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Statistical Indicators

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U.S. Corn Prices To Remain Weak

U.S. farm prices for corn are expected to remain weak in1999/2000. While this year's crop is smaller, supplies are essentially unchanged because of larger carryin stocks. Although prices strengthened when the impact of the drought in the eastern Corn Belt became clear, abundant supplies in other major U.S. growing regions are expected to keep the average farm price near the 1998/99 forecast of $1.95 per bushel. Domestic use will likely set another record in 1999/2000, while U.S. corn exports decline because of increased competition from China, continued large exports by Argentina, and declining world trade.

Food Price Rises in 1999, 2000 Are Lowest Since Early 1990's

Consumers are benefiting from a low general inflation rate, with food prices forecast to increase only 2 percent in 1999 and 2-2.5 percent in 2000, in part because of large supplies of meats. Food price increases have not been so low since the early 1990's—when prices increased 1.2 percent in 1992 and 2.2 percent in 1993.

Assessing Ag Commodity Price Variability

Potentially large swings in farm prices and incomes have been a longstanding farm policy concern. Better understanding the patterns and forces behind commodity price variability would help policymakers facilitate good risk management practices and help farmers manage their price risks. Within-year price variability for corn and wheat futures contracts follows seasonal patterns, and across-year price variability for wheat, corn, and soybeans is negatively correlated with the level of stocks relative to total disappearance. General price levels for soybeans and most grains may move in tandem with many of the same forces, but price variabilities are more distinct, due likely to disparities in their supply and demand responsiveness.

U.S. Ag Exports To Turn Up In Fiscal 2000

U.S. agricultural exports are forecast to recover modestly in fiscal year 2000 to $50 billion, the first increase since 1996. The gain from 1999—2 percent—is expected to be limited by relatively low prices. For bulk exports, the projected increase is 3 percent (volume is up 5 percent), and for high-value products just over 1 percent. Propelling the gains are higher global economic growth, especially in Asia, and reduced export competition for some bulk commodities.

Striking a New Balance in Public-Private Agricultural Research

The revolution in biotechnology, coupled with strengthened patent protection for biological inventions, suggests that the traditional view of agricultural research—a public sector specializing in relatively basic research and a private sector oriented toward applied research and technology development—needs revision. While some motivations for research are still distinctly public (e.g., improving nutritional health and enhancing environmental quality), research areas able to benefit both sectors suggest a need to expand opportunities for public-private partnerships, such as the cooperative research and development agreements used by USDA's Agricultural Research Service.

Examining EU's Agenda 2000

The European Union's (EU) Agenda 2000, finalized in March, builds on key agricultural reforms of 1992 by further reducing support prices for some commodities while partially compensating producers for the price declines through direct payments. In general, Agenda 2000 will make modest changes in the grain, oilseed, dairy, and beef sectors. For wheat, the reforms will likely move the government purchase price below a rising world price, enabling EU countries to expand wheat exports without subsidies. Most other EU agricultural commodities will remain uncompetitive in world markets, and will require continued EU subsidization for export.

Infrastructure Investment in APEC Region

A particularly troubling impact of the global financial crisis of 1997-98 has been the scaling back of public and private infrastructure investment in the most financially distressed economies of the Asia-Pacific Economic Cooperation (APEC) region—Indonesia, Malaysia, the Philippines, South Korea, and Thailand. Sizable investments are needed to maintain and expand infrastructure across APEC to sustain economic growth and facilitate trade, both within and among those economies and with the U.S. (over 60 percent of U.S. agricultural exports goes to the APEC countries). Infrastructure development reduces marketing costs, benefiting both producers and consumers. Lowering these costs could have as positive an effect on food and agricultural trade as removal or reduction of a tariff.

Briefs

Livestock, Dairy, & Poultry

U.S. Beef Production To Drop From Record Level

U.S. cattle inventories are set to decline through 2000, with beef production likely down in 2000 and again in 2001. Behind the beef production falloff is an expected decline in feedlot placements in second-half 1999. But before then, beef production will reach a record in 1999 as heifer slaughter remains near record large.

Meanwhile, total red meat and poultry supplies will stay near record highs in 2000 as pork supplies remain large and the rate of broiler supply expansion returns to levels of the mid-1990's. Continued low feed costs will help hold down beef production costs. In addition, grazing conditions are favorable in most parts of the country, and hay production is forecast at record levels.

The July 1, 1999, cattle inventory was down 1 percent from a year earlier, continuing its decline from the 1996 cyclical peak. Most cow-calf operators have lost money since 1995, but can expect positive returns above cash costs this year. With the beef-cow inventory down 1 percent on July 1 from a year earlier, and the number of beef replacement heifers down 4 percent, producers are not likely to begin breeding more replacement heifers until at least 2000, and the next gain in the calf crop will not occur until at least 2001. The 1999 calf crop is estimated to be the smallest since 1952.

With total number of cattle on feed on July 1 above a year earlier, the supply of cattle available for marketing during the declining phase of the cattle cycle is at its peak. As inventories decline, the trend in feedlot inventories is clearly down over the next several years, even if heifer retention remains low.

On July 1, cattle in feedlots with capacity over 1,000 head in the 7 monthly reporting states were up 4 percent from a year ago and up 6 percent from 1997. However, total placements will move below a year earlier in second-half 1999, and they will continue declining until the calf crop rebounds.

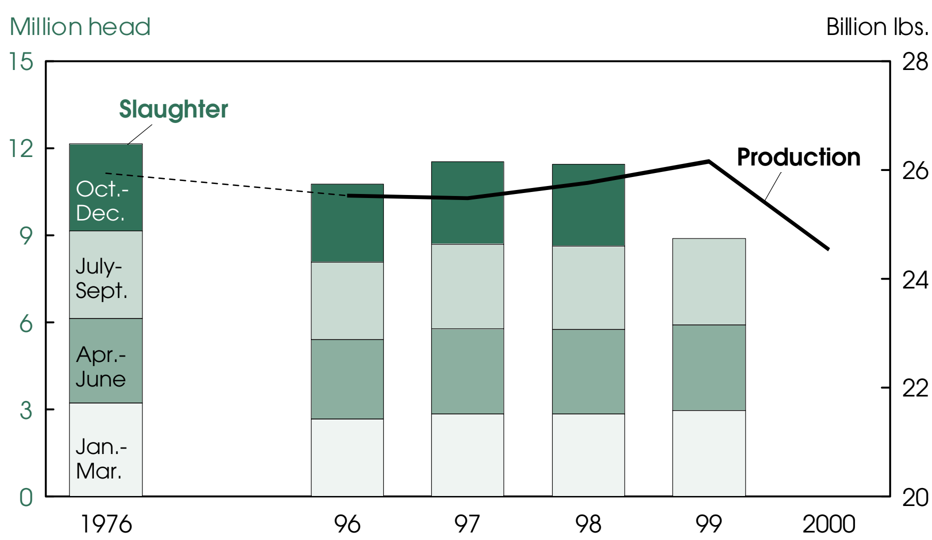
Falling feedlot placements ensure that beef production will begin to decline fairly sharply through at least 2001, but not before breaking the 1976 record for both commercial and total beef production in 1999. Steer and heifer slaughter is expected to decline nearly 6 percent in 2000, after rising 2 percent in 1999 from a year earlier. The full extent of the dropoff will be determined by the number of heifers actually retained for herd expansion. Through the third quarter, heifer slaughter is the second largest after 1976. Cow slaughter is expected to decline nearly 6 percent in 1999 and another 5-6 percent next year.

Beef production is expected to remain above a year earlier through early fall. Fourth-quarter production is expected to decline 1-2 percent from a year earlier because of lower summer placements. Production in 2000 is expected to decline 4-7 percent, with the largest year-to-year declines taking place next spring and summer, reflecting large year-to-year changes in heifer slaughter. This will also be the most difficult period of adjustment for end users as supplies of higher quality beef tighten and prices rise. Retail markets, with large supplies of competing meats, will likely see the greatest reductions in beef offerings.

Fed-cattle prices are expected to remain in the mid-$60's per cwt through early fall as large first-half placements are marketed. Prices are expected to move into the upper $60's in late fall through first-quarter 2000. Supplies will begin to tighten fairly substantially in the second quarter as demand strengthens seasonally. Tight supplies will push up average prices to near $70 in the last three quarters of 2000, with the market possibly moving even higher late in the year if the U.S. economy remains strong.

Yearling feeder cattle prices have already strengthened as fed-cattle prices held firm this spring and summer and as grain prices declined. Large grain stocks are expected to hold down grain price increases through much of 2000. Prices of 750- to 800-pound yearling steers are expected to average near $77 per cwt this summer, up from $68 in 1998. Prices are likely to

Higher Heifer Slaughter Will Eventually Pull Down Beef Production



1999 and 2000 forecast. 1976 record slaughter. Slaughter forecast not available for 2000 and 4th-quarter 1999.

Economic Research Service, USDA

average in the low $80's in 2000, the first sustained rise to this level since 1993.

Per capita beef supplies are expected to remain about unchanged in 1999 from last year's 68.1 pounds, but are likely to decline 3-4 pounds in 2000. At the same time, however, broiler supplies are forecast up 5 pounds per capita from 1998 and will likely rise 4 pounds in 2000. Total red meat and poultry consumption, a record-large 214 pounds per capita in 1998, is expected to reach nearly 220 pounds this year and decline only modestly in 2000.

Large supplies of competing meats are likely to hold down beef retail price gains over the next couple of years as beef supplies decline. Retail prices for Choice beef are expected to average $2.83 a pound this year, up from $2.77 in 1998. Prices may rise to $2.86 in 2000, the highest since 1993 when total per capita meat supplies were only 208 pounds. In 2000, supplies will be near 217 pounds per person.

As overall beef supplies decline, buyers will increasingly compete for tight supplies of cattle grading Choice, which is higher valued beef sold extensively in domestic hotel-restaurant and export markets. Lower valued beef, particularly Select grade and nonbranded beef sold in retail markets, may have difficulty competing profitably against expanding supplies of other meats at relatively low prices.

At the producer level, demand for breeding stock that produce high-grade beef will likely increase. In fact, a shift away from breeding stock yielding low-grade beef is likely already underway, which may have supported production of lower quality beef during the past year and dampened its retail price. Thus the price spread between Choice and higher graded beef and the lower grades may be increasingly reflected in feeder cattle prices. Discounts may increase on stocker-feeder cattle that will not reach desired grade and consistency characteristics at slaughter, particularly as the cattle inventory begins its next cyclical expansion. AO

Ron Gustafson (202) 694-5174
ronaldg@econ.ag.gov

Feed & Forage Are Plentiful

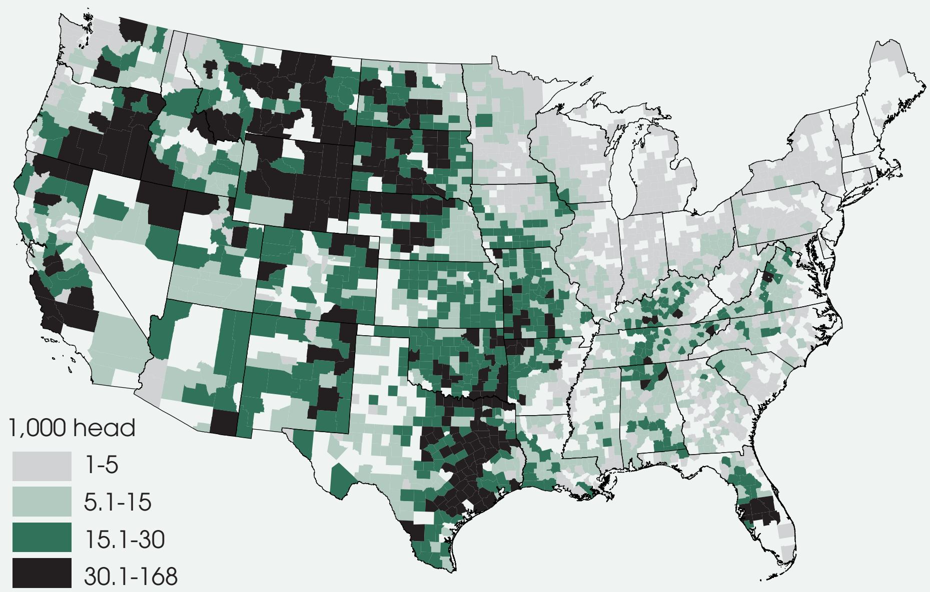
With feed grain supplies remaining high in 1999/2000, relatively low prices will continue to keep down costs for livestock producers (see Commodity Spotlight). The farm price of corn in 1999/2000 is expected to average near the 1998/99 average of $1.95 per bushel and well below 1997/98's $2.43.

Forage conditions have been very favorable in most parts of the country. The exception is the mid-Atlantic, eastern Corn Belt, and Northeast, where dry weather has sharply reduced forage supplies. Total hay production in 1999 is forecast at a record 161 million tons, up 6 percent from 1998 and 5 percent higher than 1997. Yield is forecast record high, and acreage is expected to rise 3 percent from a year earlier. Forage supplies look favorable for most of the industry, given favorable grazing conditions in most areas and a reduced cattle herd. Producers in areas with shortages can acquire stocks from areas where supplies are plentiful, although shipping charges can limit transport distances.

Ag Industry Snapshot

Beef Cow Inventory Is Distributed Throughout the U.S.

Cattle tend to be fed on land not needed for crop production or in areas that are too rolling, wooded, rocky, or arid. Consequently, the U.S. beef industry is distributed throughout the country. The cow-calf industry is centered in the Great Plains states, with the largest beef cow inventories in Texas, Missouri, Nebraska, Oklahoma, Montana, and Kansas. In 1998, nearly 856,000 farms and ranches reported beef cow holdings, with an average of 40 cows per farm. The total beef cow inventory was 33.9 million head.



Source: 1997 Census of Agriculture, National Agricultural Statistics Service, USDA.
Agapi L. Somwaru (202) 694-5208, agapi@econ.ag.gov

Economic Research Service, USDA

Briefs

Specialty Crops

Decline in Fresh-Market Pear Output To Boost Prices in 1999

Total U.S. pear production for 1999 is forecast down 1 percent from 1998, to 1.9 billion pounds. While harvest of Bartlett pears is projected to reach 1 billion pounds, up 6 percent from 1998, production of other U.S. pear varieties is forecast at 854 million pounds, down 9 percent from last year. Bartlett pears accounted for more than half of total U.S. pear production during the last 3 years, but this year's increase is not large enough to offset the decrease in other-than-Bartletts. The overall decline in pear production this year, along with decreased supplies of domestic-grown apples, indicates higher grower prices for fresh-market pears in 1999/2000.

Bartlett production is forecast up in the three Pacific Coast states that produce nearly all the U.S. Bartlett pear crop. California expects a 3-percent rise from 1998, Washington 14 percent, and Oregon 2 percent during 1999. Over 70 percent of U.S. Bartlett pears are usually processed, while the balance are marketed mostly during the summer. Downturns for other-than-Bartlett are projected at 4 percent in Washington and 15 percent in Oregon, but California production remains essentially unchanged. Typically, over 80 percent of other-than-Bartlett pears are for fresh use in the fall and winter months.

Good quality and fruit size are being reported for the Bartlett pear harvest in California. In Oregon and Washington, cold winter conditions that lasted through spring slowed crop development. In other pear-producing states, specifically in the Northeast region, drought conditions are resulting in smaller size fruit.

The delay in harvesting pear crops in Washington and Oregon could give an additional boost to grower prices. However, significantly larger carryover inventories could offset some price strength. Stocks of fresh pears (other-than-Bartlett varieties) in cold storage as of June 30, 1999, were 59 percent larger than the same time in 1998. Grower prices for fresh-market pears, averaging 7 percent higher than a year ago for the first 6 months of 1999, reflected reduced fresh-market production in the fall of 1998. In July and August—the first two months of the 1999/2000 marketing season—fresh pears averaged 20.2 cents a pound ($404 per ton), 18 percent higher than the average in July/August 1998.

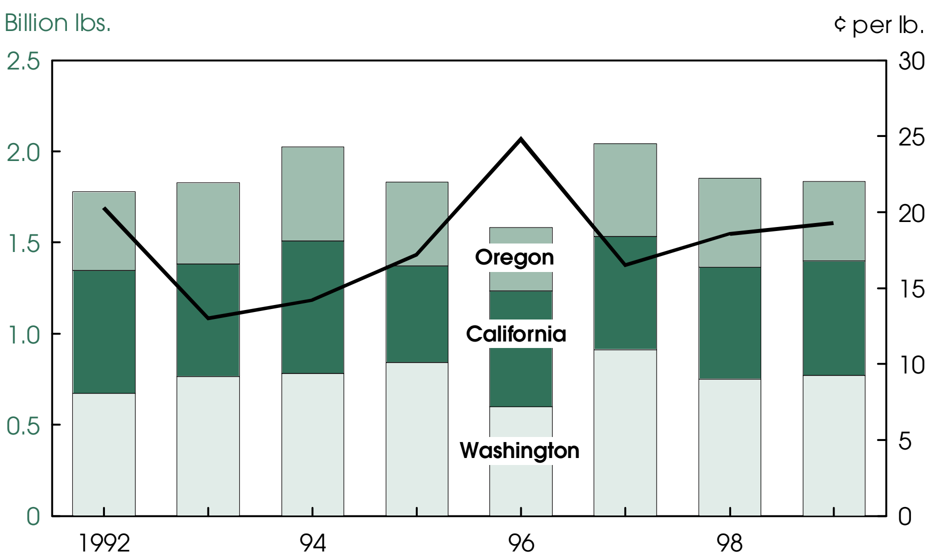
Typically, stocks of Bartlett pears in cold storage are depleted by the end of the marketing season. But as of June 30, 1999, Bartlett stocks totaled 3.7 million pounds, compared with zero a year earlier. Despite last year's lower production, grower prices for processing pears averaged 8 percent lower in 1998/99 compared with the previous season.

Decreased production in 1998 raised U.S. imports of fresh pears during 1998/99 (July-June) to 190.5 million pounds, 27 percent above the previous season. During the same period, U.S. exports of fresh pears fell to 305.2 million pounds, 16 percent below record levels the year before. The smaller 1998 U.S. pear crop, higher U.S. prices, increased supplies from the European Union (EU), and weakened economies facing Brazil and many Asian countries all contributed to the decline in U.S. pear exports during 1998/99.

Export volume fell significantly among four of the five principal U.S. purchasers: the EU (down 36 percent), Canada (down 17 percent), Brazil (down 41 percent), and Taiwan (down 7 percent). Exports to Mexico, however, rose 8 percent. Combined shipments to these markets made up 87 percent of total U.S. pear exports during 1998/99. Lower U.S. fresh-market supplies that are likely this year, along with expectations of higher prices, will again limit U.S. export prospects during 1999/2000. AO

Agnes C. Perez (202) 694-5255
acperez@econ.ag.gov

Pear Production Dip in 1999 To Yield Higher Fresh-Market Price



1999 forecast. Production is all pears; excludes minor amounts from other states. Price is for fresh-market pears, marketing year July-June.

Economic Research Service, USDA

Food Marketing

Food Price Increases in 1999 & 2000 To Be Lowest Since Early 1990's

Consumers are benefiting from a low general inflation rate, with food prices forecast to increase only 2 percent in 1999 and 2 to 2.5 percent in 2000, in part because of large supplies of meats. Food price increases have not been so low since the early 1990's—when prices increased 1.2 percent in 1992 and 2.2 percent in 1993. With 8 months of Consumer Price Index (CPI) data already collected in 1999, the annual average food CPI is 2 percent above the first 8 months of 1998. The inflation rate for the all-items CPI is forecast to be 2 percent in 1999 and 2.2 percent in 2000.

The at-home component of the food CPI, which increased 1.9 percent in 1998, is forecast up 1.7 percent in 1999 and 2-2.5 percent in 2000. The away-from-home component, which increased 2.6 percent in 1998, is expected to increase 2.6 percent in 1999 and 2.5-3 percent in 2000. This component is heavily influenced by competition among restaurants, fast-food establishments, and meals offered by supermarkets.

Food price changes are key in determining what proportion of income consumers spend for food. In 1998, 11 percent of household disposable income went for food—with 6.7 percent for food at home and 4.4 percent for food away from home—down from 11.1 percent in 1997. The downward trend should continue in 1999 and 2000.

Meats. Retail meat prices are forecast up 2-3 percent in 2000 as combined red meat and poultry production falls from a record 81.2 billion pounds in 1999 to 80.7 billion pounds in 2000. Total red meat and poultry consumption will reach almost 220 pounds per capita in 1999, breaking the 1998 record of 214 pounds. In 2000, consumption may decline 1-2 pounds. Increased supplies of poultry will mitigate the smaller beef supplies expected in 2000. In 1998 and 1999, large meat supplies and reduced prospects for higher price meat exports depressed U.S. livestock and poultry prices, with retail prices falling 1.9 percent in 1998 and expected to increase 0.1 percent in 1999.

Beef and veal. After setting a record for both commercial and total beef production this year, beef production will begin a fairly sharp decline next year. In addition to lower beef supplies, retail availability of higher quality beef will tighten after the hotel-restaurant-export market competes for the higher valued beef. Retail prices for Choice beef are expected to average $2.83 a pound this year, up from $2.77 in 1998. Prices may rise to $2.86 per pound in 2000, the highest average retail price since 1993. The CPI for beef and veal is expected to increase 1.2 percent in 1999 and another 1-3 percent in 2000. Large supplies of other meats, particularly poultry, will limit the increase. Also, improved eating quality, consistency, and increased cut sizes have made both white-meat chicken and pork loins more competitive with beef.

Pork. Commercial pork production is expected to be about 19.2 billion pounds in 1999, up over 1 percent from a year earlier. Following two consecutive record years, production is expected to fall to 18.6 billion pounds in 2000. With plentiful supplies of pork and competing meats throughout 1998 and 1999, pork retail prices fell 4.7 percent in 1998 and are expected to fall another 2.3 percent in 1999. The pork CPI is expected to increase 2-3 percent in 2000 as pork and beef supplies decline.

Retail pork prices in 1999 have remained relatively steady despite volatile hog prices. Retailers have found that they can move pork off the shelf without large price discounts, and consumer incomes are strong, increasing the demand for meat. Over time, pork demand appears to have increased in response to higher quality, greater consistency, and larger cut size

Changes in Food Price Indicators, 1998 through 2000

	Relative weights[1]	1998	Forecast 1999	Forecast 2000
	—Percent—	—Percent change—		
All items		1.6	2.0	2.2
All food	100.0	2.2	2.0	2 to 2.5
Food away from home	37.2	2.6	2.6	2.5 to 3
Food at home	62.8	1.9	1.7	2 to 2.5
Meats	10.8	-1.9	0.1	2 to 3
Beef and veal	4.8	-0.2	1.2	1 to 3
Pork	3.8	-4.7	-2.3	2 to 3
Other meats	2.2	-0.9	0.9	2 to 3
Poultry	3.2	0.3	0.1	-1 to 1
Fish and seafood	2.2	2.6	1.6	1 to 3
Eggs	0.8	-3.3	-3.6	-2 to -1
Dairy products	6.7	3.6	4.7	-1 to 1
Fats and oils	1.9	3.7	2.3	0 to 2
Fruits and vegetables	9.0	5.7	2.0	2 to 3
Fresh fruits and vegetables	6.9	7.3	2.3	2 to 3
Fresh fruits	3.5	4.3	7.9	2 to 4
Fresh vegetables	3.4	10.9	-4.2	2 to 4
Processed fruits and vegetables	2.1	1.7	2.3	2 to 3
Sugar and sweets	2.4	1.6	1.4	1.5 to 2.5
Cereals and bakery products	10.0	2.0	2.5	2 to 3
Nonalcoholic beverages	7.0	-0.3	1.1	2 to 3
Other foods	8.5	2.7	2.4	2 to 3

[1]Bureau of Labor Statistics estimated weights as share of all food, December 1998.
Sources: Historical data, Bureau of Labor Statistics; forecasts, Economic Research Service.

Economic Research Service, USDA

offered by the industry. Pork consumption may reach a record 53.5 pounds (per capita, retail weight) in 1999, with an expected decline to 51.6 pounds forecast for 2000.

Poultry. The CPI for poultry is expected to be unchanged in 2000, after rising only 0.3 percent in 1998 and 0.1 percent in 1999. Broiler production is expected to continue growing, up 6 percent to 29.4 billion pounds in 1999, and up 5.2 percent to 31 billion in 2000. Turkey production is expected to increase slightly to 5.3 billion pounds in 1999. After 3 years of negative returns for turkey producers, some production facilities have been converted to chicken production.

Consumers are buying more poultry in response to the convenience of processed poultry products and to fast-food promotions. Broiler consumption will be 77.8 pounds (per capita, retail weight) this year, up from 72.6 pounds in 1998, and could reach 82.2 pounds in 2000. The fast-food market continues to grow, especially demand for wings and skinless, boneless chicken breast. And with downturns in the export market expected in 1999 and 2000, promotions of dark meat (legs and thighs) have begun in the U.S. retail market.

Fish and seafood. Despite larger imports of shrimp, tilapia, and salmon, slower growth in U.S. catfish output should lead to an increase of 1.6 percent in the fish and seafood CPI for 1999. In 2000, the index is forecast up 1-3 percent.

Eggs. Retail egg prices fell 3.3 percent in 1998 and are expected to fall another 3.6 percent this year due to production increases of nearly 3 percent each year. With egg production expected to increase 2 percent in 2000, the CPI for eggs is expected to decline just 1-2 percent next year. Per capita egg consumption is forecast to rise from 253.6 eggs in 1999 to 255.2 eggs in 2000.

Dairy products. In 1998 and 1999, strong demand outstripped production of milkfat products such as butter, cheese, and ice cream, leading to higher consumer prices. The CPI for dairy products increased 3.6 percent in 1998 and is expected to increase another 4.7 percent this year. Summer 1999 milk production rose about 3 percent above a year earlier, with a smaller fall increase expected. Good forage is expected to keep expansion in milk production strong through the rest of 1999. However, dairy growth is slowed by limited herd expansions in the northern U.S. With milk production forecast to increase 2 percent next year, retail prices for dairy products are expected to remain unchanged in 2000.

Fresh fruits. Higher retail prices for Valencia and navel oranges, grapefruit, lemons, and pears are boosting the CPI fresh fruit index by 7.9 percent in 1999, after a 4.3-percent increase in 1998. Four days of freezing temperatures in California late last December squeezed fresh citrus supplies through much of 1999. The 1998/99 U.S. citrus crop dropped 23 percent from the previous season, mostly due to poor weather. All citrus crops, except limes, were smaller. Florida's citrus production was down 20 percent from the previous year's record crop, and California's citrus output fell 39 percent. However more stone fruit, grapes, and strawberries will be harvested in 1999 than 1998. After a record 1998 apple crop, production is likely to fall 7 percent in 1999. In 2000, the CPI is expected to rise 2 to 4 percent.

Fresh vegetables. Fresh-market vegetable acreage is expected to increase 1 percent for 1999, with summer vegetable area for harvest forecast up 5 percent over a year ago. After weather-related shortfalls in 1998, growing conditions in major fresh vegetable areas returned to near normal in 1999. Consequently, the fresh vegetable CPI is forecast to fall 4.2 percent in 1999. In 2000, the CPI is expected to return to trend growth, up 2 to 4 percent.

Processed fruits and vegetables. Although supplies of processed vegetables were down in 1998, adequate supplies of most fruits for processing limited the CPI increase for processed fruits and vegetables to 1.7 percent. The index is expected to increase 2.3 percent in 1999 and 2-3 percent in 2000. In first-half 1999, more navel oranges grown in southern California were sent to processing because of freeze damage.

Sugar and sweets. Domestic sugar production was up almost 3 percent to 8.3 million short tons in 1998/99. It is expected to hit a record 8.9 million short tons in 1999/2000. Relatively low inflation, along with increased production, is nudging up the 1999 sugar and sweets index by only 1.4 percent. With U.S. sugar production in 1999/2000 expected to be up 7 percent, the CPI is projected up 1.5 to 2.5 percent in 2000 as demand remains strong in the bakery and cereal sector.

Cereals and bakery products. This food category accounts for almost 16 percent of the at-home food CPI. With grain prices lower this year and inflation-related processing costs modest, the CPI for cereals and bakery products is forecast to increase 2.5 percent in 1999. Most of the costs to produce cereal and bakery products are for processing and marketing—more than 90 percent in most cases—with grain and other farm ingredients accounting for a fraction of total cost. With competition among producers and consumer demand for bakery products expected to remain fairly strong, the CPI is forecast up 2-3 percent in 2000.

Nonalcoholic beverages. The CPI for nonalcoholic beverages increased 1.1 percent in 1999, led by higher soft drink prices, and is forecast to increase another 2 to 3 percent in 2000. Coffee and carbonated beverages account for 28 and 38 percent of the nonalcoholic beverage index. Lower coffee prices in 1999 reflect a near-record crop in Brazil, the largest producer of Arabica coffee beans. Weather has been excellent for the current crop, and coffee trees have finally recovered from effects of a freeze in 1994. AO

Annette L. Clauson, (202) 694-5373
aclauson@econ.ag.gov

Commodity Spotlight

U.S. Corn Prices To Remain Weak Despite Record Domestic Use

U.S. farm prices for corn are expected to remain weak in 1999/2000. While this year's crop is smaller, supplies are essentially unchanged because of larger carryin stocks. Exports are projected to decline, but with domestic use setting another record, gains in 1999/2000 ending stocks should be limited.

Faced with low prices, U.S. corn producers trimmed plantings by 2 percent in 1999. Besides low prices, the decline in corn acreage is attributable to lower prospective government payments for corn relative to soybeans under the marketing assistance loan program. Lower plantings combined with yield-reducing dry weather in the eastern Corn Belt is cutting U.S. corn output to 9.4 billion bushels, down 4 percent from 1998.

Over the last 10 years, planted acreage of corn, the primary feed grain in the U.S., has consistently comprised 23 to 24 percent of acreage of major field crops. Sorghum acreage has accounted for 3 to 4 percent, oats 1 to 3 percent, and barley 2 to 3 percent. Like corn, planted acreages of sorghum, oats, and barley declined in 1999.

Average corn yield is forecast at 132.2 bushels per acre, down from 134.4 bushels in 1998. The eastern Corn Belt crop was planted earlier than in recent years, setting up early-season expectations of higher yields, but dry weather in many areas of the eastern Corn Belt has cut yield potential. In the western Corn Belt, wetter conditions throughout the growing season have helped yield potential.

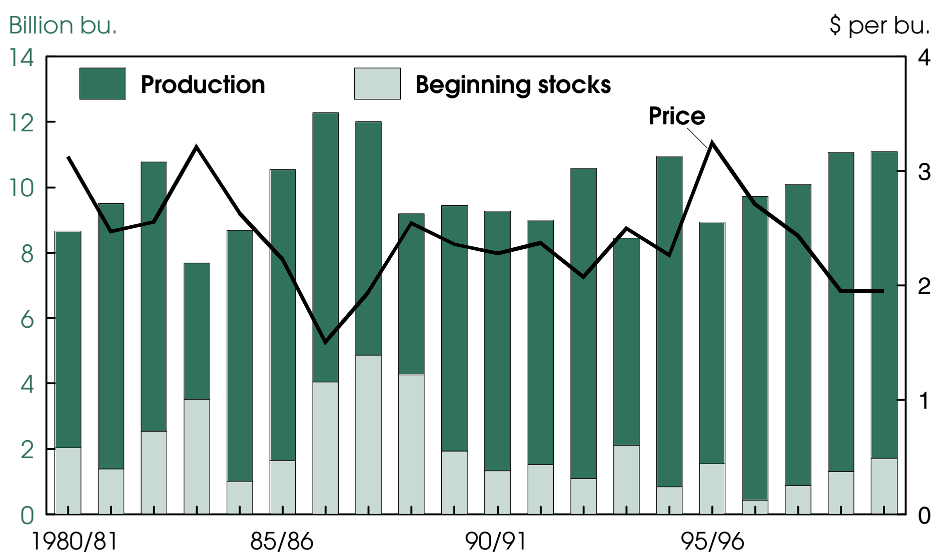
Domestic Use Forecast Record High

Domestic use in 1999/2000 is expected to total a record 7.5 billion bushels, up 1 percent from 1998/99, bolstered by gains in food/seed/industrial use.

Food, seed, and industrial uses are forecast to remain strong, up 3 percent from 1998/99 to 1.9 million bushels. Use at this level would represent 17 percent of total corn supply, up from 16.5 percent in 1998/99 but below the 17.6 percent of supply used in 1997/98.

Total sweetener use of corn has not been as strong as earlier anticipated in 1998/99. Corn used in high fructose corn syrup (HFCS)—principally in soft drinks—is forecast up 3 percent in 1998/99 from 532 million bushels in 1997/98. The hot summer months stimulated domestic sales, but exports of HFCS in September 1998-June 1999 were down 6 percent from the previous year. Higher tariffs limited export gains to Mexico to 1 percent. In

U.S. Corn Prices to Hold Steady in 1999/2000



U.S. season-average farm price. Season beginning September 1.
1998/99 and 1999/2000 forecast.

Economic Research Service, USDA

Commodity Spotlight

1999/2000, use is expected to increase another 3 percent.

Glucose and dextrose use in 1998/99 is expected to be down 4 percent from 1997/98. Some "nonfat" products that used sweeteners (including those derived from corn) to replace fats have not sold well and have been reformulated, weakening the market for glucose and dextrose. In 1999/2000, corn used to produce glucose and dextrose is expected to level off or rise slightly, continuing a long-term trend similar to the rate of population growth.

In 1999/2000, *beverage alcohol and manufacturing use* of corn is expected to be up 2 percent from the forecast 127 million bushels in 1998/99. The strong economy is expected to keep sales of beverages strong, and low corn prices should help keep manufacturing alcohol (used for rubbing alcohol and after-shave, for example) competitive with alternatives.

Industrial uses of corn are expected to continue growing in 1999/2000, but not at the strong pace of 1998/99. Corn used to make *ethanol* in 1998/99 is forecast at 530 million bushels, up 10 percent from 1997/98. Low corn prices have encouraged ethanol producers to keep output high. Ethanol stocks have become large, preventing a runup in ethanol prices that would normally accompany recent gains in gasoline prices.

