

# AGRICULTURAL OUTLOOK



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## 1999 Farm Sector Outlook... USDA's 10-Year Baseline Projections... Risk Management Tools... Broccoli Sales... Japan's Rice Import System

### Near-Term Weakness Expected in U.S. Farm Economy

*The stage was set for agricultural prospects to worsen in 1999* when the outlook for U.S. agriculture changed abruptly during 1998. Rising world commodity supplies and weakening international demand last year reduced farm prices and the value of farm exports. The U.S. government reacted with legislation to increase assistance to farmers, which is helping to maintain farm income. In 1999, supplies of most agricultural commodities will remain large, and the outlook for exports remains somewhat pessimistic in the near term. With exports and prices likely to be lower in 1999, farm financial stress will intensify, particularly in the Corn Belt.

Much of the U.S. farm sector will be adjusting to weak demand and large global supplies in the next few years, according to USDA's 10-year baseline projections. Compared with the last few years, agricultural commodity prices are down, the value of U.S. agricultural exports is lower, and net farm income declines. International factors weakening the long-term U.S. agricultural outlook include fallout from the financial crisis in Asia and economic contraction in Russia. In the second half of the baseline, improved economic growth in developing regions supports gains in U.S. ag exports, leading to rising nominal market prices, gains in farm income, and increased financial stability in the U.S. farm sector.

### Boom & Bust: Will Agricultural History Repeat?

*Farm sector conditions* in the 1990's in some respects resemble those of the boom and bust cycle of the 1970's and into the 1980's. Reminiscent are changes in the value of the dollar, the role of agricultural exports, weather-related problems followed by a surge in output, and sustained rises in farmland values and farm indebtedness. But significant differences exist. Although a number of factors could aggravate the current downturn, the magnitude of the contraction could be mitigated by current domestic economic



stability, less pronounced expansion, and more conservative borrowing and lending.

### Managing Risk with Insurance & Pricing Strategies

*Making good risk management choices* requires: 1) understanding the farm's risk environment, 2) knowing how the available risk management strategies work, and 3) selecting the strategy or combination that will provide protection that best suits the farm's and operator's circumstances. The principal risk lies in the uncertainty of the revenue generated by the farm. Insurance and forward pricing offer tools to manage risk. The majority of insurance policies sold are: standard yield-based crop insurance, revenue insurance, and revenue insurance with replacement coverage protection. Combining insurance with forward pricing—e.g., a cash forward sale, a futures hedge, or a put option hedge—generally results in lower risk than either alone.

### Rice Tariffication in Japan

*Japan changes its rice import system* on April 1, 1999 to allow imports outside the existing minimum access quota, but annual increases in the quota will be less than without the April 1 change. Japan's

minimum access quota for rice imports, implemented in 1995 under GATT's Uruguay Round Agreement on Agriculture (URAA), ended the effective ban on rice exports to Japan. The tariff on imports within the minimum access quota is zero, but the URAA allows Japan to add a markup to these imports. Imports above the minimum access amount will be subject to a tariff, but there is virtually no chance that any rice paying the over-quota tariff could compete with Japan's domestic production. U.S. rice exports to Japan will likely be lower than they would have been without tariffication, hitting California producers hardest.

### Broccoli: Super Food For All Seasons

*Broccoli has again caught the interest* of American consumers, after stagnating sales in the early 1990's. Broccoli is regularly identified as the vegetable eaten most often for health reasons, and the introduction of pre-cut and packaged value-added products provides more convenience. Americans consumed 2 billion pounds of broccoli in 1998, about 8 pounds per capita, 34 percent higher than in 1990. The industry boasts farm revenue averaging \$484 million (1996-98), up 24 percent from the previous 3 years. The U.S. retail price for fresh-market broccoli in 1998 averaged \$1.10 per pound, up 27 percent since 1995.

### Food Prices to Post Modest Gains

*The Consumer Price Index for all food* is expected to increase 2-3 percent in 1999, following a 2.2-percent increase in 1998, the smallest since 1993. Food at home is projected to increase 2 to 2.5 percent, while food away from home should increase 2.5 to 3 percent. Overall, lower meat, egg, and coffee and soft drink prices countered higher prices for dairy products, fresh fruits and vegetables, and fats and oils. Although 1999 looks like another year of low food price inflation, uncertainties remain about the ultimate effect of changes in meat exports, increasing consumer demand for high-butterfat products, and high orange and banana prices.

## Agricultural Economy



Jack Harrison

## Outlook for the Farm Economy In 1999

The outlook for U.S. agriculture changed abruptly during 1998. At home, inclement weather devastated California, Florida, and many regions in between. Rising world commodity supplies and fallout from the Asian financial crisis reduced farm prices and the value of farm exports. The U.S. government reacted with legislation to increase assistance to farmers. Totalling nearly \$6 billion, these funds are helping maintain farm income and tempering financial hardship for many producers. With exports and prices likely to be lower in 1999, farm financial stress will intensify, particularly in the Corn Belt.

Global events have been and will continue to be a major factor in the U.S. agricultural economy. While strong world economic growth and lower trade barriers in 1996 and 1997 helped push U.S. agricultural exports to a record-high \$60 billion in fiscal 1996, expanding world production and weakening world demand have hurt U.S. exports since then. Grain, cotton, beef, and poultry exports have all been seriously affected. In 1998, the U.S. economy was strong, but the foundation of world demand deteriorated as Japan, South Korea, Malaysia, Philippines, Thailand, Indonesia, Russia, Saudi Arabia, and Brazil all saw recessions. In the boom

period of 1996 and 1997, the world economy grew 3.4 percent per year. In 1998, growth fell to 1.9 percent, and in 1999, a further slide to just 1.7 percent is expected.

Brazil's problems are a particular concern given the fall of the *real* during January. For now, the currency has stabilized following the decision to allow it to float (AO March 1999). But the underlying large government deficit remains, and until this is addressed, Brazil faces high interest rates and slow growth. Because Brazil is the largest economy in South America, its performance will affect the entire continent. At this point, indications are not optimistic for 1999.

Anemic world economic growth and lower prices are expected to lower U.S. farm exports to \$49 billion this year, down nearly \$11 billion from the 1996 peak. Exports to Asia account for over 80 percent of the decline in total export value.

The drop in exports has given rise to several questions: Could more aggressive use of credit guarantees boost exports? Would elimination of trade sanctions help solve the problem? Would full use of the Export Enhancement Program restore lost trade? But the answer to these questions is no. Credit guarantees are being pushed to the limit, trade sanctions are having only a minor effect on U.S. exports, and the Export Enhancement Program, which is available primarily for wheat, would drive down world wheat prices, making it a waste of taxpayers' money given the ample competitive supplies on the world market.

Many uncertainties could affect agricultural markets and the well-being of market participants over the next 1 to 2 years. Weather is always a key and could work to make prospects better or worse. Another major factor will be the world economy. If the Asian economies fail to stabilize or if the economic problems in Brazil spread, U.S. agricultural exports could drop further. Right now, the engines of growth in the world economy are the U.S. and the European Union (EU), and both are slowing. Should either of these two regions fall into recession, there would be a global recession that would further erode world food and fiber demand and U.S. farm exports.

### ***Higher Farm Stress Expected in 1999***

Given this somewhat pessimistic outlook regarding demand for farm products, what are the implications for the overall health of the U.S. farm economy? Starting with aggregate cash flow, declining prices caused farm market receipts to fall by \$10 billion down to \$198 billion during 1998. Prices are likely to hold at that reduced level this year, with crop receipts projected to drop again and livestock receipts to rise with some improvement in cattle prices.

The projections and discussions in this article are drawn from a presentation at USDA's 1999 Agricultural Outlook Forum in Arlington, VA, February 22-23. Near-term numbers reflect official USDA data as of February 22, 1999. Long-term numbers were prepared in October-December 1998 and are published in *USDA's Agricultural Baseline Projections to 2008*, released in February 1999. USDA's complete 1999 baseline estimates are accessible via the Internet at [www.econ.ag.gov/briefing/baseline/](http://www.econ.ag.gov/briefing/baseline/)

Helping to offset the decline in cash receipts in 1998, and so far this year, have been declines in interest rates, fuel prices, and feed costs. In fact, total production expenses decreased 2 percent from 1997 to 1998, the first significant drop in more than a decade. And expenses are likely to change little in 1999.

Direct government payments to farmers reached nearly \$13 billion in calendar 1998 and will probably total at least \$11 billion in 1999, again providing strong support. For the 1990's, government payments exceeded these levels only once—in 1993.

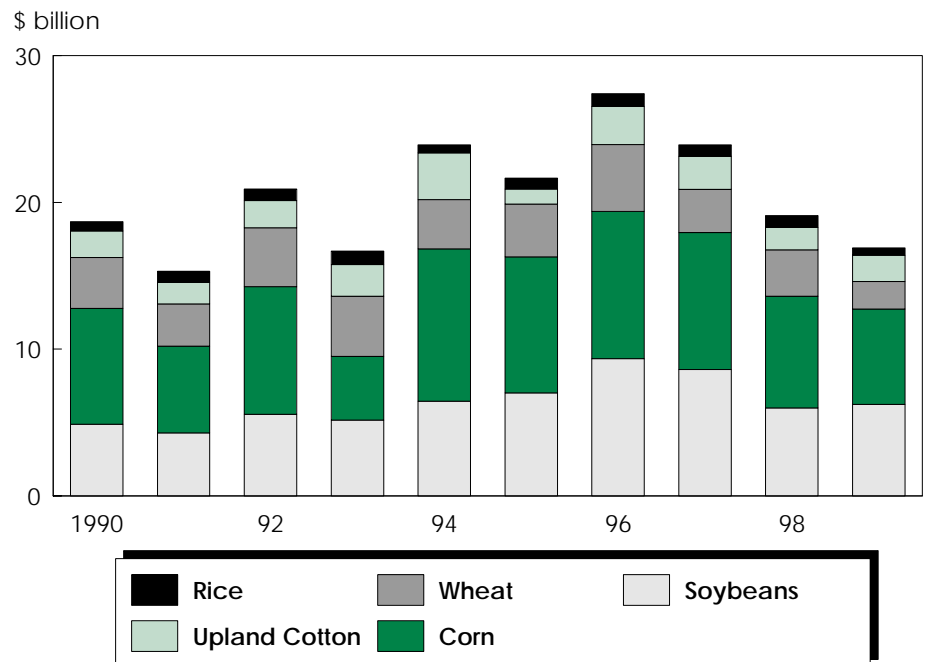
All these figures reflect an industry still performing adequately financially as it entered 1999, thanks to higher government payments and lower production costs, which helped push total net cash farm income for agriculture in 1998 to the second highest ever. The farm balance sheet was fairly sound, as farm equity steadily increased through the 1990's and as the overall debt-to-asset ratio remained steady at about 15 percent, down from over 20 percent in the mid-1980's.

For long-term agricultural prospects

See *Special Article*, page 32

But these aggregate figures mask a marked erosion in market income in many regions and commodity sectors, and all signs now point to higher farm financial stress in 1999. Net cash farm income is projected at \$55.5 billion in 1999, down \$3.6 billion. While U.S. farm real estate values may rise slightly, land values began declining in a number of Midwestern states during the last half of 1998. The drop in income, coupled with declining asset values for many producers, means many will have difficulty obtaining credit. Those who do obtain credit will use it for variable cash expenses rather than investment, and will find themselves squeezed as they try to repay debt out of current income. Many producers who struggled with cash flow in 1998 resulting from low prices and adverse weather will likely see their problems worsen in 1999.

### Net Income of Field Crop Operations to Again Reflect Financial Strain



Value of production and government payments minus total cash production expenses. 1998 preliminary; 1999 forecast.

Source: Office of the Chief Economist, USDA.

Economic Research Service, USDA

Aggregate farm income estimates include a large, stable, and growing core of commodities that include fruit, vegetables, nursery and greenhouse products, and broilers. Farm sales of these commodities—which exceed the total value of food grain, feed grain, and oilseed sales—will trend up again in 1999. So, looking beneath aggregate U.S. farm income reveals that the greatest financial strain in 1999 will be on field crops. For the 1998 wheat, corn, soybean, upland cotton, and rice crops, net income will be 17 percent below the previous 5-year average, and for 1999 crops, current projections show income 27 percent below the previous 5-year average.

While slow world economic growth and abundant world food and fiber supplies converge in 1999 to reduce the economic performance of U.S. agriculture, Americans will continue to benefit from ample high-quality food choices, with food prices rising only 2 percent this year.

### Field Crop Prices To Remain Low . . .

Wheat, corn, and soybeans saw sharply lower prices in 1998/99, with carryover stocks expected up. Farm prices for *wheat* in 1998/99 are expected to average \$2.70 per bushel, the lowest season-average price in 8 years. USDA estimates carryover stocks on June 1 at nearly 1 billion bushels, the highest since 1988. Since wheat was the first major commodity to sink after the mid-1990's runup, it will likely be the first to start reviving. The 1996 Farm Act envisioned that planting flexibility would help reduce surpluses by causing a cutback in planted acreage when prices were low. This year is the first big test, and wheat is passing the test. For the 1999 crop year, the world wheat situation will be tighter, with lower U.S. and EU production. U.S. wheat prices should rise, but with weak global demand and trade, the increase may be limited to a range of 10 percent.

For *corn*, total supplies in this marketing year are up sharply, and carryover stocks on September 1 are likely to be at their

## Agricultural Economy

### Low Prices for Field Crops: How Did We Get Here?

The recent Asian financial crisis and subsequent economic problems in many other countries are contributing to weak commodity prices, but the roots go back further. In 1995, record-high prices provided strong incentives to grain producers to expand production, which they did, both in the U.S. and abroad. In 1996, global production of wheat increased 44 million tons to a record 583 million, reflecting higher acreage and good yields. Output rose another 27 million tons in 1997. Similarly, global coarse grain output soared in 1996, jumping more than 100 million tons to a record 907 million. Although production slipped slightly in 1997, it was still the second largest on record.

Oilseeds experienced a similar supply response triggered by high prices, although lagging by a year. Led by gains in soybeans, global oilseed production in 1997 increased 24 million tons to a record 286 million. Again, there was a striking increase in area, and favorable weather boosted yields. This was followed by a smaller production increase in 1998.

Against this backdrop, world trade in coarse grains declined in 1997/98, and is increasing only modestly in 1998/99. The volume of world wheat trade held up in 1997/98 but is forecast down sharply in 1998/99 to the lowest since the mid-1980's.

Even before world imports began to falter, U.S. grain exports started to weaken as the U.S. lost market share in 1996/97 in the face of strong competition from other suppliers. While U.S. exports and market share for corn have increased in 1998/99, they remain relatively low by historical standards. For wheat, the volume of U.S. exports and market share has improved only marginally.

Oilseed trade has been stronger, which helps explain why soybean prices have showed less weakness relative to the grains despite large supplies. Record high in 1997/98, world trade in the major oilseeds has remained strong in 1998/99 despite a decline in soybean trade volume. Global trade in the major protein meals, including soybean meal, has risen for the last several years, and will be record large again in 1998/99.

Likewise, vegetable oil trade, including soybean oil, is expected to be record high in 1998/99, although its growth rate has slowed. U.S. exports of soybeans and products have been comparatively strong, even with some loss of market share to South America. However, in 1998/99 U.S. exports are contracting, a large factor behind recent price weakness.

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highest level since 1993. USDA's corn price forecast is the lowest in more than a decade. For the 1999 crop, trend yields would push U.S. supplies up again even with a little less acreage. Total use should expand by about the same amount, leaving U.S. corn carryover stocks near this season's high levels and setting the 1999/2000 price outlook for feed grains about unchanged from this year.

For *soybeans*, U.S. supplies this season are record high, and U.S. producers face

strong competition from Brazil and Argentina. Carryover stocks on September 1 are expected to exceed more than 400 million bushels, the highest carryover in more than a decade. Soybean prices will probably average just over \$5 per bushel this season, the lowest since 1986/87.

The key crop outlook question is: Can market forces stabilize or reduce stocks in 1999/2000? The answer: not likely. In fact, the 1996 Farm Act provisions are

causing the pain of grain surpluses to be spread to oilseed markets. Producers are turning to soybeans because it appears to be the best of the less-than-ideal alternatives for the moment, and a further increase in carryover stocks and lower prices is likely for the 1999 crop year. Soybean acreage is likely to rise at least 1 million acres, encouraged by the high marketing assistance loan rate for soybeans relative to other crops, the benefits of herbicide-resistant soybeans, low out-of-pocket planting costs, and the crop's resilience in adverse weather. Given trend yields, prices could average well below \$5 a bushel, and marketing loan payments could be in excess of \$2.5 billion.

*Cotton* may be the commodity most vulnerable to the world economic slowdown. Lower global demand for cotton textiles and apparel has resulted in the second-lowest U.S. cotton exports in 20 years. The demise of the Step 2 cotton program has aggravated the export decline and will permit raw cotton to be imported (AO September 1998). With a strong dollar and with Asian textiles seeking a home, the U.S. has seen a 20-percent increase in imported cotton textiles and apparel since the start of 1997. Of the total cotton textiles and apparel Americans will buy this year, about 45 percent will be imported. Weak demand has pared farm prices, despite the drought-reduced crop in 1998. In 1999, a return to trend yields that raises U.S. production—coupled with any weakness in world demand—could push U.S. ending stocks higher, placing additional pressure on cotton prices.

### ... While Livestock & Poultry Prices to Tick Up

The meat and poultry industry is in for another year of record-high production in 1999. For *cattle*, market prices eroded further last year, and averaged the lowest in the 1990's. Continuing liquidation and record-high slaughter weights caused beef production to increase by 1 percent in 1998. A 3-percent decline in beef production is expected in 1999, but much of the year-to-year decline will not occur until the second half. For all of 1999, fed-cattle prices are expected to average \$65.50 per cwt, compared with \$61.50 last year.

*Hog* production has received attention this year as prices for all of 1998 averaged slightly below \$32 per cwt, the lowest since 1972 (*AO* March 1999). What was responsible for the drop. Ten percent more production? Constrained slaughter capacity? Imports? Megafarms? A rush to avoid environmental constraints? Answer: all of the above probably had a role. But the most important factor can be expressed by paraphrasing a colorful statement of George Bernard Shaw about another farm animal. His summary opinion of New Zealand: too many sheep.

Continued large supplies will keep a lid on hog prices during the first half of 1999. But as slaughter begins to decline in the second half, prices should rise above last year's level, particularly by the fourth quarter. For all of 1999, USDA

forecasts a slight decline in production and hog prices averaging \$34 per cwt, 7 percent higher than last year.

As beef and pork production are cut back, *broilers* will gain increased domestic market share. Loss of the Russian market hurt broiler exports, but prices were still strong in 1998. With lower feed costs, broiler production will probably be up nearly 6 percent in 1999, pushing total meat and poultry supplies to record-high levels in 1999.

*Milk* production is seeing its first sustained production increases since 1995, and prices are coming down from the record-high \$15.38 average in 1998. For all of 1999, farm-level milk prices will likely average about \$1 per cwt below last year—about halfway between the 1997

and 1998 levels. Lower feed costs and high earnings of the past year are expected to help producers through the price decline.

Agriculture is a cyclical industry, and economic performance of the sector will improve. Over the next 2-4 years, economic recession in a number of countries should give way to economic recovery, lower prices will reduce agricultural production, weather will curb output in some areas, and demand for U.S. agricultural products will rise, bringing stronger farm prices and incomes. Unlike the rapid change in agricultural fortunes in 1998, the recovery could occur at a very gradual pace. **AO**

*Keith Collins*  
Chief Economist, USDA

## Next month in *Agricultural Outlook* . . .

A report on farmers' 1999 planting intentions

## And in future issues . . .

- \* The first market forecasts for field crops (1999/2000) and livestock (2000)
- \* Competition and concentration in U.S. agriculture

## Agricultural Economy

### Farm Income Outlook by Resource Region

The brunt of cash-flow problems for farm businesses in 1999 is expected to fall most heavily on three regions of the U.S.—the *Heartland*, *Mississippi Portal*, and *Northern Crescent*.

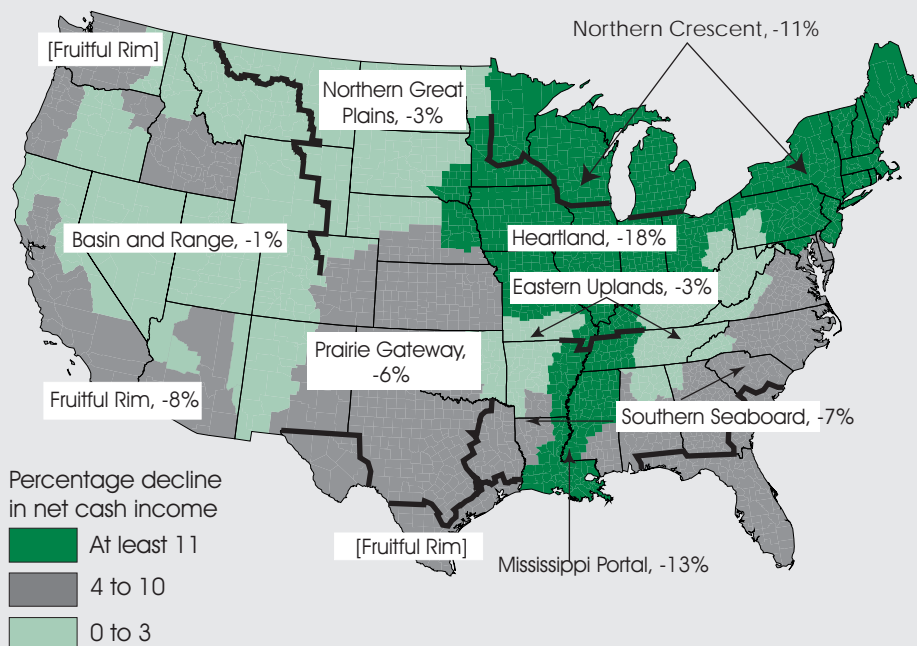
Given continued low prices for corn and soybeans, average net cash income in the *Heartland* is expected to be 18 percent lower than in 1998 and 35 percent below the 1997 average of \$50,600. More than one in four farm businesses (40,800) may not earn enough income to cover expenses in 1999, compared with 15 percent in 1997 (the latest data available).

These anticipated cash flow problems will only compound financial difficulties for vulnerable farms (negative income and high debt levels), which account for 6 percent of the region's total (9,500). These farm businesses will need to address the shortfall in earnings quickly by liquidating inventories or tapping other working capital, selling off machinery and equipment, or offsetting farm losses with savings or off-farm income. Those without sufficient equity will need to restructure loan terms.

The farm businesses in the *Mississippi Portal* are also expected to experience cash flow difficulties in 1999. Lower receipts for cotton and soybeans and reduced government payments are expected to lower average net cash income to \$73,000, down 13 percent from 1998. About 18 percent of the region's farm businesses (3,600) are not expected to cover cash expenses, compared with 16 percent in 1997. The share of vulnerable farms could reach 7 percent by the end of 1999, up from 6 percent in 1997.

The *Northern Crescent* is unique in being one of the few regions where, on average, 1998 net cash income is likely to be above the year before, thanks in large measure to higher milk prices. In 1999, a combination of falling milk prices and relatively low grain prices will result in an 11-percent decline in net cash income. But average net cash income for this region in 1999 is fore-

#### Farm Income Is Forecast Down Sharply in the Nation's Midsection



Based on average net cash income for U.S. farms, 1998-99.

Source: Economic Research Service, USDA

cast not much below 1997's average of \$50,300. The share of farm businesses in a vulnerable overall financial position should remain around 6 percent (3,200).

The *Heartland*, *Mississippi Portal*, and *Northern Crescent*—the regions with the highest year-over-year declines in average net cash income—are not the most susceptible to financial difficulties arising from cash shortfalls. Sharp declines in net cash income would be much more problematic if it were to occur in the *Northern Great Plains* (down 3 percent) or *Prairie Gateway*

(down 6 percent). Each of these regions began 1999 with 8 percent of farms (3,500 in *Northern Great Plains* and 5,000 in *Prairie Gateway*) in a vulnerable financial position and another 13 percent of farm businesses (4,300 in *Northern Great Plains* and 7,500 in *Prairie Gateway*) with debt representing more than 40 percent of assets.

Average income in these regions is not expected to decline as dramatically as in other regions, because of somewhat more favorable cattle prices, the potential for lower production costs, and

This material was presented at USDA's 1999 Agricultural Outlook Forum, February 22-23, and is based on a new regional classification of farms developed by USDA's Economic Research Service that reflects land characteristics and commodity mix. This classification divides farms into more homogeneous groups compared with traditional regional groupings that follow political boundaries. For more information on the classification by resource region and a discussion of farm income changes by type of farm, the speech may be downloaded from [www.usda.gov/agency/oc/waob/outlook99/speeches/014/morehart.doc](http://www.usda.gov/agency/oc/waob/outlook99/speeches/014/morehart.doc)

higher government payments that should offset the effect of lower crop receipts on farm income. Even so, weather and disease problems have had a cumulative effect on financial performance of individual farm businesses in these regions that is not reflected in average net cash income. Results for the *Prairie Gateway* indicate that 30 percent of farm businesses (20,700) did not earn enough income to cover cash expenses in 1997, which was the highest percentage among regions.

The regional outlook for net cash income during the next 5 years—using national figures from USDA's agricultural baseline projections—suggests that cash flow problems are likely to persist in the *Heartland* and *Northern Great Plains*, with each region establishing new lows in net cash income each year through 2001. Average net cash income begins to inch up after 2001 in the *Heartland* but remains relatively flat in *Northern Great Plains*. As a result of persistent lower incomes in these regions, farm debt will remain fairly high relative to what can be repaid from current income. Farmers in both regions are projected to continue using available credit lines fully.

The *Mississippi Portal* projections also show net cash income declines during the next 5 years. But unlike other regions where income is falling, the

### Average Net Cash Income to Decline in All Regions in 1999

Resource region	1993-97 average	1997	1998	1999	Region's share of U.S. farm businesses
\$1,000 per farm					Percent
Heartland	46.5	50.6	39.8	32.7	31
Northern Crescent	52.6	50.3	55.3	49.0	16
Northern Great Plains	47.4	40.5	37.9	36.7	8
Prairie Gateway	45.7	52.1	52.5	49.5	13
Eastern Uplands	33.2	37.3	42.1	40.8	7
Southern Seaboard	53.3	60.9	64.6	59.9	7
Fruitful Rim	100.5	142.6	141.6	129.8	11
Basin and Range	54.8	58.1	47.0	46.5	3
Mississippi Portal	75.9	81.9	83.8	73.0	4
<b>All U.S. farm businesses</b>	<b>54.3</b>	<b>61.7</b>	<b>59.2</b>	<b>53.3</b>	<b>100</b>

Net cash income is net cash earnings realized within the year from sales of production and the conversion of assets (including inventories) into cash. 1998 and 1999 forecasts. Total number of farm businesses (those with gross sales over \$50,000) is 530,000.

Economic Research Service, USDA

level never drops below the most recent low (\$56,700 in 1995). In the *Northern Crescent*, average net cash income declines through 2000 but rebounds to the 1997 level by 2003.

The farm financial outlook is more promising over the next 5 years in the *Fruitful Rim*, given the favorable outlook for vegetables, fruit, and nursery and greenhouse products and their relative importance to farm income in the region. The *Eastern Uplands* is also

expected to have rising average net cash income, based on continued growth in poultry receipts and modest gains in cattle receipts. In the *Southern Seaboard*, average net cash income is expected to remain near 1998 levels. **AO**

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### About the Model

The regional scenarios analysis was conducted using a farm business financial partial budgeting model. The model is static—any potential structural or production response is not treated—and reflects historic production patterns and farm structure within each region. The model incorporates elements of income and expenses to project cash flow, assets, and debt. Results from the Economic Research Service's Short-term Forecast Model, the USDA Baseline Model, and FAPSIM model, were used as input into the farm business model to derive forecasts for specific categories of income and expenses (such as corn receipts and feed costs). The farm business model uses individual farm data for farm businesses (defined as those with gross sales of more than \$50,000), obtained from USDA's Agricultural Resource Management Study (ARMS). Model results were summarized across resource regions to determine the relative impacts of the financial outlook. Since farm business performance varies within a region, these results are not used to predict performance of individual farms *within* a region.



## Commodity Spotlight



Gary Lucier

### Broccoli: Super Food for All Seasons

U.S. presidents may not all have cared for broccoli, but it appears that many Americans have come to enjoy it. After stagnating sales in the early 1990's, broccoli has again caught the interest of American consumers. The industry boasts farm revenue averaging \$484 million (1996-98), up 24 percent from the previous 3 years. The sharp gain in revenue reflects higher prices caused by rising demand for broccoli and its value-added products.

In the 1980's, broccoli enjoyed a surge in popularity fueled largely by increased health consciousness of consumers.

Today, the resurgence of broccoli demand appears to be based on both health-related issues and matters of convenience. The introduction of pre-cut and packaged value-added products provides more convenience for consumers, and highly publicized medical research linking compounds in broccoli with strong anti-cancer activity in the body has added a powerful incentive to consumption.

According to the recently released 1997 Census of Agriculture, U.S. broccoli acreage is concentrated on relatively few farms—6 percent of growers harvest 80 percent of the crop. About 63 percent of U.S. broccoli area is on farms that harvest

500 or more acres of broccoli—up from the 53 percent reported in the preceding census in 1992. The concentration of acreage on large farms since 1992 likely reflects the rise of the value-added sector in broccoli, where grower/processors require large volumes to operate fresh-processing plants year round. The 1997 census found increasing concentration as well among farms raising lettuce and carrots, which are also experiencing rapid growth in the value-added arena.

#### *California Leads in U.S. Broccoli Production*

Broccoli is grown in nearly every state, including Alaska and Hawaii. California harvests 82 percent of the acreage, although it is home to just 22 percent of the farms growing broccoli. California's share of broccoli acreage was up only slightly from 1992. Arizona is the second-largest producer with 8 percent of the acreage (up from 5 percent in 1992) and less than 2 percent of the farms. Oregon, Maine, and Washington round out the top five producing states, with another 6-7 percent of U.S. acreage. Several states noted in the 1992 census as important producers reported dramatically reduced broccoli acreage in 1997, including Texas and North Carolina (down 80 and 73

percent). Low shipping-point prices early in the decade likely discouraged higher production at that time.

Although broccoli is produced in several areas of California, the state's acreage is concentrated in Monterey, Santa Barbara, and Imperial Counties (48, 24, and 6 percent). In Monterey's fertile Salinas Valley, broccoli acreage increased 10 percent between 1992 and 1997, and at \$225 million broccoli is second only to lettuce in the valley's agricultural production value. Monterey County provides a substantial amount of value-added produce items such as bagged salads and pre-cut broccoli florets.

In Santa Barbara's Santa Maria Valley, broccoli acreage jumped 72 percent between 1992 and 1997, vaulting ahead of strawberries as the county's leading agricultural commodity. Some of this increase is likely due to the introduction of value-added fresh broccoli products by several area firms. Both the Salinas and the Santa Maria Valleys also have firms producing frozen broccoli products.

The Imperial Valley and Arizona's nearby Yuma Valley have also seen acreage increases since 1992. These two desert areas harvest broccoli from late fall to early spring, while the coastal Salinas and Santa Maria Valleys produce virtually year-round. However, the peak production period in the desert valleys, December and January, when they account for the largest share of U.S. broccoli shipments, coincides with the lowest output period of the coastal valleys.

The 1997 Census of Agriculture reported nearly 3,900 acres of broccoli in Oregon. The state's Willamette Valley accounts for two-thirds of the broccoli acreage and serves both fresh and processed markets—two large vegetable freezing firms are located in the valley.

No current acreage or production data are available for Maine's broccoli industry, although the state's broccoli acreage is likely up from the 3,219 acres reported in the 1992 census. Potatoes still account for the largest share of Maine's agricultural industry. Most broccoli is produced by a few former potato growers in Aroostook County in far northern Maine, where most

of the state's potatoes are also produced. From late July through early November, Maine ships broccoli to eastern metropolitan areas such as Boston, New York, and Philadelphia. Maine growers can compete with California shippers on the east coast because of their transportation cost advantage.

### **Fresh & Processing Markets Influenced by Trade**

Most broccoli produced domestically is sold fresh or frozen, with fresh-market production accounting for 94 percent of the U.S. crop. Fresh-market broccoli also includes value-added fresh-cut and prepared products such as bagged florets and broccoli coleslaw. Although broccoli is generally not canned, limited quantities of dried and dehydrated broccoli are used in soups.

Domestic production of broccoli for freezing has declined during the 1990's, and relatively few U.S. firms now pack frozen broccoli. Domestic freezers get the majority of their raw product under contract with growers who plant specifically for requirements set by the processors—such as varieties and volume schedules. However, broccoli is generally considered a dual-use vegetable, meaning varieties suitable for the fresh market can sometimes be utilized for processed products. Thus, processors may also purchase additional volume on the open market from fresh-market growers, usually when fresh-market prices are low.

Trade plays an important role in U.S. broccoli markets, although the role differs for fresh and frozen products. About 18 percent of U.S. fresh-market broccoli supplies are exported, and 5 percent of fresh-market broccoli consumption in the U.S. is from imports. Canada, Japan, and Hong Kong import the largest shares of U.S. product, taking 56, 35, and 5 percent of U.S. fresh broccoli exports. All of the fresh broccoli imported by Canada and Mexico and 90 percent of the market in Japan are supplied by U.S. product. U.S. imports of fresh-market broccoli come primarily from Mexico. The bulk arrives during fall and winter, with smaller quantities coming during spring and summer.

### **Imports Account for the Bulk of U.S. Frozen Broccoli Consumption**



Fresh equivalent. 1999 and 2000 forecast.

Economic Research Service, USDA

U.S. fresh-market exports and imports have both been trending upward in the past two decades. Export volume during the 1990's has risen 73 percent, while imports have more than tripled, with all the growth in imports occurring since 1994. The most opportune time for Mexican exports to the U.S. is January through May, when Mexican production is greatest, but this market window is limited by a high tariff—25 percent in 1994—being phased out slowly over 15 years. Given the well-supplied U.S. market, NAFTA offered little additional economic incentive for Mexican broccoli exporters following implementation of the agreement on January 1, 1994. However, the steep *peso* devaluation that began in December 1994 altered this balance and likely provided much of the impetus for the increased fresh-market broccoli exports to the U.S. seen since 1995.

Although there are no government data for frozen broccoli exports, U.S. shipments are likely small (less than 5 million pounds) and move primarily into Europe, Japan, and Canada. In 1989, Statistics Canada reported just 86,000 pounds, valued at \$41,000, of U.S. frozen broccoli imports.

U.S. frozen broccoli imports have been rising for the past two decades. Imports come primarily from Mexico—85 percent of the total—with Guatemala providing most of the remainder. Mexican frozen broccoli imports to the U.S. face a 15-percent base tariff under NAFTA, being phased out over 10 years, while Guatemalan imports enter duty free under the Caribbean Basin Initiative. Imports of frozen broccoli, primarily from Mexico, rose eight-fold from 1980 to 1987, from supplying 9 percent to nearly half of U.S. demand. Today, imports account for a hefty 80 percent of the frozen broccoli consumed in this nation.

Why does the U.S. rely on imports in the frozen broccoli market? Processing costs are the key. Trimming broccoli by hand is said to yield the highest quality product, but labor is the largest cost associated with producing frozen broccoli florets. Lower labor rates have drawn broccoli marketers to Mexico, as they have many other industries attempting to cut costs over the past 2 decades. Based on this cost incentive, American firms have created an export-oriented frozen broccoli industry in central Mexico, reflected in the rapid rise in frozen broccoli imports.

