

R Real economic growth increased to a robust 5 percent in 2000, but is expected to slow to 1.7 percent in 2001, then increase again slightly to 2.6 percent in 2002. A combination of demand factors (monetary tightening, lower business fixed investment) and supply factors (tight labor markets, high oil and natural gas prices) led to the drop in GDP growth in 2001. Food prices are expected to increase 3.2 percent in 2001 and 2.5 percent in 2002. The percentage of income spent on food in all categories is likely to average 10.5 or 10.6 percent through 2002, as household disposable personal income increases. Food and agricultural exports are expected to grow moderately in both 2001 and 2002. Food and agricultural imports set new records in 1999 and 2000 and will continue to do so in 2001. As export markets continue to increase in importance for many US field crops, the agricultural sector also continues to recover from the market situation of the late 1990s that resulted in generally weak agricultural commodity prices.

The United States as a whole has adequate water supplies, although there are limited supplies in many areas, reflecting uneven distribution of the nation's water resources. Agriculture is a major user of ground and surface water in the US, accounting for 80 percent of the nation's consumptive water use. The quality of the US water supply is important, with challenges still remaining for water quality improvement. Conservation compliance measures have been adopted on 91 million acres or nearly one-quarter of all US cropland and have led to significant improvements in water resource quality.

Macroeconomic Situation and Outlook

Growth in the US economy slowed from 4 percent in the first half of 2000 to 1.6 percent in the second half. In the first half of 2001, growth slowed further, to 1 percent. Demand factors that contributed to the much slower growth included reduced demand for consumer durable goods and residential housing, a tightening of monetary policy in 1999 and 2000, more stringent business credit conditions, and slower overall credit growth. The supply factors included tight labor markets, and high oil and natural gas prices. Tight labor markets in 1999 forced the Federal Reserve to increase short-term interest rates. At the same time, higher oil and natural gas prices reduced consumer discretionary income and raised energy costs for businesses, thereby reducing their profits. Given the much slower pace of both consumer and business purchases of durable goods in the second half of 2000, firms sharply slowed industrial production in the fourth quarter of 2000 and the first half of 2001, to reduce excess business inventories. The dollar has continued to appreciate greatly against most world currencies, especially those of developing countries. The tightening of monetary policy in 1999 and 2000 enhanced the value of the already appreciating dollar and raised interest rates worldwide.

US economic growth is projected at 1.7 percent for 2001. After growing at a seasonally adjusted annualized rate of only 1 percent in the first half of 2001, growth is projected to be 2.1 percent in the second half of 2001. After a sluggish performance in 2001, growth is expected to increase to 2.6 percent in 2002 and 3.1 percent in 2003. Growth in the second half of 2001 and through 2002 is expected to be constrained by lower consumer confidence, lower consumer wealth, and a softer labor market. Over the course of 2002 and 2003, the combination of lower interest rates, more stable equity markets, stronger foreign growth, a weaker dollar, and the gradual reduction of excess business capacity should allow for a gradual acceleration in US growth. By 2003, the long-term potential growth rate is expected to return to normal and should average 3.1 percent.

Economic growth in 2002 is expected to be near 2.6 percent. Numerous factors account for the anticipated stronger growth. First, the Federal Reserve Board has acted forcefully to lower short-term interest rates since early 2001 and will continue to aggressively ease monetary policy until economic growth increases significantly, barring an unlikely sizeable increase in inflation. Long-term interest rates are expected to move downward through most of the second half of 2001 under the pressure of additional easing of monetary policy, continued low inflation, and reduced investor concern regarding an overly rapid US economic rebound.

Second, underlying productivity growth, while slowing, should remain relatively strong in the US. Nonfarm business hours worked declined slightly and economic growth slowed sharply in the second half of 2000, with labor productivity growth through 2003 expected to be lower than the 2.8 percent average achieved between 1996 and 2000. Third, the compromise personal tax cut legislation will raise personal disposable income and spending in the latter half of 2001 and 2002. Fourth, the reduction of excess inventories in the first half of 2001 will encourage greater industrial production in the second half of 2001. Fifth, gradually increasing stability in equity markets and gradual improvement in business credit availability in the second half of 2001 and 2002 will encourage greater business investment. Inflation, measured by GDP deflator, is expected to change little over the 2001-2002 horizon. Continued tightness in the labor markets and slower gains in labor productivity should be offset by continued slack in manufacturing capacity and slightly lower energy prices.