Corn used to make *starch* in 1998/99 (for products such as paper and wall board) is forecast to decline 1 percent from 1997/98 to 230 million bushels, possibly due to increased competition from wheat starch. The strong U.S. economy would be expected to keep paper use (and thus starch demand) at a high level. Builders are reportedly having problems finding wall board. This news normally stimulates wall board production and boosts starch use. In 1999/2000, starch use of corn is expected to rise 2 percent from 1998/99 as the strong economy stimulates starch use.

Feed demand from the poultry and dairy sectors continues strong as production expands, responding to strong domestic demand for meat and an expected increase in meat exports. But feed demand from the beef and pork sectors is expected to slip, leaving total feed use (including residual) unchanged at 5.6 billion bushels in 1999/2000.

Broiler producers have continued to expand production despite disease problems in their hatchery supply flocks. Low grain prices and relatively strong broiler product prices have encouraged producers to continue expansion. Turkey and egg production are both expected to increase from 1999 levels. Likewise, higher milk production will boost feed demand by the dairy industry.

Beef production is forecast to decline 6 percent in 2000. Cattle herds have been declining for 2 years, and the number of calves available for feeding has been declining. The USDA *Cattle on Feed* report released in August indicated fewer feedlot placements than a year earlier and confirmed that beef supplies will decline. With fewer cattle in feedlots in the months ahead, feed needs will weaken in the beef sector.

Pork production is projected to increase 1 percent in 1999 but decline 3 percent in 2000. While very low hog prices caused many small producers to abandon the industry in fourth-quarter 1998 and first-quarter 1999, large operations have cut back very little, and production continues to increase in 1999, sustaining strong demand for grain. However, feed demand may weaken in 2000.

Competition Holds Down U.S. Exports

U.S. corn ***exports*** are likely to decline in 1999/2000 because of increased competition from China, continued large exports by Argentina, and declining world trade. Behind the increased competition and flat demand is large world corn production, forecast at 592 million tons, down 2 percent mostly because of below-trend yields in China. Significant increases are expected in Argentina, Brazil, Mexico, South Africa, and the European Union (EU). Production gains in Latin America

Gasoline Additives: MTBE v. Ethanol

Methyl tertiary butyl ether (MTBE) and ethanol are oxygenates—oxygen-rich compounds which are added to motor vehicle fuels to make them burn more cleanly. MTBE is often produced from methanol (derived primarily from natural gas). Ethanol is derived primarily from corn and other agricultural products. Under the Clean Air Act Amendments of 1990, Federal law requires a 2-percent minimum level of oxygenates in reformulated gasoline sold in "nonattainment" areas (generally metropolitan areas where ozone levels exceed federal standards).

MTBE is highly water soluble and spreads easily in water if underground gasoline tanks leak or if it is spilled. Earlier this year, news reports of its discovery in well water in California prompted calls for its elimination as a gasoline additive. California's governor has issued an executive order to ban use of MTBE by the end of 2002. If ethanol were to completely replace MTBE in California and elsewhere, much more ethanol would need to be produced.

Also boosting prospects for ethanol use is a change in Environmental Protection Agency (EPA) regulations to require gasoline with lower sulfur content beginning in 2004. Most processing technology to reduce sulfur content also lowers gasoline's octane rating. Ethanol is a prime additive because it boosts gasoline's octane rating and has low sulfur content. But ethanol has a relatively high Reid Vapor Pressure (rvp)—a measure of propensity to evaporate—and must be combined with a higher-cost low rvp gasoline blend stock to meet requirements for reformulated gasoline.

Earlier this year, the EPA established a blue ribbon panel (including representatives from government, industry, and environmental groups) to study the use of oxygenates. In July 1999, the panel recommended reducing the use of MTBE. The panel also recommended Congressional removal of the 2-percent oxygenate requirement, a move favored by oil companies since it would give refiners greater flexibility in finding a substitute for MTBE.

will lower imports in that region. World corn area continues to expand, with foreign area increases more than offsetting the U.S. decline.

Throughout much of 1998/99, U.S. and world corn prices were low enough to discourage the government of China from exporting aggressively (i.e., with subsidies since internal prices are above world prices), and China's corn exports dropped to less than half the previous year despite the record large crop. However, with burdensome stocks and a new crop about to be harvested, China sold over 2 million tons abroad when U.S. corn prices increased in late July and early August. Most of those exports are expected to be shipped in 1999/2000.

While world corn output is forecast down slightly in 1999/2000, production is forecast down for all other coarse grains, particularly barley. Global barley production is expected to fall dramatically, with world production down over 9 million tons or 7 percent. The EU, the world's largest barley producer and exporter, increased the grain area set-aside for 1999 from 5 percent to 10 percent, and producers reduced barley plantings because wheat was generally more profitable. In the Middle East and parts of North Africa, drought reduced both area and yields of barley. In total, world coarse grain production is forecast at 863 million tons in 1999/2000, down 3 percent from a year ago.

For the last 3 years, global coarse grain production exceeded consumption. In 1999/2000, world coarse grain consumption is forecast larger than production, and a 6-percent decline in ending stocks is expected. Nevertheless, supplies remain large, limiting U.S. price increases for corn and other feed grains.

The weighted-average price of corn received by U.S. farmers is forecast at \$1.75-\$2.15 per bushel in 1999/2000, compared with a forecast \$1.95 in 1998/99. In January-May 1999, the monthly farm price of corn averaged about \$2.05 per bushel but declined to a low of \$1.74 per bushel in July when the prospective crop suggested large supplies. Although prices strengthened when the impact of the drought in the eastern Corn Belt became clear, abundant supplies in other major U.S. growing regions are expected to dampen any additional gains in 1999/2000. AO

Allen Baker (202) 694-5290 and Edward Allen (202) 694-5288
albaker@econ.ag.gov
ewallen@econ.ag.gov

U.S. Ag Exports To Turn Up In Fiscal 2000

U.S. agricultural exports are forecast to recover modestly in fiscal year 2000 to $50 billion, the first increase since 1996. The gain from 1999—2 percent—is expected to be limited by relatively low prices, and export value will remain below the levels of 1995-98. For *bulk* exports, the projected gain is 3 percent, and for *high-value products (*HVP's*)* just over 1 percent.

Propelling the export gain are higher global economic growth, especially from recovery in Asia, and reduced export competition for some bulk commodities. Gross Domestic Product (GDP) growth outside the U.S. is forecast to double to 2.9 percent in 2000, reflecting gains in almost every region, especially Japan and the European Union (EU), two key U.S. markets. In addition, the value of the U.S. dollar is projected to decline, particularly against the Japanese yen and other Asian and Latin American currencies, which improves U.S. price competitiveness in foreign markets. The dollar is expected to remain stable against the Mexican peso and the Canadian dollar.

U.S. agricultural imports are expected to rise $500 million from 1999 to $38 billion, the 13th consecutive record. Behind the gain are U.S. economic growth and attractive import prices. U.S. GDP is forecast to grow at 2.5 percent in 2000, slightly slower than expected in 1999. Each of the largest import categories—horticultural products, red meats, and coffee—will increase by $100 million. Volume gains will be greatest for fruits and wine/malt beverages.

With export gains exceeding import growth, agriculture's projected trade surplus in fiscal 2000 is $12 billion, up 4 percent from the 1999 forecast. This is still the second-lowest surplus since 1987 and well below the $27-billion surplus in 1996, the last record year for agricultural exports.

This is the first forecast of agricultural exports for 2000 (released August 31, 1999). *Bulk commodities* include wheat, rice, feed grains, soybeans, cotton, and tobacco. *High-value products* (HVP's) are total exports minus bulk commodities. HVP's include semiprocessed and processed grains and oilseeds (e.g., soybean meal and oil), animals and animal products, horticultural products, and sugar and tropical products. Appendix table 27 presents a breakout of U.S. agricultural exports and imports by major commodity group—both volume and value—for 1998-2000.

Bulk Export Value To Rise Modestly

The value of U.S. bulk commodity exports (wheat, rice, coarse grains, soybeans, cotton, and tobacco) is projected at $18.1 billion, a 3-percent increase over 1999. With most export unit values for bulk commodities projected to decline, the gain reflects mainly the anticipated increases in volume for all bulk commodities except tobacco (to remain stable) and corn (to decline). The bulk share of total agricultural export value will remain at 36 percent, unchanged from fiscal 1999.

Bulk export volume is projected at 115.1 million tons, 5.3 million tons over 1999. Soybeans are expected to see the largest gain in volume, rising by 3.2 million tons. Exports of wheat are projected up 2.5 million tons, cotton up 400,000 tons, and rice up 100,000 tons.

The projected record U.S. soybean harvest in 1999/2000 is expected to keep world soybean production at a high level and prices weak. Consequently, expected U.S. soybean exports in 2000 are forecast to rise 15 percent in volume while gaining only 4 percent in value. Small decreases in South American competitors' supplies should enable the U.S. to boost its share of world soybean trade.

The value of U.S. wheat exports is projected up 11 percent, due mostly to higher volume, as export unit values are forecast only slightly higher than in 1999. Increased foreign demand and decreased export competition explain the growth. Fiscal 2000 exports from Turkey and Eastern Europe—significant exporters in some years—are expected to decline by at least 50 percent due to smaller production. However, Australia and Canada still will be important competitors for the larger demand.

U.S. cotton exports in 2000 face expanding global supplies as well as an expected increase in exports by China, a major importer in some years. U.S. production will rebound to a more normal level of

U.S. Agricultural Exports To Rise Slightly in 2000

	1996	1997	1998	1999	2000
			$ billion		
Grain and feeds	21.6	16.5	14.1	14.4	14.4
Oilseeds and products	9.7	11.4	11.1	8.2	8.3
Livestock products	8.1	7.7	7.6	7.4	7.7
Poultry and products	2.7	2.9	2.7	2.1	2.2
Dairy products	0.7	0.8	0.9	0.8	0.9
Tobacco, unmanufactured	1.4	1.6	1.4	1.4	1.4
Cotton and linters	3.0	2.7	2.5	1.4	1.7
Seeds	0.7	0.9	0.8	0.8	0.9
Horticultural products	10.0	10.6	10.3	10.3	10.5
Sugar and tropical	1.9	2.1	2.1	2.0	2.0
Total	59.8	57.3	53.6	49.0	50.0

Fiscal years. 1999 forecast; 2000 projected. Based on commodity forecasts in August 12, 1999 *World Agricultural Supply and Demand Estimates*. Total includes miscellaneous products.

Economic Research Service, USDA

approximately 4 million tons (18.3 million bales) from last year's drought-reduced low of just 3 million tons (13.9 million bales). With larger production, U.S. exports are forecast up 44 percent in quantity, but stiffer export competition will limit expected gains in export value.

Record U.S. rice production will bolster U.S. exports in 1999/2000. However, export competition will heighten in 2000 and prices will fall sharply as production rises in several major exporting countries (China, Thailand, and Vietnam) and in several major import markets. While U.S. export volume is projected at 3.3 million tons (up 100,000 tons), expected low prices will keep export value at $1 billion (the same as 1999).

In contrast to all other bulk commodity exports, prospective U.S. exports of corn fall 1.5 million tons in fiscal 2000 to 48.5 million tons, valued at $4.6 billion, as China boosts exports and intensifies competition in the world corn market. Total U.S. coarse grain exports (value and volume) are forecast to decline, with the drop in corn exports offsetting an expected increase in barley and sorghum exports.

HVP Exports To Recover From 1999 Decline

Greater world economic growth should begin to raise global incomes and increase overseas demand for high-value product trade again in 2000. U.S. HVP exports are forecast at $31.9 billion, 1.3 percent over 1999. Most categories are projected up slightly, including soybean meal, red meats, poultry meat, dairy products, fruits, and tree nuts. The only commodities not gaining are soybean oil and vegetables. The HVP share of total agricultural export value is essentially unchanged at 64 percent in 2000.

The record-large U.S. soybean crop and expected gains in demand support increased soybean meal exports in 2000, forecast at 6.3 million tons and $1.2 billion. Most of the gain is in volume, up 1 million tons; continued weak export prices limit gains in value to $100 million. Forecast U.S. soybean oil exports drop to $400 million (down $200 million) as soybean oil prices decline under record-large world oilseed production (including a record palm oil crop).

Prices of both beef and pork are forecast to increase in 2000, which will raise expected beef and pork export value by 7 percent. In addition, some beef and pork food-aid shipments to Russia from 1999 will be pushed into first-quarter fiscal 2000, raising expected export volume.

Exports of poultry meat are forecast at $1.8 billion, up $100 million, supported by a small rise in demand from Asia and the Baltic States and slightly higher export unit values. With economic turnaround for Russia unlikely, the export volume of U.S. poultry meat is not expected to recover in 2000 after plummeting in 1999.

Total horticultural exports are forecast to expand $200 million to $10.5 billion. U.S. fruit and tree nut exports are each forecast up $200 million. Fruit exports should be bolstered by a recovery in the U.S. fresh orange crop and by higher prices, along with growth in grapefruit and apple shipments to Asia. A larger U.S. tree nut crop is projected to boost U.S. tree nut exports. Offsetting some of the gain in fruits and tree nuts is a decline in vegetable exports due to sharper export competition and flat demand. AO

Carol Whitton (202) 694-5287
cwhitton@econ.ag.gov

Mary Lisa Madell

EU's Agenda 2000 & Beyond

The European Union's (EU) Agenda 2000, finalized in March, builds on key agricultural reforms of 1992 by further reducing support prices for some commodities while partially compensating producers for the price declines through direct payments. In general, Agenda 2000 changes in the grain, oilseed, dairy, and beef sectors are modest and depend on world price levels. But for wheat, the reforms will likely move the government purchase price below a rising world price, enabling the EU to expand wheat exports without subsidies. Besides moving the EU further from price supports in favor of direct payments, Agenda 2000 will modify supply control measures.

While Agenda 2000 effects on production and trade are modest, implications for the next round of World Trade Organization (WTO) negotiations are more profound; the EU will have more negotiating room on support prices, tariffs, and export subsidies (depending upon the commodity) while still protecting its domestic markets from imported agricultural products.

In 1992, the European Community (EC) adopted a set of reforms to its Common Agriculture Policy (CAP) in pursuit of an agreement in the General Agreement on Tariffs and Trade (GATT) multilateral trade negotiations. The reforms, the most comprehensive in the nearly 30-year history of the CAP, have become the philosophical basis for future changes in the CAP, featuring lower support prices, partially decoupled direct payments, and cropland set-aside.

Agenda 2000 represents the European Union's initial position for the next round of WTO negotiations on agriculture, to begin in November 1999. Agenda 2000 is also a financial package and a prelude for the next EU enlargement, which will include a number of Eastern European countries. The EU also imposed a ceiling on CAP spending from 2000 to 2006, a ceiling that will surely be surpassed if EU enlargement occurs during that time. In fact, the ceiling probably would have been surpassed even without enlargement. Compensation payments will continue and will likely be extended to East European farmers (EU enlargement), putting even greater pressure on the CAP budget.

If Agenda 2000 does not produce the desired results while meeting budgetary and WTO commitments, the reforms could be revised as early as 2003, after midterm reviews. Pressures for deeper reform will likely be greater in 3 years because of the need to complete the WTO multilateral negotiations on agriculture, the strain of mounting expenses on the CAP budget, and EU enlargement encompassing countries with agricultural sectors competitive with existing EU members.

This analysis by USDA's Economic Research Service (ERS) compares an Agenda 2000 scenario with USDA February 1999 baseline projections. The baseline projections were made with the assumption that the EU would use unreformed CAP mechanisms to comply with its WTO limits on subsidized exports. The baseline set-aside for cropland is 5 percent in 1998/99, 10 percent in 1999/00, 15 percent from 2000/01 to 2002/03, and a maximum of 17.5 percent from 2003/04 to 2009/10. In the baseline scenario, the EU does not accumulate stocks beyond the historical average. The ERS analysis of Agenda 2000 suggests that most EU agricultural commodities will continue to be uncompetitive in world markets, and will require continued EU subsidization for exports.

Domestic Support & Export Subsidies May Fall

In the Uruguay Round Agreement on Agriculture (URAA), countries agreed to curtail programs and policies that provide direct economic incentives to producers to increase resource use or production, such as administered price supports, input subsidies, and producer payments not accompanied by limitations on production. Support reductions were implemented by agreed reductions to a country's Aggregate Measure of Support (AMS), a numerical measure that quantifies the economic benefits from policies considered to have the greatest potential to affect production and trade (*AO* December 1998). The EU's compensatory payments**,** designed to replace farm income lost through support-price reductions, as well as former U.S. deficiency payments, were exempt from curtailment because they were considered to be payments under production-*limiting* programs and are scheduled to be renegotiated in the upcoming WTO Round.

Production-*enhancing* policies, subject to AMS reduction, are considered to have the largest production and trade effects. According to the URAA, the AMS for production-enhancing policies was to have been reduced by 20 percent from the

1986-88 base period. The 1992 CAP reforms exceeded the 20-percent reduction required in the EU's AMS. Agenda 2000 also lowers the AMS because of the reduction in support prices. Consequently, the EU appears able to agree to a substantial reduction in its domestic support without affecting its internal markets.

Even with price reductions of the CAP 1992 reform, the EU was constrained by the quantity of subsidized exports allowed under the URAA. Grain and beef exports were particularly troublesome because EU prices continued to exceed world prices throughout most of the 1990's. Agenda 2000 price cuts will enable the EU to export wheat without subsidy in 2000, and marginally more pork, poultry, and eggs will be exported without subsidy because of lower feeding costs.

Agenda 2000 Reforms EU Farm Policy

The final agreement calls for:

- a 15-percent reduction in grains support price (18 euros/mt), phased in over 2 years, to be offset by an increase in direct payments (9 euro/ton);
- a 33-percent reduction in direct payments to oilseed producers, implemented over 3 years, equaling the grains direct payment in 2002;
- a 10-percent minimum required cropland set-aside for 2000-06;
- a 20-percent reduction in the support price for beef to 2,224 euros/ton, to be phased in over 3 years and offset by direct payments;
- a delay in dairy reform until 2005/06;
- a 1.2-percent increase in the dairy quota in the first 2 years for a group of specified deficit countries, and, starting in 2005, a 1.2-percent increase in the group quota over 3 years for the remaining countries; and
- a limit to total agricultural spending for 2000-06 of 40.5 billion euros per year, in real terms.

Grain & Milk Output To Rise

Under the EU's Agenda 2000 proposals, grain production would increase above USDA's baseline projections. The 10-percent set-aside requirement, agreed upon within the EU, is lower than the baseline for most years, making more land available for production. However, grain yields are expected to be slightly lower than baseline projections as farmers use less fertilizer in response to a 15-percent cut in support price.

Based on USDA grain price projections in the 1999 baseline, the EU grain intervention price would be below world and U.S. wheat prices but above world and U.S. prices for corn, barley, and oats. With the world wheat price above the intervention level, EU wheat producers could export at the world price without subsidies. The price of other EU grains would remain at the intervention level, above world prices. Growing wheat in the EU would be more profitable than other grains, shifting some acreage out of coarse grains and oilseeds and into wheat.

Grain feeding would increase in response to the support-price cut, at the expense of meal feeding. As the internal wheat price moves above the internal price of other grains, wheat feeding would decline while feeding of barley and corn would increase. The 15-percent cut in support price could make EU *wheat* competitive in world markets in 2000, compared with 2005 in the baseline, eliminating the need for export subsidies. The proposed grains intervention price is well above USDA projected world prices for coarse grains. EU wheat exports would increase above USDA estimates, while coarse grain exports would remain at the EU's WTO subsidized export limits.

The reduction in EU direct payments to *oilseed* producers would initially cause a slight shift out of oilseed production into wheat production. However, oilseed production would be slightly higher than USDA baseline projections, due to the lower 10-percent set-aside.

While EU *dairy* reform has been postponed until 2005, milk production will increase 1.2 percent in 2000 in response to the 1.2-percent increase in the dairy quota. The quota will rise another 1.2 percent from 2005 to 2007. The support price for skim milk powder (SMP) will be allowed to fall 15 percent over the same 3-year period.

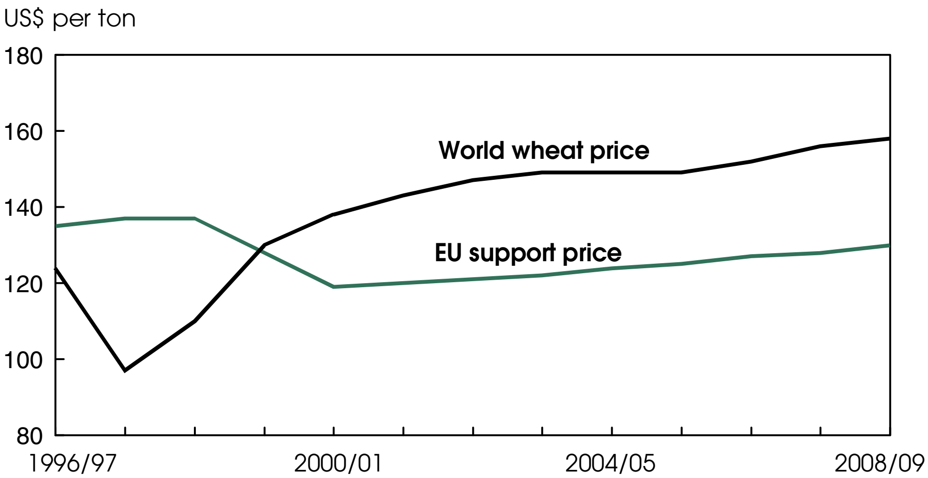
Current EU dairy prices appear too high to allow the EU to export dairy products without a subsidy. Currently, all EU butter exports, nearly all SMP exports, and 82 percent of cheese exports are subsidized. Because the 15-percent reduction in support price is far smaller than average export subsidies for both butter and SMP, the dairy support price will remain above world prices and export subsidies will continue to be required.

The support price for *beef* is cut by 20 percent, but because of lower feed costs, increases in the dairy quota (more milk cows producing more calves for beef), and larger direct payments, beef production will decline only slightly. If the full 20-percent cut in the beef support price is passed on to consumers, beef stocks could be eliminated. If half the price cut reaches consumers, beef stocks could drop from 828,000 tons in 1998 to about 150,000 tons by 2007. The support price for beef will decline 556 euros/ton, far less than the average export subsidy of 1,388 euros/ton in 1995/96-1996/97, thus remaining above the world price and requiring subsidies for exports.

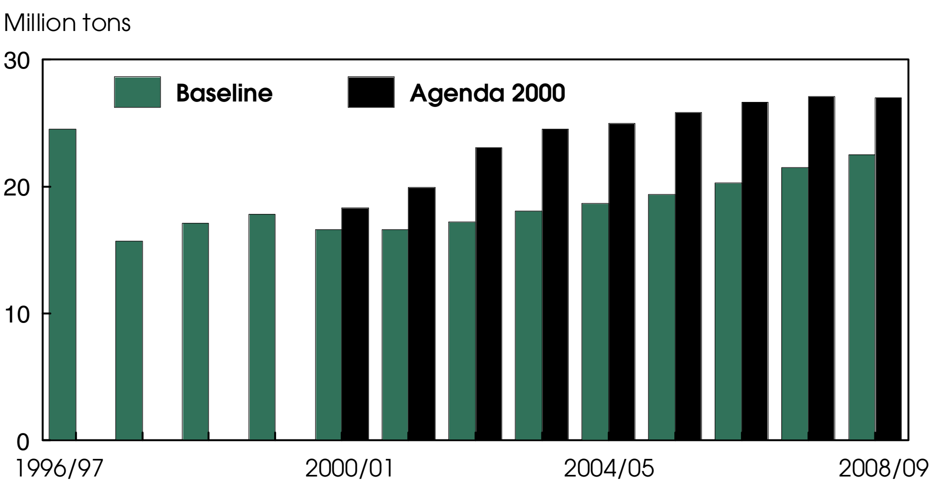
Effects of Agenda 2000 on U.S. agriculture will vary by commodity. EU livestock product exports will be small, producing only marginal effects on U.S. livestock product exports. EU wheat exports are likely to increase significantly under Agenda 2000, which will push the world price of wheat down about 4 percent. Consequently, U.S. wheat production would decline about 1 percent (less than a million tons), and consumption would increase slightly in response to the lower wheat price, diminishing exports by about 1.5 million tons.

World Agriculture & Trade

With EU Wheat Support Prices Below World Prices in ERS's Agenda 2000 Scenario...



...EU Wheat Exports Are Projected Above Baseline Levels



1999/2000-2008/09 projected.

Economic Research Service, USDA

Market Access Remains Restricted

The URAA provided for a minimum level of market access and maximum allowable levels of domestic support and export subsidies. Market access committed member states to tariffication and reduction of all border measures by an average 36 percent over a 6-year period to 2000, and no less than 15 percent for any individual tariff. Member countries also had to establish access quotas equal to historical import levels to maintain current levels of imports or, in the absence of historical imports, establish a minimum access quota that would provide an opportunity for imports. However, "dirty tariffication" occurred where countries exaggerated measures of domestic prices and/or understated world prices, thus increasing tariffs. In addition, the chosen base period against which the cuts would be measured was 1986-88, a time of high levels of protection, which added to the high tariff levels allowable.

Agenda 2000, by lowering intervention prices, effectively lowers the tariff on grains and beef. The EU could thus agree to tariff reduction at least equal to the reduction effected by Agenda 2000. However, EU tariffs are so high that the EU could reduce tariffs by a substantial amount and still not face competition from imports, with the exception of currently imported high-quality grains such as durum wheat, malting barley, and high-quality common wheat. No country is likely to penetrate the EU beef market because the applied tariff is much higher than that required to protect EU producers.

Consumer Issues Affect EU Ag Policy

Food quality and safety regulations will likely have little short-term impact on the outcome of Agenda 2000 reforms for grains. EU corn producers are not likely to be greatly affected by changes in competitive conditions resulting from restrictions on genetically modified varieties, as little corn is currently exported by the EU, and corn exports are not expected to expand significantly even after support price cuts. Furthermore, EU corn producers will continue to be protected by market barriers protecting grains.

With respect to nutrition, a number of consumer advocates have pointed out that the CAP undermines the advice of the latest medical research, which emphasizes the need for increased vegetable and fruit consumption. Production restrictions and encouraged market withdrawals make vegetables and fruits, which are not addressed by Agenda 2000, relatively more expensive.

The growing influence of consumers in agricultural policy is evidenced by the EU's acknowledgment that one of the motivations for CAP reform is to address consumer concerns. The CAP has been criticized for its cost and its large share of the EU budget, for contributing to pollution and the spread of animal diseases by promoting intensive agriculture and overproduction, and for failing to promote economic development. However, support price cuts for grains and beef may discourage overuse of chemicals and undesirable practices associated with intensive livestock production. Provisions for promoting less intensive production of livestock and other agri-environmental measures will help meet environmental objectives. Targeting of funds to areas in greatest need will help direct funds based on development objectives and farm income equality goals.

Some of these consumer, animal welfare, and environmental pressures are steering the EU toward common ground with its trading partners and away from subsidizing overproduction. For example, consumers and animal rights' advocates are pressing the EU for more stringent food safety regulations of pathogens, pesticides, livestock production methods, and crops developed through biotechnology. Farmers are increasingly being required to moderate the effects of their practices on animal welfare and the environment.

Some of these regulations have led to policy changes that will likely create greater trade conflict. Trade disputes over hormones in beef, genetically modified organisms (grains and oilseeds), fur trapping, battery cages (confinement cages for layer hens), size of living space for livestock, and a host of other issues have already surfaced between the EU and its trading partners.

Trade conflicts have been precipitated by mandated labeling in the EU, demanded by activist consumer groups there. Labeling, whether mandatory or voluntary, is one way food processors can transmit information to consumers and target those who prefer foods produced in what they view as an environmentally benign and humane way.

Anticipating the Next WTO Round

The EU is better positioned to aggressively negotiate in the WTO round than in the Uruguay Round. Because of the 1992 reforms and Agenda 2000, the CAP can withstand a substantial cut in domestic support and lower tariffs without compromising internal markets. But further cuts in allowable levels of subsidized exports will require changes in the CAP beyond Agenda 2000. And competitors have made it clear that subsidized exports will be the principal target of the next WTO round.

Concurrent with the WTO round of negotiations will be budget issues generated by EU enlargement. While EU enlargement does not appear to affect the WTO negotiations in terms of market access, domestic support, or export subsidies, enlargement will create severe budget problems under the strictures of Agenda 2000. With a budget fixed at 40.5 billion euros through 2006, the CAP will have to be reformed again if enlargement is to occur. Deepeniing reforms could produce fully decoupled CAP compensation payments and could lower support prices to world levels, thus removing the need for export subsidies. Such a move would pressure the EU's international trade partners to do likewise.

The EU has stated that it plans to introduce consumer, environmental, and animal welfare issues into WTO negotiations. The EU feels that if its farmers are to incur costs because of labeling and processing regulations, imported goods must be subject to the same cost-incurring regulations. If not, EU representatives have stated that these exports will not be allowed to enter the EU. The U.S. position is that these issues are already covered under the URAA. AO

David Kelch (202) 694-5151
dkelch@econ.ag.gov

For more on Agenda 2000

See the forthcoming report on:

The European Union's Common Agricultural Policy and the pressures for change

* Agenda 2000 reforms
* Potential impacts of EU enlargement
* Food safety and environmental issues

Watch for it on the Economic Research Service website
www.econ.ag.gov

Risk Management


Chicago Board of Trade

Assessing Agricultural Commodity Price Variability

Price variability is a component of market risk for both producers and consumers. Although there is no consensus as to what constitutes too much commodity price variability, it is generally agreed that price variability that cannot be managed with existing risk management tools can destabilize farm income, inhibit producers from making investments or using resources optimally, and eventually drive resources away from agriculture.

Market price volatility that is not offset by application of risk management strategies can lead to sudden and large income transfers among various market participants. For example, grain producers with high variable costs or significant debt may face increased financial stress because of unexpected downward swings in prices and income, and may be unable to repay creditors. Input suppliers, farm lenders, processors, and producers in both the grain and livestock sectors may see their business costs rise and may pass those higher costs on to consumers. And insurance companies trying to set actuarially sound revenue insurance rates when faced with increases in price variability must raise premiums charged to farmers in order to maintain actuarial soundness (*AO* August 1999).

This article continues *Agricultural Outlook's* series on risk management.

Counterbalancing society's interest in the farm sector's ability to manage price risk is an equally important interest in preserving a "natural" degree of price variability. Price changes trigger supply and demand adjustments that make markets work more efficiently. Thus, society has an interest not only in helping market participants manage price risk via appropriate risk management tools, but also in allowing markets to function efficiently.

An improved knowledge of the patterns of commodity price variability and the forces behind it would aid policymakers in providing a policy environment conducive to good risk management practices and would help farmers to better understand and manage their price risks. USDA's Economic Research Service (ERS) has undertaken research designed to identify trends or patterns in price movements and variability over time—nominal and inflation-adjusted—and across agricultural commodities. The research also explores factors influencing price variability, such as strong seasonal patterns in production, market supply and demand conditions, and government policies.

How Market Conditions Affect Price Variability

Agricultural commodity prices respond rapidly to actual and anticipated changes in supply and demand conditions. Because demand and supply of farm products, particularly basic grains, are relatively price-inelastic (i.e., quantities demanded and supplied change proportionally less than prices) and because weather can produce large fluctuations in farm production, potentially large swings in farm prices and incomes have long been characteristics of the sector and a farm policy concern.

The *supply elasticity* of an agricultural commodity reflects the speed with which new supplies become available (or supply declines) in response to a price rise (fall) in a particular market. Since most grains are limited to a single annual harvest, new supply flows to market in response to a postharvest price change must come from either domestic stocks or international sources. As a result, short-term supply response to a price rise can be very limited during periods of low stock holdings, but in the longer run expanded acreage and more intensive cultivation practices can work to increase supplies. When prices fall, the cost of storage relative to the price decline helps producers determine if commodities that can be stored should be withheld from the market.

Similarly, *demand elasticity* reflects a consumer's ability and/or willingness to alter consumption when prices for the desired commodity rise or fall. This willingness to substitute another commodity when prices rise depends on several factors, including number and availability of substitutes, importance of the commodity as measured by its share of consumers' budgetary expenditures, and strength of consumers' tastes and preferences. Since the farm cost of basic grains generally comprises a very small share of the retail cost of consumer food products (e.g., wheat accounts for a small share of the price of a loaf of bread and corn represents a fraction of the retail cost of meat products), changes in grain prices have little impact on retail food prices and therefore little impact on consumer behavior and corresponding farm-level demand.

Increasing demand for grains for *industrial use*, whether from processing industries or from rapidly expanding industrial hog and poultry operations, further reinforces the general price inelasticity of demand for many agricultural commodities. Industrial use of grains generally is not sensitive to price change, since industrial users usually try to utilize at least a minimal level of operating capacity year round. Also, in most cases, as with retail food prices, the price of the agricultural commodity represents a small share of overall production costs of agriculture-based industrial products.

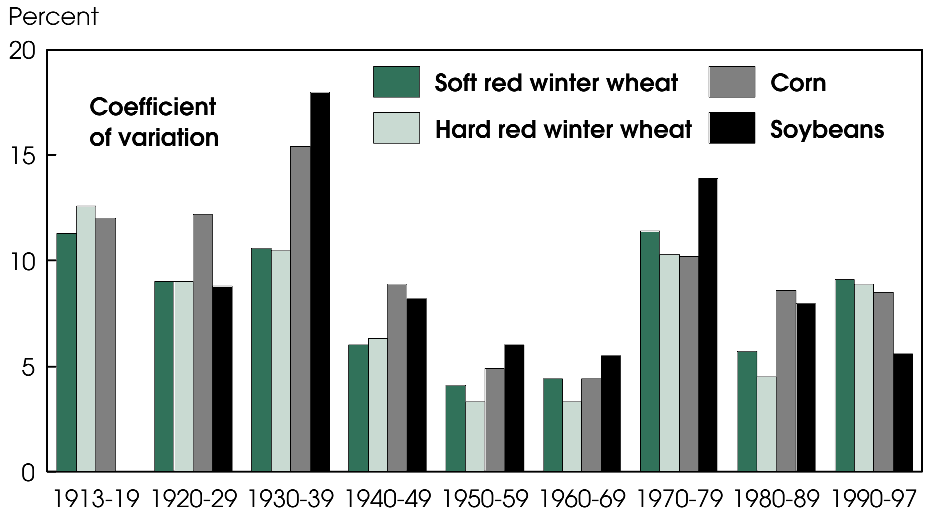
However, feed demand for grain, particularly for cattle feeding in the Southern and Northern Plains states, is far more sensitive to relative feed grain prices, since similar feed energy values may be obtained from a variety of different grains. Cattle feeders in these states are quick to vary the shares of different grains in their feed rations as relative prices change.