## Commodity Spotlight

### Market Price Trends Up . . .

Prices for fresh broccoli (unadjusted for inflation) averaged a record-high \$30.80 per cwt (f.o.b. shipping point) during the 1998 season, up 51 percent from 1989. In the frozen market, the majority of broccoli is grown under contract. As a result, processing prices tend to be more stable than those in the fresh market and have changed little over the past 15 years. Average prices paid by processors at the processing plant door for raw broccoli were \$19.40 per cwt in 1998, up just 6 percent from \$18.25 per cwt in 1989.

With renewed demand in the 1990's, f.o.b. prices for fresh-market broccoli have recently resumed the steady upward trend exhibited during the 1970's and early 1980's. During the mid- to late-1980's, broccoli prices trended downward, reflecting excess production caused by growers' overreaction to increasing demand. Production expanded briefly into several southern and eastern states during the 1980's but is now largely centered in the western states. As prices declined, many of these new broccoli growers found the crop unprofitable and consequently moved from broccoli to other crops.

Despite the upward trend in the 1990's, monthly fresh-market broccoli prices have continued to fluctuate widely around mean prices, as they did in the 1980's. Seasonal price patterns tend to be weak, since broccoli is produced year round in the U.S. and imports of fresh-market broccoli are limited. A weak, 2-year cyclical pattern appeared in the first half of the 1990's, but that pattern has not been evident over the last 3 years. The widest bands of price irregularity occur during March and November when temporary supply disruptions occur, primarily because of the shift from one seasonal growing region to another in California.

In 1998, the U.S. retail price for fresh-market broccoli averaged \$1.10 per pound, up 12 percent from a year earlier. Largely reflecting renewed demand, the retail price for fresh-market broccoli has risen 27 percent since 1995. The marketing price spread—the difference between farm and retail price—for fresh-market broccoli is very similar to that of carrots,

### Cole Facts

When two Italian brothers planted a trial crop of broccoli near San Jose, California in 1923, they were sowing the seeds of the commercial broccoli industry in the U.S. Broccoli is believed to have originated in Mediterranean Europe, and wild broccoli can be found today along Europe's Mediterranean and Atlantic coasts. The seeds initially planted in California over 60 years ago came from Messina, Italy.

The type of broccoli most familiar to U.S. consumers is sprouting (or Italian) broccoli rather than heading broccoli, which is similar to cauliflower. Broccoli, along with cauliflower, cabbage, brussels sprouts, kohlrabi, kale, and turnip, belongs to the *Cruciferae* (mustard) family. The name "broccoli" derives from the Italian *brocco*, meaning "arm branch." Members of the broccoli family are also sometimes referred to as "cole crops." The word "cole" is thought to be a derivative of the Latin for stem or stalk of a plant. The ancient Greeks referred to the cole crops as *Kaulion*, meaning "stem," and in some European countries broccoli is called *calabrese*.

Broccoli, a biennial crop cultivated as an annual, is classified as a cool-season crop and produces the highest quality where mean monthly temperatures average 60 to 65 °F. In the past, most fresh and processing varieties were direct seeded, with a small amount of the crop transplanted in order to be ready for early market windows. Now, in part to assure better stands (and yields), an increasing amount—currently about one-fourth of the crop—is produced from greenhouse-grown transplants.

Fresh-market broccoli is largely packed in the field, generally in 23-pound cartons holding 14-18 bunches, which are cooled before transport to market, and then sold in bulk or pre-packaged. Traditional retail bulk displays of broccoli crowns—bunched stems banded together—and loose stems are most prevalent. However, rising consumer interest in value-added products such as spears (florets with attached stalk) and pre-cut and bagged florets have helped expand consumer interest. Broccoli for most of these value-added products is harvested and trucked to a packing plant for final cutting, trimming, and packaging.

Fresh broccoli has long been a mainstay of well-stocked salad bars. Many consumers also enjoy broccoli in raw form as an appetizer with a vegetable dip. However, broccoli is more commonly used as a side dish or entrée component (e.g., stir-fried with meat). Popular variations include steamed broccoli covered with melted cheese and chicken-broccoli stir-fry.

Broccoli for processing is hand harvested, dumped into large bulk containers, and trucked to a processing plant, where it is washed, cut, and trimmed. Frozen broccoli is marketed primarily as spears, cuts (1-inch pieces), and chopped product (pieces smaller than 1 inch). These are often frozen by the traditional "wet-pack" method, in which broccoli is first blanched and then frozen in sealed containers.

Another popular method of freezing is called individually quick frozen (IQF). IQF is a process in which broccoli is cut and blanched, the pieces frozen separately as they travel along a conveyer line, and the frozen pieces packed into plastic polybags found in supermarket freezer cases. Alternatively, processors may initially pack IQF products in bulk storage containers for later custom packing. Frozen food processors also pack broccoli in products such as vegetable blends (with cauliflower and carrots, for example), boil-in-bag pouches with cheese sauces, and meal entrees.

celery, and lettuce. On average, grower/shippers in these industries received 25-30 percent of the retail value for bulk commodity, with the remaining 70 percent

going to marketing costs such as transportation, retail labor, and other selling costs.

# Commodity Spotlight

## ... Along with Per Capita Use

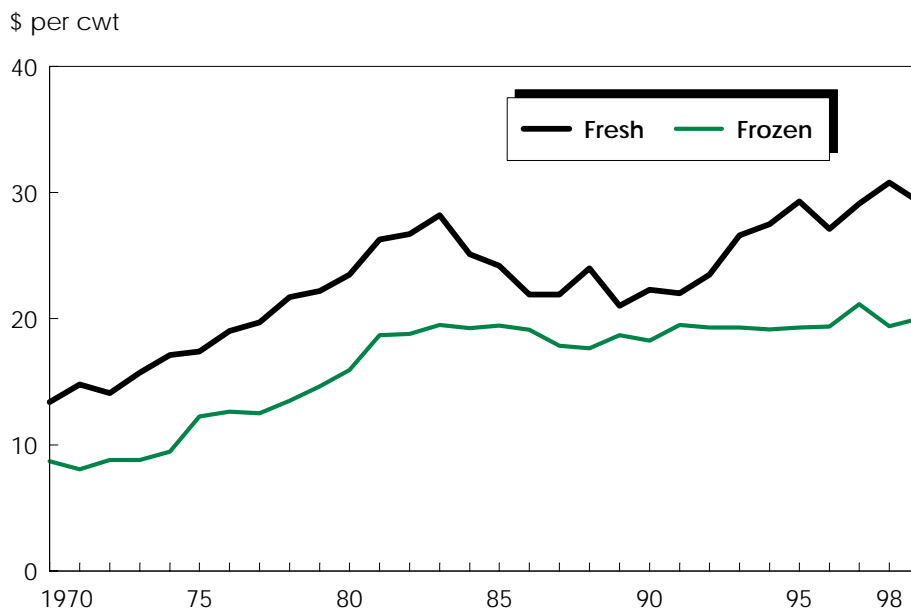
Americans consumed 2 billion pounds of broccoli in 1998. On a per capita basis, this works out to about 8 pounds, which is 34 percent higher than in 1990 and nearly 3 times the 1980 level. From the early 1970's, the trend in per capita broccoli use gradually moved upward until reaching a peak in 1989. This peak occurred during a time of strong economic prosperity in the nation. The economic slowdown of the early 1990's, however, witnessed a sudden drop in fresh-market broccoli use. Consumption of other vegetables and fruits, including iceberg lettuce, cauliflower, cantaloupe, and several others, showed similar use patterns during that period. Use of frozen broccoli, however, remained relatively stable during the late 1980's and early 1990's.

After reaching a low-point for this decade in 1991, fresh-market broccoli use picked up strongly and now sits at an all-time high of 5.6 pounds per person—81 percent higher than in 1991 and more than 3 times the 1980-82 average. Frozen broccoli use, on a fresh-equivalent basis, reached a record-high 2.6 pounds per capita in 1996 but has since returned to the 2.2 pounds per capita level of the early 1990's. This decline likely reflects weather and pest-related production problems in Mexico during the past 2 years, rather than a change in consumer behavior.

What caused the resurgence in fresh-market demand? The keys are likely the introduction of several value-added broccoli products plus a heightened awareness of the association of broccoli with good health.

The health aura which broccoli has enjoyed for many years has strengthened over time as medical and nutritional research continue to explore the linkages between diet and health. Annual private surveys of produce consumers routinely inquire about specific perceptions of fresh vegetables, and broccoli is regularly identified as the vegetable eaten most often for health reasons, including cancer prevention. In addition, consumers often specify high fiber content as the reason to purchase broccoli. Broccoli, carrots, and sweet potatoes are routinely identified by

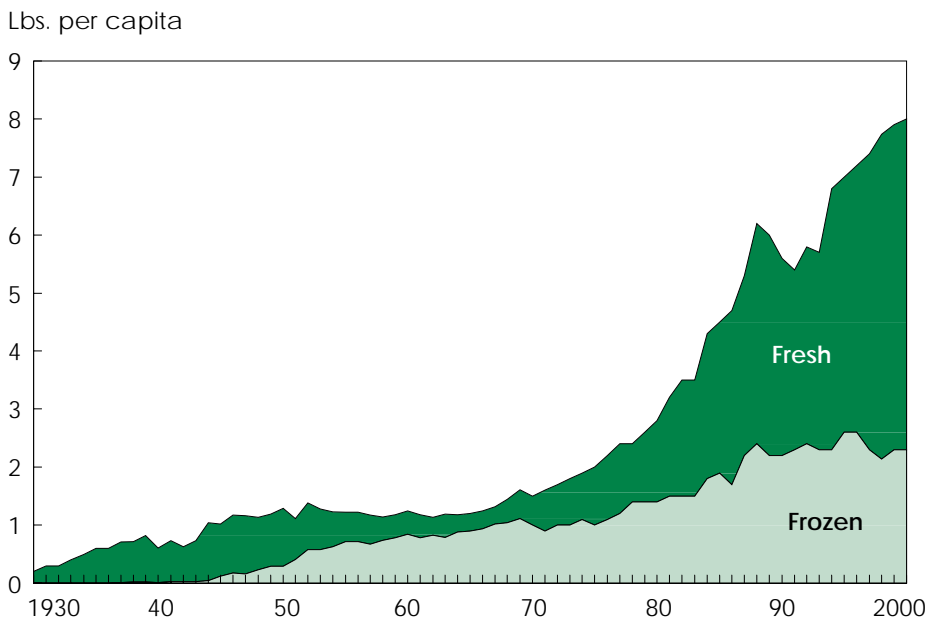
**U.S. Fresh-Market Broccoli Prices Have Rebounded in the 1990's**



Season-average farm price. 1999 forecast.

Economic Research Service, USDA

**Broccoli Consumption in the U.S. Has Increased Sharply Since 1980**



1999 and 2000 forecast.

Economic Research Service, USDA

consumers as the three vegetables with the greatest nutritional benefits.

USDA's nutrition information confirms that consumer perceptions of broccoli's nutritional value are correct. Broccoli's fiber content is one of the highest among

## Commodity Spotlight

vegetables, and 100 grams of broccoli contains 75 percent more vitamin C than an equal amount of oranges.

One medium stalk (148 kg) provides 200 percent of the daily recommended intake of vitamin C, 16 percent of recommended dietary fiber, and 10 percent of recommended vitamin A in the form of beta-carotene. Broccoli also contains folate, potassium, and several other minerals, providing 6 percent of daily calcium and 4 percent of daily iron needs. Reports on the link between broccoli and the compound sulphoraphane, a potent anti-cancer chemical, have been in the news since researchers at Johns Hopkins University began releasing study results in 1992.

Private surveys of produce consumers in the early 1990's found that almost a fifth of consumers considered broccoli to be among the most time-consuming produce items to cut, trim, and prepare. The emergence of value-added broccoli products in

the early 1990's responds directly to these consumer concerns. Value-added products such as bagged pre-cut florets, diced broccoli pieces, and stir-fry mixes have undoubtedly played a role in the resurgence of broccoli demand by making it more accessible and attractive to time-pressed consumers. Innovative products like broccoli coleslaw (with shredded broccoli, red cabbage, and carrots) and baby broccoli hybrids may also be helping to expand total broccoli use. In a 1999 survey, 84 percent of broccoli consumers said they had purchased pre-cut broccoli florets in the past year.

The increase in broccoli consumption is good news for both growers and consumers. Broccoli demand is expected to continue to trend higher, which will help grower prices and incomes. In addition, as new value-added products are introduced and the potential health benefits of broccoli become better understood through medical and nutritional research, consumers will also reap the benefits. **AO**

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### April Releases—USDA's Agricultural Statistics Board

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

#### April

- 1 Dairy Products  
Dairy Products Prices  
(8:30 am)
- 5 Egg Products  
Poultry Slaughter  
Basic Formula Milk Price  
(Wisconsin State Report)  
Crop Progress (4 pm)
- 6 Agricultural Land Values
- 7 Broiler Hatchery
- 8 Vegetables
- 9 Crop Production (8:30 am)  
Dairy Products Prices (8:30 am)
- 12 Crop Progress (4 pm)
- 14 Broiler Hatchery  
Potato Stocks
- 15 Milk Production  
Turkey Hatchery
- 16 Dairy Products Prices (8:30 am)  
Cattle on Feed
- 19 Hatchery Production—Annual  
Crop Progress (4 pm)
- 20 Cold Storage
- 21 Broiler Hatchery
- 22 Catfish Processing  
Dairy Products—Annual
- 23 Dairy Products Prices (8:30 am)  
Chickens and Eggs  
Livestock Slaughter  
NASS Facts Newsletter (4 pm)
- 26 Crop Progress (4 pm)
- 27 Floriculture Crops
- 28 Broiler Hatchery
- 29 Catfish Production  
Poultry Production and Value
- 30 Dairy Products Prices (8:30 am)  
Agricultural Prices  
Peanut Stocks and Processing

In the  
Commodity Spotlight  
next month  
**Aquaculture**

## World Agriculture & Trade



### Rice Tariffication in Japan: What Does It Mean for Trade?

Rice has long been the staple food of Japan, a country of just over 125 million people with a land area slightly smaller than California. Because of the high costs of producing rice in Japan, rice prices there are among the highest in the world. The wholesale price of domestically grown Japanese rice averages about 306 yen/kg, compared with about 60 yen/kg for California rice arriving at a Japanese warehouse (excluding government markup or tariff). Rice-exporting countries see marketing potential in Japan, and have sought to persuade it to change the policies that insulate and isolate it from world rice markets. But Japan has effectively kept most imported rice out of the domestic market, arguing that food security requires protecting domestic production.

On April 1, 1999, Japan changes its rice import system to allow imports outside the existing minimum access quota. But subsequent annual increases in the quota will be less than without the April 1 change. The tariff to be applied to imports outside the quota is equivalent to \$3,080 per ton at current exchange rates, representing a tariff rate of about 450 percent on last year's U.S. rice exports to Japan. The new tariff is about 20 percent higher than the maximum government "markup"

currently allowed for rice imports within the quota.

Total world trade in rice has recently grown to more than 20 million tons per year. Japan imports over 600,000 tons of rice, mostly the high-priced varieties, and therefore accounts for a disproportionate share of the value of world rice trade. However, if Japan were to ease its import policy, the level of rice imports could be higher than under the current managed-trade regime.

#### *Japan's Minimum Access*

Until 1995, Japan had maintained an effective ban on rice imports, which rested on the exclusive right of part of its agriculture ministry, the Food Agency, to conduct trade in rice. Under this state trading regime, Japan imported rice only if domestic production failed to satisfy consumption needs. When it joined the General Agreement on Tariffs and Trade (GATT) in 1955, Japan claimed the right to regulate trade in rice and some other commodities under GATT's "Balance of Payments" (BOP) clause that granted concessions to countries with trade deficits. But in 1963, Japan "disinvoked" the BOP rationale for trade barriers as the trade balance went from deficit to surplus in the

wake of Japan's successful export of manufactured goods. However, Japan maintained some "residual" trade barriers, such as those for rice and beef, which were to be lifted at an unspecified future time.

In the 1980's, the U.S. rice industry twice petitioned the U.S. government to persuade Japan to relax its barriers against rice imports, and U.S. officials frequently raised the issue with Japan. However, Japan refused to alter its stance, and in most years imported no rice other than a relatively small quota that was opened in 1972, principally for the use of Okinawa's sake brewers, when the Okinawa island group passed from U.S. to Japanese control.

The Uruguay Round (UR) of GATT negotiations focused particularly on barriers to agricultural trade, and in general were able to "tariffify" nontariff barriers—i.e., to substitute tariffs on imports for fixed quantitative limits to trade. However, negotiating countries agreed to exceptions under conditions spelled out in Annex 5 to the UR Agreement on Agriculture (URAA). Annex 5 provides that a developed country (such as Japan) will allow "minimum access" for imports in the first year of URAA commitment equal to 4 percent of average annual consumption in the UR base period, 1986-88. This rises in annual increments of 0.8 percent of the base period consumption until it reaches 8 percent in the final year.

Japan's first year of URAA commitment was Japanese fiscal year (JFY) 1995 (April 1, 1995-March 31, 1996), and the final year is 2000, with quantities of required imports rising from 379,000 tons of milled rice to 758,000 tons in 2000. Japan imported rice according to this commitment through JFY 1998, with imports reaching 606,000 tons (milled basis), or 6.4 percent of the base period consumption. However, Annex 5 of the URAA also allows a developed country to "tariffify" its import barriers (convert an import ban or quota to an import duty) at the beginning of any year. In accordance

*Agricultural Outlook* went to press in March, shortly before Japan's tariffication policy was scheduled to be implemented.

## World Agriculture & Trade

with Annex 5, Japan announced that it would lower annual market access increases in 1999 and 2000 from 0.8 percent of base period consumption to 0.4 percent on April 1, 1999. While Annex 5 requires that Japan continue to meet its existing minimum access amount (606,000 tons in 1998), the smaller increases in minimum access will put the import quota in 1999 at 644,000 tons instead of 682,000, and in 2000, the quota will be 682,000 tons instead of 758,000. Until another agreement is made, Japan's annual minimum access after 2000 will remain at 682,000 tons.

The tariff for imports within the minimum access quota is zero, but the URAA allows Japan to add a markup to within-quota imported rice of up to 292 yen/kg when it enters Japan. The markup remains a part of Japan's new import rules. For imports above the minimum access amount, Japan has specified a tariff of 351.17 yen/kg in 1999 and 341 yen/kg in 2000.

In addition to the tariff on over-quota imports, the Japanese government reportedly also wants to implement a special safeguard mechanism. One version of this proposal, which has not yet been officially announced, states that if over-quota imports exceed 30,000 tons, or if imported rice prices fall below 90 percent of the average for 1986-88, an additional tariff of 117.6 yen could be imposed, bringing the total tariff in 1999 to 468.77 yen/kg. Presumably, the special safeguard would be removed at the end of the fiscal year in which it was imposed.

### Tariff Puts Foreign Rice Out of Reach

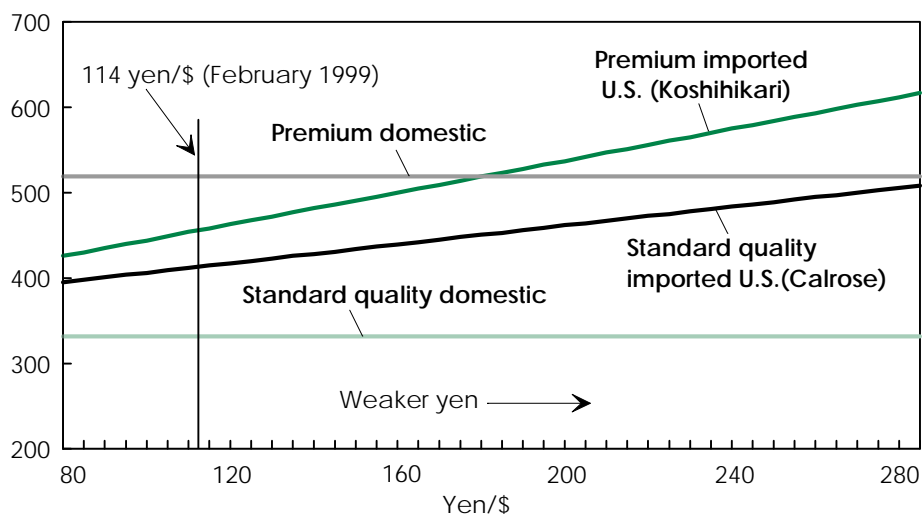
Japan's tariffication measures will slow the rate of increase in minimum access in 1999 and thereafter, reducing the previously expected level of imports in 2000 by 76,000 tons. Since the U.S. has accounted for a large share of Japan's imports to date (nearly 50 percent), U.S. rice exports will likely be lower than they would have been without tariffication. Hardest hit will be California, since the overwhelming majority of U.S. rice exports to Japan under the minimum access arrangement has originated in

## Rice Preferences Vary

Because rice consumption is so differentiated in Japan, it presents a potential market for several different kinds of rice imports. While there is some demand for long grain indica rice in ethnic restaurants, the main table rice is shorter grain japonica rice. The table-rice market is further differentiated by preferences for certain varieties of short grain rice, and these varieties are sometimes promoted as products from a certain area, such as a prefecture or town. Smaller markets exist for glutinous (very sticky) japonica rice and for rice for industrial uses, such as sake (rice wine) brewing and rice crackers, etc. Organically produced rice is popular and commands a price premium. Japanese rice is sold as a single variety or marketed as a blend. Most imported rice is blended with other rice and Japanese consumers do not know its origin.

## Weaker Yen Makes U.S. Rice Less Competitive in Japan

Estimated wholesale price (yen/kg)



Imports are outside quota (no markup), and include a 351-yen/kg tariff. In 1998/99, Calrose (medium-grain japonica) accounted for about 88 percent of U.S. rice exports to Japan. Koshihikari (premium short-grain japonica) accounted for a large share of the remainder. Source: *Rice Market News* (USDA), industry sources, and U.S. Embassy, Tokyo.

Economic Research Service, USDA

California. Other major suppliers to Japan have been China, Australia, and Thailand.

Could relatively high-quality rice conceivably be imported over the quota and still compete with Japanese production? The effect of the tariff (equivalent to about \$3,080 per ton at an exchange rate of 114 yen/\$) depends on the price of imported rice relative to domestic. Using January to November 1998 prices (c.i.f., milled rice—includes cost, insurance, and freight) for Regular Minimum Access imports, the tariff of 351.17 yen/kg will raise the per-kg price of Chinese rice to 425 yen/kg (up 474 percent), Australian

rice to 435 yen/kg (up 420 percent), and U.S. rice to 429 yen/kg (up 449 percent). In contrast, Japan's highest-priced rice type, Unuma Koshihikari, sells at wholesale for 519 yen/kg, and standard quality rice sells at 332 yen/kg.

Sales results from a special part of the quota reserved for the "simultaneous buy-sell system" (SBS) indicate that there is virtually no chance that any rice paying the over-quota tariff could compete. The SBS has been used with some success in other commodity markets, such as the Japanese and Korean markets for beef. In an SBS, private-sector buyers and sellers

can negotiate directly to determine the quantity, quality, timing, etc. of a sale. In the Japanese rice SBS, buyers and sellers propose a quantity and price of rice to be exchanged. The Food Agency then examines all bids, choosing those that have the widest margin between the proposed selling and buying prices. The Agency keeps the margin.

The margin is the markup, which under the URAA cannot exceed 292 yen/kg. The closer the margin gets to 292 yen/kg, the more likely the Food Agency will accept the bid, so buyers' and sellers' bids reflect pressure to maximize the difference. However, at some price buyers will lose money if they cannot dispose of the imported rice within Japan and recover at least the SBS purchase price. Results of recent SBS sales give some idea of the maximum price at which imported rice types can be sold in the Japanese market.

The outcome of the last SBS sale—a total of 30,000 tons on December 9, 1998—indicates that a tariff of 351 yen/kg is likely to preclude any over-quota purchases. The markup for whole-grain rice sales (milled and brown) ranged from 167 to 179 yen/kg, and for broken rice was about 50 yen/kg. Sale results indicate that the highest marketable addition to imported rice prices—whether markup or other additions such as a tariff—is currently around 179 yen/kg, and current market conditions would clearly not support over-quota sales with an added 351-yen/kg tariff. Nor would a reduction to 341 yen in 2000 be enough to stimulate over-quota trade.

### **Import Prices Remain High**

Behind the Japanese government's decision to impose a high tariff on rice is the high price of domestically produced rice in Japan, upwards of 400 yen/kg at retail. Japanese producers' prices are about two-thirds of retail rice prices, with the remainder going to wholesale and retail marketing costs. During the 1990's, the Japanese government has taken steps to allow more competition in retailing and wholesaling of rice. However, producer prices, although somewhat lower than in the past, remain extremely high because

## **Japan: California Rice Growers' Best Customer**

Japan produces and consumes primarily japonica rice, a variety usually purchased by higher income countries. Japonica accounts for about 15 percent of world production and 11-12 percent of world trade in most years, while indica rice accounts for more than three-fourths of world production and trade. Japonica rice is slightly more rounded (or plump) and stickier than indica, and typically sells at a premium to indica in international markets.

Japan is the world's largest importer of japonica rice, which accounts for the bulk of Japan's rice imports. Without Japan's purchases, world japonica trading prices would be much lower than today, as was the situation during most of the 1980's after South Korea—the largest importer at that time—withdrawed from the market. The bulk of world japonica exports are from Australia, the U.S., and China, with smaller quantities supplied by Egypt, the European Union, and Taiwan (food aid only). Besides Japan, other major japonica importers are Turkey, Jordan, and South Korea.

California produces mostly japonica, and Japan is now the largest export market for California rice. In U.S. market year 1997/98 (August-July), Japan accounted for about half of California's rice exports and almost one-fifth of the state's crop. Without the Japanese market, California would have severe excess supply, lower prices, and would likely decrease production.

of the government's trade and agricultural policies.

Pressure to keep prices high reflects fears that lower prices would put small-scale, high-cost farmers out of business, and that larger scale, low-cost farmers would lose the extra income that comes from high prices. Despite the URAA, the Japanese have effectively kept most imported rice out of the domestic market in order to prevent greater supply from depressing prices. In addition, the government has bought large stocks of Japanese rice and expanded a program to pay producers to divert riceland to other uses, in order to keep producer prices strong.

Since Japan sets its tariff in yen, the effect of the tariff on import demand varies with the exchange rate. The rise of the yen from 360 per dollar—the fixed rate prevailing in the 1970's—to rates as low as 80 yen per dollar in 1995 made Japanese rice much more expensive compared with imported rice. In 1998, the yen ranged from 147 per dollar to 108 per dollar.

Given a tariff level at 351 yen/kg, Japanese buyers are unlikely to import any rice other than premium outside the minimum access amount. With a very strong yen, premium U.S. rice may be competitive with top-quality Japanese varieties. But regardless of the exchange rate, prices for

standard quality U.S. imports—including the 351-yen/kg tariff—would not be competitive with domestic rice in Japan. Japan will, however, meet its commitments for minimum access quantities. The minimum access quota is divided into two components: the SBS share and the general quota. A minimum SBS share is mandated by the URAA, and the remainder, the general quota, is purchased by the Food Agency, which puts most of it into stocks.

The government currently aims to replace rice stocks each year. Very little Food Agency imported rice is consumed as table rice in Japan; industrial use, feed use, and food aid exports have been the primary uses of imported rice. Since the Food Agency paid an average of 68,000 yen per ton for the imports (\$599/ton at 114 yen/\$—the average exchange rate for the first 2 weeks of February 1999) and sold most of the rice at a lower price or donated it, the government lost money on this rice. In addition, the cost of storing rice for a year is substantial, especially for brown rice, which is stored in refrigerated warehouses.

The amounts of rice imported under the SBS, which allows rice exporters greater contact with Japanese buyers, far exceed the minimum share mandated in the URAA, increasing from 3 percent of total Japanese rice imports in JFY 1995 to 19



## World Agriculture & Trade

### Japanese Tariff Significantly Raises Prices for Imported California Rice

Representative wholesale price for:	Yen/kg <sup>1</sup>	\$/ton <sup>1</sup>
<b>Calrose (standard quality)</b>		
California price (fob, mill)	49	430
Marketing costs	11	94
Warehouse price in Japan	<b>60</b>	<b>524</b>
<b>Within-quota imports</b>		
Markup (RMA) <sup>2</sup>	163	1,427
Estimated wholesale price	<b>222</b>	<b>1,951</b>
<b>Outside-quota imports</b>		
Tariff <sup>3</sup>	351	3,080
Estimated wholesale price	<b>411</b>	<b>3,604</b>
<b>Koshihikari (premium quality)</b>		
California price (fob, mill)	80	700
Marketing costs	26	231
Warehouse price in Japan	<b>106</b>	<b>931</b>
<b>Within-quota imports</b>		
Markup (SBS) <sup>4</sup>	179	1,570
Estimated wholesale price	<b>285</b>	<b>2,501</b>
<b>Outside-quota imports</b>		
Tariff	351	3,080
Estimated wholesale price	<b>457</b>	<b>4,012</b>

1. Exchange rate 114 yen/\$ (average of first 2 weeks in February 1999). 2. Average markup for 1998 Regular Minimum Access imports. 3. Tariff scheduled to be implemented April 1, 1999. 4. Highest reported markup for October simultaneous buy-sell tenders.

Source: *Rice Market News*, Agricultural Marketing Service, USDA; Japanese and U.S. industry sources.

Economic Research Service, USDA

percent in JFY 1998. Since the Food Agency keeps the price margin or markup, it makes money on the SBS rice, instead of losing it in general quota purchases, and further expansion of the SBS might be expected. However, as the quantity of imports actually competing with Japanese domestic rice increases and greater rice supply acts to depress prices within Japan, the Food Agency may be pressured to limit expansion of the SBS.

Rice varieties imported through the SBS have been very diverse, reflecting strong differentiation of rice markets within Japan and worldwide. For example, in the December 1998 SBS sale, c.i.f. (selling) rice prices in successful bids ranged from 45 yen/kg to 180 yen/kg. Some imports appear destined for table use, such as the Chinese short grain milled rice which dominated in 1998, while other imports were industrial use or glutinous rice (a market which California has dominated). Little of the rice recently imported under

the SBS has been medium grain, the predominant rice produced in California and Australia, which makes up the largest share, by type, of purchases made by the Food Agency in the general quota.

Japan's government continues to argue that stringent protection at the border is required to ensure that rice production area does not fall drastically, for both food security and environmental reasons. In Japan, rice paddies are considered a defense against flooding as well as a water filtration system. In addition, rice cultivation has cultural and aesthetic dimensions.

Japan's trade partners counter that food security is better achieved through free trade and that environmental and other possible benefits of rice farming should be realized through other means than high rice prices and barriers to trade. The coming multilateral negotiations for a new World Trade Organization agreement are likely to address these arguments as well as the size of Japan's proposed tariff on rice. **AO**

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## Food & Marketing



Jack Harrison

## Food Price Outlook for 1999: An Update

The Consumer Price Index (CPI) for all food is expected to increase 2 to 3 percent in 1999, following a 2.2-percent increase in 1998. Food at home is projected to rise 2 to 2.5 percent, while food away from home should increase 2.5 to 3 percent. The 1998 all-food increase was the smallest since 1993 and follows the USDA baseline projection of an average growth rate of 2.3 percent from 1998 to 2008.

Although 1999 looks like another year of low food price inflation, uncertainties remain that will influence whether the increase for all food is closer to 2 or to 3 percent. Will the sluggish export market for beef and higher valued cuts of pork and poultry continue throughout 1999? Can the expected 2-percent increase in milk production meet consumer demands for butterfat products in 1999? And will higher expected retail prices for oranges and bananas continue longer than the first 6 months of 1999?

The food categories involved in these uncertainties—beef, pork, and poultry; dairy and related products; fats and oils (including butter); and fresh fruits—together account for 39 percent of the food-at-home CPI. Thus the answers to

these questions will be determining factors in the final figure for 1999.

Retail food price changes are underpinned by general economic factors that influence both food prices and the relationship between farm and marketing costs. Increasing economies of size in the farm sector continue to reduce the cost of producing food at the farm level. At the same time, the farm value share of the retail cost of food continues to decline as consumers pay for additional processing and services to reduce the time required for food preparation. The share of the consumer food dollar going to purchase food away from home has increased steadily, averaging 45 percent for the past 2 years, while the farm-value share of the retail price for food items is expected to average only 23-24 cents on the dollar for 1998 and 1999.

As post-farm gate processing and services take up an increasing proportion of the food dollar, the retail price of food increasingly reflects the general inflation rate in the wider economy. In recent years, food price increases have been small, in line with the low general inflation rate, which was only 1.9 percent in 1998 and is forecast to be around 2-3 percent in 1999.

Food price changes are a key variable in determining what proportion of income consumers spend for food and what is left for purchases of other goods and services. In 1997, 10.7 percent of household disposable personal income went to pay for food, with 6.6 percent for food at home and 4.1 percent for food away from home, down from 10.8 percent in 1996. The downward trend in the proportion of household disposable personal income used for food should continue into 1998 and 1999. Preliminary figures (inflation-adjusted) on food sales for 1998 show food-at-home spending went down 0.1 percent, and spending on food away from home went down 1.5 percent, while per capita disposable income rose 3.1 percent. With continued competition among grocery stores, restaurants, and fast-food establishments, the same pattern is expected through 1999.

The food-at-home CPI increase of 2.2 percent in 1998 was kept moderate by lower grain prices and adequate feed supplies, large supplies of competing meats, adequate supplies of coffee, increased sugar production, and strong competition in the soft drink and prepared food industries. The 1998 CPI increase of 2.6 percent for food away from home was smaller than in 1997. Continued strong competition among restaurants and fast-food establishments kept pressure on prices, while lower costs for raw materials, especially food, kept costs down.

Overall food price increases in 1998 were influenced largely by three circumstances. Large consumer demand coupled with stagnant milk production contributed to higher retail prices for dairy products, especially high butterfat items. Reduced fresh fruit and vegetable supplies resulting from damages inflicted by El Niño weather patterns and Hurricane Mitch led to substantial retail price increases for those foods. And modest increases in the indexes for sugar and sweets, cereals and bakery products, and other foods were the result of adequate supplies and a small increase in the general price level, which contributes to manufacturing, processing, and marketing costs.

Overall food price decreases in 1998 may be accounted for by large, competing supplies of meats that led to retail

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price decreases for beef and pork; lower feed prices that led to larger egg production and a consequent drop in retail prices; and adequate coffee supplies and competition among soft drink producers for market share that lowered the prices for these items in the nonalcoholic beverages index.

**Beef and veal.** After falling 0.2 percent in 1998, the CPI for beef and veal is expected to increase 1-2 percent in 1999. Commercial beef production is expected to decline 2-3 percent in 1999, with further reductions expected in 2000. However, continued record-large supplies of competing meats at prices lower than beef prices will limit large retail price increases. As supplies decline, retail beef prices will begin rising modestly in spring 1999.

Economic slowdowns in Asia and Russia resulted in a declining U.S. beef trade balance in 1998, with less of the top-graded U.S. beef going into the export market. The strong U.S. economy led to an almost 11-percent rise in beef imports in 1998, while exports grew less than 1 percent. Trade is expected to be more balanced in 1999. World beef supplies are expected to decline and slow U.S. imports to 3-4 percent, while U.S. beef exports are expected to rise 7-9 percent, largely as a result of food aid programs to Russia.

**Pork.** With expectations of plentiful supplies of pork and competing meats throughout 1999, pork retail prices are expected to fall another 3-4 percent, after sliding 4.7 percent in 1998. Pork production increased 10 percent in 1998, leading to the largest per capita consumption rate increase since 1994, with an increase of almost 8 pounds from 1997 per capita consumption of 48.7 pounds. With fractionally lower production and expected export increases of 10 percent, U.S. per capita pork consumption in 1999 will decline slightly from 1998 levels. U.S. pork exports in 1999 are expected to be over 1.3 billion pounds, up from more than 1.2 billion in 1998.

