outlook for livestock and poultry; industry outlook on meat trade; the impact of uncertain times on U.S. meat demand

Future Effects of the U.S. Sugar Program

Moderator: Craig Ruffalo, Manager of Information Sales, McKeany-Flavel Company, Inc.
Discussion by representatives of the Rocky Mountain Sugar Growers Cooperative, the American Sugar Alliance, the Blommer Chocolate Company, and the Consumer Federation of America

Tracking Food Products for Quality, Safety, and Efficiency

Moderator: Susan Offutt, Administrator, Economic Research Service, USDA
Topics: Monitoring for safer food production and distribution; food industry and retailer perspectives; certifiable quality management systems for the U.S. grain and livestock industry

Cotton and Fibers Outlook

Moderator: Jean P. Sagouspe, cotton producer, Los Bãnos, California
Topics: U.S. and world cotton outlook; China's cotton trade under the WTO; risk management in U.S. cotton production

12:45 p.m. **Concurrent Commodity Luncheons**

Grains and Oilseeds
Livestock and Poultry
Sugar and Sweeteners
Cotton and Fibers
Fruit and Vegetables
With featured speakers

2:15 p.m. **Concurrent Sessions**

The Economic Outlook for Bio-Fuels

Moderator: Roger Conway, Director, Office of Energy Policy and New Uses, Office of the Chief Economist, USDA
Topics: The economics of ethanol and biodiesel production; generating electricity from animal waste; the role of public policy and regulation in supporting demand; availability of equity and debt capital to build plants

Protection Against Imported Disease and Pests

Topics: Options for stronger protective measures against livestock diseases and invasive plant pests; potential impacts and costs of taking added measures

The Horticulture Sector's Future in an Era of Globalization

Moderator: Tom Karst, Executive Markets Editor, *The Packer*, Vance Publishing Corporation
Topics: Strategic partnering from a producer perspective (Sunkist); strategies for competitiveness—U.S. and European Union approaches; one company's experience in going global

Outlook for Tobacco

Moderator: Tom Capehart, Economic Research Service, USDA
Topics: Tobacco situation and outlook; the international outlook for U.S. tobacco; impact of contracting on the tobacco industry; Capitol Hill perspective on the future of the U.S. tobacco program and quota buyout proposals