In general, elasticities of demand and supply for agricultural products are both low but not uniform or consistent across commodities. For example, there are several characteristics unique to wheat production in the U.S. that suggest greater supply and demand elasticity (and, since supply and demand respond somewhat faster, less dramatic price swings) relative to other field crops in the face of external supply and demand shocks—e.g., crop failure in a competing exporter country or financial crisis in a major purchasing country.

First, U.S. wheat production is marked by two independent seasons, winter and spring, with planting periods nearly 6 months apart. If it becomes apparent that winter wheat production is substantially below market expectations due to prevented plantings or weather-related declines in expected yield, some potential production losses can be offset by increased spring wheat plantings.

Second, the potential for surplus wheat production to enter agricultural markets from a large number of competing wheat exporter nations (principally Canada,

Cash Price Variability Was Greatest Before World War II and the in 1970's



Based on prices at major terminal markets. Soybean price data for 1913-19 not available. The coefficient of variation (CV) is a measure of price variability. CV = (dispersion of monthly inflation-adjusted average cash price over the season divided by mean of monthly average cash price over the season) multiplied by 100.
Source: Constructed by ERS using monthly average cash price data from Bridge News Service and USDA's Agricultural Marketing Service and the all-urban CPI deflator from the Bureau of Labor Statistics.

Economic Research Service, USDA

Argentina, Australia, the European Union, and occasionally Eastern Europe) increases the supply responsiveness of wheat beyond that of other major grains. In addition, since two major U.S. wheat export competitors are located in the Southern Hemisphere and their production cycle runs opposite that of the U.S., still greater elasticity of supply in international markets is possible.

Argentina and Australia have the opportunity to expand planted wheat acreage in response to supply and demand circumstances in the U.S. within the same marketing year, dampening the potential year-to-year variability of prices in the U.S. market. While this potential additional supply limits price rises, it may actually deepen price declines because high storage costs and limited storage capacity frequently push surplus production into international markets even when prices are low.

Third, wheat can serve dual functions as either food or feed. The feed potential of wheat can have a dampening effect on price variability, either by introducing an additional source of demand that prevents prices from falling too low or by shutting off that same demand source when prices rise too high relative to other feed grains.

Fourth, most government-assisted export programs have been directed at wheat and have had a potential dampening effect on price variability in much the same manner as feed demand—they introduce an additional source of demand that moves opposite prices. Because export programs are funded to deliver a fixed *value* of commodities, the *volume* of U.S. program grain exports rises during periods of excess supply and relatively lower prices, but falls when supplies are tighter and prices higher.

Similarities Common in Commodity Price Movements

In examining long time series of monthly average spot market prices for corn, oats, soybeans, and several classes of wheat from major terminal markets, ERS has found strong similarities in nominal and inflation-adjusted price movements and variability over time and across agricultural commodities. Price movements of corn, oats, and most wheat classes are similar mainly because of their

Risk Management

Wheat Price Is More Highly Correlated With Corn Price Than With Soybeans. . .

	Wheat			Corn	Soybeans
	Soft red winter	Hard red winter	Hard amber durum		
	Correlation coefficient for price				
Wheat:					
Soft red winter	**1.00**	0.99	0.87	0.90	0.71
Hard red winter	0.99	**1.00**	0.90	0.90	0.71
Hard amber durum	0.87	0.90	**1.00**	0.81	0.62
Corn	0.90	0.90	0.81	**1.00**	0.72
Soybeans	0.71	0.71	0.62	0.72	**1.00**

. . .but Grain Price Variability Is Less Highly Correlated Than Grain Price

	Wheat			Corn	Soybeans
	Soft red winter	Hard red winter	Hard amber durum		
	Correlation coefficient for price variability				
Wheat:					
Soft red winter	**1.00**	0.94	0.71	0.46	0.39
Hard red winter	0.94	**1.00**	0.71	0.53	0.35
Hard amber durum	0.71	0.71	**1.00**	0.22	0.30
Corn	0.46	0.53	0.22	**1.00**	0.39
Soybeans	0.39	0.35	0.30	0.39	**1.00**

Prices are inflation-adjusted monthly spot market prices during various time periods, 1913-98. The correlation coefficient indicates similarity between two sets of variables: a coefficient of plus one (+1) indicates a perfect positive relationship, minus one (-1) a perfect negative relationship, and zero no relationship.
Price variability is coefficient of variation (CV) for market-year inflation-adjusted monthly spot market prices. CV = (dispersion of monthly inflation-adjusted average cash price over the season divided by mean inflation-adjusted monthly average cash price over the season) multiplied by 100.
Sources: Spot market prices from USDA's Agricultural Marketing Service; daily cash settlement prices from the Chicago Board of Trade; and monthly average settlement prices from Bridge News Service.

Economic Research Service, USDA

substitutability in livestock feeding, but their market-year price volatility shows greater differences because the commodities differ in their response to supply and demand shifts.

Nominal prices for these commodities, as reported by USDA's Agricultural Marketing Service, have shown a general upward trend since the early 1930's, interrupted by nearly two decades of fairly stable prices in the 1950's and 1960's. This period of relative stability ended with a dramatic price spike in the early 1970's, a tumultuous period marked by an unexpected surge in world grain demand and trade, coupled with poor harvests and rapid, dynamic macroeconomic changes (*AO* September 1996). Since the mid-1970's, nominal prices appear to have both a higher mean level and greater variability. The past three seasons (1996-98) have witnessed a precipitous plunge in nominal prices from the May 1996 spike when corn and two of the high-protein wheat classes—hard red winter and hard red spring—attained record-high monthly average spot market prices.

When monthly average price data are adjusted for inflation, a different pattern emerges—declining real prices since the late 1940's, interrupted by the dramatic upward spike in prices of the early 1970's. The pattern of inflation-adjusted price variability is less clear than the pattern of nominal price variability, but it suggests that prices were more variable during the three pre-World War II decades than since.

A common statistic for measuring the variability of a data series is the coefficient of variation (CV), which expresses the dispersion of observed data values as a percent of the mean. Since the CV is unit-free (a percent), it facilitates comparison of price changes in different directions, across different periods of time, and for different commodities. Marketing-year CV's calculated from each commodity's inflation-adjusted series of average monthly spot prices reflect the price volatility that occurred *within* each marketing year. The nature and degree of this within-year price variability affect decisions on the mix and level of farm activity, as well as on risk management and marketing strategies.

On the other hand, comparison of CV's *across* market years provides an indication of a commodity's longrun price variability. Such across-year price variability influences firm expansion and capital-asset acquisition decisions, and has a direct bearing on a firm's economic viability. In addition, the longrun variability of commodity prices across marketing years reflects the risk environment for agriculture relative to other sectors.

A shortcoming inherent in using historical averages as a forecast of price volatility is that such estimates fail to fully incorporate current market information. For example, prices are likely to be more volatile than the historical average during a year that begins with very low carryin stocks.

The degree of variability in commodity prices is traditionally believed to depend heavily on stock levels and on the nature and frequency of unexpected shifts in demand and supply. Thus, essentially all market forces affecting commodity price formation could potentially come into play in determining price variability. Such forces include own supply (carryin stocks, production, and imports), supply of substitute crops (depending on end use), and aggregate demand (domestic mill, feed, seed, and industrial use, and exports). Own supply and supplies of competitor crops are directly affected by weather, acreage, government policy, and international trade factors. Demand is directly affected by price, income, shifts in tastes and preferences for end uses, and population growth. Grain and seed characteristics—i.e., type, quality, protein content, and color—are also key factors in price formation.

The possibility of substitution in use is critical in determining strength of correlation between different commodity prices. For example, inflation-adjusted spot market prices for three winter wheat classes—soft red, hard red, and soft white winter—and hard red spring wheat are highly correlated, because they offer some similar characteristics to end users. Hard amber durum, on the other hand, with its high protein level and specific milling and end use qualities, offers the least opportunity for substitution with other wheat classes and, as a result, tends to have slightly lower price correlations with other wheat classes.

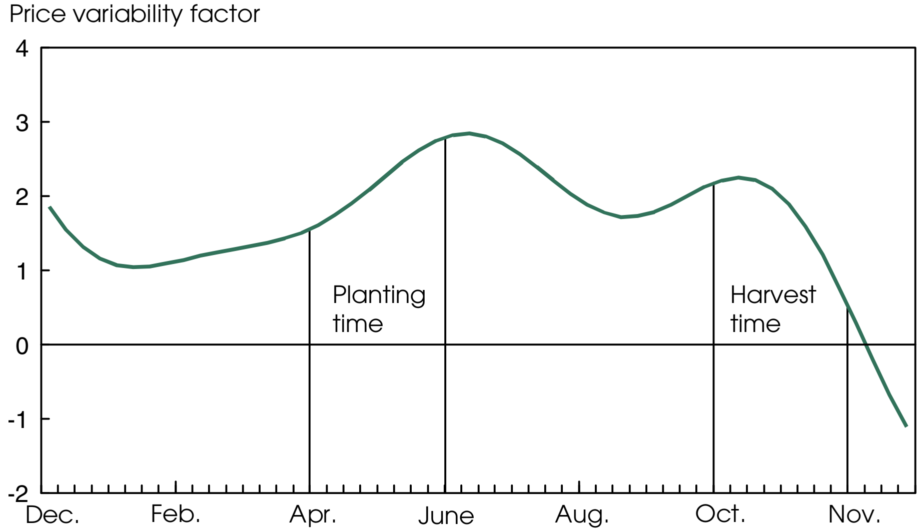
Price correlations among corn, oats, and wheat, although somewhat lower, are still very strong and likely reflect their substitutability in feed markets. Price correlations between these grains and soybeans are lower yet. Soybean prices are principally derived from demand for its joint products—oil and meal. Soybean meal is generally included in feed rations as a protein source, but may compete directly with other grains in feed rations as an energy source, depending on relative prices. However, soybean oil—used principally as a food with some minor industrial uses—has limited substitutability with grains (corn oil being the major exception), thereby weakening the soybean-grain price correlation.

Correlations of market-year price CV's for corn, oats, wheat classes, and soybeans are sharply lower compared with price-level correlations. This suggests that while general price levels for most grains and soybeans may be influenced by or move in tandem with many of the same forces, commodity price variabilities are more distinct and less strongly related to each other, due likely to disparities in their respective supply and demand responsiveness to price changes.

Strong Seasonal Pattern for Within-Year Price Volatility

The principal difficulty analyzing within-year price variability is that while prices can be routinely observed for almost any time period (e.g., year, month, week), the economic supply and demand factors that likely influence price movements are generally reported only on a monthly or quarterly basis. Research conducted jointly by ERS and North Carolina State University attempted to circumvent this problem by transforming monthly and quarterly data into weekly data representations. These were used to assess the importance of relevant market information in forecasting *within-year* price variability (measured as

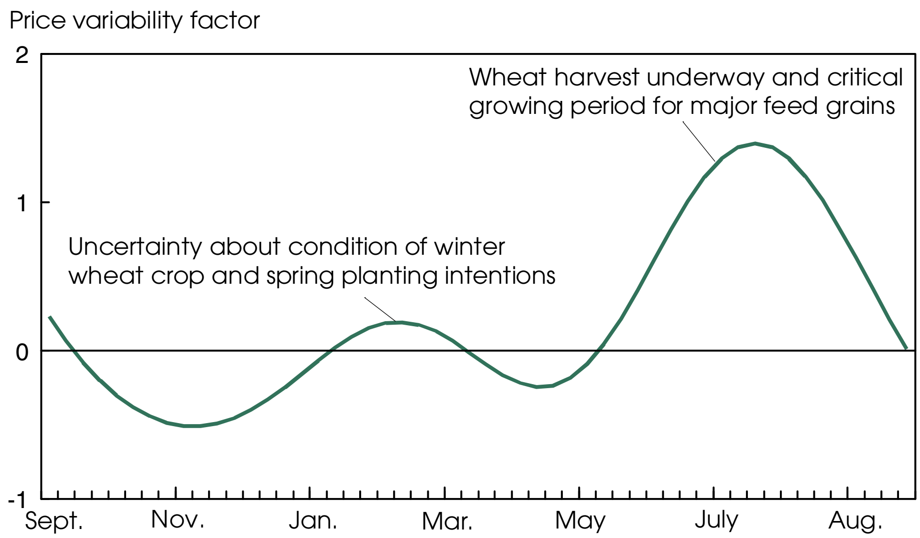
Corn Price Variability Rises During Planting Time and Ebbs During Harvest



Price variability factor indicates weekly deviation from expected (or forecast) price variability measured over the entire time period. Zero indicates price variability during that week is the same as expected price variability over the entire time period. Seasonal volatility estimated by an economic model of volatility using weekly Chicago Board of Trade December corn futures contract prices, 1986-97.
Source: USDA's Economic Research Service and North Carolina State University.

Economic Research Service, USDA

Wheat Price Variability Peaks When Uncertainty Is Greatest



Price variability factor indicates weekly deviation from expected (or forecast) price variability measured over the entire time period. Zero indicates price variability during that week is the same as expected price variability over the entire time period. Seasonal volatility estimated by an economic model of volatility using weekly Minneapolis Grain Exchange September wheat futures contract prices, 1986-97.
Source: USDA's Economic Research Service and North Carolina State University.

Economic Research Service, USDA

Are Prices More Volatile in Recent Decades Than Earlier?

An examination of the historical record of wheat, corn, oat, and soybean prices during 1913-97 indicates the following patterns:

- Wheat prices tend to be less variable than prices for oats, corn, or soybeans over the entire period and during most selected subperiods. The most notable exception is the 1990-97 period when wheat price variability was above average while soybean and oat variability were below the average for the entire period.
- All five wheat classes, plus corn and soybeans, exhibited dramatic increases in price variability during the 1971-75 period.
- Price variability for all commodities is noticeably higher in the post-1970's era (1976-97) than during the pre-1970's period (1951-70).
- Price variability in the post-1970's period (1976-97) is slightly lower than variability during the 1913-50 period.

Studying such a long price series gives greater perspective to current levels of price variability and suggests that perhaps an anomaly with respect to price variability occurred during the 1950's and 1960's, when heavy government involvement in agricultural commodity markets—including large government stockholdings of wheat and feed grains—coupled with low absolute levels of world trade (relative to the post-1971 period) contributed to artificially stable prices.

a rate of change) of settlement prices for the Minneapolis Grain Exchange's September wheat futures contract and the Chicago Board of Trade's December corn futures contract during the 1987-96 period.

Futures prices play a critical role in facilitating seasonal market operations, because they provide a forum for forward contracting, as well as a central exchange for domestic and international market supply and demand information. Regional and local grain elevators rely on futures commodity exchanges for hedging grain purchases and generally set their grain offer prices at a discount (in areas of surplus production, such as the Corn Belt) or at a premium (in deficit production areas, such as North Carolina) to a nearby futures contract. As a result, cash prices and futures contract prices are strongly linked—i.e., both prices contain much of the same information about variability.

Both corn and wheat futures contract prices display distinct patterns of seasonal variability. For the December *corn* contract, a strong variability peak occurs in June when there is a great deal of uncertainty surrounding the true extent of plantings and likely yield outcomes for corn and other spring-planted crops. Much of the acreage uncertainty is resolved with release of USDA's June 30 *Acreage* report, while yield uncertainty is resolved in July after corn pollination has occurred. A second, weaker peak occurs in October and corresponds with the arrival of new information during the peak corn harvest period. The seasonal component of corn price volatility then declines rapidly prior to contract expiration.

This pattern suggests that the bulk of relevant information is synthesized by the corn market during the critical summer growing months when estimates of acreage and yields are largely determined. Supply news then tends to dominate markets into the fall harvest, with little new information added during the period immediately preceding contract expiration.

The seasonal pattern for September *wheat* futures contract price variability also shows two peaks, the first a weak early-season peak occurring in January-March, a time of substantial uncertainty about the true condition of the winter wheat crop and farmers' spring planting intentions. Much of the uncertainty is resolved with USDA's release of its March 28 *Planting Intentions* report.

A second, much stronger peak in variability occurs in late July and corresponds with the arrival of new information during the peak wheat harvest period and the critical growing period for the major feed grains. Domestic prices for the U.S. wheat crop also depend heavily on international supply and demand conditions, and some key market information governing international developments does not reach the market until midsummer when USDA begins forecasting major international crop production. Following the July harvest-time surge, the seasonal variability then declines rapidly prior to contract expiration.

The volatility of corn and spring wheat futures prices also shows a strong negative relationship with growing conditions—better-than-average growing conditions are associated with lower price variation. However, corn and wheat prices differ in the association of variability with many of the remaining supply and demand factors studied. This is likely due to differences in their respective supply and demand responsiveness to price changes.

For corn, increases in expected U.S. domestic demand—published monthly in USDA's *World Agricultural Supply and Demand Estimates (WASDE)* report—had a positive influence on price volatility, but changes in actual levels of corn stocks—estimated quarterly by USDA—did not appear important, probably because corn supply is estimated from a single annual crop, and because changes in stocks are primarily a residual of often offsetting changes in other market forces and therefore tend to move slowly between harvests.

For wheat, changes in expected exports and domestic demand for all wheat showed no influence on spring wheat price volatility, while increases in actual all-wheat private stocks had a dampening effect on volatility. Lack of a strong relationship between demand factors and spring wheat price volatility is likely explained by winter wheat dominance of U.S. wheat exports, by the shifting importance of wheat as government food donations versus commercial export sales, and by the interplay of food-feed markets.

The study found that the level of day trading (day traders enter and exit the market with no outstanding balance at the end of the trading day) at each commodity exchange correlated positively with both corn and spring wheat price variability, likely because day trading allows prices to adjust to information more quickly. On the other hand, market concentration—measured using Commodity Futures Trading Commission “commitment of traders” data on holdings of the four largest traders—had a negative influence on spring wheat price volatility, suggesting that the action of large traders in highly concentrated markets may decrease the volatility of wheat prices.

Forces Driving Across-Year Price Variability

In joint research to investigate determinants of *across-year* price variability, ERS and North Carolina State University constructed within-year CV’s from monthly average cash prices at major terminal markets during 1944-97 for Chicago/St. Louis soft red winter wheat, Chicago corn, and Chicago/Central Illinois soybeans. Each CV reflects the price variability that occurred during a market year. Then these market-year CV’s were examined in light of year-to-year changes in major supply and demand factors.

As expected, output price variability for all three commodities was found to be negatively correlated with the level of stocks relative to total disappearance; a ready supply available from stocks tends to make prices less sensitive to new market information. However, as in the within-year study, corn, soybean, and wheat price CV’s exhibited key differences in their association with most of the remaining supply and demand factors studied, likely because of differences in their supply and demand responsiveness to price changes.

Since increases in production tend to dampen both prices and price variability by contributing to an increase in total supply relative to market demand, any change in acreage and yield (both of which have positive associations with production) is expected to have a negative, indirect effect on price variability through the influence on production. Change in yield shows a strong negative relationship with corn price variability, but no relationship with soybean and wheat CV’s. Wheat’s dual seasons (winter and spring) within a single crop year and broad geographic diversity of production likely diminish the influence of a single weather pattern on the aggregate wheat market. Change in harvested acres is negatively related to wheat price variability, but not to corn or soybean price variability.

Change in demand, on the other hand, is expected to be positively associated with price variability since increases in demand, whether domestic or international, draw down total supplies and stocks, and decreases in demand have the opposite effect. This was confirmed by a positive association between corn price variability and both domestic use and exports.

However, wheat price variability showed no relationship to change in domestic use and was negatively related to change in exports. The negative effect of wheat exports on price variability tends to confirm the smoothing effect of government export assistance programs, and suggests that U.S. wheat exports act as a residual source of supply to world markets when domestic prices fall low enough. The offsetting roles of food and feed usage in wheat price volatility—positive for widespread changes in domestic use for milling and other food and industrial uses, but negative (and offsetting) when acting as a residual outlet to feed markets—result in a net neutral effect.

Similarly, changes in the general level of input prices are expected to have positive associations with price variability indirectly via their negative influences on production and total supply. For example, rising input prices tend to dampen production and, in turn, may raise price variability. However, no relationship was found with corn and wheat price CV’s. Instead, soybean price variability showed a negative association with changes in input prices, suggesting that soybean cost savings relative to corn and wheat played a role (*AO* May 1999). As input prices rise, producers favor soybeans because net returns are higher, resulting in greater acreage, more production, and lower soybean price variability.

Government policy influences are inherent in nearly all related supply and demand variables. Several government program initiatives (including some that preceded the 1996 Farm Act) were studied to directly measure the influence of loan rates (which tend to act as support prices), expected deficiency payments (which were intended to stabilize income but often had the unintended consequence of limiting substitution in production because of associated acreage restrictions), and acreage reduction programs (which were designed to reduce supply by removing acreage from production). Results hint at some effects on commodity price variability for wheat and soybeans from acreage constraints and price support programs, but no government policy variable was found to influence corn price variability.

While far from conclusive, these results suggest that past government programs had a tendency to produce higher levels of price variability, at least for wheat and soybeans. In every case where a government policy variable was found to be important, it had a positive association with price variability. At first glance, this effect may seem surprising. However, policies that are intended to stabilize producer incomes—a central goal of past policy—are apparently likely to increase the volatility of market prices if they distort production and marketing arrangements.

Since the 1996 Farm Act, government policy has shifted away from potentially price-destabilizing direct intervention in agricultural production processes and markets. Instead, USDA’s Risk Management Agency has been working to provide the necessary tools and information for farm operators and other participants in agricultural markets to better understand and manage risks associated with producing and selling agricultural commodities. Although effective techniques for managing inter-year price risk remain elusive, a variety of management tools—e.g., futures and options contracts, and various crop and revenue insurance products (*AO* April 1999)—exist for managing within-year price risk. AO

Randy Schnepf (202) 694-5293
rschnepf@econ.ag.gov

Biotechnology Research: Weighing the Options for a New Public-Private Balance

The revolution in biotechnology, coupled with strengthened patent protection for biological inventions, is toppling conventional wisdom about the research roles of the public and private sectors. Although the division of labor was never precise, a long-held belief is that the combination of a public sector specializing in relatively basic research and a private sector oriented toward applied research and technology development generates the highest return on the nation's total research and development (R&D) investments.

Today, however, it is increasingly evident that a sizable share of what was once considered exotic basic science, such as genomic mapping, is being conducted in the private sphere by large life science firms, such as Novartis, Monsanto, DuPont, and Celera, and by many smaller biotech companies. The expansion of their basic research programs explains in part why total research expenditures by the private food and agricultural industry have nearly tripled in real terms between 1960 and 1996, from about $1.3 billion to $4 billion, and why total U.S. investment in agricultural research is much larger now than ever before. This shift in the role of the private-sector research poses new public policy questions and presents challenges for planning the public-sector agricultural research agenda.

Among the challenges facing R&D decisionmakers and analysts: Is there a unique and distinct role for public-sector research as the private sector's role expands? What is the appropriate relationship between public and private research entities? How do public researchers gain access to critical basic knowledge being generated by private firms? And should public research organizations be pursuing intellectual property protection as vigorously as private firms?

Answering such questions may require a new conceptual framework for public R&D decisions—a framework likely to evolve slowly in relation to the speed with which the biotechnology revolution is generating new knowledge of plant and animal genomics and stimulating development of genetically enhanced agricultural and agriculturally based products (*AO* March 1999).

Traditional View of Public-Private Split Is Fading

The traditional economic rationale for a strong public role in research is based on the nature of R&D—i.e., the product is information which, unless kept secret, can be copied with minimal additional cost by anyone who wants to use it. Lacking the ability to sufficiently recoup (or "appropriate") the returns on their research investments, firms would likely conduct too little research from the standpoint of potential benefits to society at large.

On the other hand, if firms are able to secure strong proprietary rights to research discoveries, the benefits of new knowledge are unlikely to be widely shared and many potentially beneficial uses may be precluded. A strong public-sector role in conducting as well as funding research helps ensure both a larger pool of R&D for the nation and broad dissemination of new discoveries to other scientists and innovators who can advance and apply them.

This logic has been used to support the idea that the public-sector role should emphasize basic research. Basic research has been the least appropriable category of research because pure knowledge, once discovered, is difficult to keep secret and its use by one person in no way precludes its use by another. Applied research, on the other hand, may result in a physical product or technology whose use can be restricted to those buying a copy.

Widely available basic research results are also likely to have the largest positive "spillovers"—that is, benefits that extend beyond the initial users and that often underpin further research discoveries. For example, knowledge of DNA structure has spawned and enhanced biomedical research discoveries all over the world. By concentrating on basic research, the public sector can maximize spillovers to the benefit of further advancements in both public- and private-sector research, as long as the results of public-sector basic research remain nonappropriable public goods.

Agriculture and agricultural technology have characteristics that have further shaped the public sector's role in U.S.

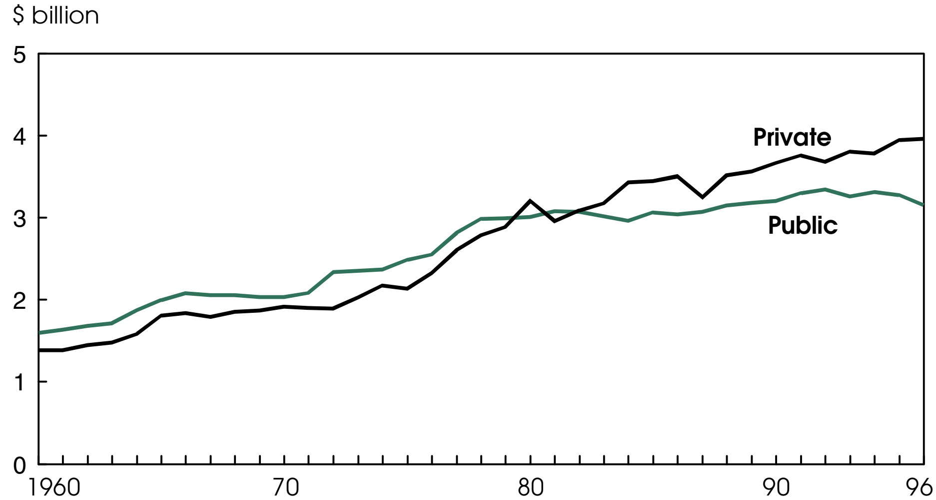
agricultural research over the last 100-plus years. Some research areas related to public concerns about agricultural production and the food system—for example, enhancing environmental quality, conserving genetic resources, improving the nutritional status of consumers, mitigating food safety risks, and protecting biological security of the food system—may have both basic and applied components that are critical for building the science base for public policy. However, such areas of research are unlikely to attract adequate private investment because prospects for financial returns are relatively low or difficult to assess.

Further, economic returns from investing in development of many agricultural production technologies, particularly self-pollinated seeds and new livestock breeds, have historically been difficult for private inventors to appropriate, not only because the products themselves provide the means to reproduce them, but also because biological inventions until recently were not subject to standard patent law. With no patent restriction, a farmer could, for example, use the seed of self-pollinated plants in the next planting season, or even sell the next generation of seed to others. Consequently, investment in crop and livestock breeding research has been historically a largely public-sector effort.

The extent to which private firms and individuals can profit from what were previously considered basic scientific discoveries changed dramatically following a 1980 Supreme Court decision that made it possible to obtain the strongest form of intellectual property protection (utility patents) for living organisms. In the last 10 years especially, the rate of patent application and patent granting for biological inventions has accelerated rapidly, particularly for genetically engineered plants and animals as well as for individual genes with specific uses (“utilities”).

In a departure from past experience with biological innovation, a number of utility patents are for biological materials that *enable* scientific research. Examples of e*nabling technologies* are “promoter genes” (genes that control or modify the action of other genes), “marker genes” (genes that, when discovered in an organism, facilitate identification of an associated trait that is otherwise not detectable), and specific cellular-level enzyme activation processes. The value of these enabling technologies is a function of their importance in the production of a biotechnology end product.

Private Agricultural Research Expenditures Have Overtaken Public



1996 dollars.

Economic Research Service, USDA

Development of a genetically engineered, salt-tolerant crop cultivar (a patentable final product), for example, may rely on use of a bacterium-based gene transfer technique (an enabling technology), which is itself patentable and which may require a license for legal use. Biological enabling technologies have been likened to computer software in that both have fairly recently been deemed patentable, both can provide intermediate means to a final goal, and both could easily be “pirated” to produce final goods were it not for intellectual property protection.

The strengthening of intellectual property law for biological materials is essential fuel for the engine of private-sector biotechnology innovation. It allows those who invest scientific resources in research to recoup their (often substantial) development costs through licensing rights to use an enabling technology or retaining exclusive sales rights (for 20 years maximum) on a final biological product. Basic science can now lead to unique and patentable properties of specific biological materials. At the same time, advances in biotechnology—e.g., fast and accurate “DNA fingerprinting” to identify patented DNA sequences—have strengthened companies’ ability to protect their intellectual property. There is, therefore, a private incentive to pursue what historically has been considered public-sector basic science, because the results are no longer pure public goods.

Continued consolidation, vertical integration, and concentration in the agricultural seed and chemical industries have raised some concerns about expansion and control of agricultural R&D by private interests. With very large life-science-based firms conducting appropriable research on agricultural biotechnologies, questions arise about the concentration of power proffered by patents and other means of protecting intellectual property. However, evidence to date indicates that licensing of many enabling technologies whose patents are owned by private firms is widespread. So, even if few firms manage a large body of intellectual property, licensing may temper the manifestation of substantial market power.

Of potentially greater concern is vertical integration of agricultural biotechnology firms along a portion of the food supply chain. For example, a chemical firm that owns a seed company focused on major row crops may have an incentive to restrict the use of an enabling technology to its own seed firm in order to limit

Government Broadens Protection for Biological Discoveries

While limited types of patent protection for plants have been available since 1930, recent government actions have significantly expanded the scope of safeguards for new biological discoveries. The landmark *Diamond v. Chakrabarty* decision by the Supreme Court in 1980 ruled that a genetically engineered organism could be patented under existing law. Subsequently, the U.S. Patent Office set precedent rules during the 1980's that permitted granting utility patents to new types of plants and plant parts (including seeds, tissue cultures, and plant genes), and also to animal genes and new and unique breeds of nonhuman animals.

During that decade, a series of new laws also changed the nature of intellectual property protection available to public-sector discoveries. In 1980, the *Bayh-Dole Patent Policy Act* allowed individuals and institutions to receive patents and then grant licenses for the results of research conducted with Federal funds. The *Stevensen-Wydler Technology Innovation Act* of 1980, later amended by the *Federal Technology Transfer Act* of 1986, authorized cooperative research and development agreements (CRADA's) as a mechanism for public-private research collaboration, and directed the public sector to transfer rights to explore commercial possibilities to the private sector for development and economic rent (profit) appropriation.

Plant breeding activities by traditional seed companies have clearly responded to the new forms of intellectual property protection by intensifying their research efforts. In recent years, the private-sector plant breeding effort—measured in scientist years—was more than twice the public-sector effort in USDA and state agricultural experiment stations combined. Although seed companies continue to emphasize cultivar development, a study of plant breeding R&D in the U.S. indicates that 40 percent of scientists specializing in genetic enhancement and basic research are employed in the private sector, with much higher shares for scientists studying hybrid crops. Nearly half of all breeders of pureline cereal crops—those that produce true-to-type seed from generation to generation—are in the private sector. Not surprisingly, the private sector owns the majority of Plant Variety Protection Certificates and patents awarded for multicellular living organisms.

competition in new row-crop seed. This in turn would limit the number and type of end products likely to be developed from that enabling technology to a level probably lower than if its use were licensed to many seed companies (including firms that produce specialty crop seed along with some major row-crop seed).

Sorting Out a Public Research Role

The strengthening of intellectual property protection for biological inventions has weakened one of the historical justifications for public support of agricultural research—i.e., the inability of private entities to sufficiently profit from research. By the same token, another major justification—i.e., to maximize knowledge spillovers by facilitating broad dissemination of research finding—appears to have been reinforced. These developments suggest the need for decisionmakers to reevaluate public research policy and to identify strategies that generate the greatest social return on R&D investments. Key to policy planning is determining when and how the public sector should interact with the private sector—i.e., whether an area of inquiry is purely in the public domain, is appropriate for public-private partnership, or is most suitable for the public sector to pursue to prevent control by the private sector.

Given that some motivations for research are distinctly public—e.g., mitigating food safety risks, improving nutritional health, and enhancing environmental quality—they are unlikely in and of themselves to be a focus for private endeavors. One benefit of stronger intellectual property protection for agricultural research is that by creating an incentive for private basic research, it offers an opportunity to redistribute limited public resources to critical areas in the public domain. For example, genetic resource conservation—storing and conserving genetic resources for the future—may be viewed as a kind of insurance against loss of rare biological material because it gives society the option of drawing upon these banked resources at a later time.

Which genetic resources will be needed for breeding in the future, and *when,* is unknown. Uncertainty of a return to such investment over a long time span means that genetic resource conservation would be seriously underfunded by the private sector in relation to its longrun value to society. This vital responsibility—currently overseen by the National Plant Germplasm System (NPGS)—is generally agreed to fall within the public domain.

Carving out areas of distinctly public-sector research is, however, likely to be more difficult than in the past, because it is increasingly likely that some knowledge and/or biotechnological tools needed for public-sector research thrusts will result from private activity and will be patented. For example, a project to genetically modify papaya for disease resistance—aimed primarily at aiding less-developed countries not likely to compete with U.S. commercial interests—was complicated by the need for university-based researchers to negotiate a half-dozen licensing agreements with private firms.