The United States represents about 27 percent of total world GDP. Thus, much slower growth in the US significantly reduces foreign growth, especially in those countries that are heavily dependent upon US imports. World growth is expected to slow to 2 percent in 2001 and rebound to 3.1 percent in 2002. The competitiveness of US exports, especially agriculture, has been reduced by the strong US dollar. However, the value of the dollar is expected to drop by approximately 2.5 percent in 2001 and 3 percent in 2002. By increasing US export competitiveness, the moderate fall of the dollar will mitigate

some of the negative impact that slower world growth is having on US exports, especially in 2002.

Food Prices and Consumption

Consumers can expect modest increases in food prices, with the Consumer Price Index (CPI) for all food categories projected to be up 3.2 percent in 2001 and 2.5 percent in 2002, compared with 2.3 percent in 2000. The general inflation rate is forecast to increase 3.1 percent in 2001 and 2.5 percent in 2002. Prices of food at home are expected to increase 3.3 percent in 2001 and 2.4 percent in 2002; while prices of food away from home are forecast to increase 2.8 percent in 2001 and 3 percent in 2002. The largest price increases in 2001 are expected for beef, dairy products, eggs, fats and oils, and fresh fruits and vegetables. Labor, energy, processing, and marketing costs, which particularly affect prices for highly processed foods, are expected to rise faster than the cost of farm commodities and have a greater effect on retail prices than will fluctuations in prices received by farmers.

Four factors contributing to moderate retail food prices are: (1) low overall inflation, which keeps costs related to food production and marketing (labor, packaging, transportation, and advertising) from rising substantially; (2) stable farm value of the food dollar (about \$.19 by 2001 and 2002); (3) a trend toward economies of scale in the agricultural and food processing sector, which will slow the increase in per-unit production costs; and (4) a competitive environment in the food processing, food service, and retail markets. Although consolidation and concentration in the US meat sector have accelerated since 1996, research has shown that consumers have benefited from lower per-unit processing costs while price competition between beef, pork, and poultry remains strong.

Consumer expenditures for all food categories in 2000 reached \$843.2 billion, and are expected to grow to \$855 billion in 2001 and \$885 billion in 2002. Sales of food away from home increased more than 9 percent in 2000, while sales of food at home increased about 5 percent. Rising incomes are chiefly responsible for the increased spending on food away from home, which should average 48 percent of total food expenditures in 2001 and 2002. Higher energy prices in 2000 did not translate into higher food prices and are not expected to boost food prices in 2001 or 2002, largely because transportation and energy costs together are less than 10 percent of the total food-marketing bill. Also, continued strong competition in the food service industry prevents complete pass-through of higher wage and raw material costs to consumers.

The percent of the consumer food dollar spent away from home has risen from 39 percent in 1968 to 48 percent in 2001 and 2002. As disposable income increases to \$27,073 in 2001 and \$28,249 in 2002, the percentage of income spent on all food is expected to average 10.5 percent in 2001 and 10.6 percent in 2002. Per-capita caloric intake is expected to increase to 3,607 calories a day in 2002 from 3,438 in 1995, an increase of almost 5 percent. About 32 percent of US caloric

intake is from animal products, with the remaining 68 percent from vegetable products.

Food Processing and Marketing

The food marketing system is an important part of the US economy, accounting for more than 15 percent of total GDP and directly employing one-fifth of the nation's labor force. By 2002, the food marketing system is expected to earn \$0.81 of every dollar spent by consumers on food, up from \$0.76 in 1990.

After a long-term decline and recent stabilization, the number of US food processing establishments has increased to 26,000 in 2000. Estimated sales amounted to \$517 billion in 2000 with sales projected to increase to \$544 billion in 2002. Large and highly diversified firms increasingly dominate food processing: the 100 largest firms in the business account for about three-quarters of the sector's value added. According to the Food Institute Report, February 5, 2001, new food product introductions declined to 9,248 in 2000 compared to 9,664 in 1999. Manufacturers responded to consumers' changing needs by offering quick hand-held items for portability, smaller portion sizes for multiple mini-meals throughout the day, and healthy and flavorful offerings. These trends are expected to continue into 2001 and 2002.

Merchant food wholesalers buy products from manufacturers and distribute them to retailers and food service establishments. Wholesaler sales reached \$389 billion in 2000. If recent trends continue, sales will reach \$397 billion by 2001. Rapid consolidation continues to reshuffle the leading general-line grocery wholesalers, with sales of the top four reaching \$51 billion in 2000. Companies from outside the United States are also purchasing US wholesalers. For example, Royal Ahold, Zaandam, The Netherlands, an international retail and foodservice company, recently purchased US Foodservice, a leading foodservice distributor in the United States. Both consolidation and international trends are expected to continue.