When hog prices were historically low in late 1998, concerns were raised about why retail prices did not drop as sharply as producer prices (AO March 1999). Different demand situations can explain why

### Changes in Food Price Indicators 1997 through 1999

	Relative weights <sup>1</sup>	1997	1998	Forecast 1999
	—Percent—	—Percent change—		
All items		2.3	1.6	2
All food	100.0	2.6	2.2	2 to 3
Food away from home	37.1	2.8	2.6	2.5 to 3
Food at home	62.9	2.5	1.9	2 to 2.5
Meats	10.9	3.0	-1.9	-1 to 1
Beef and veal	4.8	1.7	-0.2	1 to 2
Pork	3.8	5.2	-4.7	-4 to -3
Other meats	2.2	2.8	0.9	0 to 1
Poultry	3.2	2.8	0.3	-1 to 1
Fish and seafood	2.2	2.3	2.6	2 to 3
Eggs	0.8	-1.5	-3.3	-3 to -1
Dairy products	6.8	2.4	3.6	4 to 5
Fats and oils	1.9	0.9	3.7	3 to 4
Fruits and vegetables	9.1	2.0	5.7	2 to 3
Fresh fruits and vegetables	7.0	1.7	7.3	3 to 4
Fresh fruits	3.6	0.8	4.3	7 to 8
Fresh vegetables	3.4	2.9	10.9	-3 to -1
Processed fruits and vegetables	2.1	2.4	1.7	2 to 4
Sugar and sweets	2.5	2.9	1.6	1 to 3
Cereals and bakery products	10.0	2.1	2.0	2 to 4
Nonalcoholic beverages	7.0	3.7	-0.3	2 to 3
Other foods	8.5	3.2	2.7	2 to 3

<sup>1</sup>Bureau of Labor Statistics estimated weights as share of all food, December 1997.

Sources: Historical data, Bureau of Labor Statistics; forecasts, Economic Research Service.

Economic Research Service, USDA

retail pork prices do not parallel hog prices.

First, contractual agreements between hog producers and slaughter plants are increasingly the norm, with only about 10 percent of slaughter hogs sold in the open spot, or cash, markets. When the available slaughter hog supply exceeds plant capacity (as it did in fourth-quarter 1998), slaughter plants lower their bid for the available supply of noncontracted hogs, which sharply reduces spot market prices. Conversely, when slaughter facilities are at relatively low rates of utilization (as in third-quarter 1997), packers bid spot market hog prices up sharply.

Second, pork retail prices are generally slow to react to farm price changes and do not fluctuate as much as producer or wholesale prices. Historically, declines in the farm value of pork take more than a year to be passed on to consumers, while increases take about 4 months. Retail values do not *rise* at the same rate nor to the same degree as farm values. For example, the net farm value for pork increased 24

percent in 1990, but the pork CPI increased by only 14.7 percent in 1990 and 3.3 percent in 1991. Similarly, retail prices tend to *fall* less than farm values. In 1991, the net farm value for pork fell 10 percent, followed by an additional decrease of 14 percent in 1992, but the pork CPI rose 3.3 percent in 1991 and declined by only 4.7 percent in 1992. More recently, in 1996, when the net farm value for pork increased 27 percent, the pork CPI index increase was only 9.9 percent in 1996 and 5.2 percent in 1997.

Retailers strive to offer a variety of meat and poultry products to consumers, knowing that increased sales in one meat species comes at the expense of another. During the December holidays, retailers found they were able to move pork without significant retail price reductions, as pork supplies met rising retail consumer demand at the price range set by retailers.

**Other meats.** Other meats are highly processed food items (hot dogs, bologna, sausages). The CPI for this category increased 0.9 percent in 1998, and 1999

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prices are expected to increase up to 1 percent. Price changes for items in this category are influenced both by the cost of meat inputs and by the general inflation rate, since they reflect additional manufacturing costs.

**Poultry.** Broiler meat production for 1999 could increase to 29.4 million pounds, about 5 percent above 1998. However, 1999 turkey production is forecast at 5.25 million pounds, fractionally below 1998. Turkey producers are recovering from 2 years of negative returns, which has held down production increases.

Export prospects for U.S. poultry have become less certain due to the continuing financial crisis in many Asian countries and loss of the Russian market. Broiler meat exports are forecast to remain weak through much of 1999, with first-half exports expected to be 20-25 percent lower than 1998. As these circumstances continue into 1999, increases in production likely will lead to lower retail prices for much of the year, despite reduced supplies of competing red meat. The poultry CPI is expected to change only slightly again in 1999, between -1 and 1 percent, following an increase of 0.3 percent in 1998.

**Fish and seafood.** The CPI for fish and seafood was up 2.6 percent in 1998, with an expected increase of 2-3 percent in 1999. More than 50 percent of the fish and seafood consumed in the U.S. in 1998 came from imports. Imports for 1998 were up, especially for salmon, shrimp, tilapia, mussels, clams, and oysters. The strength of the U.S. dollar favors a continued rise in imports, especially from Asian countries.

U.S. farm-raised production supplied 20-25 percent of U.S. fish and seafood consumption in 1998. The U.S. has one of the world's largest year-round farm-raised fishing industries. Domestic production of catfish reached record highs in 1998, about 560 million pounds, and catfish growers are expected to continue expanding in 1999. U.S. per capita seafood consumption has remained flat in the 1990's—between 14.8 and 15.2 pounds of edible meat per year. Increases in total domestic seafood consumption have come from population growth. However, a

strong U.S. economy is expected to boost away-from-home food demand, which is especially important for seafood, as a large percentage of seafood is consumed at restaurants.

**Eggs.** After a period of volatile egg prices in 1996, the CPI for eggs fell 1.5 percent in 1997 and 3.3 percent in 1998, and is expected to fall 1-3 percent in 1999. With table-egg production expected to be about 2 percent higher in 1999, consumption is expected to increase to the highest level since 1988. Higher production levels and slower growth in exports led to lower retail prices in 1997 and 1998, and is expected to do the same in 1999.

**Dairy products.** Robust demand and stagnant milk production produced record high retail prices for milk and most dairy products throughout most of 1998. Increased demand and lower feed costs have provided a strong incentive to boost milk production in 1999, leading to expected increased production of 2 percent. As a result of a lag in retail price adjustments to production increases, the milk CPI is forecast up 4-5 percent in 1999, following a 3.6-percent increase in 1998. Strong consumer demand for dairy items, especially gourmet ice cream, cheese, and butterfat products, is expected to continue into 1999.

**Fats and oils.** The fats and oils CPI increased 3.7 percent in 1998 and is expected to rise another 3-4 percent in 1999. The large increases, following a modest 0.9 percent increase in 1997, are largely an artifact of the 1998 move of butter from the dairy products index to the fats and oils index by the Bureau of Labor Statistics, since higher retail prices for butter, which now accounts for 31 percent of the fats and oils index, led the increase. The remaining items contained in the fats and oils index are highly processed food items, and their price changes are influenced by the general inflation rate, as well as by U.S. and world supplies of vegetable oils.

**Fresh fruits.** Reduced production of most summer stone fruits and fall pears in 1998 helped to boost retail fresh fruit prices for the year. However, the 1998 U.S. apple crop, which was up 9 percent from a year ago, helped mitigate retail price increases

for other fruits. In 1998, U.S. production of grapes, pears, peaches, apricots, sweet cherries, strawberries (in the 6 highest producing states), and blueberries all declined. Production of tart cherries and cranberries was up slightly.

The 1997/98 U.S. citrus crop increased 5 percent over the previous year, mostly because of a record orange crop, up 9 percent over the previous year. Wet, cool conditions in California and spring drought conditions in Florida reduced U.S. orange production forecasts for 1998/99 to 21 percent below 1997/98 production, and a freeze in California's San Joaquin Valley in December 1998 caused USDA to lower 1998/99 orange production forecasts even more, bringing the level to 27 percent less than the previous year's 13.9 million tons. California's production estimate alone was down 49 percent.

Because California produces about 80 percent of U.S. fresh-market oranges, retail prices for oranges are expected to increase 40-50 percent for the first 6 months of 1999. Imports from other countries, along with diversion of part of Florida's orange production (usually used for juice) to the fresh market, should mitigate the effects.

Most of the tropical fruit supplies in the U.S., including the most popular varieties—bananas, mangoes, pineapples, and papayas—are imported. After seasonally lower banana prices in 1998, higher retail prices are forecast for most of 1999. Hurricane Mitch, which hit the banana-growing areas of Honduras and Guatemala in November 1998, caused major damage to the crop. The impact of storm damage in Central America on retail prices should occur as early as February or March 1999, with prices peaking in April. Retail banana prices are forecast to increase up to 15 percent in the first 6 months of 1999, and an additional 8 percent during the last half of the year.

Fresh oranges and bananas account for 20 and 18.5 percent of the fresh fruits CPI. Higher prices for these two products raise the expected CPI for 1999 beyond the increased level that would be expected simply from steady U.S. consumer demand for fresh fruits. Following a 4.3-percent increase in 1998, the fresh

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### Minimum Wage Increases— The Impact on Food Prices

Ongoing debate about the merits of increasing the minimum wage has generated empirical research on the potential effects of an increased minimum wage on employment, but little work has been done on the impact of minimum wage increases on prices in general or on food prices in particular. Because the food industry has larger-than-average concentrations of workers in low-wage occupations, increases in the minimum wage might be expected to have fairly large impacts on food prices. USDA's Economic Research Service (ERS) recently conducted research to estimate what the price effects of a minimum wage increase in the food industry might be, taking into account the size of the increase, effects on benefits in addition to wages, and effects on pay in other low-wage categories.

ERS estimates derive from an economic model (Leontief Input/Output model) that assumes all increased wage costs can be passed through to the consumer. Firms are not always able to pass through wage increases this way—purchasers may be able to substitute other products if firms increase prices too much, for example. But by assuming full pass-through, the model results can be considered as upper bounds.

The model takes into account the industry employment structure, share of workers in the minimum wage bracket, share of wages and salaries in the total cost of production, and the percentage increase in the minimum wage. A change in one input component—the minimum wage in this case—trickles through the system, affecting costs and, in turn, prices. ERS researchers estimate new food prices under several likely scenarios that vary the base of the minimum wage increase (50-cent increase over the 1992 minimum of \$4.25 or 50-cent increase over the 1997 minimum of \$5.15), spillover effects (increases of 1-3 percent in near-minimum-wage categories to maintain graduated wage scales), and the effect on total compensation (wages and other benefits).

ERS estimates these price effects separately for the two industry categories defined by the U.S. Bureau of Labor Statistics (BLS) that would generally be considered the food and restaurant sectors. The *food and kindred products industry* category includes establishments that manufacture or process food and beverages for human consumption. The *eating and drinking places industry* category includes retail establishments selling prepared food and drink for consumption on the premises, including fast-food restaurants. Results indicate a smaller effect in the food and kindred products industry, with consumer price increases ranging from 0.3 to 0.5 percent, than in the eating and drinking places industry, which shows consumer price increases of 0.9 to 1.3 percent. But for both categories, the effects are small in absolute terms.

What accounts for these small increases? The proportion of total cost of production affected by any wage increase in the food industry would be relatively small; labor's share of the cost of production was only 13.5 percent for the food and kindred products industry and 34 percent for the eating and drinking establishments. Moreover, the share of food industry workers in the minimum wage category is also small—less than 10 percent in most subsectors of the food and kindred products industry and around 23 percent in the eating and drinking places industry. So the proportion of labor costs affected by a minimum wage increase—even including spillover effects on other low-wage workers—is relatively small. Finally, the wage and salary share of labor costs, the portion affected directly by a minimum wage increase, is only part of total labor costs—75-80 percent in most cases—further limiting the price effects of even full pass-through of increased wage costs.

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fruits CPI is expected to increase 7-8 percent in 1999.

**Fresh vegetables.** El Niño-driven cold, wet weather in Florida, California, and Mexico reduced fresh-market vegetable supplies and disrupted planting and harvest windows, resulting in increased retail prices throughout the first half of 1998. In addition, although downgraded to a tropical storm by the time it reached the U.S., Mitch caused wind and water damage to some central Florida vegetables in early November, putting additional upward pressure on prices. As a result, the fresh vegetable CPI rose 10.9 percent in 1998.

Two percent fewer acres of fresh-market vegetables and melons were harvested in fall 1998. Acreage of cool-season crops—lettuce, carrots, and broccoli—declined 1 percent, while that of warm-season crops—tomatoes, bell peppers, snap beans—dropped 3 percent. Mitch damaged several of the fall-season vegetable crops in Florida and flooded cantaloupe fields in Costa Rica and Honduras, reducing supplies and causing higher consumer prices into early 1999. Strong winds caused some bloom loss for tomatoes and peppers; snap beans and radishes were drowned, requiring replanting of some fields; yield potential for Florida's fall vegetables was diminished; and product quality of vegetables like tomatoes and eggplant that did survive was reduced.

During the 1999 winter season (January-March), harvested acreage of 13 selected vegetables is forecast to rise 3 percent to 193,500 acres, and imports from Mexico will add to large domestic supplies. For calendar year 1999, fresh-market vegetable acreage is expected to increase about 1 percent. Potato production, which increased 2 percent in 1998, is expected to increase another 1 percent in 1999. As a result, the fresh vegetable CPI is forecast to fall 1-3 percent in 1999, if weather and growing conditions in the major fresh vegetable growing areas return to normal.

**Processed fruits and vegetables.** Production of the four leading vegetables for processing (tomatoes, sweet corn, snap beans, and green peas) was down 2 percent in 1998, after a 3-percent decline in planted acreage a year earlier. Per-acre yields were below a year earlier for

tomatoes, green peas, and sweet corn (down 7, 3, and 2 percent), but were higher for snap beans (up 3 percent). Wholesale prices of canned vegetables and juices for 1998, however, averaged only 1 percent above the previous year, placing little pressure on retail prices. The ready availability of canned and frozen vegetables, frozen concentrate orange juice, and other fruit supplies kept the CPI increase for processed fruits and vegetables to 1.7 percent in 1998, but the reduced acreage and lower yields are expected to lead to an increase of 2-4 percent in 1999.

**Sugar and sweets.** Domestic sugar production was up to 8 million tons in 1997/98 and is projected up another 3 percent in 1998/99 to 8.3 million tons. Higher sugarbeet prices and lower prices for competing crops led to acreage increases in both years. Along with higher sugar output, lower retail prices for selected sugar-related food items in 1998 kept the increase in the sugar and sweets CPI to only 1.6 percent. It is projected to continue to increase 1-3 percent in 1999.

**Cereal and bakery products.** These products account for a large portion—almost 16 percent—of the at-home food CPI. Lower grain prices in 1997 and 1998 held the increase to 2 percent in 1998. Most of the costs to produce cereal and bread products—more than 90 percent in most cases—are for processing and marketing, leaving the farm ingredients as a minor cost consideration. Competition for market share among the three leading breakfast cereal manufacturers led to the cereal component of this index falling 9.7

percent from 1995 to 1996, and 1.4 percent from 1996 to 1997. In 1998, cereal prices were up slightly—1.3 percent. Continued strong demand for cereal and bakery products, balanced by continued competition among producers, should keep the CPI increase for cereals and bakery products to about 2-3 percent in 1999.

**Nonalcoholic beverages.** Coffee and carbonated beverages are the two major components of this category, accounting for 15 and 38 percent of the nonalcoholic beverages CPI. After increasing 3.7 percent in 1997, due primarily to higher coffee prices, the index fell 0.3 percent in 1998. Lower coffee prices and strong competition in the soft drink industry between the two largest firms continued throughout most of 1998. After increasing almost 13 percent in 1997, coffee prices fell almost 3 percent in 1998; carbonated beverages were down 1.4 percent in 1997 and 1 percent in 1998.

Brazil's 1998/99 coffee harvest reached a near-record 36 million bags, a third of the world's total and 50 percent above the 1997/98 marketing year. The current large Brazilian crop is forcing other countries to cut prices, which should continue to lower prices in the U.S. (*AO* March 1999). Brazil is the largest producer of arabica coffee beans, which are preferred for gourmet coffee blends. U.S. imports of coffee are up to 80 percent arabica beans.

Brazil's recent near-record production should lead to larger U.S. stocks and continued lower consumer prices. The continued decline of coffee prices, combined

with continued competition in the soft drink industry, should keep the CPI for nonalcoholic beverages to a moderate 2-3 percent increase.

**Other prepared foods.** Other miscellaneous prepared foods—including frozen dinners, pizzas, and precooked frozen meats—are highly processed and largely track changes in the all-items CPI. Competition among these products and from the away-from-home market should continue to dampen retail price increases for items in this category. In 1998, the CPI for other prepared foods increased 2.7 percent, and the 1999 increase is expected to be in the same range at 2-3 percent. **AO**

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- 9 *World Agricultural Supply and Demand Estimates (8:30 am)*
- 12 *Cotton and Wool Outlook (4 pm)\*\**  
*Oil Crops Outlook (4 pm)\*\**  
*Rice Outlook (4 .pm)\*\**
- 13 *Wheat Outlook (9 am)\*\**
- 20 *Agricultural Outlook\**
- 21 *Tobacco\**
- 22 *Vegetables and Specialties\**
- 23 *Feed Yearbook\**
- 23 *U.S. Agricultural Trade Update (3 pm)*
- 27 *Livestock, Dairy, and Poultry (3 pm)\*\**

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## Farm Finance



Jack Harrison

## Agricultural Boom & Bust: Will History Repeat in the 1990's?

The recent deterioration in commodity prices following several years of healthy gains in farmland values and rising debt levels has led to speculation that agriculture could be entering a contraction similar to that of the 1980's. Over the past 2 years, prices for many key agricultural commodities (especially grains, oilseeds, and hogs) have fallen dramatically. In addition, preliminary 1998 real net farm income is lower than for 4 of the preceding 5 years, and the 1999 forecast indicates further deterioration. Because lenders may balk at extending loans to agricultural borrowers who cannot demonstrate solid repayment ability, some have characterized the anticipated downturn as a "credit crisis." But whether reduced incomes create financial hardship depends on initial farm financial strength, how far income falls and how long it remains low, and the decisions that farmers and lenders make as events unfold.

### *The 1970's Boom Became The 1980's Bust*

*The Boom.* Commodity prices surged from 1973 through 1975 and remained high through 1979. During this period, farm income, rate of return on assets from current income, and rate of return from

real capital gains were unusually large. Farmers responded strongly to perceived profit opportunities from increased production by bringing more land under cultivation and by investing in productivity-increasing technologies.

One factor that contributed to the initial surge in farm income was the increase in effective demand abroad for U.S. agricultural products. This increase stemmed partly from devaluation of the dollar following a major change in foreign exchange valuation—in 1972 the U.S. abandoned the fixed exchange rate regime that had been in place since the end of World War II—and partly from adverse weather conditions in competing production regions overseas. For example, exports to the Soviet Union increased when the Soviets began to purchase feed to offset domestic production shortfalls, instead of cutting livestock herds.

Government policies during the 1970's amplified the supply response. Along with many other governments concerned about foreign exchange or food security issues, the U.S. expanded support for agricultural production. Federal commodity programs encouraged higher production and indirectly encouraged increased farm borrowing. By setting price floors, commodity

programs reduced risk associated with falling prices, making farm income a more reliable source for debt repayment. Price floors were raised during the boom period, when the increase involved no immediate increase in Federal budget expenditures, further supporting farm income and farm borrowing.

Increased farm income, rising inflation, readily available credit, and low to negative real interest rates led to sustained increases in farmland values and in outlays for farm machinery and equipment. Because financial assets lose value with inflation while real assets gain value, rising inflation encourages investors to shift their holdings from financial to real assets. Such a shift exacerbates the loss for financial assets but strengthens the gain for real assets, including farmland.

Real interest rates—nominal interest rates less the rate of inflation—were low or negative during much of the 1970's. Low real interest rates encourage debt financing, since debt can be repaid in the future with cheaper, inflated dollars. From the beginning of the boom in 1972 through the peak in land values in 1981, farm debt grew 15 percent faster than assets. Although the increase in asset values was widely dispersed, the increase in debt was concentrated among farmers who were financing new purchases of land or equipment. With strong equity, rising incomes, and increasing collateral values during the boom years, most farmers had little trouble getting loans. Given the strong farm financial picture, lenders at that time fully expected to recover both the balance due and all foreclosure costs in the event of default.

*The Bust.* By the end of 1970's, concern was mounting about declining farm liquidity and about indications of farmers' vulnerability to cash flow or interest rate shocks. For example, interest and principal payments had grown from less than one-sixth (16 percent) of gross cash income in the early 1970's to almost

This article is adapted from a presentation at USDA's 1999 Agricultural Outlook Forum, held in Arlington, Virginia, February 22-23.

one-fourth (24 percent) of gross cash income by 1980. Nevertheless, farmers, lenders, and economists were slow to realize the extent of needed adjustments. Instead, many who anticipated a contraction argued that it would be short and would involve shifting income from asset accumulation to debt service, but that asset values would remain sound.

By the early 1980's, many of the factors that spurred the boom were reversing. Commodity prices fell, input prices and interest rates rose, export demand turned down, and farm income declined. Many farmers who had bought land or made other long-term investments—especially those who used debt financing—now had difficulty meeting their other financial obligations or even making a living.

Nominal interest rates rose sharply in 1980, peaked in 1981, and remained high for several years, the result of inflation-fighting policy decisions by the Federal Reserve Board. High interest rates made dollar-denominated investments attractive and caused the foreign exchange value of the dollar to appreciate, making U.S. goods relatively expensive for purchasers abroad. The monetary tightening successfully curbed the double-digit inflation of the late seventies—inflation as measured by the Consumer Price Index peaked at 12.5 percent in 1980 and fell below 2 percent by 1986. But the high value of the dollar along with high price floors for program commodities hurt U.S. agriculture's international competitiveness and pressured farm incomes.

The fall in real farm income and the increase in real interest rates altered the economic environment that had made debt-financed investment in farmland and other nonfinancial assets attractive, delivering a double whammy to heavily indebted farmers. Because the value of capital assets is directly related to the cash flows they generate and inversely related to interest rates, falling incomes and rising interest rates pressured farm asset values, which fell dramatically from 1981 through 1986.

### ***Lender Stress Followed Farm Loan Defaults***

Like the agricultural crisis, the crisis among lenders—banks, thrifts, and the Farm Credit System (FCS)—had its roots in the 1970's. Increased instability in banking, as in agriculture, arose from the change in the exchange rate regime, rising inflation, volatile nominal interest rates, and anti-inflationary Federal Reserve Board monetary policies. And as in agriculture, there were few obvious signs of trouble for lenders in 1980, when small banks (those with less than \$100 million in assets) and FCS institutions were enjoying good rates of return on assets and returns on equity, low loan charge-offs, and improving equity-to-asset ratios.

According to the Federal Deposit Insurance Corporation (FDIC), most of the bank failures in the 1980's—a period of more bank failures than any decade since the 1930's—were precipitated by four regional and sectoral recessions, including the one in agriculture. Banks were vulnerable to these recessions because they tended to serve relatively narrow geographic markets, but not all regional recessions were accompanied by bank failures. Generally, failures were associated with recessions in sectors that had experienced a fairly sustained expansion and had grown faster than the national economy. Agriculture was such a sector. In contrast, recessions that were preceded by slow growth (such as in the rust belt) did not lead to many failures.

Recessions that caused problems for lenders were similar in that each followed a period of rapid expansion, speculation that contributed to the runup in asset values, and wide swings in demand for real estate that contributed to the severity of downturns. But the behavior of agricultural lenders and their regulators arguably accentuated the sector's boom and aggravated the 1980's decline. Credit helped fuel the boom, and when the down cycle hit, some borrowers inevitably defaulted, weakening lenders.

Lenders who found themselves in trouble had generally not been in a seriously weak condition in the years preceding the recessions. But lenders who failed had often assumed greater risks than the sur-

vivors, measuring risk as the ratios of total loans and nonresidential real estate loans to total assets. Still, only a small fraction of lenders with high risk exposures failed. Mitigating factors included strong equity and reserve positions, more favorable risk/return tradeoffs, superior lending and risk management skills, and proactive changes in risk policies before losses became severe. Lenders that relaxed credit standards, entered markets where management lacked expertise, made large loans to single borrowers, or experienced loan growth that strained their internal control systems or back-office operations were most likely to fail. These factors were as much associated with distress among FCS lenders as with distress among commercial banks.

The greater a lender's exposure to agriculture, the more problems arose from defaulting farm loans. Life insurance companies and large banks were least affected because of the relatively small share of their assets related to agriculture. Even many rural banks were adequately diversified to survive the downturn. Of 5,000 agricultural banks existing in 1981, 328 failed in the next 10 years, but return on equity for agricultural banks never fell below 5 percent, on average, and capital-to-asset ratios were higher on average than at other banks, even improving over the decade. FCS lenders faced greater challenges because their loan portfolios were not diversified either by geography or by industry, and because of organizational and operating inefficiencies.

### ***The 1990's: Deja Vu?***

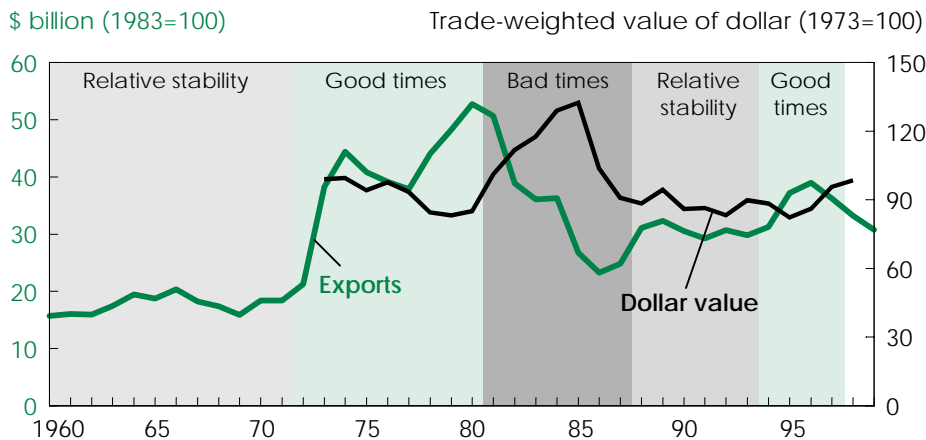
Some of the experiences of the past few years are astonishingly similar to events of the agricultural cycle of the 1970's and 1980's. Some of the events and conditions supporting recent gains in farm income and asset values parallel those that occurred in the boom years of the 1970's, starting with the recent up-cycle which followed a pattern of rising agricultural exports during a period of tight stocks that resulted from production controls and unusually bad weather in many growing areas worldwide. This combination, then as now, led to high prices and optimism about future income from farming which along with falling interest rates, supported farmland price increases.



# Farm Finance

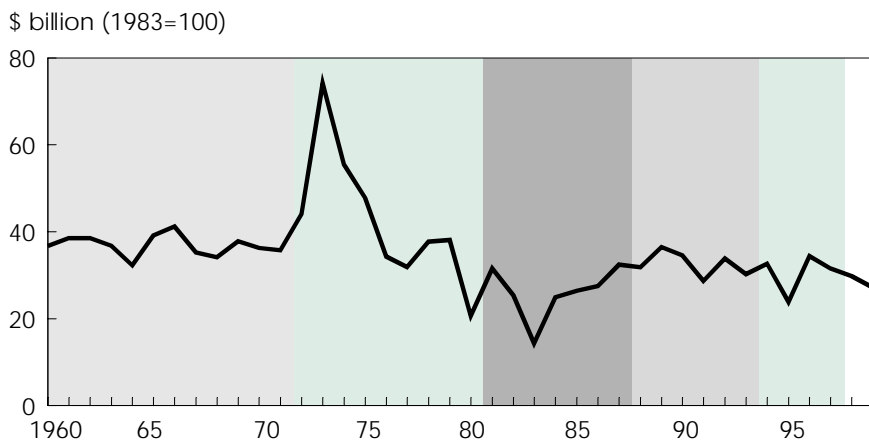
## Toward the End of the Early Boom . . .

### Real Ag Exports Turned Down as the Dollar Appreciated

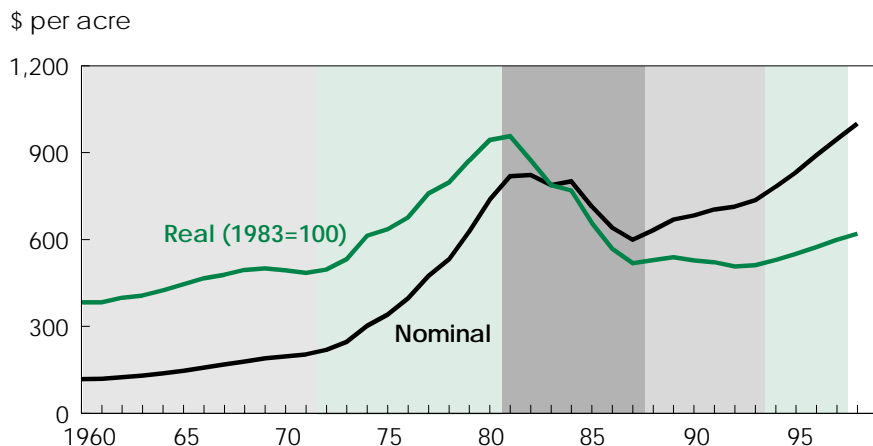


Real trade-weighted value of the dollar before 1973 is not available.  
Source: Economic Report of the President for trade-weighted dollar value.

### Real Net Farm Income Declined Steeply



### Real and Nominal Farmland Values Reached Unusually High Levels



1998 and 1999 forecasts.  
Economic Research Service, USDA

Recent increases in farm indebtedness add to the sense of déjà vu. The beginning of the current down-cycle also shows parallels—policies that imposed supply controls on agricultural production have been relaxed, foreign demand has diminished in the face of financial crises that started in Asia, the dollar has appreciated relative to other currencies, and carryover stocks of grains and oilseeds are increasing.

Despite the similarities, many factors are substantially different. In contrast to the early 1980's, the farm sector and its lenders are far less vulnerable to economic instability, because they use leverage more conservatively now than in the 1970's. Today's stable domestic economic environment, strong overall economic growth, and low unemployment in most parts of the country—unlike the stagflation and recession of the late 1970's and early 1980's—make income from off-farm employment a reliable alternative source of debt repayment capacity for farm families in many parts of the country.

Monetary tightening by the Federal Reserve Board and vulnerability of farmers and lenders to interest rate changes were defining characteristics of the 1980's crises. Although indicators of farm sector financial strength have weakened, increases in nominal interest rates—likely to be small compared with those of the 1980's because inflation is relatively low—are not the threat they were in the early 1980's. Currently, interest and principal payments consume only 14 percent of farmers' gross cash income, compared with 22 percent in 1979 and 28 percent in 1983. Even though low commodity prices and farm incomes create concerns about loan repayment ability, low nominal interest rates have continued to support asset values, including farmland, rather than pressuring them.

Both the duration and amplitude of the recent up-cycle are compressed compared with the 1970's. Nominal net farm income rose 30 percent in 1972 and 77 percent in 1973 after a long period of stability. Over the next 5 years, real net farm income averaged 16 percent higher than during the 5-year period before the 1972 increase. In 1996, nominal net farm income rose 48 percent from 1995, but 24 percent

over the average of the previous 5 years, and current projections for 1998/99 indicate this increase has not been sustained for even a few years.

Growth of real debt, while supported by a similar combination of factors, does not reach the magnitude of the 1970's. Much less of the recent increase in farm assets has been debt financed, indicating that the increase in farmland values has led to less borrowing against equity. From 1990 to 1998, nominal farm assets increased 34 percent, while nominal farm debt rose 23 percent. In contrast, debt increased 4 percent faster than assets from 1972 to 1979 and 15 percent faster from 1972 through 1981.

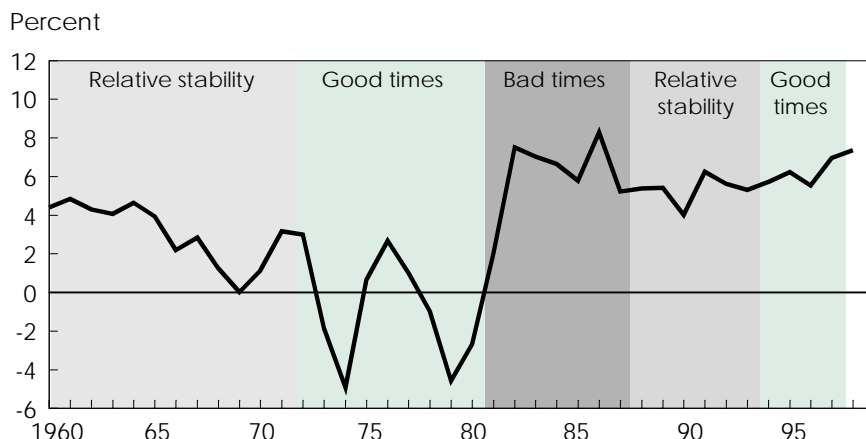
Unlike experts in the 1970's and early 1980's, farm financial advisers in the 1990's have been more temperate regarding expanding production and increasing debt loads. Instead, farm economists as well as financial regulators have advised farmers to proceed more conservatively. They have consistently warned, for example, that cash from production flexibility contract payments authorized by the 1996 Farm Act would drive up land prices initially, but that land values could fall as these front-loaded payments tapered off, and could result in loss of equity and borrowing capacity.

Overall, farm lenders are less vulnerable to downturns in the sector than they were in the 1980's. Many lenders have higher capital ratios, better quality capital, and better internal controls than during the 1970's and 1980's. Consolidation and financial innovations (securitization, third party guarantees, options, and swaps) have enabled many lenders to reduce their risk exposure to local economic conditions and interest rates movements. Regulatory changes, including risk-based capital standards, risk-based insurance premiums, and prompt corrective action increase the costs to lenders of allowing deterioration of credit quality in their loan portfolios. Lenders are also subject to closer scrutiny now from Federal regulators.

Conditions in the farm sector in the 1990's in some respects resemble those that contributed to the boom and bust cycle of the prior two decades. Reminiscent are changes in the value of the dollar,

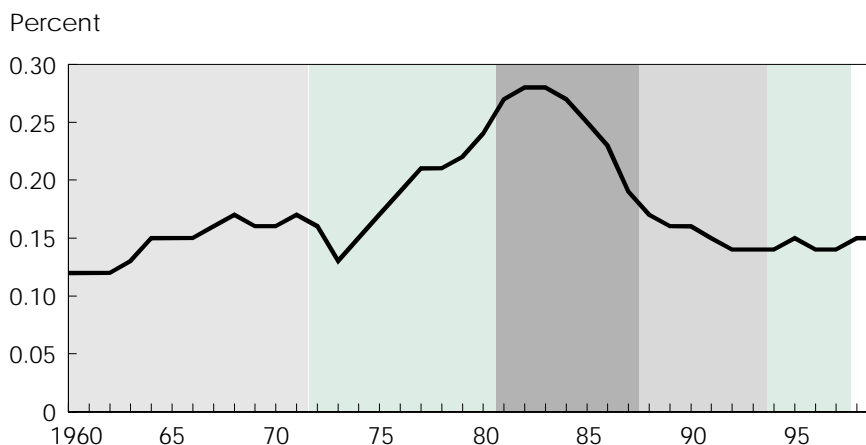
**In the 1990's . . .**

**Real Agricultural Interest Rates Have Remained Relatively High**



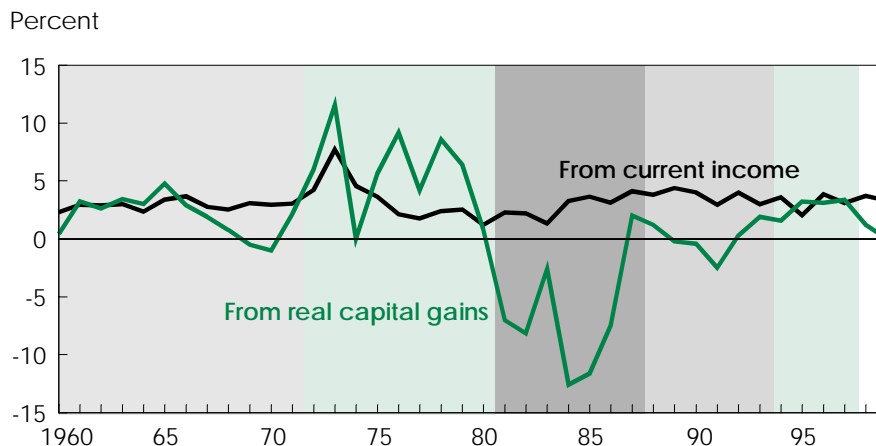
Real interest rate is negative when inflation exceeds nominal interest rate.