The potential for public-sector research to benefit from private-sector discoveries suggests a need to expand opportunities for partnerships. Despite many complementary research interests, public-private partnerships are not easy to forge, and disagreements over patent arrangements and licensing rights can be major barriers.

Drawing firms into such agreements—especially where making the findings readily available may be one of the major goals—can be very difficult. Nonexclusive or limited-exclusive arrangements that assure broad dissemination of findings may better serve the public interest, but first right to exclusively license an invention may be the powerful inducement necessary for firms to agree to participate. Alternatively, private firms may become willing to give up some intellectual property protections if they receive something beneficial in return—such as access to scientific personnel, techniques, infrastructure, or even professional credibility from association with a public endeavor—in effect, some in-kind compensation that enhances their research efforts but would be more costly to procure through other means. For example, in striving to forge partnerships with multinational firms, the network of international agricultural research centers (known as the CGIAR system) has stressed that it offers access to germplasm collections and the mantle of CGIAR's credibility and goodwill in countries around the world.

One existing vehicle for public-private partnership is the cooperative research and development agreement (CRADA), a mechanism used by USDA's Agricultural Research Service (ARS) since enactment of CRADA legislation in 1986. USDA has typically used CRADA's to speed the transfer of technology developed in the public sector to the private sector for development of commercial applications. However, ARS has seen very few patents arise from the 900 CRADA's established to date, which means there have been few exclusive patent licenses associated with these cooperators. In the current environment, the focus of CRADA's and other collaborations may shift toward cooperative research projects or programs with multiple, complementary outcomes for public and private participants.

A provocative question today is whether the public sector should strategically target and perhaps defensively patent research in order to guarantee access to and broad dissemination of certain critical types of new knowledge that might otherwise be "locked up" by private firms. An example of biological research critical to the public interest is the study of *apomixis*, asexual reproduction through seed. The apomixis trait enables some flowering-plant species to produce seedlings that are genetically identical to the mother plant, in effect allowing hybrid cultivars to clone themselves. New knowledge gained from apomixis research could generate a worldwide revolution in the economic development and use of hybrid cultivars, including major food crops, but potential limitations on biodiversity are profound. Identifying such research areas for the public sector to undertake requires a broad vision of scientific frontiers and their possibilities, coupled with insights into the investment strategies of private firms.

How Is *Agrobacterium tumefaciens* Like Computer Software?

Agrobacterium tumefaciens is a pathogenic microorganism that naturally inserts its own genes into plants that it infects. This trait has been refined for biotechnological development, where *Agrobacterium* is used to transfer genes from other organisms into plants. Although other gene transfer methods are available, this enabling technology remains one of the easiest and most effective methods for creating genetically modified organisms (GMO's).

Few would disagree that intellectual property protection (patents) should be available to inventors of computer software--tools designed to enable operation of computers. But the idea of intellectual property protection for biological tools is somewhat harder to envision. Yet biological tools such as *Agrobacterium*, like computer software, are:

- intermediate products whose value can only be realized through their use in accomplishing another task in a different final product (a genetically engineered organism or a computer);
- easily accessible, whether or not one has a license to use them, so that the potential for "pirating" reinforces the need for protection of the intellectual property they embody;
- able to resist exact replication, but can be imitated by similar products; and
- undergoing scrutiny by the legal system because of fears that producers of final products for which these intermediate products are essential may exercise undue power in the marketplace for the GMO's/computers they enable.

New knowledge of biotechnology promises dramatic change in the ability to create agricultural production and food industry applications to benefit humanity and the natural environment. Some of this knowledge may result from private research organizations—which seek to restrict distribution to shield potential returns—and some may be uncovered within the public domain. In either case, obtaining that knowledge requires expensive, long-term investments.

Determining how public agricultural research institutions—principally ARS and state agricultural experiment stations—fulfill their longstanding roles as producers of knowledge for the public good requires more complex and strategic decisionmaking than just a decade ago. New criteria are necessary for assessing *what* the public sector funds, *where* the public sector should invest, and *how* circumstances of industry structure affect expected returns to public investment.

One way to judge the value of a public-sector role in any particular type of agricultural research is to ask: Who is likely to benefit from the fruits of this research? For example, ARS reviews the plan of work for a potential CRADA to determine whether the outcome of the research could lead to applications in specific areas of end use, or to more basic discoveries of a new approach or enabling technology. The agency frequently declines collaborations that could lead to monopoly power over technologies with public-good value.

Other critical questions include: How are the benefits of the research likely to be distributed along the food supply chain among input suppliers, farmers, processors, and consumers? Are public benefits likely to exceed public costs? The answers will help determine whether one form of public-private interaction is superior to another, and to indicate how public-sector research institutions and other public policy participants might influence the private sector—the new, major actor in agricultural R&D—to pursue actions that maximize the public good from the biotechnology revolution. AO

Katherine R. Smith (202) 694-5500, Nicole Ballenger (202) 694-5013, Kelly Day-Rubenstein (202) 694-5515, Paul Heisey (202) 694-5526, and Cassandra Klotz-Ingram (202) 694-5519
nicole@econ.ag.gov

A list of suggested readings is available from the authors.

Special Article

Financial Woes Threaten Infrastructure Investment in APEC Region

The global financial crisis of 1997-98 has had serious impacts on the economies and food systems of the Asia-Pacific Economic Cooperation (APEC) region. Consumer incomes have fallen, food costs have risen, and food consumption has declined in the five most affected economies—Indonesia, Malaysia, the Philippines, South Korea, and Thailand. A particularly troubling impact has been the scaling back of public and private infrastructure investment in these economies, where underinvestment in infrastructure is already a problem. The level of infrastructure development is a significant factor affecting the outlook for U.S. agricultural trade in these five economies, which account for more than 10 percent of U.S. agricultural exports. More than 60 percent of U.S. agricultural exports goes to the entire APEC region.

Economic infrastructure includes:

- public utilities—power, telecommunications, piped water supply, sanitation and sewage, solid waste collection and disposal, piped gas, refrigerated warehouses;
- public works—roads and major dam and canal works for irrigation and drainage;
- other transport sectors—urban and interurban railways, urban transport, ports and waterways, and airports;
- public, private, and international financial systems; and
- a legal system and property rights to protect private sector investment in infrastructure.

Infrastructure development spurs a market's economic growth and thus its demand for food, and it reduces marketing costs for both domestic and foreign food products, lowering consumer prices and raising consumption. The level of infrastructure development can enhance the competitiveness of imported food products in large urban areas where international links via air and ocean shipping may be cheaper than links between rural and urban areas within the same economy. Underinvestment in infrastructure can leave rural areas isolated, limiting the economic potential of the economy as a whole. Sizable investments are needed to maintain and expand infrastructure across APEC to sustain economic growth and facilitate trade, both within and among these economies.

Underdeveloped Infrastructure Hinders Economic Growth

Despite Asia's stellar economic performance up to 1997, the region's infrastructure is among the most underdeveloped in the world, particularly in nonurban areas. With a large rural population and the world's most rapidly growing urban populations, Asia faces huge challenges in developing infrastructure fast enough. The World Bank estimates that development in East and Southeast Asia will have to generate $1.3 to $1.5 trillion in infrastructure between 1995 and 2004 to sustain the food system development and economic growth it was accustomed to prior to the financial crisis.


Port of Tacoma

Combined public and private sector investment in physical infrastructure before the financial crisis in developing East and Southeast Asia (excluding Japan) probably exceeded 5 percent of gross domestic product (GDP), or about $80 billion a year. But private sector investment in East and Southeast Asia declined by more than half after the boom year of 1996 as investors perceived increased risk and uncertainty in many of the region's economies. Public finance also declined. Economic contractions and slowdowns reduced tax and tariff revenue and diverted public funds to underwrite failing banking systems and to provide safety net programs for the growing numbers of poor.

International financial institutions like the World Bank are also sources, although relatively modest, for infrastructure investment. World Bank allocations for infrastructure in 1998 in the Asia-Pacific region totaled $2.02 billion, down from $2.54 billion in 1997. Asia Development Bank allocations for transportation and communication projects were relatively stable during 1995-98.

Some economies have used spending on infrastructure projects as a way to jump-start economic expansion—China and Japan are examples. The recently completed airport in Hong Kong (China), and the ongoing Three Gorges dam project on China's

Yangtze River, which at $50 to $70 billion is perhaps the most costly infrastructure project in history, demonstrate Asia's capacity for ambitious projects. However, infrastructure programs are often the first to be cut when fortunes fall in developing countries, as recently seen in Indonesia and South Korea and to a lesser extent Malaysia.

As a result of the financial crisis, Indonesia's government currently has no plans to enhance agricultural infrastructure. Plans to build better harbor and cold storage facilities are being put on hold, and it will be some time before an efficient Indonesian cold chain materializes (a marketing system that protects quality and safety of perishable products from production to consumption). With the high price of spare parts and other materials impinging on the government's ability to maintain and repair roads and bridges, the cost of transporting food products to and from the countryside is escalating.

In Malaysia, investment in infrastructure development has been heavy over the past decade, including major improvements in interstate highways, public transit, and port facilities; a new international airport; and improved electrical power generation. Financial crisis has led to cancellation of one planned highway project and cessation of work on the Bakun Hydroelectric Dam in Sarawak, but most other infrastructure projects are proceeding. In Korea, where government outlays for rural infrastructure have been relatively low, the financial crisis has imposed greater budget constraints on rural infrastructure investment.

Even before the financial crisis, deficiencies were apparent in the infrastructure of a number of developing economies in APEC. While Asia's sea and air links are well developed (Asia has the world's three busiest container ports: Hong Kong; Singapore; and Kaohsiung, Taiwan), road and rail service are far less developed in China, Southeast Asia, and Latin America than in more developed parts of the world. The fragmented nature of Southeast Asia's geography presents a unique challenge for road and rail development, particularly in Indonesia and the Philippines, which are both large archipelagos.

Road density (generally measured as road length per square kilometer) is generally higher for developed, densely populated economies such as Japan, Hong Kong (China), and the city-state of Singapore. Road service (generally measured as kilometers per 1,000 people) is also greater in developed economies. Many of the developing economies in the APEC region have both low road density and low road service. As a result, rural areas are more isolated than in other regions.

For example, nothing comparable to the U.S. Interstate Highway System or Latin America's Pan American Highway exists in Asia to link rural areas to urban areas and to better integrate the diverse economies. Visionaries have suggested grand schemes, from building superhighways linking countries in Southeast Asia to building a Europe-Asia landbridge; however, such projects remain distant dreams.

What Are APEC & PECC?

The Asia-Pacific Economic Cooperation (APEC) forum began in 1989 as an informal grouping of 12 market-oriented Asia-Pacific economies with the goals of better managing the growing interdependence in the Pacific region and sustaining economic growth. APEC, now 21 members strong, facilitates ministerial-level discussions and cooperation on a range of economic issues, including trade promotion and liberalization, investment and technology transfer, human resource development, energy, telecommunications, and transportation.

Members and dates of joining:

1989 Australia, Brunei, Canada, Indonesia, Japan, Malaysia, New Zealand, Philippines, Singapore, South Korea, Thailand, United States

1991 China, Hong Kong, Taiwan

1993 Mexico, Papua New Guinea

1994 Chile

1998 Peru, Vietnam, Russia

The private-sector counterpart of APEC is the Pacific Economic Cooperation Council (PECC). It was founded in 1980 and brings together senior government, academic, and business representatives to share perspectives and expertise in search of broad-based answers to economic problems in the Asia-Pacific region. PECC's membership is the same as APEC's plus Colombia. PECC is the only nongovernmental organization with APEC observer status.

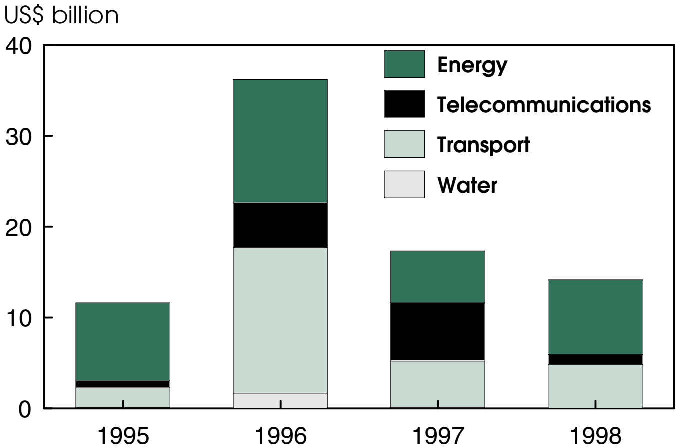
Urban Population Growth Strains Infrastructure

Projected growth in APEC's urban population will severely strain the region's infrastructure and its capacity to provide basic services, including food supply. The urban population is projected to grow from its current size of about 1.1 billion to 2 billion in 2025, with most of the increase occurring in China and developing Southeast Asia.

One way to alleviate population pressure would be to invest in infrastructure that integrates rural areas with the rest of the economy and allows rural people to remain in rural areas by participating competitively in the economy as producers and consumers. Since 1960, the Japanese government has spent about 20 percent of its annual public works budget on agriculture, forestry, and fisheries. Nearly all rural public roads are now paved, water supply and sewage service have been greatly expanded, and most rural communities are electrified. Providing this basic infrastructure has attracted other industries to rural areas and given the rural population greater access to urban opportunities. Eighty percent of the rural population can reach a large city within an hour by car and more than 80 percent of farm household income

Special Article

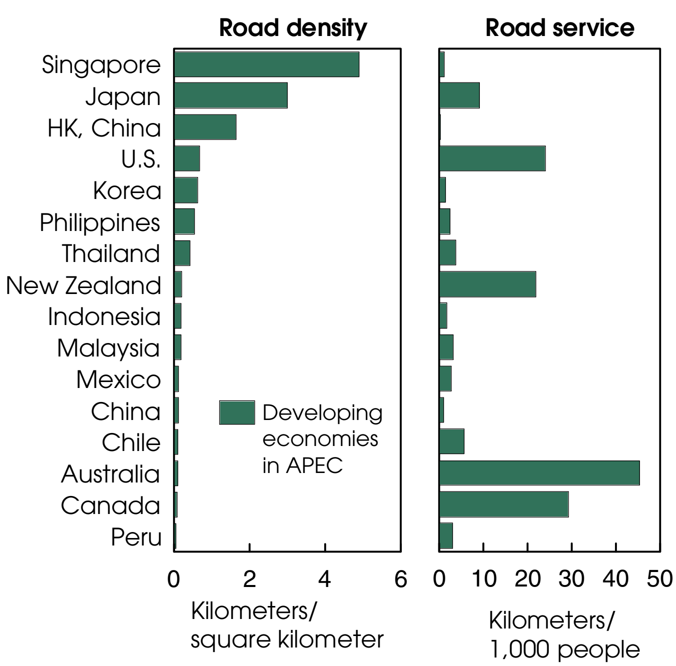
Private-Sector Investment in East and Southeast Asia Infrastructure Is Down



Includes the developing economies of East and Southeast Asia: China; Hong Kong, China; Indonesia; Korea; Malaysia; Philippines; Singapore; Taiwan; Thailand; Myanmar; Cambodia; Laos; and Vietnam. Excludes Japan.
Source: Australian Department of Foreign Affairs and Trade in cooperation with Tasman Asia Pacific, *Asia's Infrastructure in the Crisis, Harnessing Private Enterprise*, October 1998.

Economic Research Service, USDA

Road Networks Are Generally More Extensive in Developed Economies



Most data are for 1993; population numbers are for 1996.
Sources: Pacific Food Outlook, 1999-2000, Pacific Economic Cooperation Council; "A Database of World Infrastructure Stocks, 1950-95," World Bank, 1998.

Economic Research Service, USDA

comes from nonfarm sources. Rural location of industry has been far more instrumental than price support programs for farmers in sustaining rural communities in Japan.

The Promise of Private-Public Partnerships

Public resources have long been counted on to develop the basic infrastructure necessary for an economy's markets to function. But with deregulation and the declining role of public investment, private capital, though still modest, is becoming relatively more important. The role of the private sector has been enhanced by public-private arrangements (such as leases and concessions) that recognize the special nature of infrastructure and the need for economic incentives to attract private sector interest. Technological change, particularly in telecommunications, has also helped increase private sector participation in infrastructure development.

The private sector, with strong public sector backing, is critical to introduction of competition and commercial principles to infrastructure development. Private-sector commitment also requires a well-defined property rights system. Chile and Malaysia have made great strides in privatizing infrastructure services. Chile's Concession Program, established in 1995, has earmarked a number of road, airport, port, irrigation, and railroad projects to be built, maintained, and operated by private companies under contract to the government. Malaysia's program of infrastructure privatization goes back to 1983. In 1996-2000, the private sector is expected to invest three and a half times what the public sector spends on roads, ports, water supply, power, and telecommunications.

A key advantage of private sector involvement in the food system is lower costs and increased efficiency. Adopting commercial principles has been shown to enhance a system's ability to move food products, particularly perishable products, quickly and cheaply from the point of production to the point of consumption, sometimes across great distances. Privatization of the Manila ports, for example, not only increased throughput, labor productivity, and revenue to the government, but also reduced turnaround time by one-fifth to one-third. Workers in New Zealand's Auckland Port, privatized in 1998, now handle six times the volume of freight that was handled before privatization, while the number of workers has declined by one-third and turnaround time has been cut in half.

Private investment in APEC's infrastructure development, despite its increased role, has been modest, even accounting for the effects of the financial crisis. If the World Bank's $1.5-trillion prescription for infrastructure investment in developing East and Southeast Asia over 10 years is to be realized, the private component will have to increase several-fold. This will require accelerated development of bond markets in the region to attract private capital, especially for financing large infrastructure and capital-intensive industrial projects that require long-term fixed-rate debt capital.

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Improving Food System Efficiency

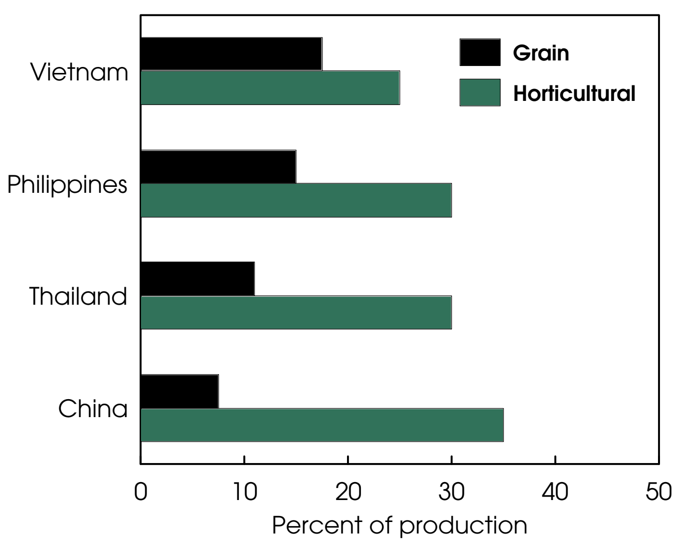
Infrastructure development reduces transaction costs, which benefits both producers and consumers. Removal or reduction of these costs could have as positive an effect on food and agricultural trade as removal or reduction of a tariff or similar trade barrier.

A sizable transaction cost in the APEC region's food system is postharvest loss, especially for horticultural products (25 to 35 percent loss) vs. grain (at 10 to 20 percent). Many of these losses are attributable to inadequate infrastructure: insufficient electricity for drying grain or refrigerating fresh fruits and vegetables, lack of warehousing capacity, or inadequate transportation.

Some national transportation systems are so inadequate and costly that it is cheaper to import basic commodities from other parts of the region or world than from geographically closer production areas within the economy. In the Philippines, the cost of moving corn from some growing areas of Mindanao to the poultry growers near Manila is estimated to be higher than importing corn from Bangkok, Thailand.

In China, corn production is concentrated in the north and northeast, while livestock production is in the southeast. The rail transport system, while extensive, is prone to congestion and delay due to heavy traffic, inefficient practices, and outdated equipment. It is often cheaper for livestock producers in southern China to import corn from the U.S. or other foreign sources than from north and northeastern China.

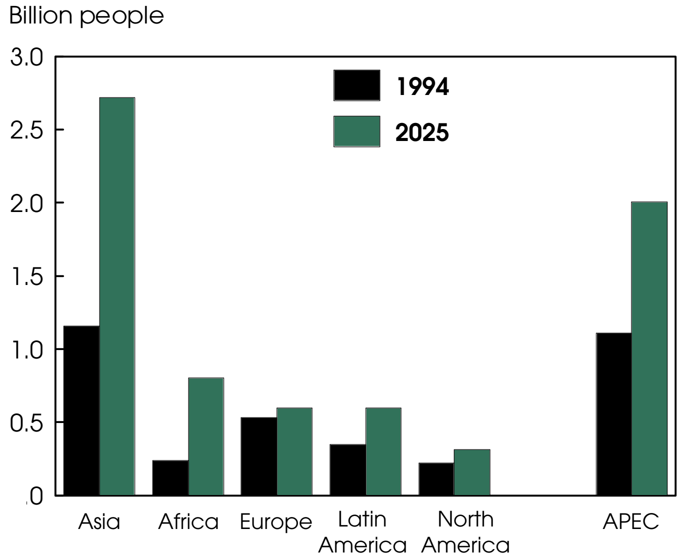
Post-harvest Losses Are High for Horticultural Products in Several Asian Countries



Source: The 5th JIRCAS International Symposium, "Postharvest Technology in Asia--A Step Forward to Stable Supply of Food Products," Tsukuba, Ibaraki, Japan, Sept. 9-10, 1998.

Economic Research Service, USDA

APEC's Urban Population Is Projected To Exceed 2 Billion by 2025



APEC includes Australia, Brunei, Canada, Indonesia, Japan, Malaysia, New Zealand, Philippines, Singapore, South Korea, Thailand, U.S., China, Hong Kong, Taiwan, Chile, Mexico, Papua New Guinea, Peru, Vietnam, and Russia.
Source: United Nations.

Economic Research Service, USDA

Efforts to reduce such costs and inefficiencies are being undertaken throughout the region. Australia's Networking the Nation program aims to enhance infrastructure and other support to communities in rural and remote areas. Sixty percent of Malaysia's new roads will be built under a rural roads program that aims to improve the accessibility of rural areas to the broader economy.

Infrastructure investment is becoming a multinational issue. National boundaries are becoming less relevant in a region that is moving toward free trade under APEC's Bogor Declaration (which proposes free trade in the region's developed economies by 2010 and in all economies by 2020).

The formation of trading blocs like NAFTA (North American Free Trade Agreement) and ASEAN (Association of Southeast Asian Nations) as well as "growth triangles" in East and Southeast Asia reflect the multinational benefits of infrastructure investments. These geographically contiguous areas have coalesced to exploit economic complementarities and to overcome physical and artificial constraints to rational allocation and use of resources within a region. Changing trade flows under NAFTA, for example, have created transportation bottlenecks along the U.S.-Mexico border, disrupting rail and trucking service. Resolving border-crossing bottlenecks is critical to an efficient food system and will require improved transportation facilities, better administration, and more coordinated infrastructure planning that subordinates national interests to regional interests.

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"Growth triangles" in East and Southeast Asia are less formal than trading blocs and their scope is usually limited to parts of rather than whole economies. Two examples are Southern China: made up of Guangdong and Fujian Provinces, Shenzhen, Hong Kong, and Taiwan; and Johor (Malaysia)-Singapore-Riau (Indonesia). Infrastructure is critical to their development, giving rural residents and farm households within the triangle alternatives that keep them from the gravitational pull of urban areas.

The recent scaling back of infrastructure investment in the financially distressed APEC economies is expected to be transitory. Equity markets across Asia are up, and U.S. mutual funds targeting Asia have outperformed the Dow Jones stock index since January 1999. With economic expansion accelerating in 1999 and 2000 and with interest rates and inflation under better control, public and private infrastructure funds should become increasingly available to the crisis economies.

But lack of public and private funds in the short term will affect maintenance of existing infrastructure in the economically distressed parts of the APEC region, and cause delay in new projects. Given the frequently large size of and long lead times needed for many infrastructure projects, any cutback or delay can have disproportionate consequences. These include:

- reduced potential for economic diversification in rural areas;
- increased transportation costs, raising food prices to consumers and lowering returns to producers; and
- increased postharvest losses because of interrupted power, telecommunications, refrigeration, and water supply.

In some instances, lowering transaction costs through improvements/expansion of infrastructure could enhance the positive effects of reducing traditional barriers to food and agricultural trade like tariffs and quotas. Lowering tariffs on horticultural product imports, for example, may have little impact on trade if infrastructure to facilitate trade—such as modern container ports, reliable power to support refrigeration storage capacity, and ready access to highway systems—is inadequate.

APEC was directed by its Ministers in 1997 to work with the private sector in developing infrastructure initiatives for promoting integration and diversification of rural economies in their efforts. In 1999, APEC and its private-sector counterpart PECC (Pacific Economic Cooperation Council), launched RISE—Regional Integration for Sustainable Economies—a public/private initiative designed to improve the economic viability of rural regions of APEC member economies through infrastructure investment.

Tapping private capital will be important in increasing the level of annual investment in infrastructure commensurate with economic growth in Asia. Supranational planning will be needed to harmonize infrastructure development as national boundaries become less relevant to the trade reality in APEC. AO

William T. Coyle (202) 694-5216
wcoyle@econ.ag.gov

A key source of information for this article is the Pacific Food Outlook 1999-2000, *published by the Pacific Economic Cooperation Council, August 1999. For an electronic copy, visit http://www.pecc.org/*

Statistical Indicators

Summary Data

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

				1998	1999				2000	
	1998	1999 F	2000 F	IV	I	II	III F	IV F	I F	II F
Prices received by farmers (1990-92=100)	101	--	--	99	96	--	--	--	--	--
Livestock & products	97	--	--	97	95	--	--	--	--	--
Crops	106	--	--	101	98	--	--	--	--	--
Prices paid by farmers (1990-92=100)										
Production items	115	--	--	113	113	--	--	--	--	--
Commodities and services, interest, taxes, and wage rates (PPITW)	117	--	--	116	116	--	--	--	--	--
Cash receipts ($ bil.)[1]	197	192	--	59	46	41	47	58	--	--
Livestock	95	96	--	25	24	23	25	25	--	--
Crops	102	96	--	35	22	19	22	33	--	--
Market basket (1982-84=100)										
Retail cost	163	--	--	165	167	167	--	--	--	--
Farm value	103	--	--	104	101	97	--	--	--	--
Spread	195	--	--	198	203	204	--	--	--	--
Farm value/retail cost (%)	22	--	--	22	21	21	--	--	--	--
Retail prices (1982-84=100)										
All food	161	164	167	162	164	164	164	165	166	167
At home	161	164	166	163	164	164	164	164	166	167
Away from home	161	165	169	163	164	165	166	167	168	169
Agricultural exports ($ bil.)[2]	53.6	49.0	--	11.1	14.4	12.7	11.2	10.7	--	--
Agricultural imports ($ bil.)[2]	37.0	38.0	--	8.7	9.2	9.4	9.4	10.0	--	--
Commercial production										
Red meat (mil. lb.)	45,134	45,697	43,472	11,702	11,384	11,368	11,584	11,361	10,912	10,728
Poultry (mil. lb.)	33,667	35,544	37,215	8,580	8,638	9,066	8,910	8,930	9,165	9,400
Eggs (mil. doz.)	6,659	6,874	7,030	1,712	1,691	1,702	1,715	1,765	1,735	1,735
Milk (bil. lb.)	157.4	161.9	165.0	38.9	40.5	42.0	39.6	39.8	41.6	42.7
Consumption, per capita										
Red meat and poultry (lb.)	213.7	219.7	217.8	56.4	54.1	55.0	54.9	55.7	54.1	54.3
Corn beginning stocks (mil. bu.)[3]	883.2	1,307.8	--	3,039.8	1,307.8	8,051.9	5,698.4	3,616.0	--	--
Corn use (mil. bu.)[3]	8,791.0	9,390.0	--	1,734.0	3,021.0	2,359.2	2,089.7	1,920.1	--	--
Prices[4]										
Choice steers--Neb. Direct ($/cwt)	61.48	64-65	66-72	61.06	62.43	65.04	65-66	65-69	65-71	67-73
Barrows and gilts--IA, So. MN ($/cwt)	34.72	32-33	34-37	22.06	28.83	35.18	35-36	28-30	31-33	34-36
Broilers--12-city (cents/lb.)	63.10	58-59	54-58	64.50	58.10	58.60	58-59	56-58	52-56	54-58
Eggs--NY gr. A large (cents/doz.)	75.80	68-70	63-68	81.70	75.00	58.10	67-68	73-77	67-73	53-57
Milk--all at plant $/cwt)	15.42	14.80-15.00	12.75-13.75	17.83	15.97	12.87	14.80-15.00	15.65-16.15	12.85-13.65	11.70-12.70
Wheat--KC HRW ordinary ($/bu.)	3.29	--	--	3.34	3.16	2.92	--	--	--	--
Corn--Chicago ($/bu.)	2.34	--	--	2.11	2.16	2.13	--	--	--	--
Soybeans--Chicago ($/bu.)	6.01	--	--	5.44	4.95	4.58	--	--	--	--
Cotton--avg. spot 41-34 (cents/lb)	67.02	--	--	64.15	56.61	55.43	--	--	--	--

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Farm real estate values[5]										
Nominal ($ per acre)	683	703	713	740	798	844	887	926	974	992
Real (1982 $)	528	521	507	514	540	558	572	586	604	609
U.S. civilian employment (mil.)[6]	125.8	126.3	128.1	129.2	131.1	132.3	133.9	136.3	--	--
Food and fiber (mil.)	24.9	24.4	23.7	24.0	24.5	24.8	24.7	24.3	--	--
Farm sector (mil.)	2.0	2.0	1.9	1.8	1.9	1.9	1.9	1.8	--	--
U.S. gross domestic product ($ bil.)	5,743.8	5,916.7	6,244.4	6,558.1	6,947.0	7,269.6	7,661.6	8,110.9	--	--
Food and fiber--net value added ($ bil.)	891.7	903.2	937.3	956.7	1,006.1	1,025.8	1,055.8	1,078.1	--	--
Farm sector--net value added ($ bil.)[7]	60.6	56.5	61.7	52.8	57.0	53.9	66.1	60.6	--	--

F = Forecast. -- = Not available. 1. Quarterly data for 1999 are forecast. 2. Annual data based on Oct.-Sept. fiscal years ending with year indicated. 3. Sept.-Nov. first quarter; Dec.-Feb. second quarter; Mar.-May third quarter; Jun.-Aug. fourth quarter; Sept.-Aug. annual. Use includes exports and domestic disappearance. 4. Simple averages, Jan.-Dec. 5. As of January 1. 6. 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. 7. The value-added data presented here is 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

				1997	1998				1999	
	1996	1997	1998	IV	I	II	III	IV	I	II
	Billions of current dollars (quarterly data seasonally adjusted at annual rates)									
Gross Domestic Product	7,636.0	8,110.9	8,511.0	8,254.5	8,384.2	8,440.6	8,537.9	8,681.2	8,808.7	8,881.9
Gross National Product	7,674.0	8,102.9	8,490.5	8,234.9	8,369.4	8,421.8	8,510.9	8,660.0	8,788.4	8,854.7
Personal consumption expenditures	5,207.6	5,493.7	5,807.9	5,593.2	5,676.5	5,773.7	5,846.7	5,934.8	6,050.6	6,155.9
Durable goods	634.5	673.0	724.7	682.2	705.1	720.1	718.9	754.5	771.2	784.6
Nondurable goods	1,534.7	1,600.6	1,662.4	1,613.2	1,633.1	1,655.2	1,670.0	1,691.3	1,736.0	1,771.1
Food	756.1	780.9	815.3	787.1	796.9	810.2	818.7	835.6	844.1	850.0
Clothing and shoes	264.3	278.0	293.8	280.7	291.0	295.3	293.7	295.1	308.1	314.0
Services	3,038.4	3,220.1	3,420.8	3,297.8	3,338.2	3,398.4	3,457.7	3,488.9	3,543.4	3,600.1
Gross private domestic investment	1,116.5	1,256.0	1,367.1	1,292.0	1,366.6	1,345.0	1,364.4	1,392.4	1,417.4	1,423.2
Fixed investment	1,090.7	1,188.6	1,307.8	1,220.1	1,271.1	1,305.8	1,307.5	1,346.7	1,377.9	1,410.9
Change in business inventories	25.9	67.4	59.3	71.9	95.5	39.2	57.0	45.7	39.5	12.4
Net exports of goods and services	-94.8	-93.4	-151.2	-98.8	-123.7	-159.3	-165.5	-156.2	-196.9	-240.0
Government consumption expenditures and gross investment	1,406.7	1,454.6	1,487.1	1,468.1	1,464.9	1,481.2	1,492.3	1,510.2	1,537.5	1,542.8
	Billions of 1992 dollars (quarterly data seasonally adjusted at annual rates) [1]									
Gross Domestic Product	6,928.4	7,269.8	7,551.9	7,364.6	7,464.7	7,498.6	7,566.5	7,677.7	7,759.6	7,794.3
Gross National Product	7,008.4	7,266.2	7,537.8	7,350.7	7,455.2	7,485.9	7,546.7	7,663.3	7,746.3	7,775.2
Personal consumption expenditures	4,714.1	4,913.5	5,153.3	4,981.0	5,055.1	5,130.2	5,181.8	5,246.0	5,331.9	5,391.8
Durable goods	611.1	668.6	737.1	684.8	710.3	729.4	733.7	775.0	798.9	817.2
Nondurable goods	1,432.3	1,486.3	1,544.1	1,494.3	1,521.2	1,540.9	1,549.1	1,565.1	1,600.9	1,612.6
Food	689.7	699.3	718.0	699.9	706.8	716.3	718.9	730.1	734.3	737.1
Clothing and shoes	267.7	288.4	310.3	292.3	307.4	311.4	309.8	312.5	333.1	336.3
Services	2,671.0	2,761.5	2,879.5	2,804.8	2,829.3	2,866.8	2,904.8	2,917.2	2,946.8	2,978.2
Gross private domestic investment	1,069.1	1,206.4	1,330.1	1,241.9	1,321.8	1,306.5	1,331.6	1,360.6	1,388.5	1,395.7
Fixed investment	1,041.7	1,138.0	1,267.8	1,169.5	1,224.9	1,264.1	1,270.9	1,311.0	1,344.0	1,376.9
Change in business inventories	25.0	63.2	57.4	66.5	91.4	38.2	55.7	44.2	38.7	12.1
Net exports of goods and services	-114.4	-136.1	-238.2	-149.0	-198.5	-245.2	-259.0	-250.0	-303.6	-337.4
Government consumption expenditures and gross investment	1,257.9	1,285.0	1,296.9	1,289.2	1,283.0	1,294.8	1,299.6	1,310.3	1,323.9	1,318.4
GDP implicit price deflator (% change)	1.9	1.9	1.0	1.2	0.8	0.9	1.0	0.8	1.6	1.5
Disposable personal income ($ bil.)	5,534.7	5,795.1	6,027.9	5,879.4	5,937.1	5,988.9	6,052.4	6,133.1	6,205.2	6,279.6
Disposable pers. income (1992 $ bil.)	5,043.0	5,183.1	5,348.5	5,235.8	5,287.1	5,321.5	5,364.1	5,421.2	5,468.2	5,500.2
Per capita disposable pers. income ($)	20,840	21,633	22,304	21,871	22,046	22,192	22,373	22,604	22,811	23,031
Per capita disp. pers. income (1992 $)	18,989	19,349	19,790	19,478	19,632	19,719	19,829	19,980	20,101	20,172
U.S. resident population plus Armed Forces overseas (mil.)[2]	265.5	268.0	270.6	269.0	269.5	270.1	270.8	271.5	272.0	272.7
Civilian population (mil.)[2]	263.9	266.5	269.1	267.5	268.0	268.6	269.3	270.1	270.6	271.2