Food store sales reached \$484 billion in 2000 and are expected to reach \$507 billion in 2002. This excludes grocery sales from supercenters operated by mass merchandisers such as Wal-Mart or from warehouse clubs. Consolidation of food stores continues to be important. From 1998 to 1999, the share of total US grocery store sales controlled by the four largest firms rose from 26.8 percent to 27.6 percent, while sales controlled by the top 20 retailers rose from 48.2 percent to 53 percent.

Sales by the food service sector reached an estimated \$351 billion in 2000 and are projected to increase to \$365 billion in 2001 and \$379 billion in 2002. Fast-food sales accounted for 35 percent of all food service sales in 1999, up from 33 percent in 1997 and 1998. Fast-food sales are projected to increase to \$128 billion in 2002, up from \$118 billion in 1999. Fast-food restaurants account for 70 percent of takeout sales, but full-service restaurants and supermarkets represent an increasing share.

Mergers and divestitures in the food industry fell after a strong showing in 1999. There were 630 acquisitions and divestitures in

2000, down from 753 in 1999 and well below the record 813 of 1998. Diversified firms with interests in the food industry (such as Proctor & Gamble), poultry and meat processors, and foreign entities were among the only firms posting an increase in the number of 2000 acquisitions over those of 1999.

The US foreign direct investment position in food processing affiliates abroad continued to grow steadily, reaching \$36 billion in 1999—up from \$35 billion in 1998—and is projected to increase to \$46 billion in 2002. Sales of these US-owned affiliates reached an estimated \$154 billion in 2000. US exports of processed food peaked at \$31 billion in 1997, then declined 6 percent in 1998 and another 2.6 percent in 1999 to \$28.7 billion. Foreign direct investment in the US food processing sector reached an estimated \$24.1 billion in 1999, up from \$18.1 billion in 1998. In contrast, processed food imports declined sharply to \$16.7 billion in 1999 from \$22.0 billion in 1998.

Agricultural Production and Trade

The US agricultural sector continues to recover from the market situation of the late 1990s that resulted in generally weak agricultural commodity prices. Large crops were produced both in the United States and abroad for a number of years and world agricultural demand was weakened by the global financial crisis of the late 1990s. Although some lingering effects of the global crisis remain in the world economy in 2001 and are expected to continue through 2002, the general recovery in the crisis countries of Southeast Asia and the former Soviet Union, along with Canada and Mexico, is likely to strengthen global demand for US agricultural exports after 2002. Nonetheless, the buildup of global supplies will keep agricultural prices under pressure through 2001 and 2002, so government payments to producers will continue to play an important role in the US field crop sector.

CROP SECTOR. Planted acreage for the eight major US field crops (corn, sorghum, barley, oats, wheat, rice, upland cotton, and soybeans) is expected to decline over the next two years before turning upward. Planting flexibility of current agricultural legislation facilitates acreage movements by allowing producers to respond to market prices and returns, augmented by marketing loan benefits in low price years. Net returns, including marketing loan benefits, influence the aggregate level of plantings as well as the cropping mix in the near term when prices are relatively low.

The United States is the world's leading producer of soybeans, with 2000-2001 production expected to be 2,770 million bushels, up slightly from 1999-2000. With the US wheat area trending downward and US share of the world wheat market eroding, 2000-2001 production is expected to be 2,223 million bushels, down from 2,299 million bushels produced in 1999-2000. Corn is the most widely produced feed grain in the United States, with the US a major player in the world corn trade market. Approximately 20 percent of the US corn crop is exported to other countries. Production in 2000-2001 is expected to be 9,968 million bushels, up from 9,431 million bushels produced in 1999-2000.

Export markets continue to increase in importance for many US field crops. Gains in disappearance for US wheat, sorghum, and cotton are driven by exports, with US trade showing larger absolute gains and growth rates than domestic demand. US wheat exports are rising but face increased competition from the EU, which is projected to be able to export wheat without subsidies. Corn and soybean oil exports are also growing at faster rates than domestic use, although absolute increases in domestic use are larger than trade gains, reflecting the relative sizes of the utilization categories. The corn sector faces strong competition in global trade from Argentina, somewhat muting US corn export gains. Projected utilization gains for soybeans, soybean meal, and rice are primarily driven by domestic demand, with larger absolute increases and growth rates in domestic use than exports.