**Ratio of Debt Service to Farm Income Is Low**



Debt service ratio is the share of gross cash farm income used to pay principal and interest on loans.

**Rate of Return on Farm Assets Has Been Relatively Stable**



1998 and 1999 forecasts.  
Economic Research Service, USDA

## Farm Finance

the role of agricultural exports, weather-related problems followed by a surge in production, and sustained increases in farmland values and farm indebtedness.

But significant differences exist: the role of interest rates and inflation, more conservative attitudes toward borrowing for both farmers and lenders in recent years, and the more limited duration and amplitude of the recent up-cycle.

### *Downturn Could Intensify*

While many of the conditions that led to the dramatic fall in commodity prices during 1998 are similar to those that produced agriculture's contraction in the 1980's, the differences that exist point to a sector better able to withstand adversity and less likely to be as dramatically

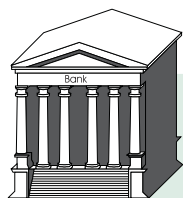
tested. Greater domestic economic stability, a less pronounced expansion, and more conservative borrowing and lending should help reduce the magnitude of any contraction.

Still, a number of factors could aggravate the current downturn. For example, some lucrative and traditional off-farm employment opportunities may disappear, especially in energy producing states. Changes in government policies could strengthen the dollar, affecting exports, or bring on greater agricultural production, possibly pressuring prices. Favorable weather here or abroad could also increase price pressure on major commodities. Continued demand shocks in food importing countries, or weakening of currencies of other agricultural exporters like Canada, Australia, and Brazil, could further erode

agricultural exports. Changes in agricultural lending or their regulation could affect lenders' willingness to lend to creditworthy farmers during a contraction.

The duration of the current contraction will be a key factor in determining successful strategies for farmers and lenders. Farmers may survive a short-lived contraction by liquidating inventories or delaying capital replacement in order to shift income or accelerate cash flows. However, if incomes do not improve, these techniques tend to increase liquidity problems and dissipate equity. A more drawn-out contraction, therefore, calls for more aggressive debt reduction and possibly asset liquidation. **AO**

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## FARM CREDIT DEMAND IN 1999 WHAT ARE THE PROSPECTS?

Read about it in a forthcoming issue  
of *Agricultural Outlook*



## Risk Management



Chicago Board of Trade

## Insurance & Hedging: Two Ingredients for a Risk Management Recipe

The past few years have seen a proliferation of market-based mechanisms available to agricultural producers for managing yield, price, and revenue risks. Making the right choices is becoming more complicated. Yet the fundamentals for making good risk management choices remain the same: 1) understanding the farm's risk environment, 2) knowing how the available risk management strategies work and which risks they address, and 3) selecting the strategy or combination of strategies that will provide the protection that best suits the farm's and the operator's individual circumstances.

USDA's Economic Research Service (ERS), using data from the Department's Risk Management Agency (RMA) and National Agricultural Statistics Service (NASS), has identified general conditions underlying farm-level risk management behavior in the U.S., how conditions relate to the performance of differ-

ent risk management strategies, and why certain risk management strategies work better than others at reducing farm-specific risk across a range of different risk environments. This research has focused on three field crops with the highest acres planted—corn, soybeans, and wheat—but it provides a useful guide for risk management for other major field crops as well.

### *Defining a Farm's Risk Environment*

Within a single crop year, once crop decisions have been made and resources have been allocated to production agriculture, the farm's principal risk lies in the uncertainty of the revenue generated by the production process. Farm revenue uncertainty, particularly the component related to field crop production, is principally a function of yield and price uncertainty, as well as the correlation between price and yield.

Weather is the principal cause of yield uncertainty. Within any given agro-climatic setting—characterized by weather pattern, soil type and fertility, growing

season, day length—variability of yield is attributable mainly to factors such as temperature, cloud cover, and timeliness and amount of precipitation.

Price uncertainty for farmers combines two elements. Price-level uncertainty is the consequence of imperfect information about future domestic and international supply and demand conditions. Basis uncertainty—uncertainty about the difference between a commodity's local cash price and its nearest futures contract price—derives from uncertainty about future commodity movements and hauling costs. The tendency for price and yield to change in opposite directions provides a "natural hedge" which tends to stabilize farm revenues over time, particularly in major producing areas (AO March 1999).

Farmers' attitudes towards risk can vary greatly and are a key determinant in selecting risk management strategies. A farmer with a strong aversion to risk will be willing to pay more for a given level of risk reduction than a farmer with a weaker aversion to risk. An operator's overall level of wealth can also have a strong bearing on risk decision making. In general, at higher levels of wealth an individual is more willing to undertake a given level of risk—a phenomenon called decreasing absolute risk aversion—but there are exceptions to this rule. The preferred or optimal risk management strategy may also vary because of other management objectives, such as profit maximization or enterprise growth. In addition, lenders may strongly suggest or even require use of risk management tools to protect their stake in the farm's production outcome.

### *The Mechanics of Crop & Revenue Insurance*

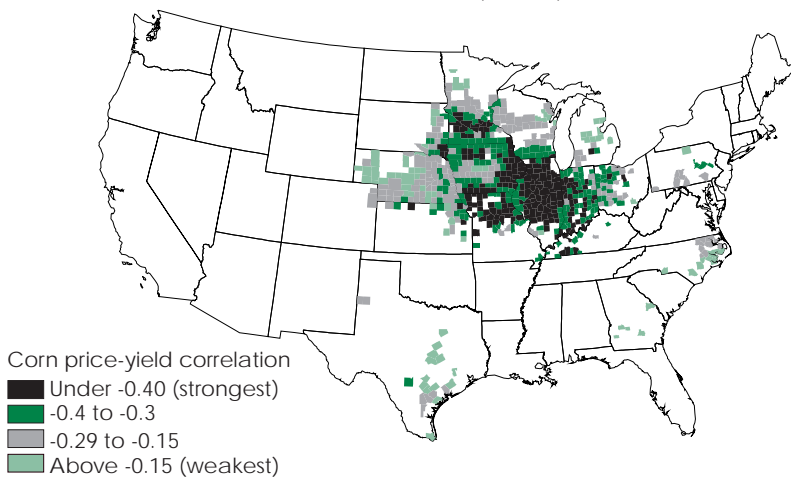
The array of crop and revenue insurance policies and coverage levels available to U.S. farmers has been rapidly expanding over the past few years. In spite of the growing complexity of agricultural insurance programs, the majority of policies actually sold can still be fairly well represented by two generic types of agricultural insurance: standard yield-based crop insurance and revenue insurance.

*This article is the second in a series on risk management. Insurance and hedging are among the variety of tools available to farmers to help reduce farm-level risk.*

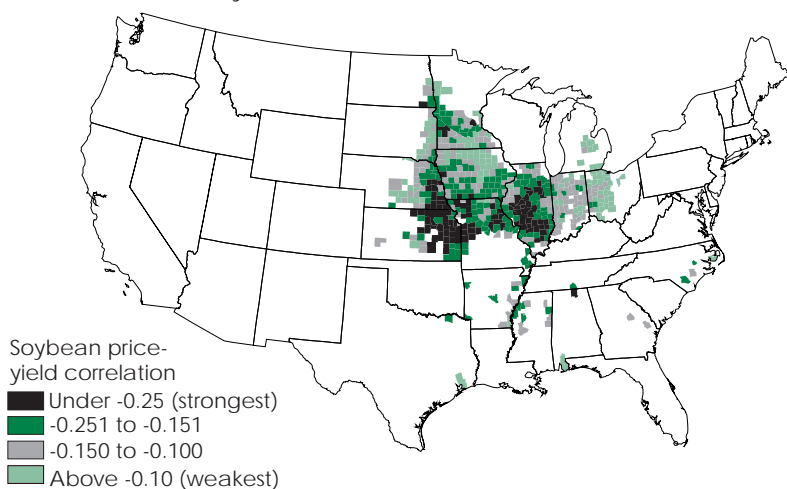
# Risk Management

## Offsetting Price-Yield Relationship, a Key Factor in the Farm Risk Environment, Varies by Region and Commodity

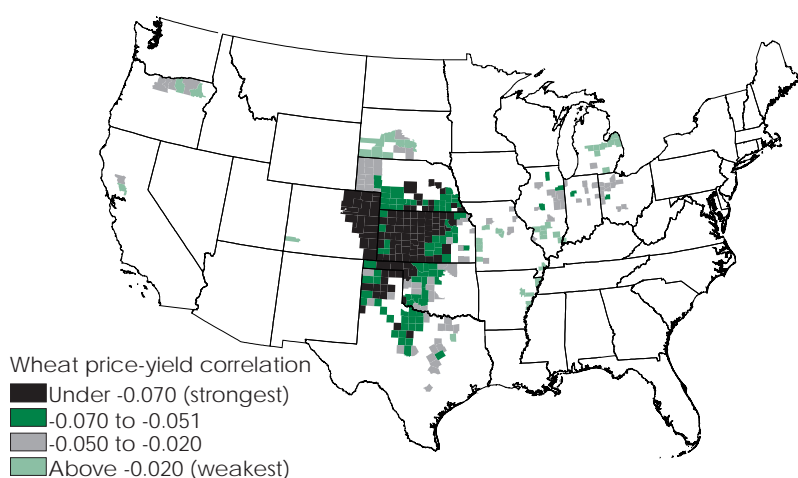
Corn Producers in Iowa, Illinois, and Indiana



Soybean Producers in Western Corn Belt



Winter Wheat Producers in Central Southern Plains



Price-yield correlation indicates strength of offsetting relationship between price and yield movements—the more negative, the better the "natural hedge" works to stabilize revenue. Based on annual county-level data, 1974-94.

Economic Research Service, USDA

The largest share of farm coverage continues to be traditional yield-based crop insurance, although revenue insurance coverage is rapidly gaining. Traditional yield-based crop insurance—referred to as multiple peril crop insurance (MPCI)—includes both the minimum catastrophic coverage (CAT) which insures against severe losses and whose premiums are fully subsidized by the Federal government, and higher levels of coverage—called "buy-up" coverage—with partially subsidized premiums. Revenue insurance policies include Income Protection, Revenue Assurance, and Crop Revenue Coverage. All three revenue insurance programs receive partial subsidization of premiums by the Federal government.

Two time periods are relevant in calculating insurance program prices. The first is planting time, when a *Projected Price* is used to set insurance premium rates and price elections, and to value coverage levels. The second is harvest time, when the *harvest-time futures price* is used to value the farm's production whether sold or stored.

For yield-based insurance purposes, RMA establishes a *Projected Price* about 3 months before the insurance signup period for each commodity. This yield-based-insurance version of the *Projected Price* is not derived solely from a futures market price average, but is a forecast of the season-average price that incorporates additional market information.

For revenue insurance valuation, the *Projected Price* is the average of the daily settlement prices of the harvest-time futures contract during the month preceding program signup. For the price at harvest time, the average closing price of the harvest-time futures contract during the month prior to the contract's expiration is used. For example, the *Projected Price* for a corn revenue insurance contract is the February average closing price of the Chicago Board of Trade's (CBOT's) December corn contract. And the harvest-time futures price for the December corn contract would be the average daily settlement price during November.

**Yield-based crop insurance (MPCI)** pays the operator an indemnity if the actual yield falls below a yield guarantee, but

MPCI does not offer price protection. Under MPCI, the producer pays a processing fee for minimum CAT coverage and a premium for buy-up coverage to obtain partial protection against yield loss only. The *yield guarantee* is determined by multiplying the producer's average historical yield—referred to as the actual production history (APH)—by the coverage level. Coverage levels range from 50 to 75 percent (expanded to 85 percent in some areas for 1999) of the APH yield, and from 60 to 100 percent of the Projected Price.

#### Example of crop insurance:

Suppose a corn producer has an APH yield of 150 bushels per acre, the Projected Price is \$2.50 per bushel, and the producer selects 75-percent APH coverage with 100-percent price coverage—referred to as the *elected price*. The producer's yield guarantee is 112.5 bushels per acre (75 percent of 150 bushels). An actual yield below 112.5 bushels will result in an indemnity payment to the producer equal to the elected price of \$2.50 times the difference between the yield guarantee and the actual yield, even if the harvest-time price rises above the Projected Price. However, if the actual yield does not fall below the yield guarantee, even if the harvest-time price falls below the Projected Price, the operator gets no indemnity. Thus MPCI partially insures against production risk, but does not insure against price risk.

**Revenue insurance**—e.g., Income Protection and the standard Revenue Assurance programs—protects farmers against reductions in gross income when a crop's prices or yields decline from early-season expectations. The *revenue guarantee* equals the product of the farmer's APH yield, the Projected Price, and the coverage level selected by the producer. A producer receives an indemnity when the actual yield, multiplied by the harvest-time futures price, falls below the revenue guarantee. Since revenue insurance coverage is generally available at a maximum of 75 percent (85 percent in some designated counties), it provides only partial protection against both price and yield risk, and is less effective at reducing risk when the natural hedge is strong.

**Revenue insurance with replacement coverage protection** is available to farmers via the Crop Revenue Coverage program or the Revenue Assurance program when purchased with an increased price guarantee option. The added replacement coverage protection (RCP) feature offers a revenue guarantee that depends on the higher of the price elected at signup or the harvest-time futures price. Thus, the producer's revenue guarantee may increase over the season, allowing the producer to purchase "replacement" bushels if yields are low and prices increase during the season. Replacement coverage complements forward contracting or hedging by partially ensuring that the farmer can buy back futures contracts or deliver on cash contracts when yields are low and harvest-time prices are high. Producers are still subject to basis risk, and only partial coverage (up to 85 percent in designated counties) can be obtained.

In general, the revenue guarantee of revenue insurance with RCP equals the product of the producer's APH yield, the coverage level selected, and the higher of the early-season Projected Price or the harvest-time futures price. Indemnity payments are triggered when the harvest-time revenue, based on the harvest-time futures price, falls below the revenue guarantee. Thus, revenue insurance with RCP also provides only partial protection against yield and price risk, and is less effective when the natural hedge is strong, because high prices offset low yields and revenue is more likely to stay at least somewhat above the guarantee.

The premium for revenue insurance with replacement coverage is more expensive than for revenue insurance without RCP, partly because the replacement cost protection provides greater price protection. Also, premium differentials increase when producers are permitted to subdivide their acreage into "units," such as by section and irrigated/nonirrigated status (as under CRC), rather than basing the premium on a producer's total acreage in a county (as under Income Protection).

Under 75-percent coverage, the standard revenue insurance guarantee for a corn producer with an APH yield of 150 bushels and a projected harvest-time price of \$2.50 is \$281.25 per acre. A revenue

insurance policy with RCP (under 75-percent coverage) has \$281.25 as an initial minimum revenue guarantee, but this guarantee may increase if market prices rise during the growing season. If a low or normal yield and low harvest-time price cause the market value of the crop to fall below the revenue guarantee, revenue insurance policies with or without RCP will pay the same indemnity. However, if the low yield is accompanied by a high harvest-time price, revenue insurance with RCP will pay an indemnity, while policies without RCP will pay a lower or no indemnity.

#### What Is Forward Pricing?

Forward pricing involves setting the price, or a limit on price, for a product to be delivered in the future. Forward pricing strategies include contracts such as cash forward, futures, options, delayed pricing, basis, minimum price, and maximum price (for feed purchases). Three general types of forward pricing strategies—a cash forward sale, a futures hedge, and a put option hedge—are described here for comparison with the risk-reducing power of crop and revenue insurance programs.

A **cash forward sale** is a contract between a seller (e.g., a farmer) and a buyer (e.g., an elevator) requiring the seller to deliver a specified quantity of a commodity to the buyer at some time in the future for a specified price or in accordance with a specified pricing formula. Most crop growers sell forward at a fixed or "flat" price based on an observed futures price quote. Some farmers use basis contracts that specify a "set" price difference relative to the futures price to be applied at delivery time. Some use "hedge-to-arrive" contracts that fix the futures price component and leave basis to be determined at delivery time. Cash forward contracts eliminate both price-level and basis risk by locking in a local cash market price for the quantity under contract, but any production in excess of the hedged amount is still subject to routine market price risk.

#### Example of a cash forward sale:

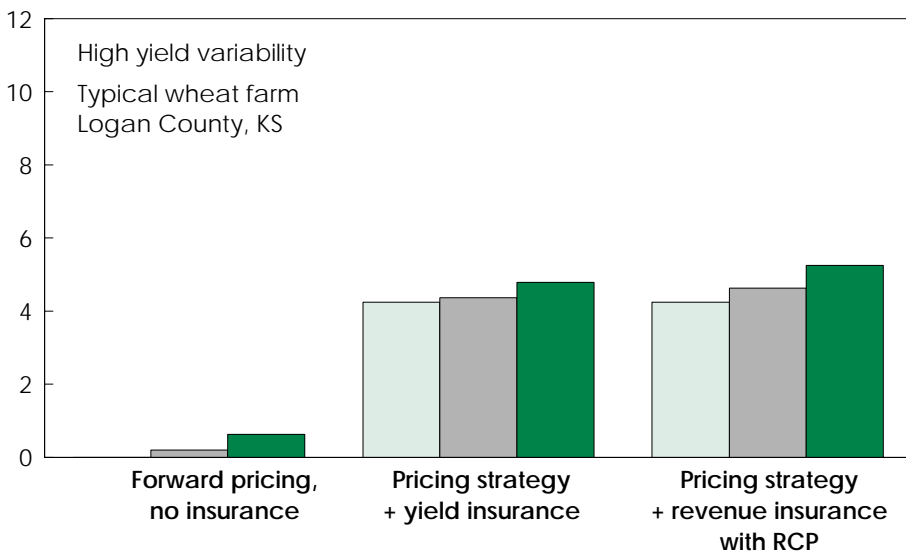
Suppose that a corn producer has planted 100 acres of corn with an APH yield of 150 bushels per acre. At planting time, the projected harvest-time price is \$2.50 per bushel, the local cash price is \$2.38, and

# Risk Management

## With Prices Moving Strongly Opposite Yield . . .

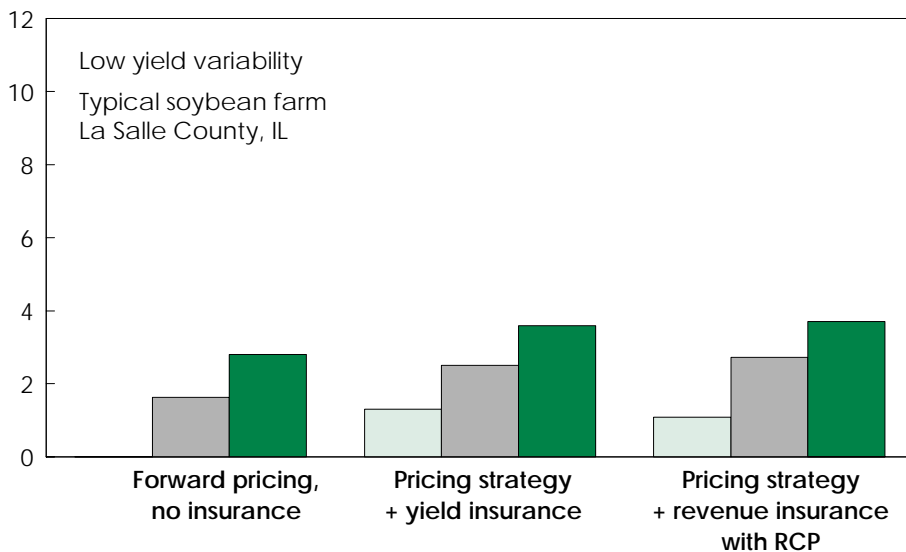
### Insurance Provides More Risk Reduction Than Forward Pricing When Yield Variability Is High

\$/acre in risk reduction value\*



### Forward Pricing Outperforms Insurance When Yield Variability Is Low

\$/acre in risk reduction value\*



**Pricing strategy:**

- Cash sale at harvest
- Futures hedge
- Cash forward contract

\* Risk reduction value is the certainty equivalent gain--estimated value to the operator of reducing risk by adding one or more risk management strategies.

RCP = Replacement coverage protection.

Price-yield correlation indicates strength of the offsetting relationship between price and yield movements--the more negative (opposite), the better the natural hedge works to stabilize revenue.

Economic Research Service, USDA

the basis is \$0.12. The producer agrees to forward contract the farm's entire expected corn production of 15,000 bushels at a price of \$2.38, for an expected revenue of \$35,700. If the price at harvest-time is \$1.80, the operator still gets \$35,700 for the crop, \$8,700 above the cash market. However, if the producer harvests only 85 bushels per acre, even though the futures price rises to \$3.50 (local cash price \$3.38 with constant basis), the net revenue under this contract will fall to \$13,730 (\$35,700 less \$21,970) because the operator has to purchase the shortfall (6,500 bushels @ \$3.38) in the cash market. This outcome illustrates the income risk associated with yield risk when an operator forward contracts 100 percent of the expected production at planting time based on the projected harvest-time price.

**Hedging** is designed to reduce price-level risk prior to an anticipated cash sale or purchase. A **futures hedge** involves the sale (short hedge) or purchase (long hedge) of **futures contracts**—standardized contracts traded on a commodity exchange—as a temporary substitute for an intended sale or purchase on the cash market. The futures contract is later bought (sold) to eliminate the futures position as the actual commodity is sold (bought). Crop growers are generally short hedgers against crops they intend to sell later in the season.

For example, every corn futures contract traded on the Chicago Board of Trade (CBOT) calls for delivery of 5,000 bushels of No. 2 yellow corn during one of five designated delivery months each year. Hedging requires relatively little investment, because only a small portion of the futures contract's face value is required as a margin good-faith deposit to guarantee performance of the contract. Hedging also provides flexibility, since the hedger can eliminate a position in the futures market by simply contracting for an equal number of offsetting contracts. Still, the primary advantage of a futures hedge is the elimination of the price-level risk of an existing cash position by locking in a price.

A producer can hedge by selling futures contracts—short hedge—covering part or all of anticipated output. For example, a

# Risk Management

corn grower could sell 10,000 bushels of December corn futures in May to hedge an expected 20,000-bushel corn crop. Such a hedge normally is lifted by buying an equal number of futures contracts as the cash commodity is sold. Since parallel movements in cash and futures prices during the period of the hedge tend to offset each other, any losses (gains) in the cash market are made up by gains (losses) in the futures market.

Any contract, cash or futures, that tends to fix the price prevents the seller from gaining from subsequent price increases as well as losing from subsequent price declines. Moreover, forward pricing contracts contain an element of nonperformance or production risk—if the quantity actually produced turns out to be less than the contracted quantity and the price at delivery lies above the contracted price, the producer must make up the shortfall at a loss. Thus, risk is minimized by forward pricing only part of a crop until yield is assured.

Finally, hedging replaces price risk with basis risk—uncertainty about the price difference between the futures contract and the cash market—and if the basis is wider than was expected when the futures position was entered, the producer’s preliminary price guarantee is reduced by the change in the basis. Basis risk is absent for hedgers who can make delivery against their futures contracts, but the cost of making delivery exceeds the loss on the basis in most cases.

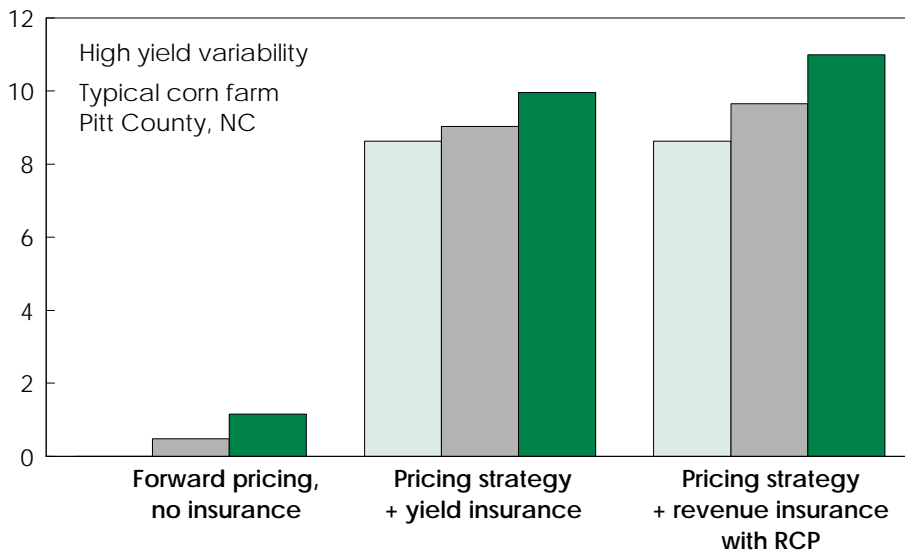
The holder of a futures contract also incurs the risk of additional payments (margin calls) necessary to maintain that contract position when the quoted price for the futures contract changes against the short position. Unexpected additional payments could result in a strain on the farm’s cash flow and/or credit reserves, particularly if eventual losses in the futures market cannot be offset by actual cash sales into the higher price cash market due to a production shortfall.

Hedging in futures offers farmers many of the benefits of forward contracting, but requires establishing an account with a certified broker, placing orders with the broker, and being prepared to meet margin calls during periods of adverse price

## With Weak Price-Yield Correlation . . .

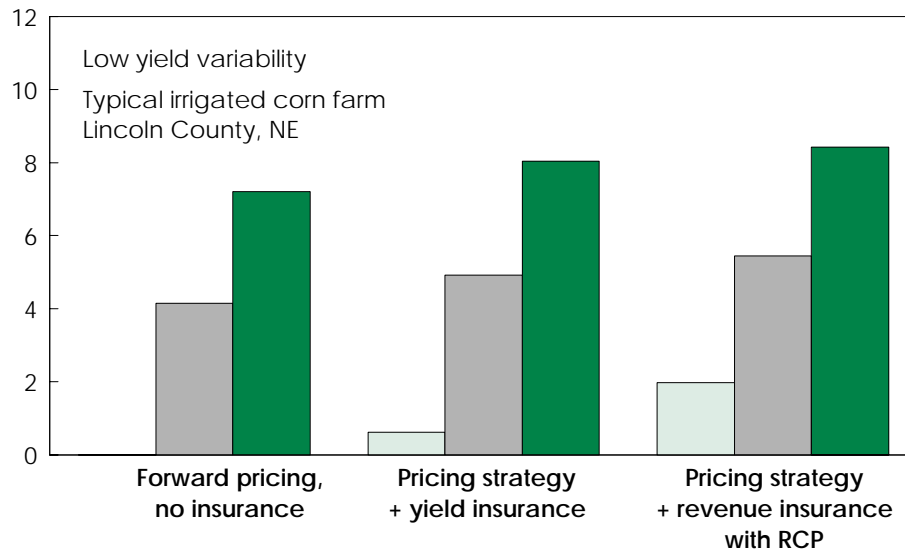
### Insurance Surpasses Forward Pricing in Reducing Risk When Yield Variability Is High

\$/acre in risk reduction value\*



### Forward Pricing Is the More Effective Strategy When Yield Variability is Low

\$/acre in risk reduction value\*



**Pricing strategy:**

- Cash sale at harvest
- Futures hedge
- Cash forward contract

\* Risk reduction value is the certainty equivalent gain—estimated value to the operator of reducing risk by adding one or more risk management strategies.

RCP = Replacement coverage protection.

Price-yield correlation indicates strength of the offsetting relationship between price and yield movements—the more negative, the better the natural hedge works to stabilize revenue.



## Risk Management

movements. Consequently, most farmers prefer to access futures markets indirectly by forward contracting with their local elevator.

### **Example of direct use of the futures market** (transferring price-level risk but not basis risk or yield risk):

Suppose a corn producer planted 100 acres of corn with an expected yield of 150 bushels per acre. At planting time, a December corn futures contract is trading at \$2.50 per bushel, the local cash price is \$2.38, and the basis is \$0.12. The producer sells two December corn futures contracts on the CBOT (equivalent to 10,000 bushels of corn) at a price of \$2.50 per bushel.

At harvest-time, if actual yield equals expected yield and the basis remains constant but prices fall, say futures to \$2/bushel and local price to \$1.88/bushel, the operator's total revenue, ignoring transaction costs, would still be \$33,200—\$5,000 profit from futures trading (sell 10,000 @ \$2.50 and buy 10,000 @ \$2) plus \$28,200 (15,000 @ \$1.88) from sale to the local elevator. If the basis widens because the local price falls faster than the futures price, the gains from hedging would remain the same, but total revenue would be lower. However, if yield falls, say to 85 bushels/acre, even if harvest-time prices rise, say futures to \$3.50 and local to \$3.38 so basis is constant, the \$10,000 loss from hedging (sell 10,000 @ \$2.50 and buy 10,000 @ \$3.50) would more than offset the higher local price (8,500 @ \$3.38 = \$28,730), bringing net revenue down to \$18,730, again ignoring transaction costs.

A *put option* is the right, but not the obligation, to sell a specified number of futures contracts at a designated price (called the strike price), at any time until expiration of the option. Hedging with a put option is very similar to buying price insurance in that the buyer/farmer pays a premium to the seller/grantor of this option to protect against a fall in price. The put option eliminates downside price-level risk by giving the buyer the right to enter into a short position in the futures market at the strike price if the option is exercised, even if futures prices fall below the strike price. The farmer who hedges by buying a put option knows the pre-

mium in advance and is not subject to margin calls as is the futures hedger. And the put option holder stands to gain if the futures price rises by more than the cost of the premium—if prices rise, the farmer can simply choose not to exercise the put option and instead sell in the higher priced cash market.

As with a futures hedge, a put option hedge is subject to both production risk and basis risk, since ultimately, any futures position entered into upon the exercise of a put option will likely be liquidated and the grain sold into cash markets. But unlike a futures contract hedge, the premium is forfeited upon payment even if the put option is never exercised.

### **Example of a put option:**

Consider again the example of the corn producer with 100 acres planted to corn and an expected yield of 150 bushels per acre. At planting time a December corn futures contract is trading at \$2.50 per bushel, the local cash price is \$2.38, and the basis is the difference or \$0.12. The producer buys two put options based on the CBOT December corn futures contract (equivalent to 10,000 bushels of corn) with a strike price of \$2.50 per bushel for a premium of \$0.16 per bushel or \$1,600.

At harvest-time the December corn contract price is down to \$2 per bushel, and the local price is \$1.88 (basis is constant). If the harvested yield is the 150 bushels per acre expected yield and the producer wants to finalize marketing decisions on November 1, by exercising the put option at \$2.50 and immediately offsetting the short position in the futures market by buying two December corn contracts at \$2, the producer realizes a gain of \$0.50/bushel, or \$5,000. Selling the harvested corn locally for \$1.88/bushel, total revenue (ignoring broker's fees and transaction costs) is \$31,600 (15,000 bushels @ \$1.88 plus \$5,000 minus the \$1,600 premium).

### ***Optimal Hedge Ratio Varies Across Pricing Strategies***

To price forward, a farmer must choose not only the type of contract—cash, futures, or options—but also the share of the expected crop to hedge. For the farmer, the optimal proportion (in a

risk-reducing sense) of the expected crop that should be forward priced—called the optimal hedge ratio—depends on the extent of basis and production risk faced by the producer.

While forward pricing in either the cash, futures, or options markets eliminates price-level risk, it fails to eliminate production risk, and cash forward contracting alone eliminates basis risk. Basis risk generally is small relative to price-level risk, but can be important, particularly at locations distant from the futures delivery points.

The production risk associated with a forward pricing contract depends on a farm's yield variability. As yield variability increases, optimal hedge ratios decrease and the risk-reducing effectiveness of a hedge declines. In the presence of high yield variability, the probability of having insufficient crop to deliver on a forward contract is high and the associated risk lowers the effectiveness of forward contracting.

Yield variability can be only partially offset by crop or revenue insurance, since coverage levels are generally limited to 75 percent, so the optimal hedge ratio will vary with both the availability and type of insurance coverage. Further, since yield protection permits a higher optimal hedge ratio, and because crop and revenue insurance do not fully eliminate production risk, combinations of forward pricing and insurance generally result in lower risk than either alone.

### ***Combination of Strategies Depends on Risk Environment***

ERS used historical data to construct representative corn, soybean, and wheat enterprises for a variety of risk environments—i.e., across ranges of yield variability and price-yield correlations—to analyze the risk reducing effectiveness of different crop and revenue insurance programs and forward pricing strategies in different risk environments. The level of risk aversion and wealth for a given enterprise is held constant across risk management strategies, and all enterprises are assumed to minimize risk per acre of the crop produced.

The estimated certainty equivalent income—the income an individual is willing to receive with certainty in lieu of undertaking a risky prospect—associated with a straight cash sale at harvest (no insurance, no forward contracting) is the baseline scenario against which all other risk management strategies are evaluated. Certainty equivalent gains/losses—the estimated value of gains/losses in risk reduction—are then calculated to reflect the differences in revenue risk reduction and costs (e.g., premiums) over the different strategies.

Federal subsidies are not included, in order to compare the pure risk reduction effectiveness of crop and revenue insurance programs and forward pricing strategies, independent of government influence. The incorporation of Federal insurance premium subsidies per acre would be a direct addition to certainty equivalent income for the relevant risk strategies. Using this framework, some general relationships emerge between revenue variability and risk management.

*For a farm with high yield variability and a weak natural hedge,* crop yield or revenue insurance alone provides substantial revenue risk reduction. Forward pricing combined with insurance—crop yield or revenue insurance—further reduces risk, although the gains are small relative to the risk-reduction gains of insurance alone. Forward pricing alone—without crop yield or revenue insurance—provides relatively little risk reduction, because price variability contributes less to revenue variability than does yield variability. Without crop yield or revenue insurance, the revenue risk stemming from yield variability greatly reduces the effectiveness of forward pricing. However, as the natural hedge strengthens, the risk reduction provided by insurance weakens, even when yields remain highly variable, and forward pricing remains fairly ineffective as a risk transfer tool.

*When yields are relatively less variable,* crop yield insurance alone affords some risk reduction, but provides much greater risk reduction when combined with forward pricing, particularly forward cash contracting. Since price variability predominates when yield variability is low, cash forward contracting, which eliminates both price-level and basis risk, is a very attractive option to a producer whose primary concern is minimizing risk.

*With low yield variability and a strong natural hedge,* forward pricing strategies are more effective than either crop or revenue insurance. Under a strong natural hedge, low yields are generally associated with high prices, thus moderating overall revenue variability, even without insurance or forward pricing. Still, crop revenue insurance, when combined with forward pricing, can provide additional marginal risk reduction.

*When low yield variability coexists with a weak natural hedge,* forward pricing alone easily outperforms crop yield and revenue insurance in reducing risk, because price variability plays the dominant role in determining revenue variability, and because of the weaker relationship between the on-farm yield and the aggregate market price. Still, additional marginal gains in risk reduction can be obtained by combining crop revenue insurance with forward pricing.

In summary, ERS findings indicate that:

- Price variability faced by growers of a given crop is approximately the same across the country, and basis risks are relatively small, so differences in revenue variability between farms are caused primarily by differences in yield variability and price-yield correlation.
- Yield variability is generally proportionally higher than price variability at

the farm level. As yield variability increases, optimal hedge ratios decrease and the risk-reducing effectiveness of hedging declines. Partially offsetting yield variability with crop or revenue insurance raises the optimal hedge ratio.