		Annual		1998	1999					
	1996	1997	1998	Jul	Feb	Mar	Apr	May	Jun	Jul
	Monthly data seasonally adjusted									
Total industrial production (1992=100)	121.4	129.7	135.1	133.6	136.9	137.5	138.0	138.4	138.6	139.4
Leading economic indicators (1992=100)	102.1	103.9	105.5	105.6	107.1	107.2	107.1	107.4	107.7	108.0
Civilian employment (mil. persons)[3]	126.7	129.6	131.5	131.2	133.1	133.0	133.1	133.2	133.4	133.3
Civilian unemployment rate (%)[3]	5.4	4.9	4.5	4.5	4.4	4.2	4.3	4.2	4.3	4.3
Personal income ($ bil. annual rate)	6,425.2	6,784.0	7,126.1	7,133.7	7,352.9	7,374.9	7,407.4	7,432.3	7,487.1	7,504.4
Money stock-M2 (daily avg.) ($ bil.)[4]	3,823.9	4,046.6	4,402.0	4,216.1	4,446.8	4,456.9	4,489.5	4,506.5	4,522.2	4,542.3
Three-month Treasury bill rate (%)	5.02	5.07	4.81	4.96	4.45	4.48	4.28	4.51	4.59	4.60
AAA corporate bond yield (Moody's) (%)	7.37	7.26	6.53	6.55	6.40	6.62	6.64	6.93	7.23	7.19
Total housing starts (1,000)[5]	1,476.8	1,474.0	1,616.9	1,719	1,752	1,746	1,577	1,668	1,571	1,661
Business inventory/sales ratio[6]	1.41	1.38	1.39	1.39	1.37	1.36	1.36	1.35	1.34	--
Sales of all retail stores ($ bil.)[7]	2,465.1	2,546.3	2,696.5	228.1	239.0	239.0	240.2	247.2	247.0	249.5
Nondurable goods stores ($ bil.)	1,457.8	1,505.4	1,563.8	134.5	136.5	137.4	138.7	143.3	143.9	144.6
Food stores ($bil.)	424.2	432.1	443.0	36.6	38.3	38.3	38.3	38.3	38.2	38.3
Apparel and accessory stores ($ bil.)	113.0	116.8	124.2	10.7	10.9	10.9	11.1	11.5	11.4	11.3
Eating and drinking places ($ bil.)	238.4	244.1	247.1	22.1	21.6	21.6	21.8	23.6	23.7	23.8

-- = Not available. 1. In April 1996, 1992 dollars replaced 1987 dollars. 2. Population estimates based on 1990 census. 3. Data beginning January 1994 are not directly comparable with data for earlier periods because of a major redesign of the household survey questionnaire. 4. Annual data as of December of year listed. 5. Private, including farm. 6. Manufacturing and trade. 7. Annual total. *Information contact: David Johnson (202) 694-5324*

Table 3—World Economic Growth

	Calendar year									
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
	Real GDP, annual percent change									
World	1.9	1.9	1.6	3.1	2.8	3.6	3.4	1.9	2.7	2.9
less U.S.	3.0	1.7	1.3	3.0	3.0	3.6	3.2	1.2	2.3	3.1
Developed Economies	1.7	1.6	0.8	2.7	2.2	3.0	2.8	2.0	2.5	2.3
less U.S.	3.2	1.0	0.1	2.3	2.1	2.8	2.2	1.0	1.8	2.2
United States	-0.9	2.7	2.3	3.5	2.3	3.4	3.9	3.9	3.7	2.4
Canada	-1.9	0.9	2.3	4.7	2.8	1.7	4.0	3.1	3.6	2.9
Japan	3.8	1.0	0.3	0.7	1.4	5.2	1.4	-2.9	1.1	1.2
Australia	-1.1	2.4	3.8	5.2	3.8	4.3	4.1	4.8	4.0	3.1
European Union	3.7	1.0	-0.5	2.7	2.4	1.6	2.4	2.6	1.8	2.7
Transition Economies	-6.9	-11.2	-6.5	-8.8	-1.5	-2.2	0.9	-1.8	-2.6	-0.5
Eastern Europe	-10.6	-4.0	0.8	3.5	5.5	3.1	1.5	1.9	1.2	4.4
Poland	-6.3	2.0	3.8	4.2	7.1	5.9	6.9	4.6	2.5	4.9
Former Soviet Union	-5.5	-13.7	-9.3	-13.9	-5.1	-5.1	0.5	-4.0	-5.1	-4.0
Russia	-5.0	-14.5	-8.7	-12.6	-4.1	-4.9	0.8	-4.3	-5.3	-4.6
Developing Economies	4.9	6.2	6.2	6.7	5.9	6.3	5.7	2.1	4.0	5.3
Asia	6.6	8.5	8.5	9.3	8.7	7.8	6.6	2.1	6.0	6.4
East Asia	8.5	10.2	10.1	10.4	9.2	8.2	7.5	3.8	6.9	7.3
China	9.3	14.2	13.5	12.6	10.5	9.6	8.8	7.8	7.5	7.7
Taiwan	7.5	6.8	6.3	6.6	6.0	5.7	6.8	4.8	5.6	4.6
Korea	8.3	4.7	5.3	8.3	8.9	6.8	5.0	-5.8	7.2	8.4
Southeast Asia	6.8	6.9	7.4	8.1	8.5	7.5	4.8	-6.2	2.7	4.3
Indonesia	8.9	7.2	7.2	7.5	8.2	8.0	4.7	-13.6	0.9	5.0
Malaysia	8.8	7.8	8.4	9.4	9.5	8.0	7.8	-7.4	2.7	3.7
Philippines	-0.2	0.3	2.1	4.4	4.8	5.7	5.1	-0.5	2.8	2.5
Thailand	8.0	8.1	8.3	8.8	9.2	6.4	-0.4	-9.4	3.0	4.3
South Asia	1.3	5.3	4.7	7.0	6.9	6.7	5.2	4.4	5.9	4.9
India	0.5	5.4	4.9	7.5	7.3	7.3	5.5	4.5	6.5	5.2
Pakistan	6.7	4.8	2.9	4.5	4.9	2.1	2.4	3.4	1.5	2.5
Latin America	3.8	3.0	3.9	4.9	0.5	3.6	5.2	2.2	0.0	3.2
Mexico	4.2	3.6	2.0	4.4	-6.2	5.1	6.7	4.8	3.0	3.8
Caribbean/Central	4.2	7.9	4.9	3.8	3.1	3.3	0.7	4.0	3.1	2.3
South America	3.6	2.7	4.5	5.0	2.4	3.2	5.0	1.4	-1.0	3.1
Argentina	8.9	8.6	5.7	5.9	-2.7	5.4	8.1	3.9	-3.3	1.8
Brazil	0.5	-1.2	4.5	5.8	3.0	2.9	3.5	0.2	-0.1	3.0
Colombia	2.3	4.0	5.5	5.9	5.3	2.0	3.0	2.3	1.3	3.5
Venezuela	9.7	6.1	0.3	-2.9	3.4	-1.6	6.4	-0.7	-4.5	4.6
Middle East	2.9	5.5	3.5	0.3	3.5	4.5	4.0	1.0	0.2	3.4
Israel	7.7	5.6	5.6	6.9	7.0	4.7	2.6	2.0	1.7	2.8
Saudi Arabia	8.4	2.8	-0.6	0.5	0.5	2.4	0.9	-1.0	1.5	2.0
Turkey	0.9	6.0	8.0	-5.5	7.0	7.0	7.6	2.9	-4.0	5.5
Africa	0.7	1.2	1.3	2.7	2.8	4.7	3.1	3.4	3.4	4.3
North Africa	1.0	2.2	0.1	2.8	2.4	5.6	2.4	4.9	4.4	4.6
Egypt	1.1	4.4	2.9	3.9	4.6	5.0	5.0	5.0	4.9	5.5
Sub-Sahara	0.5	0.3	2.5	2.6	3.2	4.0	3.7	2.1	2.4	4.0
South Africa	-1.0	-2.6	1.5	2.8	3.1	3.3	1.8	0.6	0.8	3.4
	Consumer Prices, annual percent change									
Developed Economies	4.7	3.5	3.1	2.6	2.5	2.4	2.1	1.6	1.4	1.7
Transition Economies	94.1	646.4	602.0	266.9	126.9	40.6	28.2	20.8	40.9	12.4
Developing Economies	36.5	38.9	47.2	51.8	22.2	14.3	9.4	10.4	8.8	7.5
Asia	8.3	7.6	10.7	15.9	12.8	8.3	4.8	8.0	4.7	4.5
Latin America	128.6	151.0	209.0	208.9	35.9	20.8	13.9	10.5	14.6	9.9
Middle East	27.5	25.5	24.7	31.9	36.0	24.7	23.1	23.8	19.7	19.4
Africa	24.6	32.5	30.6	37.2	33.2	25.9	11.1	8.6	8.6	6.6

-- = Not available. The last three years are either estimates or forecasts. Sources: Oxford Economic Forecasting; International Financial Statistics, IMF.

Information contact: Andy Jerardo (202) 694-5323

Farm Prices

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

	Annual			1998	1999					
	1996	1997	1998	Aug	Mar	Apr	May	Jun	Jul	Aug
					1990-92=100					
Prices received										
All farm products	112	107	101	101	97	96	99	98	95	98
All crops	127	116	107	103	99	103	105	100	95	99
Food grains	157	128	103	85	98	96	91	87	77	85
Feed grains and hay	146	117	100	91	92	92	93	91	84	85
Cotton	122	112	107	109	91	94	93	92	90	89
Tobacco	105	104	104	93	113	86	--	--	86	95
Oil-bearing crops	128	131	107	98	83	83	81	80	75	76
Fruit and nuts, all	118	108	114	133	105	109	123	130	133	138
Commercial vegetables	111	122	120	111	116	128	122	111	103	108
Potatoes and dry beans	114	90	98	96	98	103	108	111	121	100
Livestock and products	99	98	96	99	95	90	93	95	94	97
Meat animals	87	92	79	78	79	81	83	84	81	85
Dairy products	114	102	118	119	115	96	98	100	105	114
Poultry and eggs	120	113	117	131	109	104	110	113	113	110
Prices paid										
Commodities and services,										
interest, taxes, and wage rates (PPITW)	114	117	115	116	116	116	116	117	116	116
Production items	114	117	112	114	113	113	113	113	113	113
Feed	129	123	105	106	101	102	102	100	98	97
Livestock and poultry	75	94	88	83	92	92	89	93	92	91
Seeds	115	119	122	123	123	121	121	121	121	121
Fertilizer	125	121	112	112	108	107	106	105	104	102
Agricultural chemicals	119	120	122	123	121	121	116	120	119	119
Fuels	102	108	87	85	87	88	91	92	101	105
Supplies and repairs	115	118	119	120	121	121	121	121	121	121
Autos and trucks	118	119	119	118	119	119	119	119	119	118
Farm machinery	125	129	132	133	134	135	135	135	135	135
Building material	115	118	118	119	119	119	119	120	121	122
Farm services	116	117	116	117	116	116	116	118	117	117
Rent	119	121	124	134	130	130	130	130	130	130
Interest payable per acre on farm real estate debt	105	107	108	109	110	110	110	110	110	110
Taxes payable per acre on farm real estate	112	115	119	119	120	120	120	120	120	120
Wage rates (seasonally adjusted)	117	123	129	125	136	135	135	135	131	131
Prod. items, interest, taxes & wage rates (PITW)	114	117	114	115	115	115	115	115	115	114
Ratio, prices received to prices paid (%)*	98	91	88	87	84	83	85	84	82	84
Prices received (1910-14=100)	712	679	643	640	614	610	628	620	602	623
Prices paid, etc. (parity index) (1910-14=100)	1,520	1,558	1,532	1,541	1,549	1,551	1,546	1,552	1,546	1,544
Parity ratio (1910-14=100) (%)*	47	44	42	42	40	39	41	40	39	40

-- = 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 National Agricultural Statistics Service (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] 1996	1997	1998	1998 Aug	1999 Mar	Apr	May	Jun	Jul	Aug
Crops										
All wheat ($/bu.)	4.30	3.38	2.70	2.38	2.65	2.62	2.53	2.50	2.23	2.43
Rice, rough ($/cwt)	9.96	9.70	8.50	8.95	8.86	8.54	8.16	8.20	8.15	8.06
Corn ($/bu.)	2.71	2.43	1.95	1.89	2.06	2.05	2.00	1.97	1.74	1.78
Sorghum ($/cwt)	4.17	3.95	3.10	3.32	3.17	3.09	2.93	2.87	2.83	2.94
All hay, baled ($/ton)	95.80	100.00	87.00	88.00	78.50	81.90	91.60	81.70	78.40	77.40
Soybeans ($/bu.)	7.35	6.47	5.35	5.43	4.61	4.63	4.51	4.44	4.20	4.25
Cotton, upland (¢/lb.)	69.30	65.20	64.20	66.20	55.30	56.70	56.10	55.50	54.30	53.90
Potatoes ($/cwt)	4.93	5.62	5.24	5.55	5.81	6.14	6.30	6.58	7.34	5.80
Lettuce ($/cwt)[2]	14.70	17.60	15.20	16.30	14.50	20.60	14.00	11.40	12.50	12.90
Tomatoes, fresh ($/cwt)[2]	28.10	31.70	35.00	25.50	24.80	23.40	25.30	33.70	25.40	21.50
Onions ($/cwt)	10.50	12.60	13.80	14.30	11.20	16.90	17.80	17.60	17.10	15.90
Beans, dry edible ($/cwt)	23.50	19.30	19.80	19.60	17.20	16.80	20.10	19.50	19.30	19.10
Apples for fresh use (¢/lb.)	20.80	22.10	17.10	13.80	15.70	14.70	14.00	12.70	12.40	18.40
Pears for fresh use ($/ton)	376.00	276.00	291.00	328.00	331.00	337.00	340.00	356.00	469.00	341.00
Oranges, all uses ($/box)[3]	4.79	4.22	4.29	5.37	6.02	5.82	6.46	8.78	10.10	6.93
Grapefruit, all uses ($/box)[3]	2.30	1.91	1.41	6.01	1.67	2.23	3.66	8.78	10.67	5.36
Livestock										
Cattle, all beef ($/cwt)	58.70	63.10	59.60	57.40	62.40	62.70	62.10	63.70	62.60	62.90
Calves ($/cwt)	58.40	78.90	78.80	76.90	87.30	88.20	87.60	89.00	89.20	89.00
Hogs, all ($/cwt)	51.90	52.90	34.40	35.20	27.80	30.20	36.40	34.20	31.20	36.40
Lambs ($/cwt)	88.20	90.30	72.30	80.10	67.40	67.40	82.80	81.30	77.00	--
All milk, sold to plants ($/cwt)	14.75	13.36	15.41	15.50	15.00	12.60	12.80	13.10	13.70	14.90
Milk, manuf. grade ($/cwt)	13.43	12.17	14.33	14.60	15.10	11.90	11.50	11.90	13.20	14.80
Broilers, live (¢/lb.)	38.10	37.70	39.30	46.80	35.80	34.30	37.80	38.50	38.10	36.20
Eggs, all (¢/doz.)[4]	74.90	70.30	65.50	65.00	67.90	59.60	52.90	55.30	57.30	59.00
Turkeys (¢/lb.)	43.30	39.90	38.00	38.60	37.00	38.70	39.70	41.50	41.80	43.10

-- = 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 National Agricultural Statistics Service (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			1998	1999					
	1996	1997	1998	Aug	Mar	Apr	May	Jun	Jul	Aug
	1982-84=100									
Consumer Price Index, all items	156.9	160.5	163.0	163.4	165.0	166.2	166.2	166.2	166.7	167.1
CPI, all items less food	157.5	161.1	163.6	163.9	165.3	166.7	166.6	166.7	167.2	167.7
All food	153.3	157.3	160.7	161.0	163.3	163.4	163.7	163.6	163.8	164.2
Food away from home	152.7	157.0	161.1	161.5	164.2	164.5	164.6	164.6	165.1	165.6
Food at home	154.3	158.1	161.1	161.4	163.4	163.5	163.9	163.7	163.7	164.1
Meats[1]	140.2	144.4	141.6	142.2	140.3	140.5	141.4	141.8	142.2	142.8
Beef and veal	134.5	136.8	136.5	137.0	137.0	137.9	137.9	139.4	138.9	138.8
Pork	148.2	155.9	148.5	149.9	143.1	141.8	144.7	145.4	146.9	147.6
Poultry	152.4	156.6	157.1	158.9	158.3	157.6	155.7	156.8	157.3	158.5
Fish and seafood	173.1	177.1	181.7	183.5	183.5	185.3	185.9	184.6	184.4	185.2
Eggs	142.1	140.0	135.4	135.4	134.2	129.6	121.4	125.1	119.5	130.8
Dairy and related products[2]	142.1	145.5	150.8	150.5	161.5	156.1	156.2	156.1	155.7	156.5
Fats and oils[3]	140.5	141.7	146.9	149.7	149.4	149.0	147.2	147.5	148.1	148.6
Fresh fruits	234.4	236.3	246.5	248.7	257.4	271.9	280.6	273.4	264.9	266.2
Fresh vegetables	189.2	194.6	215.8	205.6	209.2	206.2	207.7	203.1	206.0	204.8
Potatoes	180.6	174.2	185.2	192.7	185.9	183.3	191.5	194.7	205.0	212.1
Cereals and bakery products	174.0	177.6	181.1	182.7	183.5	184.8	185.1	185.7	186.3	184.9
Sugar and sweets	143.7	147.8	150.2	150.2	151.0	151.7	153.0	152.4	152.4	152.7
Nonalcoholic beverages[4]	128.6	133.4	133.0	132.0	134.5	134.3	134.2	134.3	134.3	134.5
Apparel										
Footwear	126.6	127.6	128.0	127.7	126.4	129.2	127.4	125.4	125.2	123.8
Tobacco and smoking products	232.8	243.7	274.8	273.7	335.9	349.9	345.5	343.2	356.0	350.1
Alcoholic beverages	158.5	162.8	165.7	165.7	168.4	168.8	169.3	169.5	169.9	170.2

1. Beef, veal, lamb, pork, and processed meat. 2. Included butter through Dec. '97. 3. Includes butter as of Jan. '98. 4. Includes fruit juices as of Jan. '98.
This table is compiled with data provided by the Bureau of Labor Statistics (BLS). BLS operates a website at http://stats.bls.gov/blshome.html and a Consumer Prices Information Hotline at (202) 606-7828.

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

	Annual			1998	1999					
	1996	1997	1998	Aug	Mar	Apr	May	Jun	Jul	Aug
	1982=100									
All commodities	127.7	127.6	124.4	124.2	122.6	123.6	124.5	125.1	125.5	126.8
Finished goods[1]	131.3	131.8	130.6	130.7	131.1	131.9	132.4	132.7	132.9	133.7
All foods[2]	132.5	132.8	132.4	133.3	132.1	130.3	131.4	132.5	131.3	132.7
Consumer foods	133.6	134.5	134.3	135.2	134.7	133.4	134.4	135.3	134.3	135.7
Fresh fruits and melons	100.8	99.4	90.0	91.8	102.2	103.1	113.6	103.2	99.9	96.7
Fresh and dry vegetables	135.0	123.1	139.5	116.4	114.4	132.5	111.5	127.7	117.3	111.1
Dried and dehydrated fruits	124.2	124.9	124.4	125.6	122.6	122.6	120.5	120.5	120.6	120.6
Canned fruits and juices	137.5	137.6	134.4	134.4	138.0	138.0	138.1	138.4	138.6	137.9
Frozen fruits, juices and ades	123.9	117.2	116.1	116.4	124.8	123.6	122.3	122.4	120.4	117.8
Fresh veg. except potatoes	120.9	121.3	137.9	114.9	117.4	144.4	111.3	125.8	103.4	113.7
Canned vegetables and juices	121.2	120.1	121.5	122.0	120.9	120.9	120.9	121.0	121.0	121.0
Frozen vegetables	125.4	125.8	125.4	125.6	125.6	126.7	125.9	126.0	127.3	126.1
Potatoes	133.9	106.1	122.5	106.5	121.7	106.4	131.0	146.8	164.3	151.3
Eggs for fresh use (1991=100)	105.1	97.1	90.1	91.3	89.5	74.8	66.8	70.1	75.2	82.7
Bakery products	169.8	173.9	175.8	175.9	177.4	177.8	178.0	177.7	177.8	177.8
Meats	109.0	111.6	101.4	104.6	100.2	99.8	104.8	107.5	104.2	108.2
Beef and veal	100.2	102.8	99.5	100.8	102.8	103.0	104.3	110.9	107.0	108.6
Pork	120.9	123.1	96.6	104.9	87.9	86.3	100.2	96.7	92.8	104.1
Processed poultry	119.8	117.4	120.7	128.4	113.6	111.8	113.2	115.3	114.7	114.5
Unprocessed and packaged fish	165.9	178.1	183.0	179.8	200.9	185.0	187.3	188.4	189.9	188.4
Dairy products	130.4	128.1	138.1	140.1	141.8	132.1	132.9	135.5	136.4	139.9
Processed fruits and vegetables	127.6	126.4	125.8	126.2	128.4	128.4	127.6	127.8	127.8	127.2
Shortening and cooking oil	138.5	137.8	143.4	149.0	--	--	--	--	--	--
Soft drinks	134.0	133.2	134.8	134.7	137.2	137.4	137.3	136.7	136.6	138.1
Finished consumer goods less foods	127.6	128.2	126.4	126.4	127.0	129.0	129.5	129.9	130.8	131.8
Alcoholic beverages	132.8	135.1	135.2	134.8	135.9	136.0	137.3	137.4	137.9	137.1
Apparel	125.1	125.7	126.6	126.5	127.1	127.1	126.8	126.5	126.4	125.9
Footwear	141.6	143.7	144.7	144.6	144.6	144.6	144.4	144.5	144.5	144.5
Tobacco products	237.4	248.9	283.4	286.4	363.5	363.4	363.6	363.6	363.5	363.8
Intermediate materials[3]	125.8	125.6	123.0	123.2	120.7	121.6	122.1	122.9	123.6	124.7
Materials for food manufacturing	125.3	123.2	123.1	124.6	121.4	118.1	119.1	120.1	118.6	121.1
Flour	136.8	118.7	109.2	104.3	107.5	103.0	104.7	105.3	103.2	105.9
Refined sugar[4]	123.7	123.6	119.8	119.5	122.1	122.0	123.6	122.7	122.9	122.5
Crude vegetable oils	118.1	116.6	131.1	127.9	94.9	97.4	94.9	86.8	77.7	85.1
Crude materials[5]	113.8	111.1	96.7	94.3	89.0	91.1	96.1	97.2	97.4	102.1
Foodstuffs and feedstuffs	121.5	112.2	103.8	103.3	98.8	95.4	99.7	99.6	95.9	100.1
Fruits and vegetables and nuts[6]	122.5	115.5	117.2	108.9	115.8	123.5	121.3	121.6	115.6	111.2
Grains	151.1	111.2	93.4	82.5	84.9	83.1	84.6	82.2	71.7	80.9
Slaughter livestock	95.2	96.3	82.3	82.1	83.6	83.8	87.9	88.6	85.0	88.6
Slaughter poultry, live	140.5	131.0	141.4	167.8	124.8	118.7	136.6	135.6	137.6	126.3
Plant and animal fibers	129.4	117.0	110.4	115.8	96.3	94.4	93.8	89.6	79.4	82.7
Fluid milk	107.9	97.5	112.6	115.8	110.1	93.4	95.6	98.1	101.9	111.7
Oilseeds	139.4	140.8	114.4	104.6	91.3	93.5	93.3	91.5	82.2	91.5
Leaf tobacco	89.4	--	104.6	95.2	115.5	88.5	--	--	95.8	96.7
Raw cane sugar	118.6	116.8	117.2	118.2	118.1	119.6	118.3	119.5	120.6	115.2

-- = 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://stats.bls.gov/blshome.html and a Producer Prices Information Hotline at (202) 606-7705.

Farm-Retail Price Spreads

Table 8—Farm-Retail Price Spreads

	Annual			1998	1999					
	1996	1997	1998	Aug	Mar	Apr	May	Jun	Jul	Aug
Market basket[1]										
Retail cost (1982-84=100)	155.9	159.7	163.1	163.4	166.3	166.4	167.1	166.7	166.6	167.1
Farm value (1982-84=100)	111.1	106.2	103.3	103.2	99.9	96.2	97.2	98.6	96.6	98.5
Farm-retail spread (1982-84=100)	180.1	188.6	195.4	195.8	202.0	204.3	204.8	203.5	204.3	204.0
Farm value-retail cost (%)	24.9	23.3	22.2	22.1	21.0	20.2	20.4	20.7	20.3	20.6
Meat products										
Retail cost (1982-84=100)	140.1	144.4	141.6	142.2	140.3	140.5	141.4	141.8	142.2	142.8
Farm value (1982-84=100)	100.4	101.2	84.8	85.4	77.4	83.8	82.2	82.4	82.9	83.8
Farm-retail spread (1982-84=100)	180.9	188.6	200.0	200.4	204.8	198.7	202.2	202.7	203.1	203.3
Farm value-retail cost (%)	36.3	35.5	30.3	30.4	28.0	30.2	29.4	29.4	29.5	29.7
Dairy products										
Retail cost (1982-84=100)	142.1	145.5	150.8	150.5	161.5	156.1	156.2	156.1	155.7	156.5
Farm value (1982-84=100)	107.2	98.0	113.0	113.9	116.7	89.8	97.0	100.9	99.2	106.0
Farm-retail spread (1982-84=100)	174.3	189.3	185.6	184.3	202.8	217.2	210.8	207.0	207.8	203.0
Farm value-retail cost (%)	36.2	32.3	36.0	36.3	34.7	27.6	29.8	31.0	30.6	32.5
Poultry										
Retail cost (1982-84=100)	152.4	156.6	157.1	158.9	158.3	157.6	155.7	156.8	157.3	158.5
Farm value (1982-84=100)	126.2	120.6	126.1	145.9	114.9	111.7	121.7	124.4	123.5	119.0
Farm-retail spread (1982-84=100)	182.6	198.1	192.9	173.9	208.2	210.5	194.9	194.1	196.2	204.0
Farm value-retail cost (%)	44.3	41.2	42.9	49.1	38.9	37.9	41.8	42.5	42.0	40.2
Eggs										
Retail cost (1982-84=100)	142.1	140.0	137.1	135.4	134.2	129.6	121.4	125.1	119.5	130.8
Farm value (1982-84=100)	114.7	99.3	89.6	88.3	91.3	74.2	60.2	64.6	68.6	72.2
Farm-retail spread (1982-84=100)	191.4	213.0	222.5	220.0	211.3	229.1	231.4	233.8	211.0	236.1
Farm value-retail cost (%)	51.9	45.6	42.0	41.9	43.7	36.8	31.8	33.2	36.9	35.5
Cereal and bakery products										
Retail cost (1982-84=100)	174.0	177.6	181.1	182.7	183.5	184.8	185.1	185.7	186.3	184.9
Farm value (1982-84=100)	125.6	107.7	94.4	84.8	86.8	85.7	84.0	81.8	78.2	82.0
Farm-retail spread (1982-84=100)	180.7	187.4	193.2	196.4	197.0	198.6	199.2	200.2	201.4	199.3
Farm value-retail cost (%)	7.2	7.4	6.4	5.7	5.8	5.7	5.6	5.4	5.1	5.4
Fresh fruit										
Retail cost (1982-84=100)	243.0	245.1	258.2	259.2	282.9	301.7	311.8	302.7	292.7	294.2
Farm value (1982-84=100)	151.7	137.0	141.3	136.0	155.5	155.4	162.1	157.2	143.6	152.6
Farm-retail spread (1982-84=100)	285.2	295.0	312.2	316.1	341.7	369.2	380.9	369.9	361.5	359.6
Farm value-retail cost (%)	19.7	17.7	17.3	16.6	17.4	16.3	16.4	16.4	15.5	16.4
Fresh vegetables										
Retail cost (1982-84=100)	189.2	194.6	215.8	205.6	209.2	206.2	207.7	203.1	206.0	204.8
Farm value (1982-84=100)	113.3	118.7	124.5	104.2	122.9	135.0	126.9	133.2	122.4	114.8
Farm-retail spread (1982-84=100)	228.3	233.6	262.7	257.7	253.6	242.8	249.2	239.0	249.0	251.1
Farm value-retail cost (%)	20.3	20.7	19.6	17.2	19.9	22.2	20.7	22.3	20.2	19.0
Processed fruits and vegetables										
Retail cost (1982-84=100)	144.4	147.9	150.6	152.5	153.5	153.3	155.4	154.8	156.4	156.5
Farm value (1982-84=100)	121.5	115.9	115.1	116.1	113.6	113.2	114.6	115.1	114.5	114.6
Farm-retail spread (1982-84=100)	151.6	157.9	161.7	163.9	165.9	165.8	168.1	167.2	169.5	169.6
Farm value-retail cost (%)	20.0	18.6	18.2	18.1	17.6	17.6	17.5	17.7	17.4	17.4
Fats and oils										
Retail cost (1982-84=100)	140.5	141.7	146.9	149.7	149.4	149.0	147.2	147.5	148.1	148.6
Farm value (1982-84=100)	112.3	109.4	118.9	112.9	93.0	96.4	91.0	89.2	75.6	85.2
Farm-retail spread (1982-84=100)	150.9	153.6	157.2	163.2	170.1	168.4	167.9	168.9	174.8	171.9
Farm value-retail cost (%)	21.5	20.8	21.8	20.3	16.7	17.4	16.6	16.3	13.7	15.4

See footnotes at end of table, next page.

Table 8—Farm-Retail Price Spreads (continued)

	Annual			1998	1999					
	1996	1997	1998	Aug	Mar	Apr	May	Jun	Jul	Aug
Beef, All Fresh Retail Price (cts/lb)	252.4	253.8	253.3	255.1	256.2	257	257.7	256.8	258.4	257.1
Beef, Choice										
Retail price (cents/lb.)[2]	280.2	279.5	277.1	279.4	276.9	283.9	283.2	287.2	289.3	289
Wholesale value (cents)[3]	158.1	158.2	153.8	160.6	160.3	166.1	171.3	178.1	171.5	175.8
Net farm value (cents)[4]	134.9	137.2	130.8	126.1	139.9	141.1	139.6	142.1	138.6	140.4
Farm-retail spread (cents)	145.3	142.3	146.3	153.3	137	142.8	143.6	145.1	150.7	148.6
Wholesale-retail (cents)[5]	122.1	121.3	123.3	118.6	116.6	117.8	111.9	109.1	117.8	113.2
Farm-wholesale (cents)[6]	23.2	21.0	23.0	34.5	20.4	25	31.7	36	32.9	35.4
Farm value-retail price (%)	48	49	47	45	51	50	49	49	48	49
Pork										
Retail price (cents/lb.)[2]	233.7	245.0	242.7	245	237.1	234.8	239.2	241.2	244.3	246.8
Wholesale value (cents)[3]	123.2	123.1	97.3	100.9	89.2	95	105.3	100.5	97.0	107.7
Net farm value (cents)[4]	99.4	95.3	61.2	66.9	50.2	56.4	68.5	63	58.4	68.8
Farm-retail spread (cents)	134.3	149.6	181.5	178.1	186.9	178.4	170.7	178.2	185.9	178
Wholesale-retail (cents)[5]	110.5	121.9	145.4	144.1	147.9	139.8	133.9	140.7	147.3	139.1
Farm-wholesale (cents)[6]	23.8	27.7	36.1	34	39	38.6	36.8	37.5	38.6	38.9
Farm value-retail price (%)	43	39	25	27	21	24	29	26	24	28

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 price and farm value, represents charges for assembling, processing, transporting and distributing. 2. Weighted-average price 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 lb. 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 contact: Veronica Jones (202) 694-5387, Larry Duewer (202) 694-5172*

Note: Pork price and spread procedures have been revised (January 1999) and historical data made consistent with the updated series. For the complete updated series call Larry Duewer.