Domestic demand for many crops is projected to grow slightly faster than population. Growth in domestic use of rice reflects a greater emphasis on dietary concerns and an increasing share of the US population of Asian and Latin American descent. Gains in corn used for ethanol and corn sweeteners exceed population growth rates. Increases in domestic soybean crush reflect low soybean prices, but continue to reflect strong long-run growth in poultry production and demand for soybean meal.

LIVESTOCK SECTOR. Beef cattle inventories have continued to be held down by droughts and poor forage conditions over the past several years, which has encouraged ranchers to place more heifers in feedlots rather than retain them for calving, even as cattle returns have improved. The length of the biological lag is likely to prevent cowherd expansion before 2003-2004. The beef production mix continues to shift toward a larger proportion of higher-quality fed beef, with almost all steers and heifers being feedlot fed. Beef production also continues to move toward a higher graded product being directed toward the export and domestic hotel-restaurant markets. With US beef production forecast to decline to about 26 million pounds in 2001 and 2002, exports are expected to be 2 to 3 million pounds in each of those years.

The pork sector continues to transform into a more vertically coordinated industry, with a mix of production and marketing contracts. Increased vertical coordination in pork production lowers production costs and improves pork quality and product consistency, allowing pork to increasingly challenge beef in the hotel-restaurant market as well as in the retail sector. The United States is an important net pork exporter, in part reflecting environmental constraints in a number of competing countries that limit their production gains. Prospects for long-term growth markets for US pork exports remain focused on Pacific Rim nations and Mexico. Canada will increasingly compete for trade in these markets. Pork production is forecast to be 19 million pounds in 2001 and 2002, with exports expected to be 1 to 2 million pounds each year.

The broiler and turkey industries have kept production costs from increasing at the full rate of inflation through technological advancements and improved production management practices, including taking advantage of economies of size through increasing horizontal and

vertical integration. Further technological improvements are expected to occur, although efficiency gains are likely to be smaller than they were in the past. Competition in global poultry markets holds US poultry exports to moderate gains. Asian imports are projected to expand, even with growing domestic broiler production in China. Increasing exports are also expected to Russia, Mexico, Central America, and the Caribbean. Total poultry production is forecast to be 37 million pounds in 2001 and 2001, with exports expected to be 6 to 7 million pounds each year.

Milk production grows despite slowly declining cow numbers as strengthening milk-feed price ratios, improved management, and dairy productivity gains push milk output per cow higher. Productivity gains in the dairy sector reflect the continued structural shift to larger-sized operations as many traditional dairy farms, particularly smaller operations, will experience income stress caused by lower real milk prices and will exit the industry.

FARM INCOME. Net farm income has been maintained at levels near the average of the 1990s mostly because of large marketing loan benefits and additional funds provided to the sector in emergency and disaster assistance legislation in 1998 through 2000. These government payments balanced lower farm cash receipts during this period of generally low commodity prices. With current projections assuming no further ad hoc government assistance and with production flexibility contract payments scheduled to decline, farm income is forecast at \$41.2 billion in 2001, \$4.2 billion less than the \$45.4 billion in 2000. Farm income is projected to fall through 2002, as gains in commodity prices and cash receipts in the sector do not match the reduction in government payments. Further, production expenses for energy-related inputs, such as fuels and fertilizer, have been boosted due to price increases for oil and natural gas. The prices that farmers pay for fuels, including gasoline, diesel, LP gas, and natural gas, are typically more volatile than other farm input prices such as fertilizer, machinery, or general supplies. Despite some cash flow difficulties in the sector, a strong financial position achieved during the 1990s will help farmers through this period.

2002 FARM BILL DEBATE. Most provisions of the 1996 Farm Act expire in 2002 and debate on provisions of the next US farm bill has commenced. The current economic setting of low commodity prices is influencing the policy debate. In view of the large emergency payments in recent years, strong support exists for establishing a new income support program to complement the existing production flexibility contract and commodity marketing loan programs. A few observers are calling for implementing supply control programs such as a farmer-owned storage program and tying acreage set-asides to higher commodity loan rates. A major difference between the 2002 farm bill debate and previous debates is the influence of international trade agreements. Concerns have been expressed with designing programs to be minimally trade distorting so that they can meet WTO goals while addressing national agricultural policies related to market access limits, domestic support to agricultural producers, and export subsidies.