- Price-yield correlations are generally negative in major growing areas, particularly for corn. Since a farmer's revenue risk diminishes as price-yield correlation becomes more negative, crop or revenue insurance purchased with low coverage levels may be superfluous in the face of a strong natural hedge. Also, optimal hedge ratios decrease as farm price-yield correlation becomes more negative.
- Price correlation between farms is generally higher than yield correlation.
- The risk-reducing effectiveness of hedging increases as correlation between farm and futures price increases. In other words, the more closely the futures market price mirrors the farm price, the better it works for hedging risk.
- Combining forward pricing with insurance generally results in lower risk than either alone. With high yield variability, the difference among the forward pricing strategies is slight, but with low yield variability—where price variability contributes a larger share to revenue variability—the difference may be significant. When used in combination with a given type of insurance, cash forward contracting provides the greatest risk reduction for a risk-minimizing producer. **AO**

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**Next in *Agricultural Outlook's* series on risk management:  
Recent developments in crop and revenue insurance**

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tax-deferred savings accounts as a risk management tool for farmers**

## Special Article

## Long-Term Agricultural Projections Reflect Weaker Trade

A number of international factors have combined to weaken the U.S. agricultural outlook in USDA's 10-year baseline projections, either by reducing global demand or increasing foreign supplies. These include fallout from the economic crisis in Asia and economic contraction in Russia, which reduced global agricultural demand; lower growth projected for China's grain imports (relative to last year's baseline); and expanding production potential among trade competitors.

In the initial years of the baseline, much of the U.S. agricultural sector is adjusting to the combination of weak demand and large global supplies. Agricultural commodity prices are down, the value of U.S. agricultural exports is lower, and net farm income declines.

In the longer run, conditions in the sector improve. Despite strong export competition and only moderate grain import demand in China, more favorable economic growth in developing regions supports gains in trade and in U.S. agricultural exports in the second half of the baseline. This leads to rising nominal market prices, gains in farm income, and increased stability in the financial condition of the U.S. agricultural sector.

### *Demand Dampened in Asia & Russia*

Weakened economic growth and depreciated currencies in East and Southeast Asia and in Russia contribute to a 3-4 year period of weak global agricultural demand and trade. Assumptions for these and other developing economies are important for global agricultural demand because incomes in those countries are at levels where consumers begin to diversify their diets and where consumption and imports of foods and feeds are particularly responsive to income changes. For Asia, 1-3 years of negative growth in crisis countries are followed by a return to moderately positive economic growth. Structural reform, particularly in financial and banking sectors, leads to more stable economic growth in the last 5 years of the baseline, although longer-term growth for crisis-affected Asian countries is generally lower than in previous USDA baselines.

For Russia, incomes are assumed to decline through 2000, with positive economic growth resuming in 2002, followed by moderately higher growth in later years. Declining incomes combined with the effects of currency devaluation result in sharp reductions in Russian meat imports in the first half of the baseline.

Relatively moderate gains are projected for grain import demand in China. Agricultural policies assumed for China now include a greater emphasis on grain self-sufficiency. Increased governmental intervention in grain production and trade is anticipated, with price support for rice, wheat, and corn encouraging output and reducing imports of these crops. Revised livestock data for China indicate that animal inventories, meat production, and



meat consumption are 20 to 30 percent lower than previously thought. These revisions suggest slower growth in the livestock sector over the next 10 years compared with the previous baseline. Grain feed use in China is now estimated to be lower, and is projected to grow more slowly, than implied by earlier data. Somewhat weaker economic growth is also assumed for China, and a long-term trend of currency devaluation against the U.S. dollar is assumed to resume in 2001 after holding relatively steady in the last half of the 1990's. These macroeconomic conditions contribute to smaller gains in net agricultural import demand in China over the next 10 years.

Near term import demand prospects will also be affected by recent economic developments in Latin America, where the financial and trade impacts of the Asia crisis have led to weaker currencies and slower growth. Setbacks in Latin America are

The projections and discussion in this article draw on *USDA Agricultural Baseline Projections to 2008*, released at USDA's 1999 Agricultural Outlook Forum in February. Longrun baseline projections (through 2008) assume no shocks and are based on specific assumptions regarding macroeconomic conditions, policy, weather, and international developments. The baseline is one representative scenario for the agricultural sector for the next 10 years and provides a point of departure for discussion of alternative farm sector outcomes that could result under different assumptions.

assumed to be relatively minor in the baseline, but larger and more prolonged shocks are possible, which would have more significant effects on global markets.

### **Export Competition Strengthens**

U.S. exports and world prices also will be pressured by increased exportable supplies from both traditional and nontraditional competitors. Early in the baseline, global supplies of many agricultural commodities are large. In addition, expanding production potential in a number of foreign countries results in strong export competition throughout the 10-year baseline. Increased yield growth for corn, wheat, and soybeans in Argentina and conversion of undeveloped land for soybeans in Brazil, for example, strengthen competition in global markets. New seed technologies, increased fertilizer use, and an improved agricultural investment climate facilitate these production gains in South America.

Developing and transition economies, where currencies have been sharply devalued, are also likely to provide increased competition for U.S. farm exports. In Russia, for example, increased competitiveness because of devaluation of the ruble, combined with persistent weak domestic demand, could boost Russian grain exports. And in Korea, the devaluation of the *won* is expected to improve incentives for the local livestock industry to expand, increasing production and lowering meat imports.

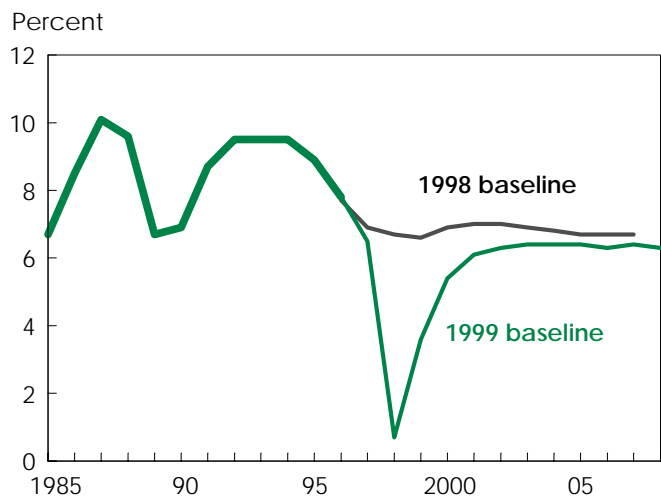
The projections also indicate the potential for increased European Union (EU) competition in the global wheat market in the medium term. Even with current EU policies, modest increases in world wheat prices combined with declining internal EU market prices are expected to allow the EU to export wheat without subsidy by about 2002. EU exports of wheat will then be able to exceed the subsidized export limit set in the Uruguay Round Agreement on Agriculture (URAA).

### **Agricultural Trade Stronger In the Longer Term**

Prospects for global trade and U.S. exports improve in the longer term. Based on the outlook for an Asian recovery in 3 to 4 years, projected trade expansion is driven by generally favorable economic growth in developing countries and by freer trade associated with ongoing unilateral policy reforms and existing multilateral reforms. Income growth in developing countries will continue to be the key reason for growth in demand for agricultural goods, both through increases in direct food use and through derived demand for livestock feeds to meet rising meat demand.

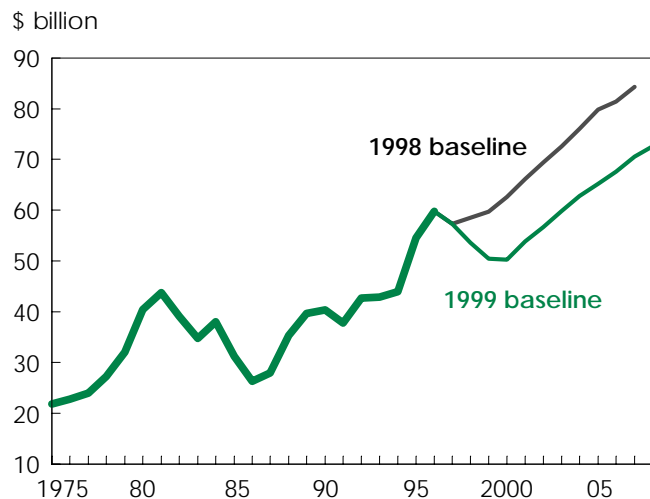
Relatively strong longer term growth is projected in the volume of global trade in bulk agricultural commodities, with broad-based expansion across developing regions, including China, South and Southeast Asia, Latin America, North Africa, and the Middle East. Trade in grains is expected to lead the stronger projected growth of bulk commodity trade during 2000-08. Projected growth in coarse grain trade is particularly strong, predicated on rising incomes, diet diversification, and increased

### **Real GDP Growth Rate to Rebound in East and Southeast Asia**



Annual growth rates. 1999-2008 projected.  
Economic Research Service, USDA

### **U.S. Agricultural Exports to Climb After 2000**



1999-2008 projected.  
Economic Research Service, USDA

demand for livestock products and feeds in developing regions. Wheat and vegetable oil trade will also continue to expand in response to rising incomes in developing countries. Trade in soybeans and meal will benefit from expansion of developing countries' feed-livestock sectors. Raw cotton demand and trade beyond 2000 are projected to be stronger than in the 1990's, but slower than in the 1980's when cotton was increasingly substituted for synthetic fibers.

Global meat demand and trade will be depressed in the near term by the slowdown in import demand in East Asia and Russia. Growth in meat trade, however, is projected to resume after

## Special Article

2000, as demand recovers in these key markets. Tariff reductions under the URAA also will support growth in meat trade in East Asia, including Japan and Korea.

With recovering global demand, agricultural commodity prices are projected to strengthen over the longer term. However, real prices are projected to decline, consistent with the long-term trend, as productivity gains continue to outpace demand growth.

The total value of U.S. agricultural exports is projected to decline in fiscal 1999 and 2000, but to increase to almost \$73 billion by 2008, up from a forecast \$49 billion in 1999. Weak global demand and prices hold down the value of U.S. bulk and high-value product (HVP) exports early in the baseline. After 2000, however, both bulk and HVP exports are projected to strengthen.

### *U.S. Crop Markets Adjust*

In the initial years of the baseline, many field crop markets are adjusting to the combination of weak demand and large global supplies, before moving back toward longer term trends with more robust growth.

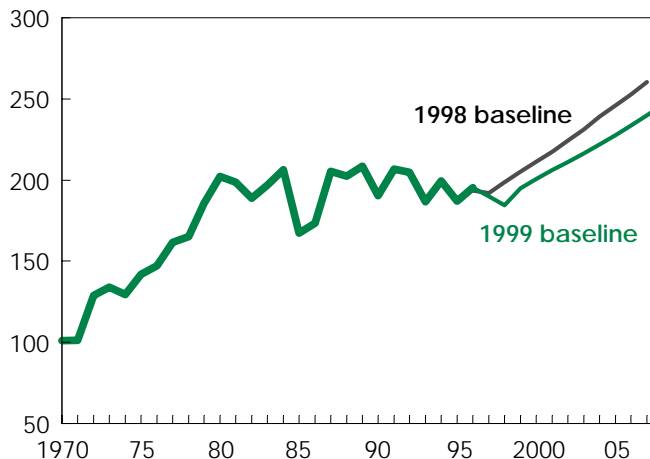
Planted acreage for the eight major U.S. field crops (corn, sorghum, barley, oats, wheat, rice, upland cotton, and soybeans) increases nearly 10 million acres by 2008 from 1998 levels, surpassing the recent high level of plantings for these crops in 1996. At first, however, aggregate area planted to these crops declines somewhat, reflecting low prices for many crops due to weak demand and large global supplies; plantings turn upward again in 2002. Planting flexibility under current legislation facilitates acreage movements by allowing producers to respond to market prices and returns, augmented by marketing loan benefits in low price years. Marketing loan benefits influence the cropping mix somewhat in the early years of the baseline when many prices are near or below market assistance loan rates (see *AO* October 1998 for more on marketing loans). Projected soybean prices are lower than soybean loan rates during the next few years, for example, so marketing loan gains and loan deficiency payments will add to market receipts, encouraging producers to plant more acreage to soybeans than they otherwise would.

Projected acreage gains in the longer term reflect land drawn into production based on strengthening farm prices. Yield gains for many crops are sufficient to mitigate some of the pressure on total land use.

Projected gains in demand for U.S. soybeans, barley, and rice are driven primarily by domestic markets. U.S. exports of soybeans and products face strengthening competition from Brazil and Argentina. Increases in total U.S. corn use are also larger in the domestic market than in trade, although corn exports grow at a higher rate. Strong competition in global corn trade from Argentina as well as moderate world import demand growth (particularly for China, which is projected to be a net corn exporter until 2005/06) combine to mute U.S. corn export gains.

### World Trade in Coarse Grains and Wheat to Resume Growth

Million metric tons



1999-2008 projected.

Economic Research Service, USDA

Increases in disappearance of U.S. wheat, sorghum, and cotton are driven by exports. U.S. wheat exports rise steadily during the baseline but face greater competition from the EU starting in 2002/03 as stronger world wheat prices and lower internal EU prices permit the EU to export wheat without subsidies. U.S. cotton exports benefit in the last half of the baseline from an assumed resumption of Step 2 program payments in 2002/03 (See *AO* September 1998 for information on Step 2).

U.S. domestic demand for most crops is projected to grow slightly faster than population through 2008. Growth in domestic use of rice reflects a greater emphasis on dietary concerns and an increasing share of domestic population with Asian and Latin American origins. Gains in corn sweetener use and corn used for ethanol production also exceed population growth rates. Increases in domestic soybean crush reflect continued strong growth in poultry production, generating demand for soybean meal. Domestic wheat use, however, is nearly flat, as declining feed use offsets food use gains. Greater U.S. exports of cotton yarn, fabric, and semi-finished products will promote growth in domestic mill use of cotton, although increases in textile imports, mostly apparel, and competition from man-made fibers, limit domestic cotton use gains.

### *Low Feed Prices Fuel Livestock Sector Expansion*

Changes in the U.S. meat complex in the near term reflect sharply lower grain and soybean meal prices from the elevated levels of the 1995/96 crop year, as well as weakened demand for meat exports to the Pacific Rim and Russia. In the longer run, feed prices below those of the mid-1990's, low inflation, domestic demand strength, and a rebound in export sales are expected to contribute to producer returns that encourage higher pork and poultry output, although only moderate cyclical expansion is

projected for beef. Record total meat supplies are projected through the baseline, with a larger proportion of poultry.

The cattle herd builds only slightly from a cyclical low near 97 million head in 2000. The inventory remains below 100 million head in a brief and moderate expansion through 2003, before turning downward again. Shifts toward a breeding herd of larger-framed cattle and heavier slaughter weights partially offset the need for further expansion of cattle inventories. The beef production mix continues to shift toward a larger proportion of fed beef, with almost all steers and heifers being feedlot fed.

Beef production also moves increasingly toward a high-graded product being directed toward the hotel-restaurant and export markets. The U.S. remains the primary source of high-quality, fed beef for export. However, emergence of the U.S. as a long-term net beef exporter will be delayed until near the end of the baseline, after the cow herd is reestablished and demand in the Pacific Rim recovers.

The pork sector will continue to evolve into a more vertically coordinated industry with a mix of production and marketing contracts. Larger, more efficient pork producers will market a greater percentage of the hogs over the next 10 years. With a more vertically coordinated industry structure, the hog cycle is dampened. A slow expansion in pork production begins in 2002 and continues for the remainder of the baseline. The U.S. becomes an increasingly important net pork exporter, in part reflecting environmental constraints for a number of competitors (e.g., Denmark and Taiwan, *AO* March 1998). However, projected gains in U.S. pork exports are somewhat muted by reduced market growth prospects in the Pacific Rim and Russia.

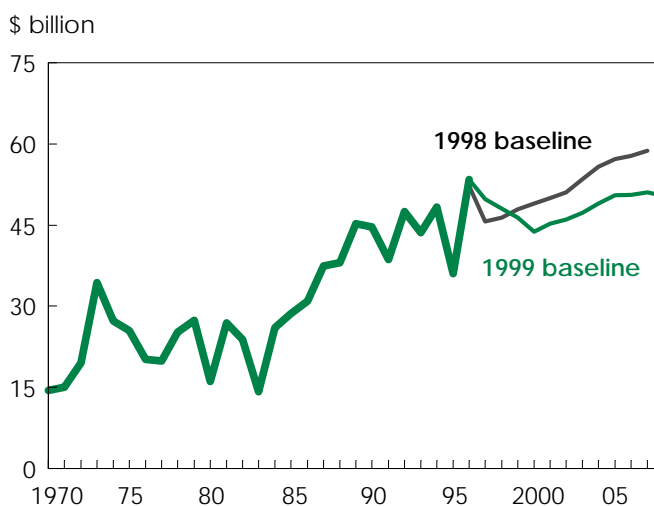
Continued technological advances and improved production management practices are expected in the broiler and turkey industries, although gains are not anticipated to hold down production costs as significantly as in the past 10 years. Competition in global poultry markets holds U.S. poultry exports to moderate gains. Following slower growth in sales to Asia and a sharp reduction in exports to Russia in 1998 and 1999, a slow recovery is projected for poultry exports to both markets.

High milk-feed price ratios and dairy productivity gains push milk output per cow higher, and milk production grows despite slowly declining cow numbers. Lower real milk prices continue to push weaker operations out of dairying. Milk production will expand in the West as well as on large-scale dairy operations in the North. Expansion in commercial use of dairy products will

### USDA Baseline Information Available on the Internet

For the full report and briefing materials, including an expanded set of charts, visit the Economic Research Service briefing room for USDA's agricultural baseline projections at [www.econ.ag.gov/briefing/baseline/](http://www.econ.ag.gov/briefing/baseline/).

## Long-Term Net Farm Income Prospects Have Dampened



1999-2008 projected.

Economic Research Service, USDA

be led by sales of cheese and dairy ingredients for processed foods, while fluid milk sales are stagnant.

Decreases in real retail prices of meats combined with increases in real disposable income allow U.S. consumers to purchase more meat with a smaller proportion of disposable income. Poultry gains a larger proportion of total meat expenditures as well as total meat consumption, reflecting lower production costs and prices relative to other meats. On a retail-weight basis, poultry consumption is projected to exceed red meat consumption at the end of the baseline.

Retail prices for all food are projected to rise less than the general inflation rate, continuing a long-term trend. Meals eaten away from home account for a growing share of food expenditures, reaching almost half of total food spending by 2008.

### Farm Financial Conditions Improve Beyond 2000

Reflecting initial weakness in the sector (see *Agricultural Economy* in this issue), net farm income declines in the first few years of the baseline, falling to about \$44 billion in 2000, slightly below the 1990-97 average. Farm income declines in the near term, as the large global supplies and weak demand compress farm commodity receipts. Lower production expenses in the initial years, particularly for farm-origin inputs, energy-related costs, and interest expenses, offset some of the reduction in cash receipts. Additionally, increased government payments bolster farm incomes for 1998 and 1999 (*AO* January-February 1999).

Net farm income improves beyond 2000, due largely to strengthening demand, moving gradually upward to exceed \$50 billion for the last few years of the baseline. Nonetheless, gains in farm income are less than inflation, so real farm income declines. The

## Special Article

agricultural sector increasingly relies on the marketplace for its income as direct government payments fall and represent only about 2 percent of gross cash income by 2008. Crop and livestock receipts are up in nominal terms as both production and prices rise.

Production expenses increase in the baseline, with expenses for nonfarm-origin inputs rising faster than expenses for farm-origin inputs. Cash operating margins tighten somewhat, with cash expenses increasing to about 79 percent of gross cash income by 2008, up from around 74 percent in recent years.

Higher nominal farm income and relatively low interest rates assist in asset accumulation and debt management, leading to an

improved balance sheet for the farm sector. Farm asset values increase through the baseline, led by gains in agricultural land values. Farm debt rises less rapidly than assets and is not beyond the ability of farmers to service. As a result, debt-to-asset ratios continue the downward trend of the last 10-15 years from the high levels of over 20 percent in the mid-1980's, declining to near 13 percent by the end of the baseline. With asset values increasing more than debt, farm equity rises significantly. Increasing nominal farm income in the baseline, combined with rising farm equity, suggests relative stability in the aggregate financial condition of the farm sector. **AO**

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- \* *Printed copies.* Available in May, Watch *Agricultural Outlook* and the Forum website.

# Statistical Indicators

## Summary Data

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

				1998				1999		
	1997	1998 F	1999 F	I	II	III	IV	I	II	III
Prices received by farmers (1990-92=100)	107	101	--	102	103	101	99	--	--	--
Livestock & products	98	96	--	94	96	97	97	--	--	--
Crops	116	107	--	110	112	104	101	--	--	--
Prices paid by farmers (1990-92=100)										
Production items	117	112	--	115	114	111	110	--	--	--
Commodities and services, interest, taxes, and wages	117	115	--	117	116	114	114	--	--	--
Cash receipts (\$ bil.)	209	196	191	47	43	47	59	46	41	46
Livestock	97	93	94	23	23	24	24	23	23	23
Crops	112	103	97	24	20	23	35	22	18	23
Market basket (1982-84=100)										
Retail cost	160	163	--	162	162	163	165	--	--	--
Farm value	106	103	--	102	103	103	104	--	--	--
Spread	189	195	--	194	194	195	198	--	--	--
Farm value/retail cost (%)	23	22	--	22	22	22	22	--	--	--
Retail Prices (1982-84=100)										
All food	157	161	164	160	160	161	162	164	164	164
At home	158	161	164	160	160	161	163	164	164	164
Away from home	157	161	165	160	161	162	163	164	165	166
Agricultural exports (\$ bil.) <sup>1</sup>	57.3	53.6	49.0	16.3	14.3	12.1	11.1	14.4	12.7	11.2
Agricultural imports (\$ bil.) <sup>1</sup>	35.8	37.0	38.0	9.2	9.8	9.4	8.7	9.2	9.4	9.4
Commercial production										
Red meat (mil. lb.)	43,209	45,134	44,641	11,039	11,013	11,380	11,702	11,372	11,213	11,136
Poultry (mil. lb.)	33,258	33,661	35,240	8,258	8,453	8,375	8,575	8,555	8,870	8,910
Eggs (mil. doz.)	6,473	6,659	6,830	1,645	1,644	1,658	1,712	1,690	1,685	1,705
Milk (bil. lb.)	156.1	157.4	160.8	39.2	40.8	38.5	38.9	40.0	41.7	39.6
Consumption, per capita										
Red meat and poultry (lb.)	208.6	214.6	217.1	51.6	52.3	54.1	56.6	54.4	53.9	54.1
Corn beginning stocks (mil. bu.) <sup>2</sup>	425.9	883.2	1,307.8	883.2	7,246.8	4,939.9	3,039.8	1,307.8	8,050.2	--
Corn use (mil. bu.) <sup>2</sup>	8,788.6	8,791.0	9,370.0	2,845.4	2,307.8	1,903.7	1,734.0	3,022.7	--	--
Prices <sup>3</sup>										
Choice steers--Neb. Direct (\$/cwt)	66.32	61.48	62-66	61.73	64.16	58.97	61.06	62-63	62-66	61-67
Barrows and gilts--IA, So. MN (\$/cwt)	54.30	34.72	35-37	37.34	42.87	36.61	22.06	28-29	35-37	38-42
Broilers--12-city (cents/lb.)	58.80	63.10	57-61	56.40	61.00	70.40	64.50	58-59	58-60	58-62
Eggs--NY gr. A large (cents/doz.)	81.20	75.80	71-75	79.00	66.50	76.00	81.70	76-77	63-67	67-73
Milk--all at plant (\$/cwt)	13.34	15.38	13.75-	14.60	13.73	15.37	17.83	16.20-	12.40-	12.50-
			14.35					16.40	12.90	13.30
Wheat--KC HRW ordinary (\$/bu.)	4.16	3.27	--	3.62	3.32	2.86	3.34	--	--	--
Corn--Chicago (\$/bu.)	2.78	2.41	--	2.72	2.49	2.03	2.11	--	--	--
Soybeans--Chicago (\$/bu.)	7.63	6.01	--	6.68	6.39	5.53	5.44	--	--	--
Cotton--avg. spot 41-34 (cents/lb)	69.89	67.02	--	64.48	66.86	72.60	64.15	--	--	--
	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Farm real estate values <sup>4</sup>										
Nominal (\$ per acre)	668	683	703	713	736	782	832	890	945	1,000
Real (1982 \$)	539	528	521	507	511	529	550	574	598	620

F = Forecast. -- = Not available. 1. Annual data based on Oct.-Sept. fiscal years ending with year indicated. 2. 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. 3. Simple averages, Jan.-Dec. 4. 1990-98 values as of January 1. 1989 values as of February 1.



## U.S. & Foreign Economic Data

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

	1997			1998							
	1996	1997	1998	II	III	IV	I	II	III	IV	
<i>Billions of current dollars (quarterly data seasonally adjusted at annual rates)</i>											
Gross Domestic Product	7,636.0	8,110.9	8,510.7	8,063.4	8,170.8	8,254.5	8,384.2	8,440.6	8,537.9	8,680.0	
Gross National Product	7,674.0	8,102.9	--	8,062.3	8,162.0	8,234.9	8,369.4	8,421.8	8,510.9	--	
Personal consumption expenditures	5,207.6	5,493.7	5,805.0	5,438.8	5,540.3	5,593.2	5,676.5	5,773.7	5,846.7	5,925.7	
Durable goods	634.5	673.0	722.9	659.9	681.2	682.2	705.1	720.1	718.9	747.7	
Nondurable goods	1,534.7	1,600.6	1,662.3	1,588.2	1,611.3	1,613.2	1,633.1	1,655.2	1,670.0	1,690.7	
Food	756.1	780.9	815.3	775.8	785.3	787.1	796.9	810.2	818.7	835.5	
Clothing and shoes	264.3	278.0	293.6	275.6	280.9	280.7	291.0	295.3	293.7	294.5	
Services	3,038.4	3,220.1	3,420.4	3,190.7	3,247.9	3,297.8	3,338.2	3,398.4	3,457.7	3,487.3	
Gross private domestic investment	1,116.5	1,256.0	1,368.7	1,259.9	1,265.7	1,292.0	1,366.6	1,345.0	1,364.4	1,398.8	
Fixed investment	1,090.7	1,188.6	1,308.5	1,176.4	1,211.1	1,220.1	1,271.1	1,305.8	1,307.5	1,349.7	
Change in business inventories	25.9	67.4	60.2	83.5	54.6	71.9	95.5	39.2	57.0	49.1	
Net exports of goods and services	-94.8	-93.4	-151.2	-86.8	-94.7	-98.8	-123.7	-159.3	-165.5	-156.3	
Government consumption expenditures and gross investment	1,406.7	1,454.6	1,487.5	1,451.5	1,459.5	1,468.1	1,464.9	1,481.2	1,492.3	1,511.7	
<i>Billions of 1992 dollars (quarterly data seasonally adjusted at annual rates)<sup>1</sup></i>											
Gross Domestic Product	6,928.4	7,269.8	7,552.1	7,236.5	7,311.2	7,364.6	7,464.7	7,498.6	7,566.5	7,678.5	
Gross National Product	7,008.4	7,266.2	--	7,239.3	7,307.0	7,350.7	7,455.2	7,485.9	7,546.7	--	
Personal consumption expenditures	4,714.1	4,913.5	5,151.6	4,872.7	4,947.0	4,981.0	5,055.1	5,130.2	5,181.8	5,239.5	
Durable goods	611.1	668.6	735.3	653.8	679.6	684.8	710.3	729.4	733.7	768.0	
Nondurable goods	1,432.3	1,486.3	1,543.9	1,477.1	1,495.7	1,494.3	1,521.2	1,540.9	1,549.1	1,564.5	
Food	689.7	699.3	718.0	697.3	700.6	699.9	706.8	716.3	718.9	730.1	
Clothing and shoes	267.7	288.4	310.1	283.3	291.9	292.3	307.4	311.4	309.8	311.8	
Services	2,671.0	2,761.5	2,879.5	2,743.6	2,775.4	2,804.8	2,829.3	2,866.8	2,904.8	2,917.3	
Gross private domestic investment	1,069.1	1,206.4	1,331.8	1,211.3	1,215.8	1,241.9	1,321.8	1,306.5	1,331.6	1,367.4	
Fixed investment	1,041.7	1,138.0	1,268.6	1,127.0	1,159.3	1,169.5	1,224.9	1,264.1	1,270.9	1,314.4	
Change in business inventories	25.0	63.2	58.3	79.0	51.0	66.5	91.4	38.2	55.7	47.8	
Net exports of goods and services	-114.4	-136.1	-238.3	-131.6	-142.4	-149.0	-198.5	-245.2	-259.0	-250.5	
Government consumption expenditures and gross investment	1,257.9	1,285.0	1,297.3	1,284.4	1,288.9	1,289.2	1,283.0	1,294.8	1,299.6	1,311.7	
GDP implicit price deflator (% change)	1.9	1.9	1.0	1.6	1.2	1.2	0.8	0.9	1.0	0.7	
Disposable personal income (\$ bil.)	5,534.7	5,795.1	6,027.0	5,767.9	5,821.8	5,879.4	5,937.1	5,988.9	6,052.4	6,129.6	
Disposable pers. income (1992 \$ bil.)	5,043.0	5,183.1	5,348.2	5,167.5	5,198.4	5,235.8	5,287.1	5,321.5	5,364.1	5,419.8	
Per capita disposable pers. income (\$)	20,840	21,633	22,301	21,558	21,709	21,871	22,046	22,192	22,373	22,591	
Per capita disp. pers. income (1992 \$)	18,989	19,349	19,789	19,315	19,385	19,478	19,632	19,719	19,829	19,975	
U.S. resident population plus Armed Forces overseas (mil.) <sup>2</sup>	265.5	267.9	270.3	267.5	268.1	268.9	269.3	269.9	270.5	271.2	
Civilian population (mil.) <sup>2</sup>	263.9	266.4	268.8	266.0	266.6	267.3	267.8	268.4	269.0	269.7	
	Annual			1998							1999
	1996	1997	1998	Jan	Aug	Sep	Oct	Nov	Dec	Jan	
<i>Monthly data seasonally adjusted</i>											
Total industrial production (1992=100)	121.4	129.7	135.1	133.8	135.7	135.2	136.1	136.4	136.6	136.7	
Leading economic indicators (1992=100)	102.1	103.9	105.5	104.8	105.6	105.6	105.7	106.2	106.4	106.9	
Civilian employment (mil. persons) <sup>3</sup>	126.7	129.6	131.5	130.9	131.3	131.8	131.9	132.1	132.5	133.4	
Civilian unemployment rate (%) <sup>3</sup>	5.4	4.9	4.5	4.6	4.5	4.5	4.5	4.4	4.3	4.3	
Personal income (\$ bil. annual rate)	6,425.2	6,784.0	7,125.1	6,970.5	7,164.1	7,184.6	7,213.8	7,276.6	7,271.6	7,316.8	
Money stock-M2 (daily avg.) (\$ bil.) <sup>4</sup>	3,823.9	4,046.6	4,401.5	4,071.4	4,241.8	4,285.7	4,327.0	4,365.1	4,401.5	4,425.1	
Three-month Treasury bill rate (%)	5.02	5.07	4.81	5.09	4.94	4.74	4.08	4.44	4.42	4.34	
AAA corporate bond yield (Moody's) (%)	7.37	7.26	6.53	6.61	6.52	6.40	6.37	6.41	6.22	6.24	
Total housing starts (1,000) <sup>5</sup>	1,476.8	1,474.0	1,615.7	1,527	1,615	1,576	1,698	1,654	1,738	1,804	
Business inventory/sales ratio <sup>6</sup>	1.40	1.38	1.38	1.39	1.39	1.39	1.39	1.38	1.37	--	
Sales of all retail stores (\$ bil.) <sup>7</sup>	2,465.1	2,546.3	--	218.4	224.3	225.1	227.9	229.5	232.0	234.3	
Nondurable goods stores (\$ bil.)	1,457.8	1,505.4	--	126.7	131.0	131.1	131.9	132.7	133.4	134.8	
Food stores (\$ bil.)	424.2	432.1	--	36.0	37.2	37.2	37.4	37.5	37.8	37.8	
Apparel and accessory stores (\$ bil.)	113.0	116.8	--	10.1	10.4	10.1	10.3	10.4	10.4	10.8	
Eating and drinking places (\$ bil.)	238.4	244.1	--	20.0	20.4	20.7	21.1	21.3	21.4	21.3	

-- = 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 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
	<i>Real GDP, annual percent change</i>									
<b>World</b>	1.9	1.9	1.6	3.2	2.8	3.6	3.5	2.0	1.8	2.5
less U.S.	3.0	1.6	1.3	3.1	2.9	3.7	3.3	1.2	1.3	3.0
<b>Developed Economies</b>	1.7	1.6	0.8	2.8	2.2	3.1	2.9	2.1	1.9	1.9
less U.S.	3.2	1.0	0.0	2.4	2.1	2.9	2.3	1.0	1.1	2.4
United States	-0.9	2.7	2.3	3.5	2.3	3.4	3.9	3.9	3.2	1.0
Canada	-1.9	0.9	2.3	4.7	2.6	1.2	3.8	3.0	2.5	3.3
Japan	3.8	1.0	0.3	0.7	1.4	5.2	1.4	-2.9	-0.9	1.9
Australia	-1.1	2.3	3.8	5.4	3.8	3.9	3.7	4.9	2.5	3.1
European Union	3.7	1.0	-0.6	3.0	2.4	1.8	2.7	2.8	1.9	2.5
<b>Transition Economies</b>	-6.9	-11.2	-6.5	-8.8	-1.5	-2.2	1.0	-2.6	-7.4	1.7
Eastern Europe	-10.6	-4.0	0.8	3.5	5.5	3.1	1.7	1.9	2.1	3.8
Poland	-6.3	2.0	3.8	4.2	7.1	5.9	6.8	4.8	3.8	5.0
Former Soviet Union	-5.5	-13.7	-9.3	-13.9	-5.1	-5.1	0.5	-5.3	-13.8	0.0
Russia	-5.0	-14.5	-8.7	-12.6	-4.1	-4.9	0.8	-5.8	-15.0	-0.2
<b>Developing Economies</b>	4.8	6.3	6.3	6.7	5.7	6.4	5.7	2.2	2.8	4.7
<b>Asia</b>	6.6	8.9	8.7	9.4	8.7	8.0	6.7	2.2	4.4	5.7
East Asia	8.7	10.8	10.6	10.7	9.3	8.4	7.8	4.5	6.4	6.5
China	9.3	14.2	13.5	12.6	10.5	9.6	8.8	7.8	8.0	7.4
Taiwan	7.5	6.8	6.3	6.5	6.0	5.7	6.8	4.8	3.7	4.7
Korea	9.2	5.1	5.8	8.6	9.0	7.1	5.5	-5.8	3.0	4.8
Southeast Asia	6.8	6.9	7.4	8.1	8.5	7.5	4.8	-6.7	-1.7	4.1
Indonesia	8.9	7.2	7.2	7.5	8.2	8.0	4.7	-14.7	-6.9	4.3
Malaysia	8.8	7.8	8.4	9.4	9.5	8.0	7.8	-6.6	-0.6	5.7
Philippines	-0.2	0.3	2.1	4.4	4.8	5.7	5.1	-0.3	-1.0	2.7
Thailand	8.0	8.1	8.3	8.8	9.2	6.4	-0.4	-8.0	0.5	4.0
South Asia	1.2	5.6	4.6	7.0	6.9	7.1	5.1	3.7	3.1	4.4
India	0.5	5.4	4.9	7.5	7.3	7.5	5.4	4.0	3.5	4.7
Pakistan	5.5	7.8	1.9	3.9	5.1	4.6	3.0	2.0	1.0	2.5
<b>Latin America</b>	3.8	3.0	3.9	5.0	0.1	3.4	5.0	2.2	-1.2	2.3
Mexico	4.2	3.6	2.0	4.4	-6.2	5.1	7.0	4.8	2.1	2.6
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	5.3	1.8	3.0	4.7	1.4	-2.2	2.3
Argentina	8.9	8.6	6.0	7.4	-4.6	4.4	8.2	4.2	0.4	3.0
Brazil	0.5	-1.2	4.5	5.8	3.0	2.9	2.9	-0.1	-5.0	1.0
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	-2.5	4.0
<b>Middle East</b>	2.9	5.5	3.5	0.3	3.5	4.5	3.9	0.9	1.4	3.5
Israel	7.7	5.6	5.6	6.9	7.0	4.6	2.3	1.5	1.8	2.8
Saudi Arabia	8.4	2.8	-0.6	0.5	0.5	2.4	0.9	-1.0	0.5	2.0
Turkey	0.9	6.0	8.0	-5.5	7.0	7.0	7.6	2.9	2.0	5.5
<b>Africa</b>	0.7	1.2	1.3	2.7	2.8	4.7	3.0	3.3	3.1	3.7
North Africa	1.0	2.2	0.1	2.8	2.4	5.6	2.4	4.9	4.3	4.1
Egypt	1.1	4.4	2.9	3.9	4.6	5.0	5.0	5.0	4.7	4.4
Sub-Saharan	0.5	0.3	2.5	2.6	3.2	4.0	3.6	1.9	2.0	3.4
South Africa	-1.0	-2.6	1.5	2.8	3.1	3.3	1.7	0.2	1.0	2.8
	<i>Consumer Prices, annual percent change</i>									
Developed Economies	4.7	3.5	3.1	2.6	2.5	2.4	2.1	1.6	1.6	--
Transition Economies	95.8	656.6	609.3	268.4	124.1	41.4	27.9	21.0	30.2	--
Developing Economies	36.4	38.7	47.3	51.6	22.3	14.1	9.2	10.2	8.4	--
Asia	8.2	7.2	11.1	15.9	12.8	7.9	4.7	7.9	6.4	--
Latin America	129.0	151.4	208.5	208.3	35.9	20.8	13.9	10.3	8.3	--
Middle East	27.5	25.6	24.6	31.9	35.9	24.6	22.8	23.6	20.5	--
Africa	24.4	32.4	30.8	37.5	34.1	26.7	11.0	8.5	7.8	--