Table 9—Price Indexes of Food Marketing Costs

	Annual			1997	1998				1999	
	1997	1997	1998	IV	I	II	III	IV	I	II
	1987=100*									
Labor—hourly earnings										
and benefits	459.7	474.3	490.4	480.2	484.9	488.3	493.0	494.6	497.8	502.5
Processing	474.7	486.0	499.3	490.5	493.8	497.7	500.7	504.9	504.6	513
Wholesaling	516.0	536.2	552.5	545.4	546.8	552.5	555.4	555.1	556.9	562.3
Retailing	419.9	435.2	454.1	441.1	448.7	450.6	457.8	459.4	464.9	465.6
Packaging and containers	399.8	390.3	395.5	392.9	398.5	396.7	394.9	391.9	390.3	396.4
Paperboard boxes and containers	363.8	341.9	365.2	350.3	365.4	368.7	366.8	359.8	355.7	368.3
Metal cans	498.3	491.0	487.9	487.9	494.1	484.7	486.0	486.6	486.6	486.6
Paper bags and related products	437.8	441.9	432.9	442.5	438.8	434.0	430.2	428.5	425.6	435.7
Plastic films and bottles	326.5	326.6	322.8	327.5	326.7	325.0	321.0	318.5	319.7	321.4
Glass containers	460.5	447.4	446.8	446.6	446.9	446.9	446.1	447.3	447.8	447.8
Metal foil	235.7	233.4	232.0	236.4	231.8	232.6	232.6	230.9	228.2	226.1
Transportation services	429.8	430.0	428.3	429.4	429.9	431.8	426.3	425.0	403.9	393.7
Advertising	580.1	609.4	624.5	611.6	623.2	624.2	624.5	626.2	634.1	635.3
Fuel and power	670.7	668.5	619.7	669.0	625.1	622.9	629.2	601.6	586.6	627.3
Electric	501.3	499.2	492.1	491.5	482.2	489.3	511.8	485.0	479.0	484.0
Petroleum	666.8	616.7	457.0	609.6	495.5	470.0	439.2	423.3	388.4	504.0
Natural gas	1,136.7	1,214.0	1,239.4	1,249.4	1,229.4	1,242.1	1,268.5	1,217.7	1,206.3	1,222.8
Communications, water and sewage	296.8	302.8	307.6	304.2	305.5	308.0	308.5	308.5	309.3	308.5
Rent	268.2	265.6	260.5	265.1	262.5	260.4	260.4	258.8	257.5	257.5
Maintenance and repair	499.6	514.9	529.3	519.7	524.1	527.1	531.1	535.1	537.9	540.7
Business services	501.7	512.3	522.9	514.1	518.4	521.2	521.8	530.3	527.7	528.7
Supplies	338.3	337.8	332.3	337.9	335.6	332.4	331.4	329.5	326.6	326.4
Property taxes and insurance	564.3	580.1	598.3	587.3	591.1	595.4	600.7	606.1	609.6	615.2
Interest, short-term	103.9	108.9	103.7	110.1	106.5	106.7	105.6	96.0	93.2	96.7
Total marketing cost index	452.1	459.9	467.2	463.4	465.3	466.9	468.6	468.0	466.5	470.9

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

Livestock & Products

Table 10—U.S. Meat Supply & Use

	Beg. stocks	Production[1]	Imports	Total supply	Exports	Ending stocks	Consumption Total	Consumption Per capita[2]	Conversion factor[3]	Primary market price[4]
	Million lbs.[5]							lbs.		$/cwt
Beef										
1996	519	25,525	2,073	28,117	1,877	377	25,863	68	0.700	65.06
1997	377	25,490	2,343	28,210	2,136	465	25,609	67	0.700	66.32
1998	465	25,760	2,642	28,867	2,171	393	26,303	68	0.700	61.48
1999	393	26,160	2,790	29,343	2,391	370	26,582	68	0.700	64-65
2000	370	24,531	2,905	27,806	2,290	365	25,151	64	0.700	66-72
Pork										
1996	396	17,117	618	18,131	970	366	16,795	49	0.776	56.53
1997	366	17,274	633	18,273	1,044	408	16,821	49	0.776	54.30
1998	408	19,011	704	20,123	1,229	586	18,308	53	0.776	34.72
1999	586	19,226	826	20,638	1,261	575	18,802	53	0.776	32-33
2000	575	18,655	800	20,030	1,200	525	18,305	52	0.776	34-37
Veal[6]										
1996	7	378	0	385	0	7	378	1	0.83	59
1997	7	334	0	341	0	8	333	1	0.83	82
1998	8	262	0	270	0	5	265	1	0.83	82
1999	5	229	0	234	0	6	228	1	0.83	88
2000	6	222	0	228	0	5	223	1	0.83	90
Lamb and mutton										
1996	8	268	73	349	6	9	334	1	0.89	85
1997	9	260	83	352	5	14	333	1	0.89	88
1998	14	251	112	377	6	12	359	1	0.89	74
1999	12	231	109	352	6	11	335	1	0.89	74
2000	11	213	114	338	6	10	322	1	0.89	71
Total red meat										
1996	930	43,288	2,764	46,982	2,853	759	43,370	120	--	--
1997	759	43,358	3,059	47,176	3,185	895	43,096	118	--	--
1998	895	45,284	3,458	49,637	3,406	996	45,235	123	--	--
1999	996	45,846	3,725	50,567	3,658	962	45,947	123	--	--
2000	962	43,621	3,819	48,402	3,496	905	44,001	117	--	--
										¢/lb
Broilers										
1996	560	26,124	4	26,688	4,420	641	21,626	70	0.859	61
1997	641	27,041	5	27,687	4,664	607	22,416	72	0.859	59
1998	607	27,612	5	28,225	4,673	711	22,841	73	0.859	63
1999	711	29,436	4	30,151	4,581	850	24,720	78	0.859	58
2000	850	30,957	4	31,811	4,575	890	26,346	82	0.869	56
Mature chickens										
1996	7	491	0	498	265	6	228	1	1.0	--
1997	6	510	0	516	384	7	125	1	1.0	--
1998	7	525	0	533	426	6	101	1	1.0	--
1999	6	546	0	553	405	5	143	1	1.0	--
2000	5	567	0	572	415	5	152	1	1.0	--
Turkeys										
1996	271	5,401	1	5,673	438	328	4,906	19	1.0	66
1997	328	5,412	1	5,741	606	415	4,720	18	1.0	65
1998	415	5,215	0	5,630	446	304	4,880	18	1.0	62
1999	304	5,225	1	5,529	378	250	4,901	18	1.0	69
2000	250	5,332	0	5,582	390	300	4,892	18	1.0	64
Total poultry										
1996	839	32,015	5	32,859	5,123	975	26,760	90	--	--
1997	975	32,964	6	33,944	5,654	1,029	27,261	90	--	--
1998	1,029	33,352	6	34,387	5,545	1,022	27,821	91	--	--
1999	1,022	35,206	5	36,233	5,364	1,105	29,764	96	--	--
2000	1,105	36,855	4	37,964	5,380	1,195	31,389	100	--	--
Red meat and poultry										
1996	1,769	75,303	2,769	79,841	7,976	1,734	70,130	209	--	--
1997	1,734	76,322	3,065	81,120	8,839	1,924	70,357	208	--	--
1998	1,924	78,636	3,464	84,024	8,950	2,018	73,057	214	--	--
1999	2,018	81,052	3,730	86,800	9,022	2,067	75,712	220	--	--
2000	2,067	80,476	3,823	86,366	8,876	2,100	75,391	218	--	--

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

Table 11—U.S. Egg Supply & Use

	Beg. stocks	Production	Imports	Total supply	Exports	Hatching use	Ending stocks	Consumption Total	Consumption Per capita	Primary market price*
	Million doz.								No.	¢/doz.
1993	13.5	6,005.8	4.7	6,023.9	158.9	769.6	10.7	5,084.6	236.4	72.5
1994	10.7	6,177.6	3.7	6,192.0	187.6	805.4	14.9	5,184.1	238.7	67.3
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	240.0	81.2
1998	7.4	6,658.7	5.8	6,672.0	218.8	921.8	8.4	5,523.0	245.2	75.8
1999	8.4	6,873.7	6.2	6,888.3	161.1	954.8	5.0	5,767.4	253.6	68.9
2000	5.0	7,030.0	4.0	7,039.0	170.0	1,010.0	5.0	5,854.0	255.2	65.5

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[1]

	Production	Farm use	Commercial Farm Marketings	Commercial Beg. stocks	Imports	Total commercial supply	CCC net removals	Commercial Ending stocks	Commercial Disappearance	All milk price[1]	CCC net removals Skim solids basis	CCC net removals Total solid basis[2]
	Billion lbs. (milkfat basis)									$/cwt	Billion lbs.	
1992	150.9	1.9	149.0	4.5	2.5	155.9	9.9	4.7	141.3	13.09	2.0	5.2
1993	150.6	1.8	148.8	4.7	2.8	156.3	6.6	4.5	145.1	12.80	3.9	5.0
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	4.5	165.5	0.4	5.3	159.9	15.42	4.0	2.6
1999	161.9	1.3	160.6	5.3	4.9	171.8	0.3	6.4	164.1	14.90	5.6	3.5
2000	165.0	1.2	163.8	6.4	3.6	173.7	1.0	5.7	167.1	13.25	2.2	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 1996	Annual 1997	Annual 1998	1998 Jul	1999 Feb	1999 Mar	1999 Apr	1999 May	1999 Jun	1999 Jul
Broilers										
Federally inspected slaughter certified (mil. lb.)	26,336.3	27,270.7	27,862.7	2,354.1	2,263.3	2,606.6	2,523.4	2,480.0	2,585.6	2,436.9
Wholesale price, 12-city (cents/lb.)	61.2	58.8	63.1	68.5	58.2	56.8	55.1	60	60.3	59.5
Price of grower feed ($/ton)[1]	175.1	157.7	128.7	131.3	109.3	106.9	107.2	105.0	102.7	95.3
Broiler-feed price ratio[2]	4.4	4.7	6.3	6.7	6.7	6.7	6.4	7.2	7.5	8
Stocks beginning of period (mil. lb.)	560.1	641.3	606.8	601.9	709.4	713.9	777	800.1	803.3	831.2
Broiler-type chicks hatched (mil.)	8,078.2	8,321.6	8,495.1	722.7	661.7	755.2	734.3	766.2	744.4	750.5
Turkeys										
Federally inspected slaughter certified (mil. lb.)	5,465.6	5,477.9	5,280.6	459.3	363.8	431.7	439.3	440.8	454.4	437.7
Wholesale price, Eastern U.S. 8-16 lb. young hens (cents/lb.)	66.5	64.9	62.2	61.4	58.8	61.7	63	65.6	68.9	71.6
Price of turkey grower feed ($/ton)[1]	165.8	142.7	115.8	115.4	102.0	98.7	99.2	95.7	94.3	86.2
Turkey-feed price ratio[2]	5.3	5.6	6.7	6.5	7.0	7.5	7.8	8.3	8.8	9.7
Stocks beginning of period (mil. lb.)	271.3	328.0	415.1	656.5	363.9	375.9	370.7	455.5	494.3	556.1
Poults placed in U.S. (mil.)	327.2	321.5	297.8	26.2	23.7	25.9	26.8	26.1	25.6	26.8
Eggs										
Farm production (mil.)	76,532	77,677	79,905	6,720	6,282	7,043	6,769	6,925	6,734	6,906
Average number of layers (mil.)	299	304	313	309	323	323	321	320	320	320
Rate of lay (eggs per layer on farms)	256.2	255.3	255.4	21.7	19.5	21.8	21.1	21.6	21.0	21.6
Cartoned price, New York, grade A large (cents/doz.)[3]	88.2	81.2	75.8	73.3	69.6	75.5	60.2	59.2	54.9	68.7
Price of laying feed ($/ton)[1]	182.5	160.0	137.5	147.3	123.0	120.2	129.6	137.4	131.7	116.9
Egg-feed price ratio[2]	8.6	8.8	9.8	7.9	10.6	11.3	9.2	7.7	8.4	9.8
Stocks, first of month Frozen (mil. doz.)	10.5	7.7	7.4	7.8	8.4	8.2	7	7.1	7.4	8.6
Replacement chicks hatched (mil.)	401.6	424.5	438.4	35.6	35.6	41.3	42	40.6	40.6	34.3

1. Calculated from price ratios that were revised February 1995. 2. Pounds of feed equal in value to 1 dozen eggs or 1 lb. of broiler or turkey liveweight (revised February 1995). 3. Price of cartoned eggs to volume buyers for delivery to retailers. *Information contact: LaVerne Williams (202) 694-51*

Table 14—Dairy

	Annual			1998	1999					
	1996	1997	1998	Jul	Feb	Mar	Apr	May	Jun	Jul
Milk--Basic Formula Price ($/cwt)[1]	13.39	12.05	14.20	14.77	10.27	11.62	11.81	11.26	11.42	13.59
Wholesale prices										
Butter, Central States (cents/lb.)[2]	108.2	116.2	177.6	203.1	133.1	130.3	103.8	111	147.7	134.7
Am. cheese, Wis. assembly pt. (cents/lb.)	149.1	132.4	158.1	162.6	131.5	134	133.6	124.8	138.1	159.7
Nonfat dry milk (cents/lb.)[3]	122.2	110.0	106.9	103.0	104.4	102.4	102.3	102.3	101.4	101.7
USDA net removals										
Total (mil. lb.)[4]	86.9	1,090.3	365.6	15.7	23.3	32.2	30.8	20.5	22.6	19.8
Butter (mil. lb.)	0.1	38.4	6.3	0.0	0.0	0.4	0.4	0	0.0	0.0
Am. cheese (mil. lb.)	4.6	11.3	8.2	0.7	0.5	0.4	0.3	0.3	0.1	0.2
Nonfat dry milk (Mil. lb.)	57.2	298.0	326.4	40.2	35.9	37.3	48.9	53.8	69.7	55
Milk										
Milk prod. 20 states (mil. lb.)	131,084	133,314	134,930	11,314	10,809	12,212	11,989	12,430	11,714	11,587
Milk per cow (lb.)	16,726	17,180	17,501	1,468	1,403	1,584	1,554	1,609	1,515	1,497
Number of milk cows (1,000)	7,837	7,760	7,710	7,709	7,702	7,708	7,714	7,725	7,730	7,738
U.S. milk production (mil. lb.)[5]	154,006	156,091	157,441	13,167	12,613	14,246	13,928	14,436	13,599	13,425
Stocks, beginning[4]										
Total (mil. lb.)	4,168	4,714	4,907	6,676	5,925	7,029	7,396	8,389	9,117	9,303
Commercial (mil. lb.)	4,099	4,704	4,889	6,648	5,893	7,001	7,371	8,362	9,086	9,264
Government (mil. lb.)	69	10	18	27	32	28	25	27	31	39
Imports, total (mil. lb.)[4]	2,911	2,698	4,864	569	360	433	414	377	436	--
Commercial disappearance (mil. lb.)[4]	154,745	156,120	159,920	13,686	11,742	14,167	13,213	13,958	13,727	--
Butter										
Production (mil. lb.)	1,174.5	1,151.2	1,081.9	63.8	111.5	113.7	106.4	104.7	86	78.3
Stocks, beginning (mil. lb.)	15.8	13.4	20.5	60.2	60.6	94.7	108.7	126.3	136.3	121
Commercial disappearance (mil. lb.)	1,179.8	1,108.7	1,124.2	85.1	80.3	103.1	91.7	96.9	108.9	--
American cheese										
Production (mil. lb.)	3,280.8	3,285.6	3,325.8	277.7	277.3	316.1	318.6	314.6	297.2	300.5
Stocks, beginning (mil. lb.)	306.6	379.6	410.3	450.1	390.8	403.9	406.0	450.5	495.7	539.1
Commercial disappearance (mil. lb.)	3,229.7	3,269.0	3,349.7	268.9	267.4	317.4	279.5	274.1	257.3	--
Other cheese										
Production (mil. lb.)	3,936.7	4,044.9	4,176.1	332.3	323.0	375.6	354.4	361.6	375.6	345.1
Stocks, beginning (mil. lb.)	105.3	107.3	70.0	133.5	108.9	139.8	146.1	172.9	181	195.8
Commercial disappearance (mil. lb.)	4,242.9	4,366.6	4,450.6	359.6	316.2	400.0	354.7	380.6	384.5	--
Nonfat dry milk										
Production (mil. lb.)	1,061.8	1,271.6	1,135.4	85.7	115.8	128.5	133.7	137.2	120.4	101.5
Stocks, beginning (mil. lb.)	70.6	71.1	103.3	122.7	82.4	107.6	122.7	136.5	163.7	158.3
Commercial disappearance (mil. lb.)	1,009.5	894.1	867.5	83.4	55.2	76.7	71.6	57.0	56.5	--
Frozen dessert										
Production (mil. gal.)[6]	1,240.9	1,290.0	1,325.9	136.4	90.6	111	117.6	119.8	136.0	133.3

	Annual			1997	1998				1999	
	1996	1997	1998	IV	I	II	III	IV	I	II
Milk production (mil. lb.)	154,006	156,091	157,441	38,031	39,164	40,821	38,519	38,937	40,540	41,963
Milk per cow (lb.)	16,433	16,871	17,192	4,144	4,268	4,451	4,210	4,261	4,437	4,586
No. of milk cows (1,000)	9,372	9,252	9,158	9,200	9,176	9,171	9,149	9,137	9,136	9,151
Milk-feed price ratio	1.60	1.54	1.97	1.71	1.73	1.71	2.05	2.46	2.20	1.81
Returns over concentrate costs ($/cwt milk)	10.98	9.80	12.15	11.00	11.10	10.40	12.25	14.80	13.00	9.90

-- = Not available. Quarterly values for latest year are preliminary. 1. Manufacturing grade milk. 2. Grade AA Chicago before June 1998. 3. Prices paid f.o.b. Central States production area. 4. Milk equivalent, fat basis. 5. Monthly data ERS estimates. 6. Hard ice cream, ice milk, and hard sherbet.
Information contact: LaVerne Williams (202) 694-5190

Table 15—Wool

	Annual			1997	1998				1999	
	1996	1997	1998	IV	I	II	III	IV	I	II
U.S. wool price (¢/lb.)[1]	193	238	162	258	209	178	142	115	115	116
Imported wool price (¢/lb.)[2]	196	206	164	204	192	176	141	141	146	142
U.S. mill consumption, scoured										
Apparel wool (1,000 lb.)	129,525	130,386	98,373	32,794	29,318	29,577	21,948	17,530	17,767	17,385
Carpet wool (1,000 lb.)	12,311	13,576	16,331	3,420	3,871	4,052	4,020	4,388	4,538	3,855

-- = 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			1998	1999					
	1996	1997	1998	Aug	Mar	Apr	May	Jun	Jul	Aug
Cattle on feed (7 states, 1000+ head capacity)										
Number on feed (1,000 head)[1]	8,667	8,943	9,455	7,706	8,868	8,889	8,573	8,537	8,173	7,879
Placed on feed (1,000 head)	19,564	20,765	19,697	1,773	1,731	1,433	1,723	1,505	1,565	2,070
Marketings (1,000 head)	18,636	19,552	19,126	1,687	1,550	1,671	1,686	1,825	1,816	1,732
Other disappearance (1,000 head)	652	701	691	42	52	78	73	44	43	42
Market prices ($/cwt)										
Slaughter cattle										
Choice steers, 1,100-1,300 lb.										
Texas	65.06	65.99	61.75	58.75	64.75	65.34	65.00	66.15	64.51	65.29
Neb. direct	65.05	66.32	61.48	59.16	64.63	65.19	64.41	63.20	64.05	65.26
Boning utility cows, Sioux Falls	30.33	34.27	36.20	40.29	37.36	36.80	39.50	40.00	42.50	42.60
Feeder steers										
Medium no. 1, Oklahoma City										
600-650 lb.	61.31	81.34	77.70	72.24	81.14	82.73	81.08	82.15	84.24	81.85
750-800 lb.	61.08	76.19	71.78	63.99	70.98	70.50	70.01	76.01	76.94	77.04
Slaughter hogs										
Barrows and gilts, 51-52 percent lean										
National Base converted to live equal.	56.53	54.30	34.72	37.98	28.25	31.69	38.45	35.39	32.84	38.56
Sows, Iowa, S.MN 1-2 300-400 lb.	--	40.24	20.29	20.26	18.41	19.49	25.28	24.29	16.22	18.65
Slaughter sheep and lambs										
Lambs, Choice, San Angelo	85.27	87.95	74.20	80.05	68.54	70.50	82.70	81.06	77.29	81.17
Ewes, Good, San Angelo	39.05	49.33	40.90	35.55	45.17	46.63	41.36	41.70	48.18	43.50
Feeder lambs										
Choice, San Angelo	94.88	104.43	79.59	78.80	81.75	81.81	84.71	80.60	77.29	78.83
Wholesale meat prices, Midwest										
Boxed beef cut-out value										
Choice, 700-800 lb.	102.01	102.75	98.60	102.16	103.88	107.42	111.07	116.01	111.14	114.26
Select, 700-800 lb.	95.34	96.15	92.19	90.65	102.01	102.11	101.95	104.76	101.45	104.62
Canner and cutter cow beef	58.18	64.50	61.49	62.13	66.18	63.51	67.52	68.20	70.33	70.15
Pork cutout	--	--	53.07	57.25	45.84	49.83	57.38	53.69	50.55	61.27
Pork loins, bone-in, 1/4 " trim,14-19 lb.	138.73	128.75	102.04	105.90	83.47	99.35	107.44	97.62	105.72	111.55
Pork bellies, 12-14 lb.	69.96	73.91	52.38	72.99	46.51	49.23	53.76	53.41	47.78	67.29
Hams, bone-in, trimmed, 20-23 lb.	--	--	--	46.62	42.86	40.06	44.03	43.54	40.79	52.10
All fresh beef retail price	252.44	253.77	253.28	255.11	256.17	256.97	257.65	256.76	258.42	257.11
Commercial slaughter (1,000 head)[2]										
Cattle	36,583	36,318	35,471	3,040	3,049	2,972	2,997	3,207	3,084	--
Steers	17,819	17,529	17,430	1,554	1,464	1,480	1,576	1,656	1,576	--
Heifers	10,756	11,528	11,450	950	1,031	978	922	1,047	922	--
Cows	7,274	6,564	5,985	483	499	460	446	448	446	--
Bull and stags	728	696	606	53	55	54	53	56	53	--
Calves	1,768	1,575	1,456	125	117	97	89	105	111	--
Sheep and lambs	4,184	3,911	3,911	276	423	310	270	270	265	--
Hogs	92,394	91,960	101,208	8,169	9,117	8,534	7,438	8,319	7,910	--
Barrows and gilts	88,224	88,409	97,026	7,823	8,769	8,217	7,154	7,154	7,154	--
Commercial production (mil. lb.)										
Beef	25,421	25,384	25,656	2,228	2,230	2,155	2,151	2,321	2,256	--
Veal	368	324	250	20	20	18	17	17	17	--
Lamb and mutton	265	257	247	17	29	21	18	19	19	--
Pork	17,084	17,244	18,981	1,505	1,737	1,630	1,418	1,583	1,489	--

	Annual			1998				1999		
	1996	1997	1998	I	II	III	IV	I	II	III
Hogs and pigs (U.S.)[3]										
Inventory (1,000 head)[1]	58,201	56,124	61,158	61,158	60,163	62,213	63,488	62,206	59,851	60,536
Breeding (1,000 head)[1]	6,770	6,578	6,957	6,957	6,942	6,958	6,875	6,682	6,527	6,515
Market (1,000 head)[1]	51,431	49,546	54,200	54,200	53,220	55,254	56,612	55,523	53,323	54,020
Farrowings (1,000 head)	11,114	11,479	12,038	2,929	3,086	3,054	2,993	2,897	2,990	2,936
Pig crop (1,000 head)	94,459	99,584	104,980	25,480	26,989	26,634	25,902	25,293	26,301	--
Cattle on Feed, 7 states (1,000 head)[4]										
Steers and Steer Calves	5,588	5,410	5,803	5,803	5,245	4,608	5,086	5,086	5,331	5,728
Heifers and Heifer Calves	3,005	3,455	3,615	3,615	3,325	3,191	3,268	3,268	3,527	3,783
Cows and Bulls	74	78	37	37	37	26	22	22	31	44

-- = 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. Beginning of period. 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: Set-aside[3]	Area: Planted	Area: Harvested	Yield	Production	Total supply[4]	Feed & residual	Other domestic use	Exports	Total use	Ending stocks	Farm price[5]
	Mil. Acres			Bu./acre	Mil. bu.							$/bu.
Wheat												
1995/96	6.1	69.0	61.0	35.8	2,183	2,757	154	986	1,241	2,381	376	4.55
1996/97	--	75.1	62.8	36.3	2,277	2,746	308	993	1,002	2,302	444	4.30
1997/98	--	70.4	62.8	39.5	2,481	3,020	250	1,007	1,040	2,298	722	3.38
1998/99*	--	65.9	59.0	43.2	2,550	3,376	405	984	1,042	2,431	945	2.65
1999/2000	--	62.7	54.5	42.3	2,307	3,357	325	1,007	1,125	2,457	900	2.45-2.75
		Mil. acres		*lb./acre*				*Mil. cwt (rough equiv)*				*$/cwt*
Rice[6]												
1995/96	0.5	3.1	3.1	5,621.0	173.9	212.6	--	6/ 104.6	83.0	187.6	25.0	9.15
1996/97	--	2.8	2.8	6,120.0	171.6	206.6	--	6/ 101.0	78.4	179.4	27.2	9.96
1997/98	--	3.1	3.1	5,897.0	183.0	219.4	--	6/ 103.2	88.3	191.5	27.9	9.70
1998/99*	--	3.3	3.3	5,669.0	188.1	226.4	--	6/ 119.5	85.0	204.5	22.0	8.83
1999/2000	--	3.6	3.6	5,967.0	212.1	244.8	--	6/ 113.0	85.0	198.0	46.8	5.75-6.25
		Mil. acres		*Bu./acre*				*Mil. bu.*				*$/bu.*
Corn												
1995/96	7.7	71.5	65.2	113.5	7,400	8,974	4,708	1,612	2,228	8,548	426	3.24
1996/97	--	79.2	72.6	127.1	9,233	9,672	5,299	1,692	1,797	8,789	883	2.71
1997/98	--	79.5	72.7	126.7	9,207	10,099	5,505	1,782	1,504	8,791	1,308	2.43
1998/99*	--	80.2	72.6	134.4	9,761	11,089	5,575	1,830	1,985	9,390	1,699	1.95
1999/2000	--	77.6	71.0	132.2	9,381	11,090	5,575	1,880	1,850	9,305	1,785	1.75-2.15
		Mil. acres		*Bu./acre*				*Mil bu.*				*$/bu.*
Sorghum												
1995/96	1.7	9.4	8.3	55.6	459	530	295	19	198	512	18	3.19
1996/97	--	13.1	11.8	67.3	795	814	516	45	205	766	47	2.34
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	270	45	190	505	64	1.70
1999/2000	--	9.3	8.5	68.2	580	644	325	55	200	580	64	1.50-1.90
		Mil. acres		*Bu./acre*				*Mil. bu.*				*$/bu.*
Barley												
1995/96	2.9	6.7	6.3	57.2	359	513	179	172	62	413	100	2.89
1996/97	--	7.1	6.7	58.5	392	529	217	172	31	419	109	2.74
1997/98	--	6.7	6.2	58.1	360	510	144	172	74	390	119	2.38
1998/99*	--	6.3	5.9	60.1	352	501	162	170	28	361	141	1.98
1999/2000	--	5.2	4.8	58.5	283	458	120	172	30	322	136	1.80-2.20
		Mil. acres		*Bu./acre*				*Mil. bu.*				*$/bu.*
Oats												
1995/96	0.8	6.2	3.0	54.6	161	342	182	92	2	276	66	1.67
1996/97	--	4.6	2.7	57.7	153	317	153	95	3	250	67	1.96
1997/98	--	5.1	2.8	59.5	167	332	161	95	2	258	74	1.60
1998/99*	--	4.9	2.8	60.4	167	349	171	95	2	267	81	1.10
1999/2000	--	4.7	2.6	61.6	162	343	165	96	2	263	80	0.90-1.30
		Mil. acres		*Bu./acre*				*Mil. bu.*				*$/bu.*
Soybeans[7]												
1995/96	--	62.6	61.6	35.3	2,177	2,516	112	1,370	851	2,333	183	6.72
1996/97	--	64.2	63.3	37.6	2,380	2,573	123	1,436	882	2,441	132	7.35
1997/98	--	70.0	69.1	38.9	2,689	2,826	158	1,597	870	2,626	200	6.47
1998/99*	--	72.4	70.8	38.9	2,757	2,961	201	1,590	805	2,596	365	5.00
1999/2000	--	74.1	73.3	37.9	2,778	3,147	157	1,635	895	2,687	460	4.40-5.20
								Mil. lbs.				*¢/lb.*
Soybean oil												
1995/96	--	--	--	--	15,240	16,472	--	13,465	992	14,457	2,015	24.75
1996/97	--	--	--	--	15,752	17,821	--	14,263	2,037	16,300	1,520	22.50
1997/98	--	--	--	--	18,143	19,724	--	15,264	3,077	18,341	1,382	25.84
1998/99*	--	--	--	--	18,000	19,455	--	15,400	2,350	17,750	1,705	19.80
1999/2000	--	--	--	--	18,395	20,165	--	15,800	2,000	17,800	2,365	16.00-19.00
								1,000 tons				*$/ton[8]*
Soybean meal												
1995/96	--	--	--	--	32,527	32,826	--	26,611	6,002	32,613	212	236.0
1996/97	--	--	--	--	34,210	34,524	--	27,320	6,994	34,314	210	270.9
1997/98	--	--	--	--	38,171	38,437	--	28,889	9,330	38,219	218	185.5
1998/99*	--	--	--	--	37,677	37,995	--	30,745	6,950	37,695	300	138.3
1999/2000	--	--	--	--	38,775	39,125	--	31,100	7,750	38,850	275	142-167

See footnotes at end of table, next page

Table 17—Supply & Utilization (continued)

	Area: Set-aside[3]	Area: Planted	Area: Harvested	Yield	Production	Total supply[4]	Feed & residual	Other domestic use	Exports	Total use	Ending stocks	Farm price[5]
	Mil. Acres			Lb./acre	Mil. Bales							¢/lb.
Cotton[9]												
1995/96	1.7	16.9	16.0	537	17.9	21.0	--	10.6	7.7	18.3	2.6	75.4
1996/97	0.3	14.7	12.9	705	18.9	22.0	--	11.1	6.9	18.0	4.0	69.3
1997/98	--	13.9	13.4	673	18.8	22.8	--	11.3	7.5	18.8	3.9	65.2
1998/99*	--	13.4	10.7	625	13.9	18.3	--	10.4	4.3	14.7	3.9	60.6
1999/2000*	--	14.6	13.6	621	17.5	21.5	--	10.4	5.7	16.1	5.4	--

-- = Not available or not applicable. *September 10, 1999 Supply and Demand Estimates. 1. Marketing year beginning June 1 for wheat, barley, and oats; August 1 for cotton and rice; September 1 for soybeans, corn, and sorghum; October 1 for soymeal and soyoil. 2. Conversion factors: Hectare (ha.) = 2.471 acres, 1 metric ton = 2,204.622 pounds, 36.7437 bushels of wheat or soybeans, 39.3679 bushels of corn or sorghum, 45.9296 bushels of barley, 68.8944 bushels of oats, 22.046 cwt of rice, and 4.59 480-pound bales of cotton. 3. Includes diversion, acreage reduction, 50-92, & 0-92 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. *Information contacts: Wheat, rice, feed grains, Jenny Gonzales (202) 694-5296; soybeans, soybean products, and cotton, Mae Dean Johnson (202) 694-5299*

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

	Marketing year[1] 1996/97	1997/98	1998/99	1998 Jul	1999 Feb	Mar	Apr	May	Jun	Jul
Wheat, no. 1 HRW, Kansas City ($/bu.)[2]	4.88	3.71	--	3.02	3.05	3.02	2.94	2.89	2.93	2.68
Wheat, DNS, Minneapolis ($/bu.)[3]	4.96	4.31	--	3.89	3.78	3.79	3.65	3.61	3.73	3.68
Rice, S.W. La. ($/cwt)[4]	20.34	18.92	--	18.50	17.06	16.52	16.13	15.56	15.13	14.91
Corn, no. 2 yellow, 30-day, Chicago ($/bu.)[5]	2.84	2.56	--	2.27	2.15	2.20	2.13	2.16	2.11	1.78
Sorghum, no. 2 yellow, Kansas City ($/cwt)[5]	4.54	4.11	--	3.74	3.43	3.48	3.37	3.35	3.32	2.92
Barley, feed, Duluth ($/bu.)	2.32	1.90	--		--	--	--	--	--	--
Barley, malting Minneapolis ($/bu.)	3.18	2.50	--		--	--	--	--	--	--
U.S. cotton price, SLM, 1-1/16 in. (¢/lb.)[6]	71.60	67.79	--	74.18	55.46	58.17	57.01	55.54	53.74	49.23
Northern Europe prices cotton index (¢/lb.)[7]	78.66	72.11	--	69.36	56.26	56.74	57.86	59.85	58.68	54.56
U.S. M 1-3/32 in. (¢/lb.)[8]	82.86	77.98	--	81.35	--	--	--	--	--	--
Soybeans, no. 1 yellow, 30-day Chicago ($/bu)	7.38	6.51	--	6.26	4.86	4.69	4.70	4.59	4.45	4.11
Soybean oil, crude, Decatur (¢/lb.)	22.50	24.69	--	24.88	19.96	19.54	19.54	17.85	16.50	15.29
Soybean meal, 48% protein, Decatur ($/ton)	270.90	276.78	--	183.40	132.30	133.00	134.50	133.20	139.10	132.73

-- = No quotes. 1. Beginning June 1 for wheat and barley; Aug. 1 for rice and cotton; September 1 for corn, sorghum, and soybeans; October 1 for soymeal and oil. 2. Ordinary protein. 3. 14 percent protein. 4. Long grain, milled basis. 5. Marketing year 1997/98 data are preliminary. 6. Average spot market. 7. Liverpool Cotlook "A" Index; average of 5 lowest prices of 13 selected growths. 8. Cotton, Memphis territory growths. *Information contacts: Wheat, rice, and feed, Jenny Gonzales (202) 694-5296; soybeans, soybean products, and cotton, Mae Dean Johnson (202) 694-5299*