AGRICULTURAL TRADE. US agricultural exports in fiscal year 2000 (October 1999 to September 2000) increased for the first time since 1996, and are expected to rise to \$53 billion in FY 2001 and \$56 billion in FY 2002, from \$50.9 billion in 2000. US agricultural imports continued to increase in FY 2000 to \$38.9 billion from \$37.3 billion in 1999, and are projected at \$40 billion in 2001 and \$40.9 billion in 2002. Total US agricultural trade, as a result, is forecast to reach \$93 billion in 2001 and \$96.9 billion in 2002, up from \$89.8 billion in 2000. Strong world economic growth in 2000, particularly in Asia, Latin America, and the Middle East, revived demand for high-value products. Sales of US livestock, poultry, and horticulture products were largely responsible for the recovery of US exports in 2000. Among US bulk commodity exports in FY 2000, only soybeans and cotton posted gains.

Exports of US grains are expected at 89.8 million tons in FY 2001, up from 87.6 million tons in 2000. US grain imports are also projected to increase to 4.8 million tons in 2001 from 4.5 million tons in 2000. Grain export volume in FY 2000 fell from 1999 because of abundant world grain supplies and strong foreign competition. While total US agricultural exports are projected to be up in FY 2001, the expectation of slower economic growth in Japan and other major Asian markets has reduced prospective US sales to that region in 2001. Nevertheless, higher economic growth in other world markets relative to the United States in 2001 will raise overall US exports, more than offsetting the expected US sales decline in Asia. Strong import demand is expected from Canada, Mexico, other Latin American countries, the Middle East, and Africa in 2001.

Increased US imports of agricultural products in FY 2001 and FY 2002 are attributed to larger demand for horticulture products, red meats, and sugar and related products. Among horticulture imports, fruits, vegetables, and wine and malt beverages lead in the year-to-year change. As has been the case in the past two decades, imported horticulture products are setting the pace for total US food imports. The largest suppliers of US imported food are Canada, the European Union, Mexico and Latin America, Australia, New Zealand, and Southeast Asia.

The US agricultural trade surplus in FY 2001 is forecast at \$13 billion and \$15.9 billion in FY 2002, up from \$12 billion in 2000, but still below the \$27.4-billion surplus in 1996. The weaker US economy in 2001 is expected to slow the growth of US imports. On the other hand, stronger growth in foreign markets relative to US growth will raise demand for US exports. If the dollar depreciates in 2001 and 2002, the projected trade surplus may expand by more.

US imports of perishable products have grown faster than exports. Perishable products include fresh, chilled, and frozen meat and poultry, dairy, fruits, fruit juices, vegetables, and fish. In 2000, perishable imports reached \$13.5 billion, compared to \$12.7 billion for exports. Similarly, US imports of fishery products, which include shellfish, have increased significantly, to \$9.8 billion by 2000, while exports totaled only \$2.9 billion. The rising imports of perishable and fishery products by the United States are helped by more advanced refrigerated transport and storage systems.

On food safety, emphasis will be placed on cooperation among various government entities, industry, scientists, and consumers to protect and create the safest food supply chain. In addition, USDA will continue to educate the public about all aspects of food safety, from testing to food handling. An educated public will hold more realistic views on the safety of the food supply and therefore will be more confident in the food they buy and consume. Finally, emphasis will be placed on the highest level of scientific research to formulate public policy and regulation.

Water Resource Issues

As a whole, the United States has adequate water supplies. Annual renewable supplies in surface-water bodies and groundwater aquifers total roughly 1,500 million acre-feet per year. Of total renewable supplies, only one-quarter is withdrawn for use in home, farms, and industry, and just 7 percent is consumptively used. Renewable surface and groundwater supplies account for roughly 90 percent of total water use nationwide. The remainder reflects depletion of stored groundwater.

Agriculture is a major user of surface and groundwater in the United States, accounting for 80 percent of the nation's consumptive water use. Irrigated agriculture remains the primary user of fresh water in the United States, although irrigation's share of total consumptive use has declined since 1970. National irrigated cropland area has expanded by about 30 percent since 1969, while field water application rates per acre have declined about 15 percent. This has resulted in an increase of total irrigation water applications of about 12 percent from 1969 to 1998. In the US, concentrations of irrigated areas are the Central Valley of California, the Snake River Valley in Idaho, the High Plains from Texas to Nebraska, the Mississippi Delta in Arkansas and adjoining states, and south-central Florida.