-- = 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	Feb	Sep	Oct	Nov	Dec	Jan	Feb
	1990-92=100									
<b>Prices received</b>										
All farm products	112	107	101	101	99	99	100	99	97	96
All crops	127	116	107	109	101	100	102	100	98	97
Food grains	157	128	103	117	88	100	105	101	101	101
Feed grains and hay	146	117	100	113	86	85	86	89	91	90
Cotton	122	112	107	103	111	110	107	100	96	94
Tobacco	105	104	104	110	103	107	109	110	111	113
Oil-bearing crops	128	131	107	117	93	93	101	102	96	88
Fruit and nuts, all	118	108	114	87	131	126	119	99	100	100
Commercial vegetables	111	122	120	117	112	134	111	110	107	97
Potatoes and dry beans	114	90	98	102	89	82	89	93	94	99
Livestock and products	99	98	96	94	97	98	97	97	96	95
Meat animals	87	92	79	82	73	75	72	66	75	77
Dairy products	114	102	118	113	127	135	137	138	133	123
Poultry and eggs	120	113	117	104	128	127	124	120	114	109
<b>Prices paid</b>										
Commodities and services,										
interest, taxes, and wage rates (PPITW)	114	117	115	117	113	114	114	113	115	115
Production items	114	117	112	115	110	110	110	110	111	112
Feed	129	123	105	114	96	95	96	96	97	98
Livestock and poultry	75	94	88	94	80	85	86	85	90	93
Seeds	115	119	122	120	123	123	123	123	123	123
Fertilizer	125	121	112	114	111	110	108	107	107	107
Agricultural chemicals	119	120	122	122	122	123	122	122	118	115
Fuels	102	108	87	95	86	86	83	72	74	77
Supplies and repairs	115	118	119	118	119	120	120	120	120	120
Autos and trucks	118	119	119	119	118	118	119	119	120	120
Farm machinery	125	129	132	131	132	133	133	133	133	133
Building material	115	118	118	118	118	118	118	118	118	118
Farm services	116	117	116	116	117	116	116	116	116	116
Rent	119	121	124	124	124	124	124	124	130	130
Int. payable per acre on farm real estate debt	105	107	108	108	108	108	108	108	111	111
Taxes payable per acre on farm real estate	112	115	119	119	119	119	119	119	122	122
Wage rates (seasonally adjusted)	117	123	129	131	125	131	131	131	136	136
Prod. items, interest, taxes & wage rates (PITW)	114	117	114	116	111	112	112	112	114	114
Ratio, prices received to prices paid (%)*	98	91	88	86	88	87	88	88	84	83
Prices received (1910-14=100)	712	679	643	640	630	630	633	626	617	608
Prices paid, etc. (parity index) (1910-14=100)	1,520	1,558	1,532	1,555	1,507	1,517	1,516	1,511	1,534	1,538
Parity ratio (1910-14=100) (%)*	47	44	42	41	42	42	42	41	40	40

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://jan.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 <sup>1</sup>			1998					1999	
	1995	1996	1997	Feb	Sep	Oct	Nov	Dec	Jan	Feb
<b>Crops</b>										
All wheat (\$/bu.)	4.55	4.30	3.45	3.27	2.41	2.79	2.97	2.87	2.80	2.72
Rice, rough (\$/cwt)	9.15	9.96	9.64	9.75	9.35	9.25	8.98	9.06	9.05	9.11
Corn (\$/bu.)	3.24	2.71	2.60	2.55	1.83	1.91	1.93	2.01	2.06	2.01
Sorghum (\$/cwt)	5.69	4.17	4.00	4.05	2.91	2.96	3.05	2.98	3.05	3.04
All hay, baled (\$/ton)	82.20	95.80	102.50	96.10	86.50	85.20	81.40	78.40	78.80	79.00
Soybeans (\$/bu.)	6.72	7.35	6.50	6.57	5.25	5.18	5.40	5.37	5.32	4.83
Cotton, upland (¢/lb.)	75.40	69.30	66.90	62.50	67.10	66.40	65.10	60.70	58.30	57.10
Potatoes (\$/cwt)	6.77	4.93	5.68	5.94	4.92	4.47	4.81	5.20	5.32	5.75
Lettuce (\$/cwt) <sup>2</sup>	23.50	14.70	17.30	10.90	14.00	21.30	9.82	11.90	10.30	10.20
Tomatoes, fresh (\$/cwt) <sup>2</sup>	25.80	28.00	33.00	48.00	27.20	43.10	42.90	45.00	39.90	23.40
Onions (\$/cwt)	11.10	10.60	12.60	16.00	12.90	12.70	13.90	16.00	16.70	14.60
Beans, dry edible (\$/cwt)	20.80	23.50	17.70	21.20	19.30	19.60	20.80	20.50	19.80	19.10
Apples for fresh use (¢/lb.)	24.00	20.80	22.20	20.80	22.70	22.80	17.90	15.20	15.90	15.00
Pears for fresh use (\$/ton)	272.00	376.00	276.00	272.00	420.00	479.00	398.00	354.00	373.00	362.00
Oranges, all uses (\$/box) <sup>3</sup>	4.23	5.01	4.57	3.73	4.97	5.42	5.87	4.74	5.15	5.60
Grapefruit, all uses (\$/box) <sup>3</sup>	2.30	2.43	1.74	7.70	11.09	3.88	3.19	2.70	1.80	1.60
<b>Livestock</b>										
Cattle, all beef (\$/cwt)	61.80	58.70	63.10	60.40	56.10	58.00	58.10	56.80	59.00	60.20
Calves (\$/cwt)	73.10	58.40	78.90	88.70	74.10	75.70	77.50	80.20	83.20	87.30
Hogs, all (\$/cwt)	40.50	51.90	52.90	35.90	29.50	27.40	18.70	14.70	26.30	28.10
Lambs (\$/cwt)	78.20	88.20	90.30	75.00	71.40	67.30	62.20	64.50	68.20	--
All milk, sold to plants (\$/cwt)	12.78	14.75	13.36	14.70	16.60	17.60	17.90	18.00	17.40	16.00
Milk, manuf. grade (\$/cwt)	11.79	13.43	12.17	13.50	15.40	16.70	17.30	17.40	15.30	13.30
Broilers, live (¢/lb.)	34.40	38.10	37.70	34.40	45.90	43.90	41.50	39.00	37.90	36.60
Eggs, all (¢/doz.) <sup>4</sup>	62.40	74.90	70.20	64.70	63.40	66.40	72.80	75.80	71.90	65.20
Turkeys (¢/lb.)	41.00	43.30	39.90	34.00	40.20	42.80	44.00	41.10	34.80	35.70

-- = 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://jan.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	Feb	Sep	Oct	Nov	Dec	Jan	Feb
	<i>1982-84=100</i>									
Consumer Price Index, all items	156.9	160.5	163.0	161.9	163.6	164.0	164.0	163.9	164.3	164.5
CPI, all items less food	157.5	161.1	163.6	162.3	164.1	164.4	164.3	164.2	164.5	164.7
All food	153.3	157.3	160.7	159.4	161.1	162.0	162.1	162.3	163.6	163.3
Food away from home	152.7	157.0	161.1	159.6	162.1	162.3	162.6	163.0	163.5	163.8
Food at home	154.3	158.1	161.1	160.0	161.2	162.5	162.5	162.6	164.3	163.8
Meats <sup>1</sup>	140.2	144.4	141.6	142.4	141.6	141.3	141.4	140.2	139.4	140.6
Beef and veal	134.5	136.8	136.5	135.9	136.3	136.1	137.0	137.1	136.0	137.3
Pork	148.2	155.9	148.5	151.5	148.7	147.5	146.2	144.1	141.9	143.5
Poultry	152.4	156.6	157.1	155.3	159.3	161.1	159.6	159.3	158.5	157.4
Fish and seafood	173.1	177.1	181.7	180.9	181.5	183.1	183.1	183.7	183.6	184.3
Eggs	142.1	140.0	135.4	137.3	132.4	136.1	139.4	142.9	137.8	138.2
Dairy and related products <sup>2</sup>	142.1	145.5	150.8	147.7	152.9	155.0	155.9	157.6	161.2	162.3
Fats and oils <sup>3</sup>	140.5	141.7	146.9	141.5	152.4	156.8	155.1	151.9	150.5	150.9
Fresh fruits	234.4	236.3	246.5	240.3	247.6	251.8	249.6	258.7	267.4	257.8
Fresh vegetables	189.2	194.6	215.8	210.5	200.1	213.9	214.9	212.3	224.5	209.8
Potatoes	180.6	174.2	185.2	179.3	189.1	187.0	176.7	178.0	184.5	184.0
Cereals and bakery products	174.0	177.6	181.1	179.7	181.9	182.2	182.1	182.3	184.2	183.8
Sugar and sweets	143.7	147.8	150.2	149.6	150.8	150.5	149.6	150.1	151.7	151.3
Nonalcoholic beverages <sup>4</sup>	128.6	133.4	133.0	134.8	132.2	132.6	132.7	131.7	133.5	134.5
Apparel										
Footwear	126.6	127.6	128.0	126.6	128.6	130.3	130.4	127.5	125.6	124.8
Tobacco and smoking products	232.8	243.7	274.8	261.2	283.5	284.9	281.3	331.2	354.2	348.7
Alcoholic beverages	158.5	162.8	165.7	165.0	166.3	166.6	166.8	167.2	167.6	168.6

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	Feb	Sep	Oct	Nov	Dec	Jan	Feb
	<i>1982=100</i>									
All commodities	127.7	127.6	124.4	125.0	123.8	124.0	123.5	122.7	123.2	122.4
Finished goods <sup>1</sup>	131.3	131.8	130.6	130.2	130.6	131.4	130.8	131.0	131.5	130.9
All foods <sup>2</sup>	132.5	132.8	132.4	131.9	133.5	133.8	133.0	132.3	133.6	131.5
Consumer foods	133.6	134.5	134.3	133.6	135.4	135.5	134.7	134.3	135.6	133.9
Fresh fruits and melons	100.8	99.4	90.0	94.2	92.3	93.1	85.4	86.6	103.6	106.3
Fresh and dry vegetables	135.0	123.1	139.5	146.4	130.8	148.4	124.5	137.9	124.4	95.2
Dried and dehydrated fruits	124.2	124.9	124.4	123.4	125.5	124.1	122.3	121.8	122.6	122.6
Canned fruits and juices	137.5	137.6	134.4	134.4	133.4	133.1	135.4	136.6	136.7	136.4
Frozen fruits, juices and ades	123.9	117.2	116.1	111.7	117.2	117.7	123.7	125.0	121.8	123.4
Fresh veg. except potatoes	120.9	121.3	137.9	136.6	135.0	161.9	131.2	148.1	131.9	93.1
Canned vegetables and juices	121.2	120.1	121.5	121.9	120.0	119.6	120.7	119.7	120.8	121.0
Frozen vegetables	125.4	125.8	125.4	126.0	125.3	125.6	125.6	125.1	125.6	126.2
Potatoes	133.9	106.1	122.5	113.6	147.5	126.0	120.7	120.7	132.3	124.8
Eggs for fresh use (1991=100)	105.1	97.1	90.1	86.0	88.9	92.0	100.3	102.9	94.0	83.5
Bakery products	169.8	173.9	175.8	175.3	175.9	176.3	176.3	176.7	177.4	178.1
Meats	109.0	111.6	101.4	102.3	100.0	98.1	97.3	95.6	100.0	98.3
Beef and veal	100.2	102.8	99.5	100.1	97.2	96.8	99.9	98.5	101.4	99.9
Pork	120.9	123.1	96.6	97.6	96.2	91.1	83.9	80.6	90.6	86.1
Processed poultry	119.8	117.4	120.7	115.7	129.4	124.6	122.0	117.1	114.9	113.0
Unprocessed and packaged fish	165.9	178.1	183.0	193.0	178.7	181.2	185.4	174.9	184.7	186.9
Dairy products	130.4	128.1	138.1	133.1	145.7	148.3	148.6	148.5	149.0	145.1
Processed fruits and vegetables	127.6	126.4	125.8	125.4	125.2	125.1	126.6	126.7	126.8	127.2
Shortening and cooking oil	138.5	137.8	143.4	140.4	151.0	150.5	143.5	148.2	--	--
Soft drinks	134.0	133.2	134.8	134.7	134.8	135.0	134.7	134.9	135.4	136.5
Finished consumer goods less foods	127.6	128.2	126.4	125.6	126.3	127.1	126.3	126.9	127.5	127.0
Alcoholic beverages	132.8	135.1	135.2	135.0	134.7	135.8	136.4	136.4	136.8	137.0
Apparel	125.1	125.7	126.6	126.5	126.9	127.1	126.6	126.7	126.8	126.8
Footwear	141.6	143.7	144.7	144.7	144.7	144.7	144.9	145.2	145.2	145.9
Tobacco products	237.4	248.9	283.4	261.9	287.4	288.0	288.1	363.9	363.0	363.0
Intermediate materials <sup>3</sup>	125.8	125.6	123.0	123.8	122.9	122.3	121.8	121.1	121.2	120.5
Materials for food manufacturing	125.3	123.2	123.1	121.6	125.1	125.4	125.3	123.9	124.6	122.4
Flour	136.8	118.7	109.2	110.7	103.3	109.2	110.4	107.1	106.8	106.2
Refined sugar <sup>4</sup>	123.7	123.6	119.8	120.6	120.3	120.0	119.6	119.7	118.5	120.2
Crude vegetable oils	118.1	116.6	131.1	131.5	131.2	124.2	131.0	121.5	123.7	112.0
Crude materials <sup>5</sup>	113.8	111.1	96.7	100.1	92.1	94.0	92.9	88.8	90.9	87.9
Foodstuffs and feedstuffs	121.5	112.2	103.8	105.1	101.3	103.7	102.4	97.2	101.6	98.8
Fruits and vegetables and nuts <sup>6</sup>	122.5	115.5	117.2	122.2	114.9	122.3	109.3	115.6	120.6	110.6
Grains	151.1	111.2	93.4	105.2	76.3	84.6	88.5	87.7	87.0	86.4
Slaughter livestock	95.2	96.3	82.3	83.6	79.0	78.7	74.9	67.3	79.3	81.0
Slaughter poultry, live	140.5	131.0	141.4	116.1	164.1	161.8	151.4	136.2	129.5	126.4
Plant and animal fibers	129.4	117.0	110.4	108.1	117.8	112.6	110.9	97.7	93.5	90.8
Fluid milk	107.9	97.5	112.6	106.7	123.3	127.7	130.6	133.5	130.4	117.2
Oilseeds	139.4	140.8	114.4	126.9	101.0	103.0	108.8	105.5	103.2	93.0
Leaf tobacco	89.4	--	104.6	112.9	105.2	109.6	106.4	112.6	112.4	112.6
Raw cane sugar	118.6	116.8	117.2	116.4	118.2	115.8	116.5	117.9	119.0	118.7

-- = 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/bls/home.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	Feb	Sep	Oct	Nov	Dec	Jan	Feb
Market basket <sup>1</sup>										
Retail cost (1982-84=100)	155.9	159.7	163.1	161.6	163.2	164.8	164.7	165.6	167.7	166.6
Farm value (1982-84=100)	111.1	106.2	103.3	102.2	104.7	106.3	104.2	101.4	99.7	99.7
Farm-retail spread (1982-84=100)	180.1	188.6	195.4	193.6	194.7	196.3	197.3	200.2	204.3	202.7
Farm value-retail cost (%)	24.9	23.3	22.2	22.1	22.5	22.6	22.2	21.4	20.8	21.0
Meat products										
Retail cost (1982-84=100)	140.1	144.4	141.6	142.4	141.6	141.3	141.4	140.2	139.4	140.6
Farm value (1982-84=100)	100.4	101.2	84.8	88.0	81.3	79.3	76.9	70.7	67.7	69.0
Farm-retail spread (1982-84=100)	180.9	188.6	200.0	198.2	203.5	204.9	207.6	211.5	212.9	214.1
Farm value-retail cost (%)	36.3	35.5	30.3	31.3	29.1	28.4	27.6	25.5	24.6	24.9
Dairy products										
Retail cost (1982-84=100)	142.1	145.5	150.8	147.7	152.9	155.0	155.9	157.6	161.2	162.3
Farm value (1982-84=100)	107.2	98.0	113.0	107.7	125.4	126.2	125.6	127.1	123.8	132.5
Farm-retail spread (1982-84=100)	174.3	189.3	185.6	184.6	178.3	181.6	183.8	185.7	195.7	189.7
Farm value-retail cost (%)	36.2	32.3	36.0	35.0	39.3	39.1	38.7	38.7	36.8	39.2
Poultry										
Retail cost (1982-84=100)	152.4	156.6	157.1	155.3	159.3	161.1	159.6	159.3	158.5	157.4
Farm value (1982-84=100)	126.2	120.6	126.1	109.7	143.9	139.7	133.8	125.6	119.6	116.5
Farm-retail spread (1982-84=100)	182.6	198.1	192.9	207.8	177.1	185.7	189.3	198.1	203.3	204.5
Farm value-retail cost (%)	44.3	41.2	42.9	37.8	48.3	46.4	44.9	42.2	40.4	39.6
Eggs										
Retail cost (1982-84=100)	142.1	140.0	137.1	147.7	132.4	136.1	139.4	142.9	137.8	138.2
Farm value (1982-84=100)	114.7	99.3	89.6	137.3	85.2	91.4	104.9	108.1	100.0	86.1
Farm-retail spread (1982-84=100)	191.4	213.0	222.5	255.3	217.1	216.3	201.5	205.4	205.6	231.8
Farm value-retail cost (%)	51.9	45.6	42.0	38.2	41.4	43.2	48.3	48.6	46.6	40.0
Cereal and bakery products										
Retail cost (1982-84=100)	174.0	177.6	181.1	179.7	181.9	182.2	182.1	182.3	184.2	183.8
Farm value (1982-84=100)	125.6	107.7	94.4	100.2	85.6	92.4	95.6	95.0	95.6	95.0
Farm-retail spread (1982-84=100)	180.7	187.4	193.2	190.8	195.3	194.7	194.2	194.5	196.6	196.2
Farm value-retail cost (%)	7.2	7.4	6.4	6.8	5.8	6.2	6.4	6.4	6.4	6.3
Fresh fruit										
Retail cost (1982-84=100)	243.0	245.1	258.2	249.6	260.6	265.9	262.7	283.5	295.3	283.0
Farm value (1982-84=100)	151.7	137.0	141.3	141.0	152.3	158.9	140.6	138.5	157.5	155.9
Farm-retail spread (1982-84=100)	285.2	295.0	312.2	299.7	310.6	315.3	319.1	350.4	358.9	341.7
Farm value-retail cost (%)	19.7	17.7	17.3	17.8	18.5	18.9	16.9	15.4	16.8	17.4
Fresh vegetables										
Retail cost (1982-84=100)	189.2	194.6	215.8	210.5	200.1	213.9	214.9	212.3	224.5	209.8
Farm value (1982-84=100)	113.3	118.7	124.5	125.2	103.0	132.4	123.1	120.6	124.5	104.0
Farm-retail spread (1982-84=100)	228.3	233.6	262.7	254.4	250.0	255.8	262.1	259.4	275.9	264.2
Farm value-retail cost (%)	20.3	20.7	19.6	20.2	17.5	21.0	19.5	19.3	18.8	16.8
Processed fruits and vegetables										
Retail cost (1982-84=100)	144.4	147.9	150.6	148.6	152.1	151.6	150.7	150.4	153.4	152.9
Farm value (1982-84=100)	121.5	115.9	115.1	114.4	115.1	115.2	115.6	116.0	114.3	115.0
Farm-retail spread (1982-84=100)	151.6	157.9	161.7	159.3	163.7	163.0	161.7	161.1	165.6	164.7
Farm value-retail cost (%)	20.0	18.6	18.2	18.3	18.0	18.1	18.2	18.3	17.7	17.9
Fats and oils										
Retail cost (1982-84=100)	140.5	141.7	146.9	141.5	152.4	156.8	155.1	151.9	150.5	150.9
Farm value (1982-84=100)	112.3	109.4	118.9	120.3	120.5	117.5	117.8	111.5	111.7	102.4
Farm-retail spread (1982-84=100)	150.9	153.6	157.2	149.3	164.1	171.3	168.8	166.8	164.8	168.7
Farm value-retail cost (%)	21.5	20.8	21.8	22.9	21.3	20.1	20.4	19.7	20.0	18.2

See footnotes at end of table, next page.

Table 8—Farm-Retail Price Spreads (continued)

	1996	1997	1998	Feb	Sep	Oct	Nov	Dec	Jan	Feb
Beef, All Fresh Retail Price (cts/lb)	252.4	253.8	253.3	252.7	250.0	251.9	252.9	254.1	255.0	255.1
Beef, Choice										
Retail price (cents/lb.) <sup>2</sup>	280.2	279.5	277.1	272.0	274.2	275.0	280.0	283.6	279.1	278.0
Wholesale value (cents) <sup>3</sup>	158.1	158.2	153.8	148.5	153.2	156.4	158.1	150.4	156.3	153.7
Net farm value (cents) <sup>4</sup>	134.9	137.2	130.8	128.0	124.6	130.9	131.5	125.5	130.1	132.8
Farm-retail spread (cents)	145.3	142.3	146.3	144.0	149.6	144.1	148.5	158.1	149.0	145.2
Wholesale-retail (cents) <sup>5</sup>	122.1	121.3	123.3	123.5	121.0	118.6	121.9	133.2	122.8	124.3
Farm-wholesale (cents) <sup>6</sup>	23.2	21.0	23.0	20.5	28.6	25.5	26.6	24.9	26.2	20.9
Farm value-retail price (%)	48	49	47	47	45	48	47	44	47	48
Pork										
Retail price (cents/lb.) <sup>2</sup>	233.7	245.0	242.7	248.1	244.7	242.2	241.0	238.1	233.4	236.9
Wholesale value (cents) <sup>3</sup>	123.2	123.1	97.3	98.8	96.2	93.3	84.6	81.1	95.6	91.0
Net farm value (cents) <sup>4</sup>	99.4	95.3	61.2	64.2	56.4	52.1	35.0	29.3	50.7	52.6
Farm-retail spread (cents)	134.3	149.6	181.5	183.9	188.3	190.1	206.0	208.8	182.7	184.3
Wholesale-retail (cents) <sup>5</sup>	110.5	121.9	145.4	149.3	148.5	148.9	156.4	157.0	137.8	145.9
Farm-wholesale (cents) <sup>6</sup>	23.8	27.7	36.1	34.6	39.8	41.2	49.6	51.8	44.9	38.4
Farm value-retail price (%)	43	39	25	26	23	22	15	12	22	22

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			
	1995	1996	1997	II	III	IV	I	II	III	IV	
	1987=100*										
Labor—hourly earnings and benefits	455.2	459.7	474.3	473.0	474.6	480.2	484.9	488.3	493.0	494.6	
Processing	472.5	474.7	486.0	484.9	487.1	490.5	493.8	497.7	500.7	504.8	
Wholesaling	502.2	516.0	536.2	534.1	538.9	545.4	546.8	552.5	555.4	554.9	
Retailing	417.1	419.9	435.2	434.1	433.6	441.1	448.7	450.6	457.8	459.6	
Packaging and containers	415.7	399.8	390.3	388.7	387.6	392.9	398.5	396.7	394.9	391.9	
Paperboard boxes and containers	392.1	363.8	341.9	335.4	334.7	350.3	365.4	368.7	366.8	359.8	
Metal cans	504.9	498.3	491.0	496.1	490.8	487.9	494.1	484.7	486.0	486.6	
Paper bags and related products	457.8	437.8	441.9	441.6	439.5	442.5	438.8	434.0	430.2	428.5	
Plastic films and bottles	330.6	326.5	326.6	325.3	326.9	327.5	326.7	325.0	321.0	318.5	
Glass containers	463.3	460.5	447.4	446.9	446.6	446.6	446.9	446.9	446.1	447.3	
Metal foil	263.1	235.7	233.4	232.0	237.2	236.4	231.8	232.6	232.6	230.9	
Transportation services	436.6	429.8	430.0	430.6	429.0	429.4	429.9	431.8	426.3	425.0	
Advertising	539.1	580.1	609.4	608.7	609.3	611.6	623.2	624.2	624.5	626.2	
Fuel and power	633.7	670.7	668.5	657.4	658.1	669.0	625.1	622.9	629.2	601.6	
Electric	511.3	501.3	499.2	499.0	517.7	491.5	482.2	489.3	511.8	485.0	
Petroleum	559.7	666.8	616.7	609.7	574.8	609.6	495.5	470.0	439.2	423.3	
Natural gas	1,091.7	1,136.7	1,214.0	1,165.7	1,179.7	1,249.4	1,229.4	1,242.1	1,268.5	1,217.7	
Communications, water and sewage	284.9	296.8	302.8	302.2	303.5	304.2	305.5	308.0	308.5	308.5	
Rent	269.0	268.2	265.6	265.6	265.1	265.1	262.5	260.4	260.4	265.1	
Maintenance and repair	486.1	499.6	514.9	513.0	517.3	519.7	524.1	527.1	531.1	535.1	
Business services	491.0	501.7	512.3	511.7	513.9	514.1	518.4	521.2	521.8	522.7	
Supplies	342.7	338.3	337.8	337.0	337.5	337.9	335.6	332.4	331.4	329.5	
Property taxes and insurance	546.8	564.3	580.1	577.3	582.2	587.3	591.1	595.4	600.7	606.1	
Interest, short-term	113.5	103.9	108.9	111.2	108.8	110.1	106.5	106.7	105.6	96.0	
Total marketing cost index	444.8	452.1	459.9	458.4	459.1	463.4	465.3	466.9	468.6	467.9	

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 <sup>1</sup>	Imports	Total supply	Exports	Ending stocks	Consumption		Conversion factor <sup>3</sup>	Primary market price <sup>4</sup>
							Total	Per capita <sup>2</sup>		
							Million lbs. <sup>5</sup>			
							lbs.		\$/cwt	
<b>Beef</b>										
1995	548	25,222	2,103	27,873	1,821	519	25,533	67	0.695	66
1996	519	25,525	2,073	28,117	1,877	377	25,863	68	0.700	65
1997	377	25,490	2,343	28,210	2,136	465	25,609	67	0.700	66
1998	465	25,760	2,642	28,867	2,171	393	26,303	68	0.700	61.48
1999	393	25,406	2,705	28,504	2,380	370	25,754	66	0.700	62-66
<b>Pork</b>										
1995	438	17,849	664	18,951	787	396	17,768	52	0.776	42
1996	396	17,117	618	18,131	970	366	16,795	49	0.776	53
1997	366	17,274	633	18,273	1,044	408	16,821	49	0.776	54
1998	408	19,011	704	20,123	1,229	586	18,308	53	0.776	34.72
1999	586	18,905	700	20,191	1,335	475	18,381	52	0.776	35-37
<b>Veal<sup>6</sup></b>										
1995	7	319	0	326	0	7	319	1	0.83	75
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	251	0	256	0	6	250	1	0.83	87
<b>Lamb and mutton</b>										
1995	11	287	64	362	6	8	348	1	0.89	76
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	228	115	355	5	11	339	1	0.89	74
<b>Total red meat</b>										
1995	1,004	43,677	2,831	47,512	2,614	930	43,968	122	--	--
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	44,790	3,520	48,306	3,720	862	44,724	120	--	--
<i>c/lb</i>										
<b>Broilers</b>										
1995	458	24,827	1	25,287	3,894	560	20,832	69	0.869	56
1996	560	26,124	4	26,688	4,420	641	21,626	71	0.869	61
1997	641	27,041	5	27,687	4,664	607	22,416	73	0.869	59
1998	607	27,618	5	28,230	4,672	711	22,847	73	0.869	63
1999	711	29,141	4	29,856	4,425	750	24,681	79	0.869	59
<b>Mature chickens</b>										
1995	14	496	3	513	99	7	406	2	1.0	--
1996	7	491	0	498	265	6	228	1	1.0	--
1997	6	510	0	516	384	7	125	1	1.0	--
1998	7	524	0	532	426	6	100	1	1.0	--
1999	6	541	0	547	412	5	130	1	1.0	--
<b>Turkeys</b>										
1995	254	5,069	2	5,326	348	271	4,706	18	1.0	66
1996	271	5,401	1	5,673	438	328	4,906	19	1.0	66
1997	328	5,412	1	5,741	598	415	4,727	18	1.0	65
1998	415	5,216	0	5,631	445	304	4,882	18	1.0	62
1999	304	5,235	1	5,540	430	250	4,859	18	1.0	63
<b>Total poultry</b>										
1995	727	30,393	6	31,125	4,342	839	25,944	88	--	--
1996	839	32,015	5	32,859	5,123	975	26,760	90	--	--
1997	975	32,964	6	33,944	5,646	1,029	27,268	91	--	--
1998	1,029	33,358	5	34,393	5,543	1,021	27,829	92	--	--
1999	1,021	34,917	5	35,943	5,267	1,005	29,670	97	--	--
<b>Red meat and poultry</b>										
1995	1,731	74,070	2,837	78,637	6,956	1,769	69,912	210	--	--
1996	1,769	75,303	2,769	79,841	7,976	1,734	70,130	210	--	--
1997	1,734	76,322	3,065	81,120	8,831	1,924	70,364	209	--	--
1998	1,924	78,642	3,463	84,030	8,949	2,017	73,065	215	--	--
1999	2,017	79,707	3,525	85,249	8,987	1,867	74,394	217	--	--

-- = Not available. Values for the last year 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 &amp; Use

	Beg. stocks	Production	Imports	Total supply	Exports	Hatching use	Ending stocks	Consumption		Primary market price*	
								Total	Per capita		
Million doz.										No.	¢/doz.
1992	13.0	5,905.0	4.3	5,922.3	157.0	732.0	13.5	5,019.8	235.9	65.4	
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	894.8	7.4	5,358.6	240.0	81.2	
1998	7.4	6,658.7	5.8	6,672.0	218.8	922.7	8.4	5,522.1	245.2	75.8	
1999	8.4	6,830.0	4.0	6,842.4	220.0	970.0	5.0	5,647.4	248.4	72.9	

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<sup>1</sup>

Production	Commercial			Imports	Total commercial supply	Commercial			All milk price <sup>1</sup>	CCC net removals		
	Farm use	Market-ings	Beg. stocks			Ending stocks	Disappearance	Skim solids basis		Total solid basis <sup>2</sup>		
Billion lbs. (milkfat basis)										\$/cwt	Billion lbs.	
1991	147.7	2.0	145.7	5.1	2.6	153.4	10.4	4.5	138.6	12.24	3.9	6.5
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	152.5	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	15.38	4.0	2.6
1999	160.8	1.3	159.5	5.3	3.3	168.0	0.5	4.9	162.6	14.05	3.6	2.3

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 &amp; Eggs

	Annual			1998						1999	
	1996	1997	1998	Jan	Aug	Sep	Oct	Nov	Dec	Jan	
Broilers											
Federally inspected slaughter certified (mil. lb.)		26,336.3	27,270.7	27,822.9	2,368.5	2,266.5	2,321.2	2,494.2	2,191.7	2,394.1	2,424.9
Wholesale price, 12-city (cents/lb.)		61.2	58.8	63.1	54.7	72.1	70.5	68.0	64.1	60.4	59.3
Price of grower feed (\$/ton) <sup>1</sup>		175.5	156.3	128.6	147.0	116.0	112.0	113.0	115.0	116.0	117.0
Broiler-feed price ratio <sup>2</sup>		4.4	4.7	6.3	4.5	8.1	8.2	7.8	7.2	6.7	6.5
Stocks beginning of period (mil. lb.)		560.1	641.3	606.8	606.8	569.2	557.2	598.0	614.0	657.8	711.1
Broiler-type chicks hatched (mil.)		8,076.9	8,322.5	8,485.4	710.6	713.2	692.9	692.9	673.9	733.8	735.3
Turkeys											
Federally inspected slaughter certified (mil. lb.)		5,465.6	5,477.9	5,280.0	433.7	413.4	429.4	474.3	461.6	431.1	407.2
Wholesale price, Eastern U.S. 8-16 lb. young hens (cents/lb.)		66.5	64.9	62.2	55.7	63.2	65.6	71.5	73.0	69.0	57.7
Price of turkey grower feed (\$/ton) <sup>1</sup>		166.1	143.0	115.6	131.0	102.0	99.0	103.0	106.0	107.0	107.0
Turkey-feed price ratio <sup>2</sup>		5.3	5.6	6.7	5.4	7.6	8.1	8.3	8.3	7.7	6.5
Stocks beginning of period (mil. lb.)		271.3	328.0	415.1	415.1	701.8	706.8	699.5	658.7	310.4	304.3
Poults placed in U.S. (mil.)		327.2	321.5	297.8	26.2	24.5	21.1	22.8	22.2	25.0	24.4
Eggs											
Farm production (mil.)		76,532	77,677	77,905	6,766	6,694	6,480	6,791	6,723	7,029	6,973
Average number of layers (mil.)		299	304	313	312	309	311	315	319	321	322
Rate of lay (eggs per layer on farms)		256.2	255.3	255.4	21.7	21.6	20.8	21.6	21.1	21.9	21.6
Cartoned price, New York, grade A large (cents/doz.) <sup>3</sup>		88.2	81.2	75.8	83.2	77.7	77.0	78.9	83.6	82.7	79.9
Price of laying feed (\$/ton) <sup>1</sup>		184.4	160.1	137.7	147.0	121.0	119.0	118.0	116.0	118.0	123.0
Egg-feed price ratio <sup>2</sup>		8.5	8.8	9.8	10.1	10.7	10.7	11.3	12.6	12.8	11.7
Stocks, first of month											
Frozen (mil. doz.)		10.5	7.7	7.4	7.4	8.9	6.8	6.2	6.9	7.1	8.4
Replacement chicks hatched (mil.)		401.6	425.0	440.5	37.2	33.5	38.6	35.0	30.8	35.4	35.7