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

	Target price	Basic loan rate	Findley or announced loan rate[1]	Total deficiency payment rate	Effective base acres[2]	Program[3]	Flexibility contract payment rate	Acres under contract	Contract payment yields	Partici-pation rate[4]
	$/bu.				Mil. acres	Percent of base	$/bu.	Mil. acres	Bu./cwt	Percent
Wheat										
1995/96	4.00	2.69	2.58	0.00	77.70	0/0/0	--	--	--	85
1996/97	--	--	2.58	--	--	--	0.87	76.70	34.70	99
1997/98	--	--	2.58	--	--	--	0.631	76.7	34.70	--
1998/99	--	--	2.58	--	--	--	0.663	78.9	34.50	--
1999/2000[5]	--	--	2.58	--	--	--	0.637	79.0	34.50	--
		$/cwt					$/cwt			
Rice										
1995/96	10.71	6.50	6.50[6]	3.22 #	4.20	5/0/0	--	--	--	95
1996/97	--	6.50	--	--	--	--	2.77	4.20	48.27	99
1997/98	--	6.50	--	--	--	--	2.710	4.2	48.17	--
1998/99	--	6.50	--	--	--	--	2.921	4.2	48.17	--
1999/2000[5]	--	6.50	--	--	--	--	2.820	4.2	48.15	--
		$/bu.					$/bu.			
Corn										
1995/96	2.75	1.94	1.89	0.00	81.80	7.5/0/0	--	--	--	82
1996/97	--	--	1.89	--	--	--	0.25	80.70	102.90	98
1997/98	--	--	1.89	--	--	--	0.486	80.9	102.80	--
1998/99	--	--	1.89	--	--	--	0.377	82.0	102.60	--
1999/2000[5]	--	--	1.89	--	--	--	0.363	81.9	102.60	--
		$/bu.					$/bu.			
Sorghum										
1995/96	2.61	1.84	1.80	0.00	13.30	0/0/0	--	--	--	77
1996/97	--	--	1.81	--	--	--	0.32	13.10	57.30	99
1997/98	--	--	1.76	--	--	--	0.544	13.1	57.30	--
1998/99	--	--	1.74	--	--	--	0.452	13.6	56.90	--
1999/2000[5]	--	--	1.74	--	--	--	0.435	13.7	56.90	--
		$/bu.					$/bu.			
Barley										
1995/96	2.36	1.58	1.54	0.00	10.70	0/0/0	--	--	--	82
1996/97	--	--	1.55	--	--	--	0.33	10.50	47.30	99
1997/98	--	--	1.57	--	--	--	0.277	10.5	47.20	--
1998/99	--	--	1.56	--	--	--	0.284	11.2	46.70	--
1999/2000[5]	--	--	1.59	--	--	--	0.271	11.2	46.60	--
		$/bu.					$/bu.			
Oats										
1995/96	1.45	1.00	0.97	0.00	6.50	0/0/0	--	--	--	44
1996/97	--	--	1.03	--	--	--	0.03	6.20	50.80	97
1997/98	--	--	1.11	--	--	--	0.031	6.2	50.80	--
1998/99	--	--	1.11	--	--	--	0.031	6.5	50.70	--
1999/2000[5]	--	--	1.13	--	--	--	0.030	6.5	50.60	--
		$/bu.					$/bu.			
Soybeans[8]										
1995/96	--	--	4.92	--	--	--	--	--	--	--
1996/97	--	--	4.97	--	--	--	--	--	--	--
1997/98	--	--	5.26	--	--	--	--	--	--	--
1998/99	--	--	5.26	--	--	--	--	--	--	--
1999/2000	--	--	5.26	--	--	--	--	--	--	--
		¢/lb.					¢/lb.			
Upland cotton										
1995/96	72.90	51.92	51.92[9]	0.00 #	15.50	0/0/0	--	--	--	79
1996/97	--	51.92	--	--	--	--	8.88	16.20	610.00	99
1997/98	--	51.92	--	--	--	--	7.625	16.2	608.00	--
1998/99	--	51.92	--	--	--	--	8.173	16.4	604.00	--
1999/2000[5]	--	51.92	--	--	--	--	7.880	16.4	604.00	--

-- = Not available. 1. There are no Findley loan rates for rice or cotton. See footnotes 5 and 7. 2. Prior to 1996, national effective crop acreage base as determined by FSA. Net of CRP. 3. Program requirements for participating producers (mandatory acreage reduction program/mandatory paid land diversion/optional paid land diversion). Acres idled must be devoted to a conserving use to receive program benefits. 4. Percentage of effective base enrolled in acreage reduction programs. Starting in 1996, participation rate is the percent of eligible acres that entered production flexibility contracts. 5. Estimated payment rates and acres under contract. 6. A marketing loan program has been in effect for rice since 1985/86. Loans may be repaid at the lower of: a) the loan rate or b) the adjusted world market price (announced weekly). Loans cannot be repaid at less than a specified fraction of the loan rate. Data refer to marketing-year average loan repayment rates. Beginning with the 1996 crop, loans are repaid at the lower of the loan rate plus accumulated interest or the adjusted world price. 7. Guaranteed payment rates for producers in the 50/85/92 program were $0.034/lb. for upland cotton and $4.21/cwt. for rice. 8. There are no target prices, base acres, acreage reduction programs or deficiency payment rates for soybeans. 9. A marketing loan program has been in effect for cotton since 1986/87. In 1987/88 and after, loans may be repaid at the lower of: a) the loan rate or b) the adjusted world market price (announced weekly; Plan B). Starting in 1991/92, loans cannot be repaid at less than 70 percent of the loan rate. Data refer to annual average loan repayment rates. Beginning with the 1996 crop, loans are repaid at the lower of the loan rate plus accumulated interest or the adjusted world price.

Note: The 1996 Farm Act replaced target prices and deficiency payments with fixed annual payments to producers.

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

Table 20—Fruit

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Citrus[1]										
Production (1,000 tons)	13,186	10,860	11,285	12,452	15,274	14,561	15,799	15,712	17,234	18,009
Per capita consumpt. (lb.)[2]	23.6	21.4	19.1	24.4	26.0	25.0	24.1	25.0	26.8	--
Noncitrus[3]										
Production (1,000 tons)	16,345	15,640	15,740	17,124	16,563	17,341	16,358	16,103	18,382	16,035
Per capita consumpt. (lb.)[2]	72.8	70.4	70.6	73.8	73.9	75.6	73.7	74.0	76.0	--
	1998		1999							
	Aug	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Grower prices										
Apples (¢/pound)[4]	13.8	14.9	15.8	15.0	15.3	14.1	13.3	12.7	12.4	18.4
Pears (¢/pound)[4]	16.40	15.25	18.65	18.10	16.55	16.85	17.00	17.80	23.45	17.05
Oranges ($/box)[5]	5.37	4.74	5.15	5.60	6.02	5.82	6.46	8.78	10.10	6.93
Grapefruit ($/box)[5]	6.01	2.70	1.80	1.60	1.67	2.23	3.66	8.78	10.67	5.36
Stocks, ending										
Fresh apples (mil. lb.)	133	5,008	4,169	3,407	2,607	1,858	1,252	732	361	99.2
Fresh pears (mil. lb.)	94	311	237	177	120	69	39	10	12	99.5
Frozen fruits (mil. lb.)	1,028	1,209	1,103	1,022	911	789	801	877	1,101	1,166.7
Frozen conc.orange juice										
(mil. single-strength gallons)	827	731	825	907	894	1,035	878	817	744	659.3

-- = 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

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Production[1]										
Total vegetables (1,000 cwt)	543,435	562,938	565,754	689,070	688,824	782,505	747,988	762,952	760,951	732,259
Fresh (1,000 cwt)[2,4]	254,418	254,039	242,733	389,597	387,330	412,880	393,398	409,317	433,878	419,779
Processed (tons)[3,4]	14,450,860	15,444,970	16,151,030	14,973,630	15,074,707	18,481,238	17,729,497	17,681,732	16,353,639	15,624,011
Mushrooms (1,000 lbs)[5]	714,992	749,151	746,832	776,357	750,799	782,340	777,870	776,677	808,678	--
Potatoes (1,000 cwt)	370,444	402,110	417,622	425,367	428,693	467,054	443,606	499,254	467,091	477,754
Sweet potatoes (1,000 cwt)	11,358	12,594	11,203	12,005	11,027	13,380	12,821	13,216	13,327	12,382
Dry edible beans (1,000 cwt)	23,729	32,379	33,765	22,615	21,862	28,950	30,689	27,912	29,370	30,828
	1998		1999							
	Aug	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Shipments (1,000 cwt)										
Fresh	19,632	20,767	19,681	19,644	26,297	25,769	29,042	36,831	21,355	17,816
Iceberg lettuce	3,249	3,262	3,068	2,854	3,721	3,018	3,594	4,370	3,287	3,079
Tomatoes, all	3,190	3,309	3,496	3,373	4,588	3,874	3,596	4,053	2,766	2,478
Dry-bulb onions	3,667	3,487	2,896	2,845	3,825	3,630	3,626	3,759	3,029	3,124
Others[6]	9,526	10,709	10,221	10,572	14,163	15,247	18,226	24,649	12,273	9,135
Potatoes, all	10,681	14,111	12,819	11,691	18,522	17,737	16,160	13,579	9,825	9,217
Sweet potatoes	153	415	263	227	462	208	184	196	155	172

-- = 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			1997	1998				1999	
	1996	1997	1998	IV	I	II	III	IV	I	II
Sugar										
Production[1]	7,268	7,418	7,891	4,088	2,376	824	733	3,959	2,636	1,031
Deliveries[1]	9,633	9,755	9,851	2,469	2,261	2,465	2,616	2,508	2,271	2,594
Stocks, ending[1]	3,195	3,377	3,423	3,377	3,917	2,881	1,679	3,423	4,219	3,184
Coffee										
Composite green price[2]										
N.Y. (¢/lb.)	109.35	146.49	114.43	134.89	143.58	117.73	98.57	97.83	94.37	90.41
	Annual			1998	1999					
	1996	1997	1998	Jul	Feb	Mar	Apr	May	Jun	Jul
Tobacco										
Avg. price to grower[3]										
Flue-cured ($/lb.)	1.83	1.73	1.75	1.63	--	--	--	--	--	1.50
Burley ($/lb.)	1.92	1.86	1.91		1.85	1.74	--	--	--	--
Domestic taxable removals										
Cigarettes (bil.)	486.0	471.4	--	38.1	--	--	--	--	--	--
Large cigars (mil.)[4]	3,166.4	3,552.9	--	303.1	--	--	--	--	--	--

-- = 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, Fannye Jolly (202) 694-5249; tobacco, Tom Capehart (202) 694-5245*

World Agriculture

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

	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99 F	1999/2000 F
Wheat										
Area (hectares)	231.4	222.5	222.9	222.0	214.5	219.2	230.6	228.3	224.9	218.4
Production (metric tons)	588.0	542.9	562.4	558.8	524.0	538.5	583.6	609.9	588.2	576.9
Exports (metric tons [1]	101.1	111.2	113.0	101.5	100.8	98.8	101.5	100.9	100.2	100.7
Consumption (metric tons) [2]	561.9	555.5	550.3	561.7	547.3	550.1	576.4	584.5	591.5	588.3
Ending stocks (metric tons) [3]	145.0	132.5	144.5	141.6	118.3	106.7	113.8	139.2	135.8	124.4
Coarse grains										
Area (hectares)	316.3	321.8	323.4	316.7	322.1	313.2	322.0	310.0	306.0	300.9
Production (metric tons)	828.8	810.4	871.5	798.8	871.2	802.9	908.3	880.7	886.7	862.8
Exports (metric tons [1]	88.8	95.6	92.2	85.0	98.3	87.4	94.1	85.5	94.3	92.3
Consumption (metric tons) [2]	817.2	809.8	843.6	838.5	857.3	842.4	878.0	873.4	871.4	871.6
Ending stocks (metric tons) [3]	134.8	135.4	163.2	123.5	137.4	97.9	128.2	135.5	150.8	142.0
Rice, milled										
Area (hectares)	146.6	147.4	180.4	144.9	147.4	148.1	149.8	151.2	152.0	153.4
Production (metric tons)	352.1	354.7	355.7	355.4	364.5	371.4	380.4	386.1	386.8	392.0
Exports (metric tons [1]	12.2	14.3	14.9	16.3	20.9	19.7	18.8	27.4	23.0	23.0
Consumption (metric tons) [2]	347.4	356.7	357.7	358.1	366.6	371.4	379.6	383.5	388.6	393.6
Ending stocks (metric tons) [3]	59.1	57.1	55.1	52.4	50.4	50.4	51.2	53.7	52.0	50.5
Total grains										
Area (hectares)	694.3	691.7	726.7	683.6	684.0	680.5	702.4	689.5	682.9	672.7
Production (metric tons)	1,768.9	1,708.0	1,789.6	1,713.0	1,759.7	1,712.8	1,872.3	1,876.7	1,861.7	1,831.7
Exports (metric tons [1]	202.1	221.1	220.1	202.8	220.0	205.9	214.4	213.8	217.5	216.0
Consumption (metric tons) [2]	1,726.5	1,722.0	1,751.6	1,758.3	1,771.2	1,763.9	1,834.0	1,841.4	1,851.5	1,853.5
Ending stocks (metric tons) [3]	338.9	325.0	362.8	317.5	306.1	255.0	293.2	328.4	338.6	316.9
Oilseeds										
Crush (metric tons)	176.7	185.1	184.4	190.1	208.1	217.4	219.2	229.6	236.1	236.0
Production (metric tons)	215.7	224.3	227.5	229.4	261.9	258.4	262.1	286.0	293.2	292.1
Exports (metric tons)	33.4	37.6	38.2	38.7	44.1	44.4	49.5	53.8	53.7	54.1
Ending stocks (metric tons)	23.4	21.9	23.6	20.3	27.2	22.2	17.1	24.1	29.7	29.0
Meals										
Production (metric tons)	119.3	125.2	125.2	131.7	142.1	147.3	149.6	156.5	161.3	161.3
Exports (metric tons)	40.7	42.2	40.8	44.9	46.7	49.7	50.7	51.5	54.2	53.9
Oils										
Production (metric tons)	58.1	60.6	61.1	63.7	69.6	73.0	75.8	77.1	80.2	89.7
Exports (metric tons)	20.5	21.3	21.3	24.3	27.1	26.0	28.9	30.1	30.3	30.4
Cotton										
Area (hectares)	33.2	34.8	32.6	30.6	32.2	35.9	33.8	33.6	32.7	33.0
Production (bales)	87.1	95.7	82.5	77.1	85.9	93.0	89.6	91.6	84.1	87.0
Exports (bales)	29.6	28.5	25.5	26.8	28.4	27.8	26.8	26.6	23.7	25.0
Consumption (bales)	85.5	85.7	85.5	85.3	85.5	86.9	89.1	88.4	84.8	86.5
Ending stocks (bales)	27.8	37.6	35.4	27.6	29.9	35.7	38.2	41.2	41.2	40.9
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Red meat [4]										
Production (metric tons)	111.9	117.3	117.3	119.3	124.6	130.2	125.0	128.5	132.9	133.8
Consumption (metric tons)	118.3	115.7	115.7	118.3	123.6	128.8	122.5	126.1	130.2	131.6
Exports (metric tons) [1]	6.5	7.4	7.4	7.4	8.1	8.2	8.5	9.0	8.8	8.9
Poultry [4]										
Production (metric tons)	39.6	38.0	38.0	40.5	43.2	46.7	49.5	51.8	53.1	55.2
Consumption (metric tons)	38.4	37.0	37.0	39.4	42.0	45.3	47.7	49.9	51.1	53.0
Exports (metric tons) [1]	2.8	2.4	2.4	2.8	3.6	4.6	5.2	5.7	5.7	5.5
Dairy										
Milk production (metric tons) [5]	377.6	378.4	378.4	377.6	378.4	380.8	379.9	381.5	384.9	387.5

-- = Not available. F = forecast. 1. Excludes intra-EU trade but includes intra-FSU trade. 2. Where stocks data are not available, consumption includes stock changes. 3. Stocks data are based on differing marketing years and do not represent levels at a given date. Data not available for all countries. 4. Calendar year data. 1990 data correspond with 1989/90, etc. 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			1998	1999					
	1996	1997	1998	Aug	Mar	Apr	May	Jun	Jul	Aug
Export commodities										
Wheat, f.o.b. vessel, Gulf ports ($/bu.)	5.63	4.35	3.44	2.96	3.21	3.10	3.05	3.01	2.75	2.99
Corn, f.o.b. vessel, Gulf ports ($/bu.)	4.17	2.98	2.59	2.25	2.46	2.38	2.36	2.36	2.12	2.20
Grain sorghum, f.o.b. vessel, Gulf ports ($/bu.)	3.90	2.89	2.54	2.34	2.35	2.28	2.23	2.22	1.94	2.12
Soybeans, f.o.b. vessel, Gulf ports ($/bu.)	7.88	7.94	6.37	5.83	5.02	5.00	4.88	4.87	4.61	5.00
Soybean oil, Decatur (¢/lb.)	23.75	23.33	25.78	24.00	18.54	18.78	17.85	16.50	15.29	16.50
Soybean meal, Decatur, ($/ton)	246.67	266.70	162.74	146.15	133.00	134.50	133.20	139.07	132.73	141.69
Cotton, 7-market avg. spot (¢/lb.)	77.93	69.62	67.04	71.87	58.17	57.01	55.55	53.74	49.23	49.72
Tobacco, avg. price at auction (¢/lb.)	183.20	182.74	179.77	162.04	196.54	162.96	--	--	149.96	164.45
Rice, f.o.b., mill, Houston ($/cwt)	19.64	20.88	18.95	18.85	18.08	17.75	17.31	17.05	17.00	16.48
Inedible tallow, Chicago (¢/lb.)	20.13	20.75	17.67	17.57	11.18	11.38	10.40	11.49	11.50	11.69
Import commodities										
Coffee, N.Y. spot ($/lb.)	1.29	2.05	1.39	1.28	1.04	1.01	1.14	1.09	0.97	0.93
Rubber, N.Y. spot (¢/lb.)	72.88	55.40	40.57	38.58	36.34	34.98	35.75	34.64	33.60	33.63
Cocoa beans, N.Y. ($/lb.)	0.62	0.69	0.72	0.72	0.55	0.48	0.43	0.48	0.46	0.47

Information contact: Jenny Gonzales (202) 694-5296, Mae Dean Johnson (202) 694-5299, Mary Teymourian (202) 694-5173 for coffee, rubber, cocoa beans, and tobacco.

Table 25—Trade Balance

	Fiscal Year			1998	1999					
	1998	1999 F	2000 P	Jul	Feb	Mar	Apr	May	Jun	Jul
					$ million					
Exports										
Agricultural	53,730	49,000	50,000	3,884	3,870	4,082	3,850	3,649	3,806	3,718
Nonagricultural	584,077	--	--	44,054	45,793	52,091	49,339	48,401	49,665	45,341
Total [1]	637,807	--	--	47,938	49,663	56,173	53,189	52,050	53,471	49,059
Imports										
Agricultural	37,007	37,500	38,000	2,908	3,006	3,458	3,380	3,225	3,285	2,899
Nonagricultural	859,737	--	--	72,818	70,988	79,776	76,473	76,927	84,204	83,429
Total [2]	896,744	--	--	75,726	73,994	83,234	79,853	80,152	87,489	86,328
Trade Balance										
Agricultural	16,723	11,500	12,000	976	864	624	470	424	521	819
Nonagricultural	-275,660	--	--	-28,764	-25,195	-27,685	-27,134	-28,526	-34,539	-38,088
Total	-258,937	--	--	-27,788	-24,331	-27,061	-26,664	-28,102	-34,018	-37,269

F = Forecast. P = Projected. -- = 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). *Information contact: Mary Fant (202) 694-5272*

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

	Annual			1998	1999					
	1996	1997	1998	Jul	Feb	Mar	Apr	May	Jun	Jul
	1990=100									
Total U.S. trade	100.8	111.9	115.1	118.1	109.4	109.4	109.1	108.9	108.4	108.1
Agricultural trade										
U.S. markets	101.0	109.6	115.5	117.5	110.9	111.7	111.1	111.0	110.6	110.4
U.S. competitors	98.7	109.1	113.9	117.1	111.7	111.1	110.4	109.7	109.4	109.1
High-value products										
U.S. markets	100.4	108.2	111.9	114.6	108.3	109.5	108.6	108.3	108.2	108.2
U.S. competitors	100.1	110.9	114.6	117.2	110.8	110.0	109.5	108.9	108.7	108.3
Corn										
U.S. markets	96.4	107.1	113.3	117.8	106.5	108.3	108.2	108.8	108.1	107.8
U.S. competitors	90.1	97.4	100.2	102.1	97.4	97.1	97.8	98.1	97.3	97.2
Soybeans										
U.S. markets	96.0	107.9	113.9	117.2	105.9	106.0	105.4	105.3	104.5	103.8
U.S. competitors	80.8	82.2	84.9	86.3	105.8	105.4	101.3	101.2	103.6	105.0
Wheat										
U.S. markets	100.7	105.4	112.2	112.7	112.6	114.0	115.5	116.7	117.6	119.1
U.S. competitors	102.1	109.8	116.0	119.7	115.8	116.0	115.0	113.7	113.7	114.0
Vegetables										
U.S. markets	105.6	112.4	117.8	120.0	115.8	116.9	115.6	114.7	114.8	115.3
U.S. competitors	100.5	112.0	114.1	116.0	107.9	106.9	106.9	106.5	105.9	105.4
Red meats										
U.S. markets	93.3	100.4	109.0	113.7	101.5	103.2	102.5	103.1	102.8	102.5
U.S. competitors	98.0	107.9	112.8	116.2	111.1	111.0	110.7	110.0	110.3	110.1
Fruits & fruit juices										
U.S. markets	101.3	111.3	114.1	117.1	110.9	112.2	111.4	111.1	111.0	111.3
U.S. competitors	98.2	107.2	111.7	114.3	111.7	111.1	110.0	109.6	109.7	109.6
Cotton										
U.S. markets	95.5	105.7	123.8	128.0	114.0	115.6	115.3	114.8	113.1	112.9
U.S. competitors	101.6	103.0	106.8	108.8	107.2	108.1	109.4	109.0	110.1	111.0
Poultry										
U.S. markets	102.8	111.9	109.2	106.5	117.0	117.6	117.7	116.7	116.3	115.6
U.S. competitors	95.7	107.3	109.9	111.8	110.8	110.0	108.9	108.4	108.5	108.4

1. Real indexes adjust nominal exchange rates to avoid the distortion caused by different levels of inflation among countries. A higher value means the dollar has appreciated. The "total U.S. trade" index uses the Federal Reserve Board index of trade-weighted value of the U.S. dollar against 10 major countries. Weights are based on relative importance of major U.S. customers and competitors in world markets. Indexes are subject to revision for up to one year due to delayed reporting by some countries. High-value products conform to FAS's definition for consumer-oriented agricultural products. Data are available at http://mann77.mannlib.cornell.edu/data-sets/international/88021/. *Information contact: Andy Jerardo (202) 694-5323*

Note: The indices have recently been revised to reflect a rebasing of the Russian ruble and to correct errors in the CPI data for Hong Kong and Taiwan. The complete corrected series is online at the at the Mann Library URL.

Table 27—U.S. Agricultural Exports & Imports

	Fiscal Year			Jul		Fiscal Year			Jul	
	1998	1999 F	2000 P	1998	1999	1998	1999 F	2000 P	1998	1999
	1,000 units					*$ million*				
EXPORTS										
Animals, live	--	--	--	--	--	538	--	--	28	24
Meats and preps., excl. poultry (mt) [1]	2,064	1,600	1,700	180	179	4,507	4,100	4,400	386	386
Dairy products	--	--	--	--	--	925	800	900	70	71
Poultry meats (mt)	2,663	2,400	2,400	225	220	2,347	1,700	1,800	208	163
Fats, oils, and greases (mt)	1,365	1,400	1,400	132	135	655	--	--	60	48
Hides and skins, incl. furskins	--	--	--	--	--	1,358	1,100	1,100	101	94
Cattle hides, whole (no.)	18,992	--	--	1,601	1,562	969	--	--	77	75
Mink pelts (no.)	2,990	--	--	138	280	83	--	--	4	8
Grains and feeds (mt) [2]	87,289	--	--	7,154	9,645	13,961	14,400	14,400	1,096	1,206
Wheat (mt) [3]	25,791	28,500	31,000	2,315	3,008	3,759	3,800	4,200	311	350
Wheat flour (mt)	465	900	800	34	100	117	--	--	8	14
Rice (mt)	3,310	3,200	3,300	211	207	1,132	1,000	1,000	71	66
Feed grains, incl. products (mt) [4]	44,564	55,300	54,400	3,588	5,244	5,187	5,500	5,200	396	502
Feeds and fodders (mt)	11,704	11,800	11,900	890	968	2,421	2,300	2,300	199	164
Other grain products (mt)	1,455	--	--	116	118	1,345	--	--	110	110
Fruits, nuts, and preps. (mt)	3,633	--	--	291	275	3,977	4,400	4,800	337	314
Fruit juices, incl. froz. (1,000 hectoliters)	10,658	--	--	1,292	1,103	653	--	--	66	63
Vegetables and preps.	--	--	--	--	--	4,168	2,900	2,700	328	334
Tobacco, unmanufactured (mt)	208	200	200	9	12	1,448	1,400	1,400	61	63
Cotton, excl. linters (mt) [5]	1,552	900	1,300	124	72	2,517	1,400	1,700	195	99
Seeds (mt)	816	--	--	59	39	827	800	900	36	42
Sugar, cane or beat (mt)	123	--	--	13	9	48	--	--	5	4
Oilseeds and products (mt)	36,074	32,300	36,700	1,547	1,731	10,984	8,100	8,100	506	454
Oilseeds (mt)	24,358	--	--	847	1,069	--	--	--	--	--
Soybeans (mt)	23,394	21,700	24,900	790	1,002	6,117	4,500	4,500	197	197
Protein meal (mt)	8,666	--	--	490	497	1,975	--	--	95	78
Vegetable oils (mt)	3,049	--	--	210	165	2,191	--	--	168	110
Essential oils (mt)	46	--	--	4	4	533	--	--	44	45
Other	--	--	--	--	--	4,284	--	--	356	309
Total	--	--	--	--	--	53,730	49,000	50,000	3,884	3,718
IMPORTS										
Animals, live	--	--	--	--	--	1,670	1,500	1,500	102	77
Meats and preps., excl. poultry (mt)	1,230	1,300	1,300	117	120	2,718	3,000	3,100	246	275
Beef and veal (mt)	857	--	--	85	85	1,761	--	--	167	187
Pork (mt)	271	--	--	24	25	686	--	--	58	56
Dairy products	--	--	--	--	--	1,368	1,600	1,500	150	141
Poultry and products	--	--	--	--	--	207	--	--	20	15
Fats, oils, and greases (mt)	80	--	--	6	10	59	--	--	4	6
Hides and skins, incl. furskins (mt)	--	--	--	--	--	184	--	--	12	9
Wool, unmanufactured (mt)	45	--	--	3	2	151	--	--	9	5
Grains and feeds	--	--	--	--	--	2,919	2,900	3,000	220	232
Fruits, nuts, and preps., excl. juices (mt) [6]	7,581	8,000	8,100	523	613	3,982	5,400	5,400	302	336
Bananas and plantains (mt)	4,175	4,300	4,300	311	376	1,214	1,200	1,200	95	96
Fruit juices (1,000 hectoliters)	26,577	30,000	30,000	1,920	2,669	669	--	--	47	68
Vegetables and preps.	--	--	--	--	--	4,249	4,500	4,500	298	313
Tobacco, unmanufactured (mt)	241	200	200	25	10	822	800	800	90	24
Cotton, unmanufactured (mt)	10	--	--	0	20	11	--	--	0	21
Seeds (mt)	257	--	--	9	10	422	--	--	20	22
Nursery stock and cut flowers	--	--	--	--	--	1,082	1,000	1,100	53	57
Sugar, cane or beet (mt)	2,170	1,800	NA	175	108	758	--	--	73	36
Oilseeds and products (mt)	4,314	3,900	4,000	336	309	2,243	2,000	2,100	175	170
Oilseeds (mt)	1,028	--	--	93	75	371	--	--	32	21
Protein meal (mt)	1,277	--	--	100	83	188	--	--	14	11
Vegetable oils (mt)	2,010	--	--	143	150	1,684	--	--	129	138
Beverages, excl. fruit juices (1,000 hectoliters)	--	--	--	--	--	3,705	--	--	343	394
Coffee, tea, cocoa, spices (mt)	2,369	--	--	184	207	6,056	--	--	430	416
Coffee, incl. products (mt)	1,155	1,300	1,300	88	94	3,587	2,900	3,000	239	219
Cocoa beans and products (mt)	875	900	900	65	77	1,701	1,600	1,600	124	115
Rubber and allied gums (mt)	1,162	1,200	1,200	99	78	1,027	800	800	79	47
Other	--	--	--	--	--	2,703	--	--	235	234
Total	--	--	--	--	--	37,007	37,500	3,800	2,908	2,899

F=Forecast. P=Projection. -- = Not available. Projections are fiscal years (October 1 through Septermber 30) and are from Outlook for U.S. Agricultural Exports. 1997 and 1998 data are from *Foreign Agriculural Trade of the U.S*. 1. Projection includes beef, pork, and variety meat. 2. Projection includes pulses. 3. Value projection includes wheat flour. 4. Projection excludes grain products. 5. Projection includes linters. 6. Value projection includes juice.