WATER RESOURCES' MAJOR TRENDS IN THE LAST FIVE TO TEN YEARS. An abundance of water in the aggregate belies increasingly limited supplies in many areas, reflecting uneven distribution of the nation's water resources. In the arid west, consumptive use exceeds half of the renewable water supplies under normal precipitation conditions. In drought years, water use often exceeds renewable flow. While droughts exacerbate supply scarcity, water needs continue to expand in the aggregate and to shift among uses. Urban growth greatly expanded municipal water demand in arid areas of the southwest and far western parts of the US. At the same time, demand for high-priority instream (nonconsumptive) water flows for recreation, riparian habitat, and other environmental purposes has tightened competition for available water supplies in all but the wettest years. While future water needs for instream uses are difficult to quantify, the potential demands on existing water supplies are large and geographically diverse.

WATER POLICY. The quality of the US water supply; emphasis will be placed on maintaining and improving US water quality. The Clean Water Act, which was passed by Congress in 1972, defines water quality standards for the drinking-water supply, primary contact recreation

areas, and aquatic life support. Water quality criteria establish the minimum physical, chemical, and biological parameters required for water to support a beneficial use. Since passage of the Clean Water Act, surface water quality has improved largely through reductions in toxic and organic chemical loadings from point sources. Discharges of toxic pollutants have been reduced by an estimated billion pounds per year. Rivers affected by sewage treatment plants have shown a consistent reduction in ammonia between 1970 and 1992. The percentage of the US population served by wastewater treatment plants increased from 42 percent in 1970 to 74 percent in 1998. The Clean Water Act allows states and tribes to set their own water quality standards, but requires that all beneficial uses and their criteria comply with the goals of the act.

Challenges to water quality improvement remain. Food and fiber production involve many activities and practices that can affect the quality of water resources under and near fields. For example, tilling the soil and leaving it without plant cover for extended periods of time can accelerate soil erosion. Residues of chemical fertilizers and pesticides may wash off the field into streams or leach through the soil into groundwater. Irrigation can move salt and other dissolved minerals to surface water. Livestock operations produce large amounts of waste which, if not properly disposed, can threaten human health and contribute to excess nutrient problems in streams, rivers, lakes, and estuaries. When pollutants degrade water quality, they impose costs on water users in the form of degraded ecosystems, reduced recreational opportunities, smaller commercial fishing catches, increased water treatment costs, threats to human health, and damage to reservoirs and water conveyance systems.

DEMAND AND SUPPLY OF WATER IN THE AGRI-FOOD SYSTEM. Increased water demand in water-deficit areas was historically met by expanding available water supplies. Dam construction, groundwater pumping, and interbasin conveyance provided the water to meet growing urban and agricultural needs. However, future opportunities for large-scale expansion of supplies are limited due to lack of suitable project sites, reduced funding, and increased public concern for environmental consequences. Consequently, meeting future water demands will require some reallocation of existing supplies. And since agriculture is the largest water user, reallocation is likely to result in reduced supplies for agriculture.

Irrigated cropland is an important part of the US agricultural sector, contributing about 49 percent of the total value of crops on just 16 percent of total cropland harvested. Irrigated crop sales are significantly higher per acre. Irrigated land reached new heights in 1997, with more than 55 million irrigated acres of crops and pasture land. Cropland is irrigated in all 50 states. In 1997, when the latest census of agriculture data was conducted, irrigated land ranged from about 2,500 acres in Vermont, New Hampshire, and Alaska to about 8.7 million acres in California. Irrigated acres have historically been concentrated in the western US, about 89 percent of acres in 1969 and 78 percent in 1997. But the trend is for faster irrigation growth in the eastern US, from 11 percent of acres in 1969 to 22 percent of acres in

1997. Irrigated crop sales are led by orchards, vegetables, and nursery crops. Irrigated cropland area is dominated by grain and forage crops, with corn for grain and alfalfa hay irrigated on the most acres.

Irrigated crop sales are significantly higher per acre. Average sales per harvested acre were \$950 irrigated and \$200 non-irrigated.

EFFICIENCY OF WATER USE. Water management is an important element of irrigation crop production. Efficient irrigation systems and water management practices can help maintain farm profitability in an era of limited, higher-cost water supplies. The US Department of Agriculture identified improvements in water management as one of the primary agricultural policy objectives for the 1990s and beyond. Irrigation water management involves the managed allocation of water and related inputs in irrigated crop production, so that economic returns are enhanced relative to available water. Conservation and allocation of limited water supplies are central to irrigation management decisions, as irrigation water is managed to conserve water supplies, to reduce water-quality impacts, and to improve producer net returns.