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

Table 14—Dairy

	Annual			1998						1999
	1996	1997	1998	Jan	Aug	Sep	Oct	Nov	Dec	Jan
Milk--Basic Formula Price (\$/cwt) <sup>1</sup>	13.39	12.05	14.20	13.25	14.99	15.10	16.04	16.84	17.34	16.27
Wholesale prices										
Butter, Central States (cents/lb.) <sup>2</sup>	108.2	116.2	177.6	177.8	216.6	273.1	242.3	187.9	140.8	144.4
Am. cheese, Wis. assembly pt. (cents/lb.)	149.1	132.4	158.1	144.5	166.9	171.0	183.5	188.7	192.4	162.3
Nonfat dry milk (cents/lb.) <sup>3</sup>	122.2	110.0	106.9	105.9	104.6	110.1	111.8	112.5	114.9	108.9
USDA net removals										
Total (mil. lb.) <sup>4</sup>	86.9	1,090.3	365.6	107.8	14.1	15.2	13.7	14.1	20.6	21.0
Butter (mil. lb.)	0.1	38.4	6.3	3.3	0.0	0.0	0.0	0.0	0.0	0.0
Am. cheese (mil. lb.)	4.6	11.3	8.2	0.7	0.8	0.7	0.6	0.7	0.9	0.7
Nonfat dry milk (Mil. lb.)	57.2	298.0	326.5	37.5	29.4	19.5	15.8	9.7	24.0	22.7
Milk										
Milk prod. 20 states (mil. lb.)	131,084	133,314	134,930	11,327	11,124	10,672	11,125	10,829	11,481	11,720
Milk per cow (lb.)	16,726	17,180	17,501	1,466	1,443	1,386	1,446	1,407	1,489	1,521
Number of milk cows (1,000)	7,837	7,760	7,710	7,728	7,708	7,701	7,695	7,697	7,708	7,704
U.S. milk production (mil. lb.) <sup>5</sup>	154,006	156,091	157,441	13,287	12,941	12,411	12,961	12,611	13,365	13,688
Stocks, beginning <sup>4</sup>										
Total (mil. lb.)	4,168	4,714	4,907	4,907	6,603	6,213	5,834	5,467	5,153	5,301
Commercial (mil. lb.)	4,099	4,704	4,889	4,889	6,565	6,173	5,793	5,433	5,126	5,274
Government (mil. lb.)	69	10	18	18	38	40	40	34	28	27
Imports, total (mil. lb.) <sup>4</sup>	2,911	2,698	4,591	196	559	422	548	381	481	--
Commercial disappearance (mil. lb.) <sup>4</sup>	154,731	156,085	159,931	12,734	13,764	13,087	13,740	13,174	13,563	--
Butter										
Production (mil. lb.)	1,174.5	1,151.2	1,053.4	113.5	61.5	67.1	83.2	87.2	101.6	122.3
Stocks, beginning (mil. lb.)	15.8	13.4	20.5	20.5	50.7	40.9	33.9	31.2	28.7	25.9
Commercial disappearance (mil. lb.)	1,179.8	1,108.7	1,095.7	98.3	84.6	80.6	95.8	93.1	105.1	--
American cheese										
Production (mil. lb.)	3,280.8	3,285.2	3,305.9	283.2	261.1	245.4	254.6	269.7	297.7	288.6
Stocks, beginning (mil. lb.)	379.6	410.3	407.6	407.6	460.8	441.4	417.3	394.5	388.5	407.6
Commercial disappearance (mil. lb.)	3,229.7	3,268.6	3,329.8	286.8	280.9	271.0	277.1	276.0	285.3	--
Other cheese										
Production (mil. lb.)	3,936.7	4,043.8	4,176.8	332.5	334.9	334.5	366.6	365.1	370.0	345.2
Stocks, beginning (mil. lb.)	105.3	107.3	70.0	70.0	134.7	135.2	135.5	128.0	105.9	109.5
Commercial disappearance (mil. lb.)	4,242.9	4,365.5	4,451.3	316.3	361.0	362.2	410.8	418.5	404.2	--
Nonfat dry milk										
Production (mil. lb.)	1,061.8	1,271.6	1,123.7	103.7	72.5	59.9	70.0	70.0	107.1	119.2
Stocks, beginning (mil. lb.)	70.6	71.1	103.3	103.3	112.3	78.1	64.4	45.9	41.6	56.2
Commercial disappearance (mil. lb.)	1,009.5	894.1	853.3	65.4	77.8	54.7	73.4	65.2	69.5	--
Frozen dessert										
Production (mil. gal.) <sup>6</sup>	1,240.9	1,281.4	1,272.5	83.3	122.0	112.2	94.1	76.3	82.0	81.2
	Annual			1997			1998			
	1996	1997	1998	II	III	IV	I	II	III	IV
Milk production (mil. lb.)	154,006	156,091	157,441	40,574	38,627	38,031	39,164	40,821	38,519	38,937
Milk per cow (lb.)	16,433	16,871	17,192	4,384	4,195	4,144	4,268	4,451	4,210	4,261
No. of milk cows (1,000)	9,372	9,252	9,158	9,273	9,236	9,200	9,176	9,171	9,149	9,137
Milk-feed price ratio	1.60	1.54	1.97	1.45	1.47	1.71	1.73	1.71	2.05	2.46
Returns over concentrate costs (\$/cwt milk)	10.98	9.80	12.15	9.05	9.05	11.00	11.10	10.40	12.25	14.80

-- = 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			
	1996	1997	1998	II	III	IV	I	II	III	IV
U.S. wool price (¢/lb.) <sup>1</sup>	193	238	162	244	255	258	228	255	255	258
Imported wool price (¢/lb.) <sup>2</sup>	196	206	164	210	213	204	192	176	141	141
U.S. mill consumption, scoured										
Apparel wool (1,000 lb.)	129,525	130,386	--	33,830	30,638	32,794	29,208	29,579	21,861	17,395
Carpet wool (1,000 lb.)	12,311	13,576	--	3,324	3,395	3,420	3,549	3,729	3,697	4,066

-- = 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



## Crops &amp; Products

Table 17—Supply & Utilization<sup>1,2</sup>

	Area				Total Production	Total supply <sup>4</sup>	Feed & residual	Other domestic use	Exports	Total use	Ending stocks	Farm price <sup>5</sup>
	Set- aside <sup>3</sup>	Planted	Harvested	Yield								
	<i>Mil. Acres</i>	<i>Bu./acre</i>	<i>Mil. bu.</i>	<i>\$/bu.</i>								
<b>Wheat</b>												
1994/95	5.2	70.3	61.8	37.6	2,321	2,981	345	942	1,188	2,475	507	3.45
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	248	1,009	1,040	2,297	722	3.38
1998/99*	--	65.9	59.0	43.2	2,550	3,368	350	1,013	1,050	2,413	955	2.65-2.75
	<i>Mil. acres</i>	<i>lb./acre</i>	<i>Mil. bu.</i>	<i>\$/cwt</i>								
<b>Rice<sup>6</sup></b>												
1994/95	0.3	3.4	3.3	5,964.0	197.8	230.9	--	6/ 100.7	98.9	199.6	31.3	6.78
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/ 106.5	85.2	191.7	27.7	9.70
1998/99*	--	3.3	3.3	5,669.0	188.1	224.7	--	6/ 109.2	84.0	193.2	31.5	8.40-8.80
	<i>Mil. acres</i>	<i>Bu./acre</i>	<i>Mil. bu.</i>	<i>\$/bu.</i>								
<b>Corn</b>												
1994/95	2.4	78.9	72.5	138.6	10,051	10,910	5,470	1,705	2,177	9,352	1,558	2.26
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	5,302	1,692	1,795	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	11,081	5,700	1,870	1,800	9,370	1,711	1.90-2.10
	<i>Mil. acres</i>	<i>Bu./acre</i>	<i>Mil. bu.</i>	<i>\$/bu.</i>								
<b>Sorghum</b>												
1994/95	1.6	9.8	8.9	72.7	646	693	377	22	223	622	72	2.13
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	275	45	185	505	64	1.65-1.75
	<i>Mil. acres</i>	<i>Bu./acre</i>	<i>Mil. bu.</i>	<i>\$/bu.</i>								
<b>Barley</b>												
1994/95	2.7	7.2	6.7	56.2	375	580	228	173	66	467	113	2.03
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	502	185	172	30	387	115	1.90-2.00
	<i>Mil. acres</i>	<i>Bu./acre</i>	<i>Mil. bu.</i>	<i>\$/bu.</i>								
<b>Oats</b>												
1994/95	0.6	6.6	4.0	57.1	229	428	233	93	1	327	101	1.22
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	346	165	95	2	262	84	1.10-1.20
	<i>Mil. acres</i>	<i>Bu./acre</i>	<i>Mil. bu.</i>	<i>\$/bu.</i>								
<b>Soybeans<sup>7</sup></b>												
1994/95	--	61.7	60.9	41.4	2,517	2,731	153	1,405	838	2,396	335	5.48
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	2,963	153	1,560	780	2,493	470	4.95-5.15
	<i>Mil. lbs.</i>	<i>\$/lb.</i>										
<b>Soybean oil</b>												
1994/95	--	--	--	--	15,613	16,733	--	12,916	2,680	15,597	1,137	27.58
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*	--	--	--	--	17,620	19,065	--	15,650	2,205	17,855	1,210	21.00-23.00
	<i>1,000 tons</i>	<i>\$/ton<sup>8</sup></i>										
<b>Soybean meal</b>												
1994/95	--	--	--	--	33,270	33,483	--	26,542	6,717	33,260	223	162.6
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	38,436	--	28,888	9,330	38,218	218	185.5
1998/99*	--	--	--	--	36,807	37,075	--	29,800	7,000	36,800	275	125-135

See footnotes at end of table, next page

Table 17—Supply &amp; Utilization (continued)

	Area					Total Supply <sup>4</sup>	Feed & residual	Other domestic use	Exports	Total Use	Ending stocks	Farm price <sup>5</sup>
	Set-aside <sup>3</sup>	Planted	Harvested	Yield	Production							
	Mil. Acres			Lb./acre								
Cotton <sup>9</sup>								Mil. Bales				¢/lb.
1994/95	1.7	13.7	13.3	709	19.7	23.2	--	11.2	9.4	20.6	2.7	72.0
1995/96	0.3	16.9	16.0	537	17.9	21.0	--	10.6	7.7	18.3	2.6	75.4
1996/97	--	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	618	13.8	18.0	--	10.4	4.2	14.6	3.4	--

-- = Not available or not applicable. \*March 11, 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 soybean and soyoil. 2. Conversion factors: Hectare (ha.) = 2.471 acres, 1 metric ton = 2,204.622 pounds, 36.7437 bushels of wheat or soybeans, 39.3679 bushels of corn or sorghum, 45.9296 bushels of barley, 68.8944 bushels of oats, 22.046 cwt of rice, and 4.59 480-pound bales of cotton. 3. Includes 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 crumbe. 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 <sup>1</sup>			1998						1999
	1996/97	1997/98	1998/99	Jan	Aug	Sep	Oct	Nov	Dec	Jan
Wheat, no. 1 HRW, Kansas City (\$/bu.) <sup>2</sup>	4.88	3.71	--	3.61	2.74	2.81	3.30	3.42	3.31	3.27
Wheat, DNS, Minneapolis (\$/bu.) <sup>3</sup>	4.96	4.31	--	4.12	3.58	3.53	4.03	4.15	3.97	3.92
Rice, S.W. La. (\$/cwt) <sup>4</sup>	20.34	18.92	--	19.00	18.35	17.50	17.50	17.63	17.63	17.50
Corn, no. 2 yellow, 30-day, Chicago (\$/bu.) <sup>5</sup>	2.84	2.56	--	2.73	1.97	1.84	2.00	2.16	2.16	2.16
Sorghum, no. 2 yellow, Kansas City (\$/cwt) <sup>5</sup>	4.54	4.11	--	4.33	3.27	2.98	3.17	3.45	3.41	3.41
Barley, feed, Duluth (\$/bu.)	2.32	1.90	--	1.58	--	--	--	--	--	--
Barley, malting Minneapolis (\$/bu.)	3.18	2.50	--	--	2.30	--	--	--	--	--
U.S. cotton price, SLM, 1-1/16 in. (¢/lb.) <sup>6</sup>	71.60	67.79	--	62.75	71.87	71.75	67.61	64.95	59.88	56.20
Northern Europe prices cotton index (¢/lb.) <sup>7</sup>	78.66	72.11	--	71.04	68.13	66.16	61.12	56.53	56.02	55.78
U.S. M 1-3/32 in. (¢/lb.) <sup>8</sup>	82.86	77.98	--	75.19	76.94	77.75	72.95	71.50	71.25	--
Soybeans, no. 1 yellow, 30-day Chicago (\$/bu)	7.38	6.51	--	6.74	5.31	5.01	5.26	5.52	5.55	5.29
Soybean oil, crude, Decatur (¢/lb.)	22.50	24.69	--	25.10	23.99	25.13	25.21	25.20	23.99	22.88
Soybean meal, 48% protein, Decatur (\$/ton)	270.90	276.78	--	202.80	146.25	135.80	135.70	144.50	146.40	138.80

-- = 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 soybean 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, &amp; Payment Rates

	Target price	Basic loan rate	Findley or announced loan rate <sup>1</sup>	Total deficiency payment rate	Effective base acres <sup>2</sup>	Program <sup>3</sup>	Flexibility contract payment rate	Acres under contract	Contract payment yields	Participation rate <sup>4</sup>
		\$/bu.			Mil. acres	Percent of base	\$/bu.	Mil. acres	Bu./cwt	Percent
<b>Wheat</b>										
1994/95	4.00	2.72	2.58	0.61	78.10	0/0/0	--	--	--	87
1995/96	4.00	2.69	2.58	0.00	77.70	0/0/0	--	--	--	85
1996/97	--	--	2.58	--	--	--	0.874	76.7	34.70	99
1997/98	--	--	2.58	--	--	--	0.631	76.7	34.70	--
1998/99 <sup>5</sup>	--	--	2.58	--	--	--	0.663	78.9	34.50	--
							\$/cwt			
<b>Rice</b>										
1994/95	10.71	6.50	5.88 <sup>6</sup>	3.79	4.20	0/0/0	--	--	--	95
1995/96	10.71	6.50	6.50 <sup>6</sup>	3.22 <sup>7</sup>	4.20	5/0/0	--	--	--	95
1996/97	--	6.50	--	--	--	--	2.766	4.2	48.27	99
1997/98	--	6.50	--	--	--	--	2.710	4.2	48.17	--
1998/99 <sup>5</sup>	--	6.50	--	--	--	--	2.921	4.2	48.17	--
							\$/bu.			
<b>Corn</b>										
1994/95	2.75	1.99	1.89	0.57	81.50	0/0/0	--	--	--	81
1995/96	2.75	1.94	1.89	0.00	81.80	7.5/0/0	--	--	--	82
1996/97	--	--	1.89	--	--	--	0.251	80.7	102.90	98
1997/98	--	--	1.89	--	--	--	0.486	80.9	102.80	--
1998/99 <sup>5</sup>	--	--	1.89	--	--	--	0.377	82.0	102.60	--
							\$/bu.			
<b>Sorghum</b>										
1994/95	2.61	1.89	1.80	0.59	13.50	0/0/0	--	--	--	81
1995/96	2.61	1.84	1.80	0.00	13.30	0/0/0	--	--	--	77
1996/97	--	--	1.81	--	--	--	0.323	13.1	57.30	99
1997/98	--	--	1.76	--	--	--	0.544	13.1	57.30	--
1998/99 <sup>5</sup>	--	--	1.74	--	--	--	0.452	13.6	56.90	--
							\$/bu.			
<b>Barley</b>										
1994/95	2.36	1.62	1.54	0.52	10.70	0/0/0	--	--	--	84
1995/96	2.36	1.58	1.54	0.00	10.70	0/0/0	--	--	--	82
1996/97	--	--	1.55	--	--	--	0.332	10.5	47.30	99
1997/98	--	--	1.57	--	--	--	0.277	10.5	47.20	--
1998/99 <sup>5</sup>	--	--	1.56	--	--	--	0.284	11.2	46.70	--
							\$/bu.			
<b>Oats</b>										
1994/95	1.45	1.02	0.97	0.19	6.80	0/0/0	--	--	--	40
1995/96	1.45	1.00	0.97	0.00	6.50	0/0/0	--	--	--	44
1996/97	--	--	1.03	--	--	--	0.033	6.2	50.80	97
1997/98	--	--	1.11	--	--	--	0.031	6.2	50.80	--
1998/99 <sup>5</sup>	--	--	1.11	--	--	--	0.031	6.5	50.70	--
							\$/bu.			
<b>Soybeans<sup>8</sup></b>										
1994/95	--	--	4.92	--	--	--	--	--	--	--
1995/96	--	--	4.92	--	--	--	--	--	--	--
1996/97	--	--	4.97	--	--	--	--	--	--	--
1997/98	--	--	5.26	--	--	--	--	--	--	--
1998/99	--	--	5.26	--	--	--	--	--	--	--
							¢/lb.			
<b>Upland cotton</b>										
1994/95	72.90	50.00	50.00 <sup>9</sup>	4.60	15.30	11/0/0	--	--	--	89
1995/96	72.90	51.92	51.92 <sup>9</sup>	0.00 <sup>7</sup>	15.50	0/0/0	--	--	--	79
1996/97	--	51.92	--	--	--	--	8.882	16.2	610.00	99
1997/98	--	51.92	--	--	--	--	7.625	16.2	608.00	--
1998/99 <sup>5</sup>	--	51.92	--	--	--	--	8.173	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 Act replaced target prices and deficiency payments with fixed annual payments to producers. Information contact: Brenda Chewning.

Table 20—Fruit

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
<b>Citrus<sup>1</sup></b>										
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.) <sup>2</sup>	23.6	21.4	19.1	24.4	26.0	25.0	24.1	25.0	26.8	--
<b>Noncitrus<sup>3</sup></b>										
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.) <sup>2</sup>	72.8	70.4	70.6	73.8	73.9	75.6	73.7	74.0	76.0	--
	1998					1999				
	Feb	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
<b>Grower prices</b>										
Apples (¢/pound) <sup>4</sup>	20.8	16.3	16.1	19.0	22.7	22.8	17.9	15.2	15.9	15.0
Pears (¢/pound) <sup>4</sup>	13.00	17.65	20.25	22.85	21.00	23.95	19.90	17.70	18.65	18.10
Oranges (\$/box) <sup>5</sup>	3.73	6.70	6.71	5.37	4.97	5.42	5.87	4.74	5.15	5.60
Grapefruit (\$/box) <sup>5</sup>	1.61	3.58	3.66	6.01	11.09	3.88	3.19	2.70	1.80	1.60
<b>Stocks, ending</b>										
Fresh apples (mil. lb.)	2,841	637	322	133	3,457	6,796	5,914	5,008	4,169	--
Fresh pears (mil. lb.)	212	4	0	94	534	513	384	311	237	--
Frozen fruits (mil. lb.)	1,003	836	1,040	1,028	1,050	1,280	1,353	1,209	1,103	--
Frozen conc.orange juice (mil. single-strength gallons)	828	1,003	918	827	736	600	629	731	865	--

-- = 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
<b>Production<sup>1</sup></b>										
Total vegetables (1,000 cwt)	543,435	562,938	565,754	689,070	688,824	782,505	747,988	762,952	760,952	760,952
Fresh (1,000 cwt) <sup>2,4</sup>	254,418	254,039	242,733	389,597	387,330	412,880	393,398	409,317	433,879	433,879
Processed (tons) <sup>3,4</sup>	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	16,353,639
Mushrooms (1,000 lbs) <sup>5</sup>	714,992	749,151	746,832	776,357	750,799	782,340	777,870	776,677	808,602	808,602
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	11,887
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				
	Feb	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
<b>Shipments (1,000 cwt)</b>										
Fresh	18,723	29,181	26,104	18,422	18,851	15,727	18,842	21,813	19,681	19,644
Iceberg lettuce	3,233	3,377	4,021	3,099	3,900	3,049	3,179	3,549	3,068	2,854
Tomatoes, all	3,057	3,031	2,858	2,667	2,927	2,568	2,719	3,497	3,496	3,373
Dry-bulb onions	3,436	3,006	3,255	3,278	3,783	3,049	3,084	3,423	2,896	2,845
Others <sup>6</sup>	8,997	19,767	15,970	9,378	8,241	7,061	9,860	11,344	10,221	10,572
Potatoes, all	11,870	11,965	12,734	9,569	12,695	11,498	11,734	13,483	12,819	11,691
Sweet potatoes	180	147	140	96	289	326	738	448	263	227

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			
	1995	1996	1997	II	III	IV	I	II	III	IV	
<b>Sugar</b>											
Production <sup>1</sup>	7,978	7,268	7,418	679	576	4,088	2,376	824	733	--	
Deliveries <sup>1</sup>	9,451	9,633	9,755	2,430	2,641	2,469	2,261	2,465	2,616	--	
Stocks, ending <sup>1</sup>	2,908	3,195	3,376	2,734	1,487	3,195	3,917	2,881	1,679	--	
<b>Coffee</b>											
Composite green price <sup>2</sup> N.Y. (¢/lb.)	142.18	109.35	146.49	172.99	143.29	134.89	143.58	117.73	98.57	97.83	
	Annual			1998							
	1995	1996	1997	Jan	Aug	Sep	Oct	Nov	Dec	Jan	
<b>Tobacco</b>											
Avg. price to grower <sup>3</sup>											
Flue-cured (\$/lb.)	1.79	1.83	1.73	--	1.62	1.79	1.87	1.81	--	--	
Burley (\$/lb.)	1.85	1.92	1.86	1.88	--	--	--	1.92	1.92	1.91	
<b>Domestic taxable removals</b>											
Cigarettes (bil.)	486.0	471.4	310.2	35.9	41.5	--	--	--	--	--	
Large cigars (mil.) <sup>4</sup>	3,166.4	3,552.9	2,520.0	260.8	321.3	--	--	--	--	--	

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



## World Agriculture

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

	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99 F
	<i>Million units</i>									
<b>Wheat</b>										
Area (hectares)	225.8	231.4	222.5	223.2	222.3	215.4	220.0	231.0	229.6	226.4
Production (metric tons)	533.2	588.0	542.9	562.4	559.0	524.8	538.6	582.8	610.0	586.6
Exports (metric tons) <sup>1</sup>	103.8	101.1	111.2	113.0	101.4	100.8	98.8	101.3	100.6	95.6
Consumption (metric tons) <sup>2</sup>	532.7	561.9	555.5	550.3	561.9	547.6	550.6	576.7	584.9	597.1
Ending stocks (metric tons) <sup>3</sup>	118.9	145.1	132.5	144.5	141.5	118.7	106.7	112.8	137.9	127.4
<b>Coarse grains</b>										
Area (hectares)	321.9	316.3	321.9	323.8	317.2	322.7	313.7	322.4	310.6	308.5
Production (metric tons)	793.7	828.7	810.5	872.0	799.7	871.6	802.7	907.1	880.9	878.7
Exports (metric tons) <sup>1</sup>	104.7	89.1	95.6	91.9	85.3	98.5	88.3	94.0	86.6	90.1
Consumption (metric tons) <sup>2</sup>	817.7	817.1	809.7	844.0	839.3	858.3	842.0	877.7	872.8	875.5
Ending stocks (metric tons) <sup>3</sup>	123.2	134.8	135.6	163.4	123.8	137.1	97.7	127.1	135.2	138.4
<b>Rice, milled</b>										
Area (hectares)	146.5	146.6	147.3	146.4	145.0	147.3	148.0	149.7	149.8	149.0
Production (metric tons)	343.9	352.0	354.7	355.6	355.4	364.5	371.3	380.3	386.0	378.0
Exports (metric tons) <sup>1</sup>	11.7	12.1	14.1	14.9	16.4	21.0	19.7	19.0	27.6	21.7
Consumption (metric tons) <sup>2</sup>	338.2	347.4	356.4	357.8	358.5	366.6	371.6	379.8	384.3	384.2
Ending stocks (metric tons) <sup>3</sup>	54.5	59.1	57.5	55.3	52.2	50.1	49.8	50.4	52.0	45.7
<b>Total grains</b>										
Area (hectares)	694.2	694.3	691.7	693.4	684.5	685.4	681.7	703.1	690.0	683.9
Production (metric tons)	1,670.8	1,768.7	1,708.1	1,790.0	1,714.1	1,760.9	1,712.6	1,870.2	1,876.9	1,843.3
Exports (metric tons) <sup>1</sup>	220.2	202.3	220.9	219.8	203.1	220.3	206.8	214.3	214.8	207.4
Consumption (metric tons) <sup>2</sup>	1,688.6	1,726.4	1,721.6	1,752.1	1,759.7	1,772.5	1,764.2	1,834.2	1,842.0	1,856.8
Ending stocks (metric tons) <sup>3</sup>	296.6	339.0	325.6	363.2	317.5	305.9	254.2	290.3	325.1	311.5
<b>Oilseeds</b>										
Crush (metric tons)	171.7	176.7	185.1	184.4	190.1	208.1	217.5	219.0	229.2	237.0
Production (metric tons)	212.4	215.7	224.3	227.5	229.4	261.9	258.4	261.8	286.3	294.2
Exports (metric tons)	35.6	33.4	37.6	38.2	38.7	44.1	44.4	49.4	53.9	53.9
Ending stocks (metric tons)	23.7	23.4	21.9	23.6	20.3	27.2	22.1	17.1	23.9	30.9
<b>Meals</b>										
Production (metric tons)	116.8	119.3	125.2	125.2	131.7	142.1	147.4	149.2	156.1	161.3
Exports (metric tons)	39.8	40.7	42.2	40.8	44.9	46.7	49.7	50.4	51.6	53.9
<b>Oils</b>										
Production (metric tons)	57.1	58.1	60.6	61.1	63.7	69.6	73.2	75.6	76.9	80.3
Exports (metric tons)	20.4	20.5	21.3	21.3	24.3	27.1	26.0	28.9	29.7	29.9
<b>Cotton</b>										
Area (hectares)	31.6	33.2	34.8	32.6	30.6	32.2	35.9	33.8	33.6	32.8
Production (bales)	79.7	87.1	95.7	82.5	76.7	85.9	93.0	89.6	91.6	85.3
Exports (bales)	31.3	29.6	28.5	25.5	26.8	28.4	27.8	26.8	26.6	23.9
Consumption (bales)	86.9	85.5	85.9	85.8	85.3	85.5	86.9	89.1	88.2	85.0
Ending stocks (bales)	25.3	27.8	37.6	35.1	27.0	30.0	35.8	38.2	41.5	42.2
	1990	1991	1992	1993	1994	1995	1996	1997	1998 F	1999 F
<b>Red meat<sup>4</sup></b>										
Production (metric tons)	112.3	117.7	117.3	119.3	124.6	130.2	135.5	137.4	133.2	--
Consumption (metric tons)	110.9	116.1	115.7	118.3	123.5	128.7	132.8	135.1	130.1	--
Exports (metric tons) <sup>1</sup>	8.2	7.5	7.4	7.4	8.1	8.2	8.5	8.6	7.6	--
<b>Poultry<sup>4</sup></b>										
Production (metric tons)	33.1	39.6	38.0	40.5	43.8	47.6	50.5	52.6	53.7	55.6
Consumption (metric tons)	32.6	38.4	37.0	39.4	42.7	46.2	48.9	50.8	51.8	53.7
Exports (metric tons) <sup>1</sup>	1.7	2.8	2.4	2.8	3.6	4.6	5.2	5.7	5.5	5.5
<b>Dairy</b>										
Milk production (metric tons) <sup>5</sup>	387.4	377.6	378.4	377.6	378.4	380.8	379.7	381.6	384.3	--

-- = 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	Feb	Sep	Oct	Nov	Dec	Jan	Feb
<b>Export commodities</b>										
Wheat, f.o.b. vessel, Gulf ports (\$/bu.)	5.63	4.35	3.44	3.81	2.94	3.43	3.57	3.44	3.41	3.17
Corn, f.o.b. vessel, Gulf ports (\$/bu.)	4.17	2.98	2.59	2.89	2.19	2.43	2.47	2.43	2.48	2.40
Grain sorghum, f.o.b. vessel, Gulf ports (\$/bu.)	3.90	2.89	2.54	2.87	2.16	2.29	2.37	2.33	2.32	2.31
Soybeans, f.o.b. vessel, Gulf ports (\$/bu.)	7.88	7.94	6.37	7.03	5.62	5.73	6.01	5.88	5.65	5.19
Soybean oil, Decatur (¢/lb.)	23.75	23.33	25.78	26.51	25.14	25.21	25.21	23.99	22.88	19.96
Soybean meal, Decatur, (\$/ton)	246.67	266.70	162.74	192.75	135.83	135.70	144.45	146.45	138.82	132.32
Cotton, 7-market avg. spot (¢/lb.)	77.93	69.62	67.04	63.66	71.77	67.61	64.98	59.88	56.20	55.46
Tobacco, avg. price at auction (¢/lb.)	183.20	182.74	179.77	192.05	179.06	186.53	181.01	191.02	192.51	196.54
Rice, f.o.b., mill, Houston (\$/cwt)	19.64	20.88	18.95	19.75	18.75	18.25	18.50	18.50	18.44	18.22
Inedible tallow, Chicago (¢/lb.)	20.13	20.75	17.67	16.88	16.22	16.98	16.90	16.70	16.30	12.53
<b>Import commodities</b>										
Coffee, N.Y. spot (\$/lb.)	1.29	2.05	1.39	1.86	1.13	1.11	1.23	1.17	1.11	1.02
Rubber, N.Y. spot (¢/lb.)	72.88	55.40	40.57	43.96	38.66	40.26	39.99	38.24	38.99	38.58
Cocoa beans, N.Y. (\$/lb.)	0.62	0.69	0.72	0.71	0.72	0.71	0.67	0.64	0.61	0.59

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
	1997	1998	1999 P	Jan	Aug	Sep	Oct	Nov	Dec	Jan
\$ million										
<b>Exports</b>										
Agricultural	57,365	53,730	49,000	4,809	3,704	3,467	4,859	4,671	4,827	3,891
Nonagricultural	569,892	584,077	--	46,726	45,692	48,056	51,298	49,144	50,071	44,557
Total <sup>1</sup>	627,257	637,807	--	51,535	49,396	51,523	56,157	53,815	54,898	48,448
<b>Imports</b>										
Agricultural	35,798	37,014	38,000	3,198	2,857	2,919	3,120	2,912	3,191	3,098
Nonagricultural	829,548	859,730	--	67,197	72,688	74,754	80,463	74,535	72,816	68,193
Total <sup>2</sup>	865,346	896,744	--	70,395	75,545	77,673	83,583	77,447	76,007	71,291
<b>Trade Balance</b>										
Agricultural	21,567	16,716	11,000	1,611	847	548	1,739	1,759	1,636	793
Nonagricultural	-259,656	-275,653	--	-20,471	-26,149	-26,696	-29,165	-25,391	-22,745	-23,636
Total	-238,089	-258,937	--	-18,860	-26,149	-26,150	-27,426	-23,632	-21,109	-22,843

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<sup>1</sup>

	Annual			1998						1999
	1996	1997	1998	Jan P	Aug P	Sep P	Oct P	Nov P	Dec P	Jan P
	1990=100									
Total U.S. trade	100.8	111.9	115.1	116.9	118.9	113.4	109.3	111.4	110.5	109.2
Agricultural trade										
U.S. markets	101.0	109.6	115.5	115.9	119.8	118.5	113.8	113.2	111.7	110.1
U.S. competitors	98.7	109.1	113.9	117.2	116.3	112.1	108.9	110.2	109.9	110.2
High-value products										
U.S. markets	100.4	108.2	111.9	111.0	117.3	114.9	110.7	110.2	109.1	107.4
U.S. competitors	100.1	110.9	114.6	117.1	116.9	112.5	109.1	111.0	110.5	110.1
Corn										
U.S. markets	96.4	107.1	113.3	113.9	120.2	116.4	109.0	107.9	106.1	104.1
U.S. competitors	90.1	97.4	100.2	101.6	102.0	99.1	97.0	98.0	97.9	97.4
Soybeans										
U.S. markets	96.0	107.9	113.9	116.4	118.2	114.6	108.6	108.6	107.0	105.6
U.S. competitors	80.8	82.2	84.9	84.1	85.4	85.2	85.4	85.3	85.5	93.1
Wheat										
U.S. markets	100.7	105.4	112.2	113.3	114.2	114.8	111.9	110.7	109.7	108.7
U.S. competitors	102.1	109.8	116.0	115.6	119.4	116.6	114.5	115.3	115.4	114.2
Vegetables										
U.S. markets	105.6	112.4	117.8	116.3	122.9	121.1	118.5	117.7	117.0	115.4
U.S. competitors	100.5	112.0	114.1	118.0	116.0	111.7	108.3	110.0	109.3	108.4
Red meats										
U.S. markets	93.3	100.4	109.0	108.4	116.9	112.8	105.3	104.3	102.1	99.4
U.S. competitors	98.0	107.9	112.8	114.1	115.6	111.7	108.4	109.9	109.9	109.5
Fruits & fruit juices										
U.S. markets	101.3	111.3	114.1	113.1	119.7	116.6	112.8	112.6	111.8	110.1
U.S. competitors	98.2	107.2	111.7	113.6	114.2	110.7	107.6	108.5	108.4	109.2
Cotton										
U.S. markets	95.5	105.7	123.8	133.5	126.8	124.0	116.7	114.5	112.4	112.2
U.S. competitors	101.6	103.0	106.8	106.9	108.3	107.9	105.3	104.7	104.7	103.6
Poultry										
U.S. markets	102.8	111.9	109.2	104.6	109.1	118.0	116.8	115.6	116.6	116.3
U.S. competitors	95.7	107.3	109.9	115.0	111.5	107.6	104.6	105.9	105.6	107.6

P = preliminary. 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: Tim Baxter (202) 694-5318 or 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 Mann Library URL.**

Table 27—U.S. Agricultural Exports &amp; Imports

	Fiscal Year			Jan		Fiscal Year			Jan	
	1997	1998	1999 P	1998	1999	1997	1998	1999 P	1998	1999
	1,000 units					\$ million				
<b>EXPORTS</b>										
Animals, live	--	--	--	--	--	508	538	--	45	26
Meats and preps., excl. poultry (mt) <sup>1</sup>	1,823	2,064	1,700	152	156	4,438	4,507	4,200	330	329
Dairy products	--	--	--	--	--	869	925	900	72	62
Poultry meats (mt)	2,553	2,663	2,300	232	179	2,516	2,347	1,900	194	128
Fats, oils, and greases (mt)	1,056	1,365	1,300	91	110	543	655	--	49	47
Hides and skins, incl. furskins	--	--	--	--	--	1,693	1,358	1,400	104	96
Cattle hides, whole (no.)	20,761	18,992	--	1,374	1,467	1,232	969	--	72	73
Mink pelts (no.)	3,600	2,990	--	251	321	96	83	--	6	6
Grains and feeds (mt) <sup>2</sup>	95,091	87,289	--	7,764	7,302	16,368	13,961	13,800	1,284	1,097
Wheat (mt) <sup>3</sup>	24,526	25,791	28,500	2,636	1,986	4,117	3,759	3,900	411	280
Wheat flour (mt)	511	465	600	28	49	141	117	--	8	19
Rice (mt)	2,560	3,310	3,200	278	294	959	1,132	1,100	101	110
Feed grains, incl. products (mt) <sup>4</sup>	53,796	44,564	49,400	3,676	3,821	7,166	5,187	4,800	448	388
Feeds and fodders (mt)	12,295	11,704	11,900	1,041	1,029	2,688	2,421	2,300	217	198
Other grain products (mt)	1,404	1,455	--	106	123	1,295	1,345	--	100	102
Fruits, nuts, and preps. (mt)	3,830	3,633	--	273	276	4,261	3,977	4,200	269	277
Fruit juices, incl.										
froz. (1,000 hectoliters)	10,455	10,658	--	580	839	658	653	--	40	50
Vegetables and preps.	--	--	--	--	--	4,081	4,168	2,800	341	339
Tobacco, unmanufactured (mt)	238	208	--	21	19	1,612	1,448	1,400	114	114
Cotton, excl. linters (mt) <sup>5</sup>	1,566	1,552	900	160	34	2,711	2,517	1,400	267	59
Seeds (mt)	1,200	816	--	91	59	913	827	900	130	103
Sugar, cane or beat (mt)	139	123	--	8	15	60	48	--	3	5
Oilseeds and products (mt)	33,808	35,966	33,800	3,902	3,207	11,288	10,984	8,600	1,202	807
Oilseeds (mt)	24,735	24,251	--	2,550	2,383	7,875	6,818	--	723	552
Soybeans (mt)	24,027	23,287	22,300	2,480	2,295	6,950	6,117	4,700	664	501
Protein meal (mt)	6,671	8,666	--	997	604	1,795	1,975	--	245	103
Vegetable oils (mt)	2,402	3,049	--	355	221	1,618	2,191	--	235	152
Essential oils (mt)	46	46	--	3	4	619	533	--	41	40
Other	--	--	--	--	--	4,228	4,284	--	322	311
Total	--	--	--	--	--	57,365	53,730	49,000	4,809	3,891
<b>IMPORTS</b>										
Animals, live	--	--	--	--	--	1,525	1,670	1,400	149	95
Meats and preps., excl. poultry (mt)	1,140	1,230	1,200	106	104	2,583	2,718	2,800	234	220
Beef and veal (mt)	785	857	--	76	70	1,552	1,761	--	160	148
Pork (mt)	260	271	--	21	25	766	686	--	50	49
Dairy products	--	--	--	--	--	1,273	1,368	1,400	93	109
Poultry and products	--	--	--	--	--	186	207	--	17	16
Fats, oils, and greases (mt)	76	80	--	6	7	58	59	--	4	5
Hides and skins, incl. furskins (mt)	--	--	--	--	--	210	184	--	25	20
Wool, unmanufactured (mt)	38	45	--	5	4	131	151	--	19	10
Grains and feeds	--	--	--	--	--	2,941	2,919	3,000	216	218
Fruits, nuts, and preps.,										
excl. juices (mt) <sup>6</sup>	7,121	7,581	8,000	623	684	3,773	3,982	5,000	328	419
Bananas and plantains (mt)	3,950	4,175	4,100	337	342	1,218	1,214	1,300	94	92
Fruit juices (1,000 hectoliters)	29,829	26,577	27,000	2,461	2,965	913	669	--	62	73
Vegetables and preps.	--	--	--	--	--	3,604	4,249	4,500	449	486
Tobacco, unmanufactured (mt)	337	241	200	30	25	1,179	822	800	118	90
Cotton, unmanufactured (mt)	27	10	--	1	3	34	11	--	1	3
Seeds (mt)	223	257	--	14	18	357	422	--	29	32
Nursery stock and cut flowers	--	--	--	--	--	974	1,082	1,100	105	85
Sugar, cane or beet (mt)	2,938	2,170	2,100	136	157	1,013	758	--	48	53
Oilseeds and products (mt)	3,780	4,314	4,300	407	358	2,248	2,243	2,300	198	175
Oilseeds (mt)	985	1,028	--	90	90	374	371	--	32	29
Protein meal (mt)	967	1,277	--	108	108	181	188	--	17	14
Vegetable oils (mt)	1,828	2,010	--	209	160	1,693	1,684	--	149	132
Beverages, excl. fruit										
juices (1,000 hectoliters)	--	--	--	--	--	3,247	3,705	--	217	243
Coffee, tea, cocoa, spices (mt)	2,305	2,374	--	221	243	5,778	6,066	--	583	511
Coffee, incl. products (mt)	1,212	1,155	1,200	109	110	3,698	3,587	3,800	355	267
Cocoa beans and products (mt)	767	875	1,000	86	100	1,414	1,701	1,800	170	179
Rubber and allied gums (mt)	1,075	1,162	1,200	106	94	1,315	1,027	1,100	97	62
Other	--	--	--	--	--	2,458	2,703	--	207	173
Total	--	--	--	--	--	35,798	37,017	38,000	3,198	3,098

P=Projection. -- = Not available. Projections are fiscal years (October 1 through September 30) and are from Outlook for U.S. Agricultural Exports.