Information Contact: Mary Fant (202) 694-5272

Table 28—U.S. Agricultural Exports by Region

	Fiscal year			1998	1999					
	1997	1998	1999F	Jul	Feb	Mar	Apr	May	Jun	Jul
	$ million									
Region & country										
WESTERN EUROPE	9,617	8,859	7,500	459	623	615	487	526	453	418
European Union[1]	8,997	8,522	7,100	435	597	590	464	498	414	382
Belgium-Luxembourg	715	666	--	38	39	47	45	62	35	32
France	557	536	--	25	26	30	24	22	20	24
Germany	1,376	1,294	--	72	91	100	63	80	49	56
Italy	792	729	--	21	44	61	32	43	35	19
Netherlands	2,011	1,792	--	79	172	138	131	121	94	70
United Kingdom	1,289	1,300	--	102	78	91	77	88	89	90
Portugal	243	186	--	5	11	12	9	11	4	5
Spain, incl. Canary Islands	1,087	1,132	--	38	70	48	25	31	45	37
Other Western Europe	620	336	400	24	25	25	23	29	39	36
Switzerland	506	236	--	17	18	19	16	23	21	29
EASTERN EUROPE	317	320	200	26	15	16	14	13	17	15
Poland	164	139	--	12	7	4	9	6	5	6
Former Yugoslavia	72	97	--	6	2	1	1	1	4	4
Romania	37	31	--	2	1	6	1	2	1	0
NEWLY INDEPENDENT STATES	1,593	1,456	1,200	141	35	55	72	86	85	121
Russia	1,281	1,103	900	97	17	37	20	68	57	61
ASIA[2]	26,436	21,992	17,900	1,499	1,620	1,713	1,680	1,446	1,659	1,537
West Asia (Mideast)	2,562	2,286	2,000	174	189	159	144	130	160	196
Turkey	742	658	500	48	53	21	35	36	50	46
Iraq	50	131	--	30	8	1	0	--	0	--
Israel, incl. Gaza and W. Bank	543	389	--	29	43	40	34	26	37	51
Saudi Arabia	630	535	500	33	39	39	34	26	46	31
South Asia	728	626	500	31	30	30	30	11	32	29
Bangladesh	123	114	--	9	6	6	3	2	9	8
India	152	163	--	7	15	17	12	5	18	12
Pakistan	418	275	--	8	3	4	4	4	3	4
China	1,774	1,514	900	57	60	35	52	42	34	35
Japan	10,713	9,469	8,800	683	779	820	794	695	730	636
Southeast Asia	3,136	2,288	2,200	183	168	176	163	169	180	168
Indonesia	768	529	500	50	27	39	35	40	59	33
Philippines	898	751	700	63	74	50	65	59	68	61
Other East Asia	7,523	5,808	5,500	371	393	492	497	398	524	473
Korea, Rep.	3,293	2,258	2,300	166	160	231	219	161	225	228
Hong Kong	1,640	1,568	1,300	105	92	101	87	87	104	88
Taiwan	2,588	1,975	1,900	99	141	161	191	150	194	156
AFRICA	2,265	2,174	2,100	174	189	184	161	142	180	178
North Africa	1,480	1,475	1,400	122	130	132	120	96	98	123
Morocco	166	139	--	20	23	16	19	10	9	16
Algeria	307	281	--	28	21	13	13	8	12	22
Egypt	928	939	1,000	73	82	92	78	70	73	79
Sub-Sahara	785	699	700	51	59	52	40	46	82	55
Nigeria	106	140	--	20	24	5	12	21	19	9
S. Africa	239	193	--	11	10	14	7	11	18	17
LATIN AMERICA and CARIBBEAN	9,984	11,362	10,600	970	841	869	794	753	743	805
Brazil	461	566	400	23	12	14	13	17	16	22
Caribbean Islands	1,473	1,487	--	131	124	120	129	115	110	109
Central America	1,029	1,137	--	94	110	96	90	79	83	79
Colombia	552	606	--	38	41	35	43	37	48	34
Mexico	5,077	5,956	5,600	546	416	512	427	421	393	457
Peru	178	314	--	33	35	13	30	25	30	31
Venezuela	552	516	500	55	41	52	33	28	33	29
CANADA	6,820	7,022	6,900	577	514	597	587	616	615	586
OCEANIA	534	545	500	38	33	34	42	39	43	37
TOTAL	57,365	53,730	49,000	3,884	3,870	4,082	3,850	3,649	3,806	3,718

F = Forecast. -- = Not available. Based on fiscal year beginning October 1 and ending September 30. 1. Austria, Finland, and Sweden are included in the European Union. 2. Asia forecasts exclude West Asia (Mideast). NOTE: Adjusted for transhipments through Canada for 1997 and 1998 *through December 1998, but transhipments are not distributed by country as previously for 1999. Information contact: Mary Fant (202) 694-5272*

Farm Income

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

		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
		$ billion									
	Final crop output	83.3	81.0	89.0	82.3	100.4	95.8	115.4	112.1	102.0	96.6
	Food grains	7.5	7.3	8.5	8.2	9.5	10.4	10.7	10.1	8.7	7.5
	Feed crops	18.7	19.3	20.1	20.2	20.3	24.5	27.2	27.1	22.9	20.7
	Cotton	5.5	5.2	5.2	5.2	6.7	6.9	7.0	6.3	6.0	5.1
	Oil crops	12.3	12.7	13.3	13.2	14.7	15.5	16.3	19.7	17.2	14.7
	Tobacco	2.7	2.9	3.0	2.9	2.7	2.5	2.8	2.9	3.0	2.4
	Fruits and tree nuts	9.4	9.9	10.2	10.3	10.3	11.1	11.9	13.1	11.7	12.6
	Vegetables	11.5	11.6	11.8	13.7	14.2	15.0	14.4	15.0	15.3	15.4
	All other crops	12.8	13.1	13.7	13.7	14.7	15.0	15.8	16.9	17.3	17.8
	Home consumption	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1
	Value of inventory adjustment[1]	2.8	-1.2	3.2	-5.3	7.2	-5.3	9.1	0.9	-0.4	0.2
	Final animal output	90.2	87.3	87.1	92.0	89.7	87.7	92.1	96.5	94.3	95.8
	Meat animals	51.2	50.1	47.7	51.0	46.7	44.9	44.2	49.7	43.6	45.0
	Dairy products	20.2	18.0	19.7	19.3	20.0	19.9	22.8	20.9	24.3	24.4
	Poultry and eggs	15.3	15.2	15.5	17.3	18.5	19.1	22.4	22.2	22.8	23.0
	Miscellaneous livestock	2.5	2.5	2.6	2.9	3.1	3.3	3.6	3.7	3.8	3.8
	Home consumption	0.5	0.5	0.5	0.4	0.4	0.4	0.3	0.4	0.3	0.4
	Value of inventory adjustment[1]	0.4	1.0	1.0	1.1	1.1	0.2	-1.1	-0.4	-0.6	-0.7
	Services and forestry	15.3	15.4	15.3	17.1	18.1	19.9	20.8	22.5	24.6	25.6
	Machine hire and customwork	1.8	1.8	1.8	1.9	2.1	1.9	2.1	2.6	2.3	2.3
	Forest products sold	1.8	1.8	2.2	2.5	2.7	2.8	2.6	2.9	2.8	2.9
	Other farm income	4.5	4.7	4.1	4.6	4.3	5.8	6.2	6.9	8.7	9.1
	Gross imputed rental value of farm dwellings	7.2	7.2	7.2	8.1	9.0	9.4	9.9	10.1	10.8	11.4
	Final agricultural sector output[2]	188.7	183.7	191.4	191.4	208.2	203.5	228.4	231.2	220.8	218.1
Minus	Intermediate consumption outlays:	92.9	94.6	93.4	100.7	104.9	109.7	113.2	120.9	118.7	118.9
	Farm origin	39.5	38.6	38.6	41.3	41.3	41.8	42.7	46.9	44.9	44.8
	Feed purchased	20.4	19.3	20.1	21.4	22.6	23.8	25.2	26.3	25.0	24.1
	Livestock and poultry purchased	14.6	14.1	13.6	14.7	13.3	12.5	11.3	13.8	12.7	13.5
	Seed purchased	4.5	5.1	4.9	5.2	5.4	5.5	6.2	6.7	7.2	7.2
	Manufactured inputs	22.0	23.2	22.7	23.1	24.4	26.2	28.6	29.2	28.3	28.8
	Fertilizers and lime	8.2	8.7	8.3	8.4	9.2	10.0	10.9	10.9	10.7	10.4
	Pesticides	5.4	6.3	6.5	6.7	7.2	7.7	8.5	9.0	9.1	9.1
	Petroleum fuel and oils	5.8	5.6	5.3	5.3	5.3	5.4	6.0	6.2	5.6	6.4
	Electricity	2.6	2.6	2.6	2.7	2.7	3.0	3.2	3.0	2.9	2.9
	Other intermediate expenses	31.4	32.8	32.1	36.2	39.2	41.7	41.8	44.9	45.5	45.3
	Repair and maintenance of capital items	8.6	8.6	8.5	9.2	9.1	9.5	10.3	10.4	10.4	10.4
	Machine hire and customwork	3.6	3.5	3.8	4.4	4.8	4.8	4.7	4.9	5.5	5.4
	Marketing, storage, and transportation	4.2	4.7	4.5	5.6	6.8	7.2	6.9	7.1	6.7	6.9
	Contract labor	1.6	1.6	1.7	1.8	1.8	2.0	2.1	2.6	2.4	2.5
	Miscellaneous expenses	13.5	14.3	13.6	15.2	16.7	18.3	17.8	19.8	20.5	20.1
Plus	Net government transactions:	3.1	2.1	2.7	6.9	1.1	0.2	0.2	0.2	4.6	7.7
	+ Direct government payments	9.3	8.2	9.2	13.4	7.9	7.3	7.3	7.5	12.2	15.5
	- Motor vehicle registration and licensing fees	0.4	0.3	0.4	0.4	0.4	0.5	0.4	0.5	0.5	0.5
	- Property taxes	5.9	5.8	6.1	6.2	6.3	6.6	6.7	6.9	7.2	7.3
	Gross value added	98.9	91.2	100.6	97.5	104.5	94.0	115.4	110.4	106.7	106.9
Minus	Capital consumption	18.1	18.2	18.3	18.4	18.6	18.9	19.2	19.3	19.4	19.3
	Net value added[2]	80.7	73.0	82.3	79.2	85.8	75.1	96.2	91.1	87.2	87.5
Minus	Factor payments:	36.0	34.4	34.4	34.6	36.6	37.9	41.3	42.5	43.1	44.0
	Employee compensation (total hired labor)	12.5	12.3	12.3	13.2	13.5	14.3	15.3	16.0	16.9	17.8
	Net rent received by nonoperator landlords	10.0	9.9	11.1	10.7	11.5	11.0	13.0	12.9	12.0	12.4
	Real estate and non-real estate interest	13.4	12.1	11.0	10.6	11.5	12.6	13.0	13.5	14.2	13.8
	Net farm income[2]	44.7	38.7	47.9	44.5	49.2	37.2	54.9	48.6	44.1	43.5

Values in last two columns are preliminary or forecast. 1. A positive value of inventory change represents current-year production not sold by December 1. 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 (202)694-5592 or rogers@econ.ag.gov*

Table 30—Farm Income Statistics

	1990.0	1991.0	1992.0	1993.0	1994	1995	1996	1997	1998	1999
	$ billion									
Cash Income statement:										
1. Cash receipts	169.5	167.9	171.3	177.9	181.3	188.1	199.1	207.6	196.8	192.5
Crops[1]	80.3	82.1	85.7	87.4	93.1	101.0	106.2	111.1	102.2	96.3
Livestock	89.2	85.8	85.6	90.4	88.2	87.1	93.0	96.5	94.5	96.2
2. Direct Government payments	9.3	8.2	9.2	13.4	7.9	7.3	7.3	7.5	12.2	15.5
3. Farm-related income[2]	8.1	8.3	8.1	9.0	9.1	10.5	11.0	12.4	13.8	14.3
4. Gross cash income (1+2+3)	186.9	184.3	188.6	200.3	198.2	205.8	217.4	227.5	222.8	222.3
5. Cash expenses[3]	134.1	134.0	133.3	141.0	147.1	153.2	159.9	169.0	167.8	168.9
6. Net cash income (4-5)	52.8	50.4	55.2	59.3	51.1	52.6	57.5	58.5	54.9	53.3
Farm income statement:										
7. Gross cash income (4)	186.9	184.3	188.6	200.3	198.2	205.8	217.4	227.5	222.8	222.3
8. Noncash income[4]	7.9	7.8	7.8	8.7	9.6	9.9	10.3	10.6	11.3	11.9
9. Value of inventory adjustment	3.3	-0.2	4.2	-4.2	8.3	-5.0	8.0	0.5	-1.0	-0.5
10. Gross farm income (7+8+9)	198.0	191.9	200.5	204.8	216.1	210.7	235.7	238.7	233.1	233.6
11. Total production expenses	153.3	153.3	152.6	160.2	166.8	173.5	180.8	190.0	189.0	190.1
12. Net farm income (10-11)	44.7	38.7	47.9	44.5	49.2	37.2	54.9	48.6	44.1	43.5

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 (202) 694-5592 or rogers@econ.ag.gov

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

	1992	1993	1994	1995	1996	1997	1998	1999
	$ per farm							
Net cash farm business income[2]	11,320	11,248	11,389	11,218	13,502	12,460	--	--
Less depreciation[3]	5,187	6,219	6,466	6,795	6,906	6,578	--	--
Less wages paid to operator[4]	216	454	425	522	531	513	--	--
Less farmland rental income[5]	360	534	701	769	672	568	--	--
Less adjusted farm business income due to other household(s)[6]	961	872	815	649	1,094	*1,429	--	--
	$ per farm operator household							
Equals adjusted farm business income	4,596	3,168	2,981	2,484	4,300	3,373	--	--
Plus wages paid to operator	216	454	425	522	531	513	--	--
Plus net income from farmland rental[7]	360	--	--	1,053	1,178	945	--	--
Equals farm self-employment income	5,172	3,623	3,407	4,059	6,009	4,831	--	--
Plus other farm-related earnings[8]	2,008	1,192	970	661	1,898	1,158	--	--
Equals earnings of the operator household from farming activities	7,180	4,815	4,376	4,720	7,906	5,989	5,074	4,676
Plus earnings of the operator household from off-farm sources[9]	35,731	35,408	38,092	39,671	42,455	46,358	48,167	49,828
Equals average farm operator household income	42,911	40,223	42,469	44,392	50,361	52,347	53,241	54,503
	$ per U.S. household							
U.S. average household income[10]	38,840	41,428	43,133	44,938	47,123	49,692	--	--
	Percent							
Average farm operator household income as percent of U.S. average household income	110.5	97.1	98.5	98.8	106.9	105.3	--	--
Average operator household earnings from farming activities as percent of average operator household income	16.7	12.0	10.3	10.6	15.7	11.4	--	--

-- = Not available. F = 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 Bureau of the Census, 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 1991 and 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. 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, Bureau of the Census Current Population Survey (PCS), for average household income.
Information contact: Bob Hoppe (202) 694-5572 or rhoppe@econ.ag.gov

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

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
	$ billion									
Farm assets	841.5	834.8	861.9	891.5	915.3	945.8	980.7	1,022.7	1,027.4	1,035.5
Real estate	620.0	615.4	634.3	658.8	684.0	719.6	746.3	783.1	794.4	802.3
Livestock and poultry[1]	70.9	68.1	71.0	72.8	67.9	57.8	60.3	66.8	57.0	57.0
Machinery and motor vehicles	86.3	85.9	85.4	86.5	87.5	88.5	88.9	88.1	91.0	90.0
Crops stored[2,3]	23.2	22.2	24.2	23.3	23.3	27.4	31.7	29.9	30.0	30.0
Purchased inputs	2.8	2.6	3.9	3.8	5.0	3.4	4.4	5.1	5.0	5.2
Financial assets	38.3	40.5	43.1	46.3	47.6	49.1	49.1	49.7	50.0	51.0
Total farm debt	138.0	139.2	139.1	142.0	146.8	150.8	156.1	165.4	172.0	171.0
Real estate debt[3]	74.7	74.9	75.4	76.0	77.7	79.3	81.7	85.4	88.8	87.7
Non-real estate debt[4]	63.2	64.3	63.6	65.9	69.1	71.5	74.4	80.1	83.2	83.4
Total farm equity	703.5	695.6	722.8	749.5	768.5	795.0	824.6	857.3	855.4	864.5
	Percent									
Selected ratios										
Debt to equity	19.6	20.0	19.2	18.9	19.1	19.0	18.9	19.3	20.1	19.8
Debt to assets	16.4	16.7	16.1	15.9	16.0	15.9	15.9	16.2	16.7	16.5

Values in the last two columns are preliminary or forecast. 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 contact: Ken Erickson (202) 694-5565 or erickson@econ.ag.gov*

Table 33—Cash Receipts from Farming

	Annual			1998	1999					
	1996	1997	1998	Jun	Jan	Feb	Mar	Apr	May	Jun
	$ million									
Commodity sales[1]	199,138	207,611	196,761	14,999	16,911	12,624	14,941	12,921	13,036	14,323
Livestock and products	92,956	96,535	94,539	8,077	8,002	6,991	8,712	6,820	7,209	8,090
Meat animals	44,154	49,682	43,604	4,164	3,425	3,371	4,612	3,107	3,469	4,292
Dairy products	22,785	20,940	24,312	1,846	2,403	1,957	2,148	1,772	1,857	1,788
Poultry and eggs	22,432	22,234	22,806	1,863	1,908	1,495	1,773	1,780	1,716	1,807
Other	3,585	3,679	3,816	204	266	168	179	161	167	203
Crops	106,182	111,076	102,222	6,922	8,909	5,632	6,228	6,101	5,827	6,233
Food grains	10,719	10,137	8,734	980	688	403	517	414	341	806
Feed crops	27,185	27,101	22,927	1,618	2,880	1,361	1,361	923	1,068	1,490
Cotton (lint and seed)	6,983	6,346	6,013	199	505	382	294	111	110	90
Tobacco	2,795	2,874	2,989	0	375	126	18	5	0	0
Oil-bearing crops	16,344	19,673	17,198	950	1,825	913	752	695	605	693
Vegetables and melons	14,439	14,961	15,337	1,359	959	879	1,182	1,337	1,573	1,424
Fruits and tree nuts	11,928	13,074	11,727	893	602	527	596	666	657	807
Other	15,789	16,909	17,297	923	1,075	1,042	1,508	1,949	1,472	923
Government payments	7,340	7,495	12,220	83	2,408	815	664	566	228	2,367
Total	206,478	215,107	208,981	15,082	19,319	13,439	15,604	13,487	13,264	16,690

Annual values for the most recent 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 contacts: Larry Traub (202) 694-5593 or ltraub@econ.ag.gov and Cheryl Steele (202) 694-5591 or cherylj@econ.ag.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]			
	1997	1998	May 1999	Jun 1999	1997	1998	May 1999	Jun 1999	1997	1998	May 1999	Jun 1999
	$ million[2]											
NORTH ATLANTIC												
Maine	276	282	22	21	213	224	15	6	489	506	37	27
New Hampshire	68	69	6	6	84	82	6	3	153	151	12	9
Vermont	414	472	39	37	85	84	7	3	500	557	46	40
Massachusetts	114	112	10	9	417	395	17	24	531	507	26	33
Rhode Island	9	9	1	1	54	56	5	3	63	65	6	3
Connecticut	223	228	16	17	278	281	21	12	501	509	37	29
New York	1,828	2,092	157	151	1,007	1,054	53	65	2,836	3,146	209	216
New Jersey	168	178	11	11	626	650	47	61	794	828	58	72
Pennsylvania	2,808	2,914	237	216	1,324	1,261	85	78	4,132	4,175	322	294
NORTH CENTRAL												
Ohio	1,875	1,848	146	148	3,361	3,124	146	181	5,237	4,973	292	329
Indiana	1,928	1,639	118	126	3,838	3,245	104	147	5,766	4,885	223	273
Illinois	1,928	1,575	129	127	7,055	6,167	346	403	8,984	7,742	475	530
Michigan	1,365	1,323	100	105	2,234	2,158	134	108	3,598	3,480	234	213
Wisconsin	4,066	4,492	289	334	1,721	1,701	65	77	5,787	6,193	354	411
Minnesota	3,992	3,755	282	300	4,006	3,925	169	282	7,998	7,680	451	581
Iowa	5,613	4,778	402	463	7,331	6,217	296	346	12,944	10,994	699	809
Missouri	2,771	2,420	176	193	2,631	2,262	92	113	5,402	4,682	268	306
North Dakota	598	549	49	53	2,668	2,455	103	127	3,267	3,004	153	180
South Dakota	1,781	1,557	136	158	2,401	1,951	91	90	4,182	3,508	226	248
Nebraska	5,508	5,124	408	584	4,295	3,725	134	179	9,803	8,848	542	763
Kansas	4,936	4,537	357	472	3,609	3,247	128	139	8,544	7,784	485	611
SOUTHERN												
Delaware	579	609	46	51	176	164	7	15	754	774	53	66
Maryland	928	949	75	75	607	571	40	40	1,535	1,520	115	115
Virginia	1,542	1,561	121	121	864	768	29	39	2,406	2,328	150	160
West Virginia	328	336	27	26	69	69	2	7	397	405	29	32
North Carolina	4,723	3,917	289	291	3,507	3,247	167	162	8,230	7,164	457	453
South Carolina	802	763	61	55	885	748	34	52	1,687	1,511	95	107
Georgia	3,402	3,408	266	269	2,350	2,047	135	140	5,752	5,454	401	409
Florida	1,400	1,407	85	113	5,116	5,355	611	374	6,516	6,762	697	487
Kentucky	1,972	2,134	99	93	1,571	1,787	33	51	3,543	3,920	132	144
Tennessee	1,028	1,038	74	73	1,245	1,177	38	50	2,273	2,216	112	123
Alabama	2,428	2,587	194	185	788	696	33	41	3,216	3,283	228	227
Mississippi	2,004	2,169	169	171	1,476	1,285	31	34	3,480	3,454	200	205
Arkansas	3,346	3,250	250	287	2,379	2,172	73	129	5,724	5,422	323	416
Louisiana	659	645	53	57	1,510	1,245	21	25	2,168	1,891	74	82
Oklahoma	3,036	2,838	200	233	1,138	1,062	38	162	4,174	3,900	238	395
Texas	8,147	8,220	653	809	5,060	4,986	263	311	13,208	13,206	916	1,120
WESTERN												
Montana	965	865	53	73	1,058	934	41	39	2,023	1,799	94	112
Idaho	1,405	1,585	124	147	1,878	1,735	98	91	3,283	3,320	222	239
Wyoming	686	681	38	73	191	170	3	4	876	850	41	77
Colorado	2,875	2,857	247	278	1,303	1,453	73	92	4,177	4,310	320	370
New Mexico	1,366	1,437	101	124	551	513	40	65	1,917	1,950	141	189
Arizona	906	943	80	85	1,276	1,425	118	110	2,183	2,368	198	195
Utah	706	736	55	57	256	245	10	14	962	981	65	71
Nevada	187	194	18	15	136	143	6	11	322	337	23	25
Washington	1,622	1,730	122	136	3,747	3,424	193	256	5,370	5,155	314	392
Oregon	803	762	58	67	2,427	2,330	107	169	3,229	3,092	164	236
California	6,310	6,845	547	584	19,827	17,771	1,484	1,268	26,137	24,616	2,031	1,853
Alaska	28	27	2	2	21	20	1	2	49	47	3	4
Hawaii	86	92	8	8	424	418	32	34	510	510	40	42
U.S.	96,535	94,539	7,209	8,090	111,076	102,222	5,827	6,233	207,611	196,761	13,036	14,323

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 contacts: Larry Traub (202) 694-5593 or ltraub@econ.ag.gov and Cheryl Steele (202) 694-5591 or cherylj@econ.ag.gov. To receive current monthly cash receipts via e-mail contact Larry Traub.

Table 35—CCC Net Outlays by Commodity & Function

	Fiscal year									
	1991	1992	1993	1994	1995	1996	1997	1998	1999 E	2000 E
	$ million									
COMMODITY/PROGRAM										
Feed grains:										
Corn	2,387	2,105	5,143	625	2,090	2,021	2,587	2,873	5,204	3,285
Grain sorghum	243	190	410	130	153	261	284	296	483	314
Barley	71	174	186	202	129	114	109	168	266	182
Oats	12	32	16	5	19	8	8	17	40	26
Corn and oat products	9	9	10	10	1	0	0	0	0	0
Total feed grains	2,722	2,510	5,765	972	2,392	2,404	2,988	3,354	5,993	3,807
Wheat and products	2,805	1,719	2,185	1,729	803	1,491	1,332	2,187	3,009	1,392
Rice	867	715	887	836	814	499	459	491	802	597
Upland cotton	382	1,443	2,239	1,539	99	685	561	1,132	1,740	1,236
Tobacco	-143	29	235	693	-298	-496	-156	376	69	-163
Dairy	839	232	253	158	4	-98	67	291	467	187
Soybeans	40	-29	109	-183	77	-65	5	139	1,023	2,907
Peanuts	48	41	-13	37	120	100	6	-11	16	-15
Sugar	-20	-19	-35	-24	-3	-63	-34	-30	-48	-42
Honey	19	17	22	0	-9	-14	-2	0	1	-1
Wool and mohair	172	191	179	211	108	55	0	0	6	-6
Operating expense[1]	625	6	6	6	6	6	6	5	5	4
Interest expenditure	745	532	129	-17	-1	140	-111	76	178	400
Export programs[2]	733	1,459	2,193	1,950	1,361	-422	125	212	344	1,020
1988/99 Disaster/tree/ livestock assistance	121	1,054	944	2,566	660	95	130	3	2,278	5
Conservation Reserve Program	0	0	0	0	0	2	1,671	1,693	1,517	1,552
Other conservation programs	0	0	0	0	0	7	105	197	309	367
Other	155	-162	949	-137	-103	320	104	28	682	865
Total	10,110	9,738	16,047	10,336	6,030	4,646	7,256	10,143	18,391	14,112
Function										
Price support loans (net)	418	584	2,065	527	-119	-951	110	1,128	832	1,376
Cash direct payments:[3]										
Production flexibility contract	0	0	0	0	0	5,141	6,320	5,672	5,544	5,042
Market loss assistance	0	0	0	0	0	0	0	0	3,011	0
Deficiency	6,224	5,491	8,607	4,391	4,008	567	-1,118	-7	0	0
Diversion	0	0	0	0	0	0	0	0	0	0
Dairy termination	96	2	0	0	0	0	0	0	0	0
Loan deficiency	21	214	387	495	29	0	0	478	2,653	3,383
Other	0	140	149	171	97	95	7	416	288	11
Conservation Reserve Program	0	0	0	0	0	2	1,671	1,693	1,489	1,517
Other conservation programs	0	0	0	0	0	0	85	156	260	310
Noninsured Assistance (NAP)	0	0	0	0	0	2	52	23	72	89
Total direct payments	6,341	5,847	9,143	5,057	4,134	5,807	7,017	8,431	13,317	10,352
1988-98 crop disaster	6	960	872	2,461	577	14	2	-2	1,945	0
Emergency livestock/tree/DRAP livestock indemn/forage assist.	115	94	72	105	83	81	128	5	333	5
Purchases (net)	646	321	525	293	-51	-249	-60	207	715	148
Producer storage payments	1	14	9	12	23	0	0	0	0	0
Processing, storage, and transportation	240	185	136	112	72	51	33	38	51	48
Export donations ocean transportation	50	139	352	156	50	69	34	40	441	346
Operating expense[1]	625	6	6	6	6	6	6	5	5	4
Interest expenditure	745	532	129	-17	-1	140	-111	76	178	400
Export programs[2]	733	1,459	2,193	1,950	1,361	-422	125	212	344	1,020
Other	190	-403	545	-326	-105	100	-28	3	230	413
Total	10,110	9,738	16,047	10,336	6,030	4,646	7,256	10,143	18,391	14,112

E=Estimated in the FY 2000 Mid-Session Review Budget which was released on June 28, 1999 based on May 1999 supply and demand estimates.
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. 3. Includes cash payments only. Excludes generic certificates in FY 86-96. The CCC outlays shown for 1996-2000 include the impact of the Federal Agricultural Improvement and Reform Act of 1996, which was enacted April 4, 1996. Minus (-) indicates a net receipt (excess of repayments or other receipts over gross outlays of funds). *Information contact: Richard Pazdalski Farm Sevice Agency - Budget at (202) 720-3675 or Richard_Pazdalski@wdc.fsa.usda.gov.*
Further detail can be found at www.fsa.usda.gov/dam/BUD/bud1.htm

Food Expenditures

Table 36—Food Expenditures

	Annual			1999			Year-to-date cumulative		
	1997	1998	1999	Jun	Jul	Aug	Jun	Jul	Aug
					$ billion				
Sales[1]									
At home[2]	380.2	395.3	--	33.7	36.1	32.9	196.5	232.6	265.5
Away from home[3]	297.9	301.7	--	29.5	31.5	31.8	164.0	195.6	227.4
					1998 $ billion				
Sales[1]									
At home[2]	371.0	378.5	--	33.2	35.5	32.2	186.6	220.1	254.3
Away from home[3]	289.7	286.0	--	28.9	30.8	31.0	154.0	184.8	215.8
					Percent change from year earlier ($ billion)				
Sales[1]									
At home[2]	3.4	4.0	--	2.9	5.1	-2.1	2.9	3.3	2.6
Away from home[3]	3.0	1.3	--	14.7	19.2	20.2	11.2	12.4	13.4
					Percent change from year earlier (1998 $ billion)				
Sales[1]									
At home[2]	1.0	2.0	--	5.3	7.8	0.5	1.6	2.5	2.3
Away from home[3]	0.2	-1.3	--	18.2	22.7	23.6	9.4	11.4	13.0

-- = 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) 694-5373*
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 Agr. Econ. Rpt. No. 575, Aug. 1987.

Transportation

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

	Annual			1998	1999					
	1996	1997	1998	Jul	Feb	Mar R	Apr R	May R	Jun R	Jul P
Rail freight rate index[1]										
(Dec. 1984=100)										
All products	111.5	112.1	113.4	113.6	112.7	112.6	112.7	112.7	112.7	112.8
Farm products	115.9	120.3	123.9	124.9	121.6	121.1	121.1	121.1	121.1	121.4
Grain food products	108.8	107.6	107.4	106.5	99.2	99.2	99.3	99.3	99.3	99.3
Grain shipments										
Rail carloadings (1,000 cars)[2]	25.2	23.2	22.8	21.4	24.8	23.3	22.6	22.6	22.2	24.6
Barge shipments (mil. ton)[3,4]	3.1	2.6	3.0	3.6	2.7	2.8	3.7	4.1	4.4	4.3
Fresh fruit and vegetable shipments[5]										
Piggy back (mil. cwt)	1.1	1.1	0.9	0.8	0.6	0.7	0.6	0.9	1.0	0.8
Rail (mil. cwt)	1.6	1.7	1.2	1.5	0.9	1.1	0.9	1.0	1.5	0.9
Truck (mil. cwt)	35.7	42.6	42.2	43.0	35.1	44.0	49.0	54.3	53.6	45.8

P= Preliminary. R = Revised. -- = 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 1996 is 7-month average. 5. Agricultural Marketing Service, USDA. *Information contact: Jenny Gonzales (202) 694-5296*

Indicators of Farm Productivity

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

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

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

Food Supply & Use

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

Commodity	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
					Lbs.					
Red meats[2,3,4]	119.5	115.9	112.3	111.9	114.1	112.2	114.8	115.1	112.8	111.0
Beef	68.6	65.4	63.9	63.1	62.8	61.5	63.6	64.4	65.0	63.8
Veal	1.1	1.0	0.9	0.8	0.8	0.8	0.8	0.8	1.0	0.9
Lamb & mutton	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.8	0.8
Pork	48.8	48.4	46.4	46.9	49.5	48.9	49.6	49.0	45.9	45.6
Poultry[2,3,4]	51.9	53.9	56.3	58.3	60.8	62.5	63.3	62.9	64.4	64.8
Chicken	39.6	40.9	42.4	44.2	46.7	48.5	49.3	48.8	49.8	50.9
Turkey	12.4	13.1	13.8	14.1	14.1	14.0	14.1	14.1	14.6	13.9
Fish and shellfish[3]	15.1	15.6	15.0	14.8	14.7	14.9	15.1	14.9	14.7	14.5
Eggs[4]	31.8	30.5	30.2	30.1	30.3	30.4	30.6	30.2	30.5	30.7
Dairy products										
Cheese (excluding cottage)[2,5]	23.7	23.8	24.6	25.0	26.0	26.2	26.8	27.3	27.7	28.0
American	11.5	11.0	11.1	11.1	11.3	11.4	11.5	11.8	12.0	12.0
Italian	8.1	8.5	9.0	9.4	10.0	9.8	10.3	10.4	10.8	11.0
Other cheeses[6]	4.1	4.3	4.5	4.6	4.7	5.0	5.0	5.0	5.0	5.1
Cottage cheese	3.9	3.6	3.4	3.3	3.1	2.9	2.8	2.7	2.6	2.7
Beverage milks[2]	222.3	224.2	221.8	221.1	218.3	213.4	213.6	209.8	210.0	206.9
Fluid whole milk[7]	105.7	97.5	90.4	87.3	84.0	80.1	78.8	75.3	74.6	72.7
Fluid lower fat milk[8]	100.5	106.5	108.5	109.9	109.3	106.6	106.1	102.6	101.7	99.8
Fluid skim milk	16.1	20.2	22.9	23.9	25.0	26.7	28.7	31.9	33.7	34.4
Fluid cream products[9]	7.6	7.8	7.6	7.7	8.0	8.0	8.1	8.4	8.7	9.1
Yogurt (excluding frozen)	4.5	4.2	4.0	4.2	4.2	4.3	4.7	5.1	4.8	5.1
Ice cream	17.3	16.1	15.8	16.3	16.3	16.1	16.1	15.7	15.9	16.2
Lowfat ice cream[10]	8.0	8.4	7.7	7.4	7.1	6.9	7.6	7.5	7.6	7.9
Frozen yogurt	--	2.0	2.8	3.5	3.1	3.5	3.5	3.5	2.6	2.1
All dairy products, milk equivalent, milkfat basis[11]	582.5	563.8	568.4	565.6	565.9	574.1	586.0	584.4	575.5	579.8
Fats and oils--total fat content	63.6	60.8	62.8	65.4	67.4	70.2	68.6	66.9	65.8	65.6
Butter and margarine (product weight)	14.8	14.6	15.3	15.0	15.4	15.8	14.7	13.7	13.5	12.8
Shortening	21.5	21.5	22.2	22.4	22.4	25.1	24.1	22.5	22.3	20.9
Lard and edible tallow (direct use)	2.6	2.1	2.4	3.1	4.1	3.9	4.7	4.9	5.3	4.7
Salad and cooking oils	26.3	24.4	24.8	26.7	27.2	26.8	26.3	26.9	26.1	28.7
Fruits and vegetables[12]	635.9	657.3	656.3	660.5	661.1	685.1	689.1	690.4	706.1	710.8
Fruit	272.8	279.1	273.5	266.6	268.0	285.4	284.3	285.4	289.8	294.7
Fresh fruits	120.9	122.8	116.3	113.0	123.5	124.9	126.5	124.6	129.0	133.2
Canned fruit	21.1	21.3	21.0	19.8	22.9	20.7	21.0	17.5	18.8	20.5
Dried fruit	14.9	13.2	12.1	12.3	10.8	12.6	12.9	12.8	11.4	10.8
Frozen fruit	3.6	3.9	3.7	3.6	3.7	3.6	3.6	4.0	3.8	3.5
Selected fruit juices	112.0	117.6	120.1	117.6	106.4	123.3	119.9	126.2	126.6	126.1
Vegetables	363.1	378.2	382.8	393.9	393.2	399.8	404.8	405.0	416.2	416.0
Fresh	167.4	172.2	167.2	167.2	171.1	171.9	177.4	175.1	181.8	185.6
Canning	94.8	102.4	110.7	113.3	111.6	112.1	107.8	110.2	108.5	105.9
Freezing	64.2	67.6	66.8	72.7	70.8	75.1	79.5	79.9	83.9	81.5
Dehydrated and chips	29.2	29.8	31.0	32.8	31.5	32.9	31.7	31.3	34.0	34.5
Pulses	7.5	6.3	7.1	7.8	8.2	7.7	8.5	8.5	8.0	8.5
Peanuts (shelled)	6.9	7.0	6.0	6.5	6.2	6.0	5.8	5.7	5.7	5.8
Tree nuts (shelled)	2.3	2.2	2.4	2.2	2.2	2.2	2.3	1.9	2.0	2.2
Flour and cereal products[13]	175.5	174.5	182.0	183.6	186.2	191.0	194.0	192.5	198.4	200.1
Wheat flour	131.7	129.6	136.0	136.9	138.8	143.3	144.5	141.8	148.8	149.7
Rice (milled basis)	14.3	15.2	16.2	16.8	17.5	17.6	19.2	20.1	18.9	19.5
Caloric sweeteners[14]	132.7	133.1	137.0	137.9	141.2	144.4	147.4	149.9	150.7	154.1
Coffee (green bean equiv.)	9.8	10.1	10.3	10.3	10.0	9.1	8.2	8.0	8.9	9.3
Cocoa (chocolate liquor equiv.)	3.8	4.0	4.3	4.6	4.6	4.3	3.9	3.6	4.2	4.1

-- = Not available. 1. In pounds, retail weight unless otherwise stated. Consumption normally represents total supply minus exports, nonfood use, and ending stocks. Calendar-year data, except fresh citrus fruits, peanuts, tree nuts, and rice, which are on crop-year basis. 2. Totals may not add due to rounding. 3. Boneless, trimmed weight. Chicken series revised to exclude amount of ready-to-cook chicken going to pet food as well as some water leakage that occurs when chicken is cut up before packaging. 4. Excludes shipments to the U.S. territories. 5. Whole and part-skim milk cheese. Natural equivalent of cheese and cheese products. 6. Includes Swiss, Brick, Muenster, cream, Neufchatel, Blue, Gorgonzola, Edam, and Gouda. 7. Plain and flavored. 8. Plain and flavored, and buttermilk. 9. Heavy cream, light cream, half and half, eggnog, sour cream, and dip. 10. Formerly known as ice milk. 11. Includes condensed and evaporated milk and dry milk products. 12. Farm weight. 13. Includes rye, corn, oats, and barley products. Excludes quantities used in alcoholic beverages, corn sweeteners, and fuel. 14. Dry weight equivalent. *Information contact: Jane E. Allshouse (202) 694-5449*