Nationally, variable irrigation water costs for groundwater are less (\$32 per acre) than the cost of off-farm surface water (\$41 per acre). This relationship has reversed over time, as surface water was \$6 per acre less than groundwater in 1984. However, neither reflects the full economic costs of water; on-farm well and equipment costs can be substantial for groundwater access, while infra-

structure costs are often subsidized for publicly developed, off-farm surface water.

OUTLOOK FOR WATER RESOURCES IN THE AGRI-FOOD SYSTEM. In response to the demand for water use from agriculture and expanding metropolitan areas, the US Department of Agriculture ushered in a new era of environmental policy with the 1985 Food Security Act. These programs have not only improved water quality but have contributed to the health and availability of other environmental resources. These programs have retired cropland, required conservation in production, offered to cost-share conservation projects, and brought technical information to producers. It is estimated that 80.3 percent of the US population currently live in urban or city areas; this means that additional safe and clean water resources will be required for these areas.

Conservation compliance measures have been adopted on 91 million acres, or nearly one-quarter of all US cropland, and have led to significant improvements in water resource quality. The value of these improvements to recreation, municipal water treatment, navigation, steam power generation, municipal and industrial use, water storage, and flooding has been estimated at \$1.2 billion annually. Gains in soil productivity with reduced soil erosion and the resulting health benefits of improved air quality due to compliance are estimated at nearly \$200 million annually.

UNITED STATES

	Units	1997	1998	1999	2000	2001 ^E	2002 ^F
FOOD CONSUMPTION PATTERNS ^a							
Per capita caloric intake	Cal/day	3,506	3,542	3,585	3,581	3,585	3,607
From animal products	Cal/day	1,107	1,136	1,163	1,155	1,145	1,146
From vegetable products	Cal/day	2,399	2,406	2,422	2,426	2,440	2,461
Protein (% of calories)	%	15.4	15.4	15.4	15.4	15.4	15.4
Fat (% of calories)	%	32.8	32.8	32.8	32.8	32.8	32.8
Carbohydrates (% of calories)	%	51.8	51.8	51.8	51.8	51.8	51.8
INCOME AND FOOD PRICES							
Per capita income ^b	US\$/capita	22,263	23,360	24,313	25,692	27,073	28,249
% of disposable income spent on food ^c	%	10.4	10.3	10.3	10.7	10.6	10.6
% spent eating out ^c	%	4.1	4.1	4.1	4.2	4.2	4.2
Food price index ^d	1990=100	118.8	121.4	123.9	126.8	130.8	134.1
General price index (CPI) ^d	1990=100	122.8	124.7	127.5	131.8	135.8	139.3
Agriculture's share of retail food dollar ^e	%	22.0	20.0	20.0	20.0	19.0	19.0
POPULATION							
Total population (July 1) ^f	Million	267.6	270.3	272.8	275.3	277.8	280.3
Urban ^g	%	80.0	80.1	80.2	80.2	80.3	80.3
Nonurban ^g	%	20.0	19.9	19.8	19.8	19.7	19.7
Share of population in the following age groups ^f							
0-4 years	%	7.1	7.0	6.9	6.9	6.8	6.8
5-14 years	%	14.5	14.5	14.5	15.4	14.3	14.2
15-19 years	%	7.1	7.2	7.2	7.2	7.2	7.2
20-44 years	%	37.7	37.3	37.0	36.6	36.3	35.9
45-64 years	%	20.7	21.2	21.7	22.2	22.7	23.3
65-79 years	%	9.1	9.0	9.4	9.3	9.2	9.1
80-over years	%	3.7	3.7	3.3	3.4	3.4	3.5
Median age of population ^f	Years	34.9	35.2	35.5	35.8	36.0	36.2
Female labor force participation ^f	%	59.8	59.8	60.0	60.2	60.4	60.5
LIFE EXPECTANCY ^g							
Males	Years	73.6	73.9	74.1	74.2	74.2	74.2
Females	Years	79.4	79.4	79.7	79.9	79.9	79.9
FOOD INFRASTRUCTURE							
Trade capacity ^h							
Grain exports	1,000 Tons	80,200	73,100	89,600	87,600	89,000	na
Grain imports	1,000 Tons	5,600	5,100	5,300	4,500	4,800	na
Total food and agricultural trade	Million US\$	93,000	90,600	86,500	89,800	93,000	na
Total food and agricultural exports	Million US\$	57,300	53,700	49,100	50,900	53,000	na
Perishable products ⁱ	Million US\$	12,211	11,285	11,758	12,652	na	na
Fishery exports	Million US\$	2,739	2,303	2,889	2,909	na	na
Total food and agricultural imports	Million US\$	35,700	36,800	37,300	38,900	40,000	na
Perishable products ⁱ	Million US\$	10,660	11,570	12,855	13,510	na	na
Fishery imports	Million US\$	7,686	8,053	8,832	9,845	na	na
Port capacity ^j	Million Short Tons	2,333	na	na	na	na	na
Road access ^k	1,000 Miles	3,945	3,932	na	na	na	na
Rail access ^l	1,000 Miles	133	132	na	na	na	na
Percent of population with refrigerators ^m	%	99.7	99.7	99.7	99.7	99.7	99.7
FOREIGN INVESTMENT IN THE FOOD SECTOR							
Inward FDI in the food sector, total ⁿ	Million US\$	26,196	22,026	16,717	na	na	na
From other PECC economies ^o	Million US\$	9,763	6,778	3,128	na	na	na
Outward FDI in the food sector, total ^p	Million US\$	32,773	35,074	36,125	na	na	na
To other PECC economies ^q	Million US\$	13,735	13,922	14,320	na	na	na
ROLE OF AGRICULTURE AND TRADE IN THE ECONOMY							
Agriculture as a share of GNP (GDP)	%	1.1	1.1	1.1	1.1	1.1	1.1
Self sufficiency in grains ^r	%	147.0	145.0	na	na	na	na
Self sufficiency in horticultural products ^s	%	105.0	105.0	na	na	na	na
MACROECONOMICS INDICATORS							
GDP growth ^t	%	4.2	4.3	4.2	5.0	1.7	2.6
Interest rate ^u	%	8.4	8.4	8.0	9.2	7.2	6.5