1997 and 1998 data are from *Foreign Agricultural Trade of the U.S.* 1. Projection includes beef, pork, and variety meat. 2. Projection includes pulses.

3. Value projection includes wheat flour. 4. Projection excludes grain products. 5. Projection includes linters. 6. Value projection includes juice.

NOTE: Totals include transshipments through Canada, but transshipments are not distributed by commodity as previously.

NOTE: Adjusted transshipments through Canada for 1997 exports. Information Contact: Mary Fant (202) 694-5272

Table 28—U.S. Agricultural Exports by Region

	Fiscal year			1998						1999
	1997	1998	1999F	Jan	Aug	Sep	Oct	Nov	Dec	Jan
	<i>\$ million</i>									
Region & country										
WESTERN EUROPE	9,617	8,844	7,500	988	456	479	804	818	841	748
European Union <sup>1</sup>	8,997	8,508	7,300	966	439	451	764	788	821	728
Belgium-Luxembourg	715	666	--	78	34	58	68	48	83	47
France	557	538	--	89	25	21	60	44	44	45
Germany	1,376	1,294	--	125	80	76	104	120	130	107
Italy	792	722	--	92	26	32	81	58	72	59
Netherlands	2,011	1,792	--	196	60	79	111	162	219	185
United Kingdom	1,289	1,300	--	116	95	86	135	128	85	97
Portugal	243	185	--	17	8	7	9	16	11	24
Spain, incl. Canary Islands	1,087	1,126	--	166	55	47	122	137	77	102
Other Western Europe	620	336	200	21	17	28	39	30	20	19
Switzerland	506	236	--	16	9	17	29	14	13	15
EASTERN EUROPE	317	320	300	23	16	11	16	23	25	18
Poland	164	139	--	12	5	3	6	8	3	8
Former Yugoslavia	72	97	--	3	6	3	6	6	12	6
Romania	37	31	--	2	3	1	1	2	2	0
NEWLY INDEPENDENT STATES	1,593	1,456	1,400	123	109	34	46	25	46	40
Russia	1,281	1,103	1,100	109	70	6	18	14	28	20
ASIA <sup>2</sup>	26,436	21,954	16,800	1,889	1,523	1,301	1,954	1,869	1,913	1,632
West Asia (Mideast)	2,562	2,285	2,100	227	164	123	227	158	206	118
Turkey	742	658	600	61	72	34	54	48	51	22
Iraq	50	131	--	37	0	0	0	0	0	0
Israel, incl. Gaza and W. Bank	543	389	--	34	24	13	52	12	43	27
Saudi Arabia	630	535	500	53	32	34	58	41	55	25
South Asia	728	623	600	90	79	37	82	54	80	43
Bangladesh	123	114	--	18	6	11	30	15	28	22
India	152	163	--	14	31	13	20	14	38	13
Pakistan	418	275	--	57	30	6	26	18	12	7
China	1,774	1,514	1,300	151	68	51	239	121	79	59
Japan	10,713	9,459	8,000	838	626	589	697	786	794	789
Southeast Asia	3,136	2,282	2,000	171	181	128	193	190	211	197
Indonesia	768	529	400	47	50	31	50	32	60	39
Philippines	898	744	600	50	73	46	56	53	57	50
Other East Asia	7,523	5,790	4,900	414	405	372	515	560	543	427
Korea, Rep.	3,293	2,245	2,000	130	164	140	198	216	200	203
Hong Kong	1,640	1,568	1,300	107	100	128	129	137	142	86
Taiwan	2,588	1,971	1,600	176	141	104	188	203	200	138
AFRICA	2,265	2,167	1,900	278	185	193	179	165	213	169
North Africa	1,480	1,475	1,300	225	125	119	114	102	149	120
Morocco	166	139	--	24	13	2	7	12	15	4
Algeria	307	281	--	33	25	13	23	12	23	23
Egypt	928	939	900	148	84	99	83	67	103	90
Sub-Saharan	785	692	600	53	60	74	65	63	63	49
Nigeria	106	140	--	12	13	12	10	17	10	13
S. Africa	239	193	--	24	15	17	20	13	16	13
LATIN AMERICA and CARIBBEAN	9,984	11,348	11,400	907	822	822	1,074	1,035	1,142	726
Brazil	461	566	400	33	28	39	110	64	36	25
Caribbean Islands	1,473	1,487	--	132	114	105	148	114	135	130
Central America	1,029	1,137	--	97	81	87	98	125	128	83
Colombia	552	592	--	37	41	38	39	53	50	27
Mexico	5,077	5,956	6,700	449	460	456	539	556	633	351
Peru	178	314	--	38	29	35	39	35	39	22
Venezuela	552	516	500	46	32	24	45	40	53	37
CANADA	6,620	7,022	6,700	556	534	558	601	591	586	517
OCEANIA	534	545	500	44	49	49	56	47	42	42
TOTAL	57,365	53,730	49,000	4,809	3,704	3,467	4,859	4,671	4,827	3,891

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 transshipments through Canada, but transshipments are not distributed as previously for 1998, and Jan 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	1998P	1999F
	<i>\$ billion</i>									
Final crop output	83.3	81.0	89.0	82.4	100.3	95.8	115.6	112.5	102.0	95.8
Food grains	7.5	7.3	8.5	8.2	9.5	10.4	10.7	10.6	8.9	7.9
Feed crops	18.7	19.3	20.1	20.2	20.4	24.6	27.3	27.6	23.3	21.7
Cotton	5.5	5.2	5.2	5.2	6.7	6.9	7.0	6.5	6.1	5.5
Oil crops	12.3	12.7	13.3	13.2	14.7	15.5	16.4	19.9	17.3	14.4
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	12.8	11.9	12.6
Vegetables	11.5	11.6	11.9	13.5	13.9	14.9	14.6	15.1	15.3	15.4
All other crops	12.8	13.1	13.7	14.0	14.9	15.2	15.9	16.7	16.6	16.8
Home consumption	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Value of inventory adjustment <sup>1</sup>	2.8	(1.2)	3.2	(5.3)	7.2	(5.4)	8.9	0.3	(0.6)	(1.0)
Final animal output	90.2	87.3	87.1	91.7	89.7	87.6	92.2	96.2	92.7	93.7
Meat animals	51.2	50.1	47.7	50.8	46.8	44.8	44.4	49.9	42.8	44.4
Dairy products	20.2	18.0	19.7	19.2	19.9	19.9	22.8	21.0	24.2	23.3
Poultry and eggs	15.3	15.2	15.5	17.3	18.4	19.1	22.3	22.2	22.4	22.7
Miscellaneous livestock	2.5	2.5	2.6	2.8	3.0	3.2	3.4	3.5	3.5	3.5
Home consumption	0.5	0.5	0.5	0.5	0.4	0.4	0.3	0.4	0.4	0.4
Value of inventory adjustment <sup>1</sup>	0.4	1.0	1.0	1.1	1.1	0.2	(1.1)	(0.7)	(0.6)	(0.7)
Services and forestry	15.3	15.4	15.2	16.6	17.9	19.4	20.7	22.1	23.0	23.7
Machine hire and customwork	1.8	1.8	1.8	1.9	2.1	1.9	2.2	2.6	2.5	2.5
Forest products sold	1.8	1.8	2.2	2.6	2.7	2.9	2.8	2.8	2.8	3.0
Other farm income	4.5	4.7	4.2	4.6	4.4	5.2	5.9	6.3	6.8	6.8
Gross imputed rental value of farm dwellings	7.2	7.2	7.0	7.6	8.7	9.3	9.8	10.3	10.9	11.4
<b>Final agricultural sector output<sup>2</sup></b>	<b>188.7</b>	<b>183.7</b>	<b>191.3</b>	<b>190.7</b>	<b>207.9</b>	<b>202.8</b>	<b>228.5</b>	<b>230.8</b>	<b>217.8</b>	<b>213.2</b>
<i>Minus</i> Intermediate consumption outlays:	92.9	94.6	93.5	100.6	104.9	109.0	112.9	118.6	113.0	112.1
Farm origin	39.5	38.6	38.6	41.2	41.3	41.6	42.7	45.7	43.2	43.2
Feed purchased	20.4	19.3	20.1	21.4	22.6	23.8	25.2	25.2	23.9	23.8
Livestock and poultry purchased	14.6	14.1	13.6	14.6	13.3	12.3	11.2	13.8	12.6	12.6
Seed purchased	4.5	5.1	4.9	5.2	5.4	5.5	6.2	6.7	6.8	6.7
Manufactured inputs	22.0	23.2	22.7	23.1	24.4	26.2	28.6	29.0	27.1	26.7
Fertilizers and lime	8.2	8.7	8.3	8.4	9.2	10.0	10.9	10.9	10.4	10.1
Pesticides	5.4	6.3	6.5	6.7	7.2	7.7	8.5	8.8	8.9	9.0
Petroleum fuel and oils	5.8	5.6	5.3	5.3	5.3	5.4	6.0	6.2	5.2	5.0
Electricity	2.6	2.6	2.6	2.7	2.7	3.0	3.2	3.0	2.6	2.5
Other intermediate expenses	31.4	32.8	32.2	36.2	39.2	41.2	41.5	43.9	42.7	42.2
Repair and maintenance of capital items	8.6	8.6	8.5	9.2	9.1	9.5	10.3	10.4	10.2	10.2
Machine hire and customwork	3.6	3.5	3.8	4.4	4.8	4.8	4.7	4.8	4.6	4.5
Marketing, storage, and transportation	4.2	4.7	4.5	5.6	6.8	7.2	6.9	7.1	6.9	6.9
Contract labor	1.6	1.6	1.7	1.8	1.8	2.0	2.1	2.6	2.7	2.8
Miscellaneous expenses	13.5	14.3	13.7	15.2	16.7	17.8	17.5	19.0	18.2	17.8
<i>Plus</i> Net government transactions:	3.1	2.1	2.7	6.9	1.0	0.1	0.1	0.1	5.3	6.5
+ Direct government payments	9.3	8.2	9.2	13.4	7.9	7.3	7.3	7.5	12.8	14.0
- 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	6.5	6.7	6.8	7.0	7.0	7.1
<b>Gross value added</b>	<b>98.9</b>	<b>91.2</b>	<b>100.5</b>	<b>97.0</b>	<b>104.0</b>	<b>93.9</b>	<b>115.7</b>	<b>112.3</b>	<b>110.1</b>	<b>107.6</b>
<i>Minus</i> Capital consumption	18.1	18.2	18.3	18.4	18.7	19.1	19.4	19.5	19.6	19.5
<b>Net value added<sup>2</sup></b>	<b>80.7</b>	<b>73.0</b>	<b>82.1</b>	<b>78.6</b>	<b>85.3</b>	<b>74.8</b>	<b>96.3</b>	<b>92.8</b>	<b>90.5</b>	<b>88.1</b>
<i>Minus</i> Factor payments:	36.0	34.4	34.6	35.1	37.0	38.8	42.9	42.9	44.5	44.5
Employee compensation (total hired labor)	12.5	12.3	12.3	13.2	13.5	14.3	15.4	16.0	17.1	17.6
Net rent received by nonoperator landlords	10.0	9.9	11.2	11.0	11.8	11.8	14.3	13.2	13.2	13.2
Real estate and non-real estate interest	13.4	12.1	11.1	10.8	11.7	12.7	13.2	13.7	14.1	13.7
<b>Net farm income<sup>2</sup></b>	<b>44.7</b>	<b>38.6</b>	<b>47.5</b>	<b>43.6</b>	<b>48.3</b>	<b>36.0</b>	<b>53.4</b>	<b>49.8</b>	<b>46.0</b>	<b>43.6</b>

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 the 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	1991	1992	1993	1994	1995	1996	1997	1998P	1999F
	<i>\$ billion</i>									
<b>Cash income statement:</b>										
1. Cash receipts	169.5	167.9	171.4	177.8	181.2	188.1	199.6	208.7	195.5	190.7
Crops <sup>1</sup>	80.3	82.1	85.7	87.6	93.1	101.1	106.6	112.1	102.5	96.7
Livestock	89.2	85.8	85.6	90.2	88.2	87.0	93.0	96.6	93.0	94.0
2. Direct Government payments	9.3	8.2	9.2	13.4	7.9	7.3	7.3	7.5	12.8	14.0
3. Farm-related income <sup>2</sup>	8.1	8.3	8.2	9.0	9.2	10.1	10.9	11.8	12.2	12.3
4. Gross cash income (1+2+3)	186.9	184.3	188.7	200.2	198.3	205.5	217.8	228.0	220.4	217.0
5. Cash expenses <sup>3</sup>	134.1	134.0	133.6	141.2	147.6	153.6	161.4	167.2	163.0	162.2
6. Net cash income (4-5)	52.8	50.4	55.1	59.0	50.7	51.8	56.4	60.8	57.4	54.8
<b>Farm income statement:</b>										
7. Gross cash income (4)	186.9	184.3	188.7	200.2	198.3	205.5	217.8	228.0	220.4	217.0
8. Noncash income <sup>4</sup>	7.9	7.8	7.6	8.1	9.2	9.8	10.2	10.7	11.3	11.9
9. Value of inventory adjustment	3.3	-0.2	4.2	-4.2	8.3	-5.1	7.8	-0.4	-1.2	-1.6
10. Gross farm income (7+8+9)	198.0	191.9	200.5	204.1	215.8	210.1	235.8	238.3	230.6	227.2
11. Total production expenses	153.3	153.3	152.9	160.5	167.5	174.1	182.4	188.4	184.6	183.6
12. Net farm income (10-11)	44.7	38.6	47.5	43.6	48.3	36.0	53.4	49.8	46.0	43.6

Values for last 2 years are preliminary or forecasts. 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<sup>1</sup>

	1992	1993	1994	1995	1996	1997	1998	1999
	<i>\$ per farm</i>							
Net cash farm business income <sup>2</sup>	11,320	11,248	11,389	11,218	13,502	12,460	--	--
Less depreciation <sup>3</sup>	5,187	6,219	6,466	6,795	6,906	6,578	--	--
Less wages paid to operator <sup>4</sup>	216	454	425	522	531	513	--	--
Less farmland rental income <sup>5</sup>	360	534	701	769	672	568	--	--
Less adjusted farm business income due to other household(s) <sup>6</sup>	961	872	815	649	1,094	1,429	--	--
	<i>\$ per farm operator household</i>							
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 <sup>7</sup>	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 <sup>8</sup>	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	5,757	5,122
Plus earnings of the operator household from off-farm sources <sup>9</sup>	35,731	35,408	38,092	39,671	42,455	46,358	45,060	46,651
Equals average farm operator household income	42,911	40,223	42,469	44,392	50,361	52,347	50,816	51,773
	<i>\$ per U.S. household</i>							
U.S. average household income <sup>10</sup>	38,840	41,428	43,133	44,938	47,123	49,692	--	--
	<i>Percent</i>							
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. Values in the last 3 years preliminary or forecast. 1. This table derives farm operator household income estimates from the Agricultural Resource Management Study (ARMS) that are consistent with Current Population Survey (CPS) methodology. The CPS, conducted by the 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 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 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. 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 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: USDA, Economic Research Service, 1991, 1992, 1993, 1994, and 1995 Farm Costs and Returns Survey (FCRS), and 1996 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	1998P	1999F
	<i>\$ billion</i>									
Farm assets	841.5	844.9	870.3	906.4	938.3	981.9	1,033.9	1,088.8	1,124.7	1,140.3
Real estate	620.0	625.5	642.8	673.7	706.9	755.7	799.5	849.2	891.7	904.1
Livestock and poultry <sup>1</sup>	70.9	68.1	71.0	72.8	67.9	57.8	60.3	66.8	57.0	59.0
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 <sup>2,3</sup>	23.2	22.2	24.2	23.3	23.3	27.4	31.7	29.9	30.0	31.0
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	170.4	169.1
Real estate debt <sup>3</sup>	74.7	74.9	75.4	76.0	77.7	79.3	81.7	85.4	87.6	86.7
Non-real estate debt <sup>4</sup>	63.2	64.3	63.6	65.9	69.1	71.5	74.4	80.1	82.8	82.4
Total farm equity	703.5	705.7	731.3	764.4	791.5	831.1	877.8	923.4	954.3	971.2
	<i>Percent</i>									
Selected ratios										
Debt to equity	19.6	19.7	19.0	18.6	18.5	18.1	17.8	17.9	17.9	17.4
Debt to assets	16.4	16.5	16.0	15.7	15.6	15.4	15.1	15.2	15.2	14.8

Values in the last two columns are forecasts. 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			1997		1998				
	1996	1997	1998	Dec	Jul	Aug	Sep	Oct	Nov	Dec
	<i>\$ million</i>									
Commodity sales <sup>1</sup>	199,580	208,665	195,514	19,238	14,970	15,168	16,693	20,787	19,694	18,605
Livestock and products	93,005	96,568	92,972	8,288	7,459	8,119	8,112	7,848	8,265	7,796
Meat animals	44,414	49,925	42,832	4,457	3,090	3,762	3,803	3,216	3,568	3,319
Dairy products	22,820	20,989	24,176	1,892	1,860	1,991	2,043	2,250	2,231	2,342
Poultry and eggs	22,345	22,183	22,446	1,713	1,946	2,086	1,961	2,148	2,019	1,905
Other	3,425	3,471	3,518	227	564	280	305	234	447	230
Crops	106,575	112,097	102,542	10,950	7,511	7,048	8,582	12,939	11,429	10,810
Food grains	10,741	10,603	8,867	805	1,557	925	708	614	582	692
Feed crops	27,265	27,638	23,317	2,732	1,472	1,545	1,431	2,774	2,809	2,664
Cotton (lint and seed)	6,983	6,515	6,095	1,119	113	88	206	770	986	1,107
Tobacco	2,796	2,886	3,049	564	66	431	591	365	207	818
Oil-bearing crops	16,362	19,911	17,340	1,697	858	610	1,305	3,798	1,913	1,644
Vegetables and melons	14,561	15,086	15,323	905	1,468	1,571	1,535	1,538	911	891
Fruits and tree nuts	11,933	12,790	11,911	1,350	1,032	938	1,280	1,488	1,685	1,222
Other	15,935	16,668	16,640	1,778	945	941	1,525	1,592	2,335	1,772
Government payments	7,340	7,496	12,390	742	157	1,702	1,809	1,980	3,498	1,150
Total	206,919	216,160	207,904	19,980	15,127	16,870	18,502	22,767	23,192	19,756

Annual values for the most recent year and monthly values for the current year are preliminary. 1. Sales of farm products include receipts from commodities placed under nonrecourse CCC loans, plus additional gains realized on redemptions during the period. *Information contact: Roger Strickland (202) 694-5592. To receive current monthly cash receipts, contact Larry Traub at (202)694-5593 or ltraub@econ.ag.gov.*



Table 34—Cash Receipts from Farm Marketings, by State

Region and State	Livestock and products				Crops <sup>1</sup>				Total <sup>1</sup>			
	1997		1998		1997		1998		1997		1998	
	1997	1998	1998	1998	1997	1998	1998	1998	1997	1998	1998	1998
	<i>\$ million</i>											
<b>NORTH ATLANTIC</b>												
Maine	258	267	23	23	228	233	17	17	486	500	40	40
New Hampshire	69	69	7	6	97	97	9	7	166	166	16	13
Vermont	416	472	41	45	97	102	14	5	513	574	55	50
Massachusetts	102	102	8	8	430	401	68	39	532	503	76	48
Rhode Island	9	9	1	1	74	75	5	8	83	84	6	9
Connecticut	218	219	23	19	279	266	20	34	496	485	42	53
New York	1,859	2,100	197	205	1,037	1,071	96	89	2,896	3,171	293	294
New Jersey	180	180	15	15	596	581	55	34	776	761	70	49
Pennsylvania	2,789	2,889	256	255	1,339	1,284	128	121	4,128	4,172	384	377
<b>NORTH CENTRAL</b>												
Ohio	1,869	1,818	160	164	3,476	3,112	361	293	5,345	4,930	521	456
Indiana	1,896	1,671	146	132	3,610	3,373	443	693	5,506	5,044	588	825
Illinois	1,937	1,413	103	98	7,339	6,228	427	436	9,276	7,641	530	535
Michigan	1,352	1,293	107	115	2,236	2,122	328	228	3,588	3,415	435	343
Wisconsin	4,070	4,399	419	432	1,686	1,701	297	205	5,756	6,100	716	637
Minnesota	4,054	3,489	306	304	4,101	3,958	603	581	8,155	7,447	909	885
Iowa	5,530	4,778	356	344	7,311	6,356	722	591	12,841	11,134	1,078	935
Missouri	2,795	2,235	195	188	2,768	2,298	263	194	5,564	4,533	458	381
North Dakota	611	554	52	51	2,702	2,465	355	325	3,313	3,019	408	376
South Dakota	1,820	1,412	143	135	2,417	2,003	245	179	4,237	3,414	388	314
Nebraska	5,542	5,323	445	439	4,550	3,809	436	444	10,092	9,132	881	883
Kansas	5,017	4,915	430	396	3,985	3,255	287	343	9,001	8,171	717	739
<b>SOUTHERN</b>												
Delaware	573	596	42	51	174	156	18	7	748	752	61	57
Maryland	915	985	79	85	623	572	58	37	1,538	1,557	137	122
Virginia	1,538	1,476	130	120	863	762	73	79	2,401	2,238	203	199
West Virginia	324	324	27	24	71	71	6	8	394	394	34	31
North Carolina	4,694	3,837	301	264	3,608	3,308	321	287	8,302	7,146	622	551
South Carolina	797	759	69	60	898	749	60	54	1,695	1,508	129	114
Georgia	3,442	3,460	289	286	2,445	2,144	198	216	5,887	5,604	487	501
Florida	1,265	1,238	106	124	4,978	5,155	344	556	6,243	6,392	450	680
Kentucky	1,978	1,799	311	95	1,655	1,818	195	560	3,633	3,617	506	655
Tennessee	1,005	923	71	74	1,287	1,162	173	194	2,292	2,085	243	268
Alabama	2,431	2,457	195	195	796	725	88	77	3,227	3,181	284	272
Mississippi	2,006	2,174	174	166	1,470	1,309	160	165	3,476	3,484	335	331
Arkansas	3,416	3,221	275	265	2,446	2,195	378	186	5,862	5,416	654	451
Louisiana	659	655	48	54	1,481	1,272	205	254	2,140	1,926	253	308
Oklahoma	3,061	2,544	252	231	1,308	1,177	70	80	4,369	3,721	322	311
Texas	8,184	8,733	764	707	5,277	4,973	505	572	13,461	13,706	1,269	1,279
<b>WESTERN</b>												
Montana	991	745	73	65	1,072	937	105	125	2,063	1,682	177	191
Idaho	1,389	1,409	136	140	1,926	1,738	274	216	3,315	3,147	411	356
Wyoming	646	471	40	29	199	165	43	26	845	636	83	55
Colorado	3,012	3,027	249	245	1,388	1,392	138	136	4,399	4,419	386	381
New Mexico	1,354	1,283	97	102	562	483	59	47	1,915	1,766	157	149
Arizona	888	806	78	81	1,257	1,403	118	143	2,145	2,209	196	223
Utah	715	743	68	71	238	231	20	21	953	974	88	92
Nevada	180	180	12	13	130	161	13	11	310	341	25	24
Washington	1,604	1,724	165	155	3,778	3,337	305	246	5,382	5,061	470	400
Oregon	740	691	65	58	2,373	2,202	254	159	3,113	2,892	319	217
California	6,294	7,032	710	658	18,995	17,728	2,031	1,446	25,289	24,761	2,741	2,104
Alaska	6	6	1	1	26	26	2	2	32	32	3	2
Hawaii	68	68	6	5	415	400	34	34	483	468	40	39
U.S.	96,568	92,972	8,265	7,796	112,097	102,542	11,429	10,810	208,665	195,514	19,694	18,605

Estimates as of end of current month. Totals may not add because of rounding. 1. Sales of farm products include receipts from commodities placed under nonrecourse CCC loans, plus additional gains realized on redemptions during the period. Information contact: Roger Strickland (202) 694-5592. To receive current monthly cash receipts contact Larry Traub at (202) 694-5593 or ltraub@econ.ag.gov

Table 35—CCC Net Outlays by Commodity &amp; 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	4,894	3,087
Grain sorghum	243	190	410	130	153	261	284	296	474	311
Barley	71	174	186	202	129	114	109	168	316	148
Oats	12	32	16	5	19	8	8	17	32	20
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	5,716	3,566
Wheat and products	2,805	1,719	2,185	1,729	803	1,491	1,332	2,187	2,918	1,291
Rice	867	715	887	836	814	499	459	491	707	433
Upland cotton	382	1,443	2,239	1,539	99	685	561	1,132	1,629	781
Tobacco	-143	29	235	693	-298	-496	-156	376	-254	-143
Dairy	839	232	253	158	4	-98	67	291	435	528
Soybeans	40	-29	109	-183	77	-65	5	139	450	2,339
Peanuts	48	41	-13	37	120	100	6	-11	1	0
Sugar	-20	-19	-35	-24	-3	-63	-34	-30	-48	-41
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 <sup>1</sup>	625	6	6	6	6	6	6	5	4	4
Interest expenditure	745	532	129	-17	-1	140	-111	76	152	181
Export programs <sup>2</sup>	733	1,459	2,193	1,950	1,361	-422	125	212	960	1,014
1988/98 Disaster/tree/ livestock assistance	121	1,054	944	2,566	660	95	130	3	2,609	4
Conservation Reserve Program	0	0	0	0	0	2	1,671	1,693	1,508	1,578
Other conservation programs	0	0	0	0	0	7	105	197	309	366
Other	155	-162	949	-137	-103	320	104	28	1,101	531
Total	10,110	9,738	16,047	10,336	6,030	4,646	7,256	10,143	18,204	12,425
Function										
Price support loans (net)	418	584	2,065	527	-119	-951	110	1,128	55	982
Cash direct payments: <sup>3</sup>										
Production flexibility contract	0	0	0	0	0	5,141	6,320	5,672	5,544	5,042
Marketing loss assistance	0	0	0	0	0	0	0	0	3,058	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	1,804	2,713
Other	0	140	149	171	97	95	7	416	288	10
Conservation Reserve Program	0	0	0	0	0	2	1,671	1,693	1,508	1,578
Other conservation programs	0	0	0	0	0	0	85	156	260	310
Noninsured Assistance (NAP)	0	0	0	0	0	2	52	23	67	89
Total direct payments	6,341	5,847	9,143	5,057	4,134	5,807	7,017	8,431	12,529	9,742
1988-98 crop disaster	6	960	872	2,461	584	14	2	-2	2,375	0
Emergency livestock/tree/DRAP livestock indemn/forage assist.	115	94	72	105	76	81	128	5	234	4
Purchases (net)	646	321	525	293	-51	-249	-60	207	737	11
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	84	42
Export donations ocean transportation	50	139	352	156	50	69	34	40	681	65
Operating expense <sup>1</sup>	625	6	6	6	6	6	6	5	4	4
Interest expenditure	745	532	129	-17	-1	140	-111	76	152	181
Export programs <sup>2</sup>	733	1,459	2,193	1,950	1,361	-422	125	212	960	1,014
Other	190	-403	545	-326	-105	100	-28	3	393	380
Total	10,110	9,738	16,047	10,336	6,030	4,646	7,256	10,143	18,204	12,425

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. E=Estimated in the FY 2000 President's Budget which was released on February 1, 1999 based on November 1998 supply and demand estimates. 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 Service 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](http://www.fsa.usda.gov/dam/BUD/bud1.htm)

## Food Expenditures

**Table 36—Food Expenditures**

	Annual			1998			1999			Year-to-date cumulative		
	1997	1998	1999	Dec	Jan	Feb	Dec	Jan	Feb			
<i>\$ billion</i>												
Sales <sup>1</sup>												
At home <sup>2</sup>	380.2	395.3	--	36.8	29.2	37.3	395.3	29.3	56.6			
Away from home <sup>3</sup>	297.9	301.7	--	25.3	24.0	23.6	301.7	24.0	47.6			
<i>1995 \$ billion</i>												
Sales <sup>1</sup>												
At home <sup>2</sup>	371.0	378.5	--	34.9	27.4	25.7	378.5	27.8	53.5			
Away from home <sup>3</sup>	289.7	286.0	--	23.7	22.4	22.0	286.0	22.4	44.4			
<i>Percent change from year earlier (\$ billion)</i>												
Sales <sup>1</sup>												
At home <sup>2</sup>	3.4	4.0	--	3.3	-5.8	-5.5	4.0	-5.3	-5.4			
Away from home <sup>3</sup>	3.0	1.3	--	1.7	3.2	6.1	1.3	3.2	4.7			
<i>Percent change from year earlier (1995 \$ billion)</i>												
Sales <sup>1</sup>												
At home <sup>2</sup>	1.0	2.0	--	1.2	-7.7	-7.7	2.0	-6.3	-6.9			
Away from home <sup>3</sup>	0.2	-1.3	--	-0.8	0.5	3.4	-1.3	0.5	1.9			

-- = 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	Jan	Aug	Sep R	Oct	Nov	Dec R	Jan
Rail freight rate index <sup>1</sup> (Dec. 1984=100)										
All products	111.5	112.1	113.4	113.5	113.5	113.5	113.4	113.3	113.1	113.1
Farm products	115.9	120.3	123.8	124.7	124.9	125.1	120.9	121.1	121.1	121.5
Grain food products	108.8	107.6	107.4	108.5	106.5	107.0	107.2	107.2	107.2	107.2
Grain shipments										
Rail carloadings (1,000 cars) <sup>2</sup>	25.2	23.2	22.8	23.9	22.3	21.7	26.5	24.9	24.6	23.4
Barge shipments (mil. ton) <sup>3,4</sup>	3.1	2.6	3.0	2.0	3.7	1.4	3.3	4.6	3.5	--
Fresh fruit and vegetable shipments <sup>5</sup>										
Piggy back (mil. cwt)	1.1	1.1	0.9	1.0	0.6	0.9	0.8	0.8	0.9	0.6
Rail (mil. cwt)	1.6	1.7	1.2	1.5	0.4	0.8	1.3	1.5	1.4	1.4
Truck (mil. cwt)	35.7	42.6	42.3	40.7	39.6	36.3	41.2	40.2	40.5	40.3

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<sup>1</sup>

	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 <sup>1</sup>	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 <sup>2</sup>	87	81	86	92	89	100	98	111	110	106
Nonfarm <sup>3</sup>	95	95	96	96	97	100	100	101	--	--

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

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## Food Supply & Use

### Table 39—Per Capita Consumption of Major Food Commodities<sup>1</sup>

Commodity	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
	<i>Lbs.</i>									
Red meats <sup>2,3,4</sup>	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 <sup>2,3,4</sup>	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 <sup>3</sup>	15.1	15.6	15.0	14.8	14.7	14.9	15.1	14.9	14.7	14.5
Eggs <sup>4</sup>	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) <sup>2,5</sup>	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 <sup>6</sup>	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 <sup>2</sup>	222.3	224.2	221.8	221.1	218.3	213.4	213.6	209.8	210.0	206.9
Fluid whole milk <sup>7</sup>	105.7	97.5	90.4	87.3	84.0	80.1	78.8	75.3	74.6	72.7
Fluid lower fat milk <sup>8</sup>	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 <sup>9</sup>	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 <sup>10</sup>	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 <sup>11</sup>	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 <sup>12</sup>	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 <sup>13</sup>	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 <sup>14</sup>	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.

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