na = not available E = estimate F = forecast

Sources:

- a. U.S. Department of Agriculture, ERS, Baseline.
b. U.S. Department of Commerce, Bureau of Economic Analysis, "Economic Indicators". Data for 2001 and 2002 are ERS estimates.
c. USDA's Economic Research Service estimates food expenditures by families and individuals. Food expenditures include purchases from grocery stores and other retail outlets, including purchases with food stamps and Women, Infants and Children (WIC) Supplemental Feeding Program vouchers, and food produced and consumed on farms (valued at farm prices). Expenditures also include purchases of meals and snacks by families and individuals, and food furnished to employees. These estimates exclude government-donated food and food paid for by government and business, such as food donated to schools, meals in prisons and other institutions, and expense-account meals. Data for 2000-2001 are ERS estimates.
d. U.S. Department of Labor, Bureau of Labor Statistics, 2000 and 2002 are ERS estimates.
e. Farm value percentage of consumer expenditures. ERS/marketing bill series. 2001 and 2002 are estimates.
f. U.S. Bureau of Census, "Current Population Reports" and unpublished data. 2001 and 2002 resident population data are estimates.
g. U.S. Social Security Administration, Office of Actuary, "Trustees Report to Congress".
h. Comtrade database of UN Statistics Division.
i. Excludes nursery products.
j. U.S. Army Corps of Engineers, "Waterborne Commerce of the United States," annual.
k. U.S. Federal Highway Administration, "Highway Statistics," annual.
l. Association of American Railroads, Washington, D.C., "Railroad Facts, Statistics of Railroads of Class I," annual and "Analysis of Class Railroads," annual.
m. U.S. Bureau of Census, American Housing Survey for the United States in 1993 (H-150-93). 1990 through 1992 and 1994 through 2002 are ERS estimates.
n. Survey of Current Business, U.S. Department of Commerce, Bureau of Economic Analysis, September 1997 and September 1994. Foreign direct investment position in the U.S. food processing sector on a historical-cost basis.
o. Canada and all countries of Asia and the Pacific.
p. Survey of Current Business, U.S. Department of Commerce, Bureau of Economic Analysis, September 1997 and August 1994. Foreign direct investment position in the U.S. food processing sector on a historical-cost basis.
q. Canada, Chile, Colombia, Peru, Mexico, and all countries of Asia and the Pacific.
r. ERS supply and use estimates. Includes wheat, rice, rye, corn, oats, barley and sorghum.
s. ERS supply and use estimates. Includes only fresh fruits and vegetables.
t. Chained 1992 dollars. U.S. Bureau of Economic Analysis, "National Income and Product Accounts of the United States", and "Survey of Current Business".
u. Prime rate charged by banks. Board of Governors of the Federal Reserve System, "Federal Reserve Bulletin," monthly, and "Annual Statistical Digest".