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World Agricultural Outlook Board

Staff Report
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# USDA Agricultural Baseline Projections to 2008

Interagency Agricultural Projections Committee

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**USDA Agricultural Baseline Projections to 2008.** World Agricultural Outlook Board, Office of the Chief Economist, U.S. Department of Agriculture. Prepared by the Interagency Agricultural Projections Committee. Staff Report No. WAOB-99-1, 132 pp.

## Abstract

This report provides long-run baseline projections for the agricultural sector through 2008. Projections cover agricultural commodities, agricultural trade, and aggregate indicators of the sector, such as farm income and food prices. The baseline assumes no shocks and is based on specific assumptions regarding macroeconomic conditions, policy, weather, and international developments. The projections assume that current agricultural law of the 1996 Farm Act remains in effect throughout the baseline. The baseline projections presented are one representative scenario for the agricultural sector for the next decade. As such, the baseline provides a point of departure for discussion of alternative farm sector outcomes that could result under different assumptions. The projections in this report were prepared in October through December 1998, reflecting a composite of model results and judgmental analysis.

This year's baseline reflects the effects of a number of international factors which have combined to weaken the U.S. agricultural trade outlook for the next 10 years, either by reducing global demand or increasing world supplies. Global supplies for many agricultural commodities are initially large, and expanding production potential in a number of foreign countries result in strong export competition throughout the baseline. The economic crisis in Asia and, to a lesser extent, the near-term economic contraction in Russia contribute to a prolonged period of weak global agricultural demand. Additionally, revised assumptions for China result in lower grain import demand through the baseline. In the initial years of the baseline, much of the U.S. agriculture sector is adjusting to a combination of weak demand and large global supplies. In the longer run, strong export competition and only moderate grain import demand in China continue to influence the baseline projections. Nonetheless, more favorable long-term global economic growth supports gains in trade and U.S. agricultural exports in the last half of the baseline, resulting in rising nominal market prices, gains in farm income, and increased stability in the financial condition of the U.S. agricultural sector.

Keywords: Projections, baseline, crops, livestock, trade, farm income, food prices.

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## Features in this Report

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**A Note to Users of USDA Baseline Projections**

USDA long-term agricultural baseline projections presented in this report are a Departmental consensus on a long-run scenario for the agricultural sector. These projections provide a starting point for discussion of alternative outcomes for the sector. Baseline projections are typically made in conjunction with the President's Budget analysis.

The scenario presented in this report is not a USDA forecast about the future. Instead, it is a conditional, long-run scenario about what would be expected to happen under the 1996 Farm Act and specific assumptions about external conditions. The baseline reflects major agricultural policy decisions made through mid-November 1998 and includes short term projections from the November 1998 *World Agricultural Supply and Demand Estimates* report. Trade projections in this report for 1999/2000 incorporate long-term assumptions concerning weather, foreign trend yields, and foreign use and do not reflect short-term conditions which may impact trade that year. The baseline projections do not include the 5-year data revisions for agricultural commodities released by USDA's National Agricultural Statistics Service in late-1998 and 1999. Also, the baseline does not reflect effects of the recent currency devaluation in Brazil.

Critical long-term assumptions include:

- U.S. and international macroeconomic conditions;

- U.S. and foreign agricultural and trade policies;

- Funding for U.S. agricultural export programs;

- Growth rates of agricultural productivity, both in the U.S. and abroad; and

- Normal (average) weather.

Changes in any of the assumptions can significantly affect the baseline projections, and actual conditions that emerge will alter the outcomes.

The baseline projections analysis was conducted by interagency committees in USDA and reflects a composite of model results and judgmental analysis. The Economic Research Service has the lead role in preparing the Departmental baseline report. The projections and the report were reviewed and cleared by the Interagency Agricultural Projections Committee, chaired by the World Agricultural Outlook Board. USDA participants in the baseline projections analysis and review include the World Agricultural Outlook Board, the Economic Research Service, the Farm Service Agency, the Foreign Agricultural Service, the Office of the Chief Economist, the Office of Budget and Program Analysis, the Risk Management Agency, the Agricultural Marketing Service, the Natural Resources Conservation Service, and the Cooperative State Research, Education, and Extension Service.

**A Note to Users of USDA Baseline Projections -- continued**

These new USDA baseline projections will be available electronically on the Internet, updating last year's files, at http://www.mannlib.cornell.edu/data-sets/baseline/94005/.  Also, an ERS briefing room for agricultural baseline projections has been set up at:

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http://www.econ.ag.gov/briefing/baseline/

</div>

Questions regarding these projections may be directed to:

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# USDA Agricultural Baseline Projections to 2008

## Interagency Agricultural Projections Committee

### Introduction

This report provides long-run baseline projections for the agricultural sector through 2008. Projections cover agricultural commodities, agricultural trade, and aggregate indicators of the sector, such as farm income and food prices.

The projections are a conditional scenario with no shocks and are based on specific assumptions regarding the macroeconomy, agricultural policy, the weather, and international developments. In particular, the baseline incorporates provisions of the Federal Agriculture Improvement and Reform Act of 1996 (1996 Farm Act) and assumes that current farm legislation remains in effect through 2008.  The projections are not intended to be a Departmental forecast of what the future will be, but instead a description of what would be expected to happen under the 1996 Farm Act, with very specific external circumstances.  Thus, the baseline provides a point of departure for discussion of alternative farm sector outcomes that could result under different assumptions.

The projections in this report were prepared in October through December 1998, in conjunction with the fiscal 2000 President's Budget analysis.  Projections reflect a composite of model results and judgmental analysis.  Normal weather is assumed.  The baseline reflects major agricultural policy decisions made through mid-November 1998 and includes short-term projections from the November 1998 *World Agricultural Supply and Demand Estimates* report. The projections do not include the 5-year data revisions for agricultural commodities released by USDA's National Agricultural Statistics Service in late-1998 and 1999.  Also, the baseline does not reflect effects of the recent currency devaluation in Brazil.

### Summary of Projections

This year's baseline reflects the effects of a number of international factors which have combined to weaken the U.S. agricultural trade outlook for the next 10 years, either by reducing global demand or increasing world supplies.  The economic crisis in Asia and, to a lesser extent, the near-term economic contraction in Russia contribute to a prolonged period of weak global agricultural demand (see boxes, page 96 and page 106).  Key to baseline projections for agricultural trade are macroeconomic assumptions depicting these situations.  As such, there are two distinct parts of the macroeconomic forecast.  In the near to medium term, the crisis situations and subsequent recovery dominate the outcome.  For Asia, 1 to 3 years of negative growth in crisis countries are followed by a return to moderately positive economic growth. Then, in the last 5 years of the baseline, structural reform leads to more stable long-term economic growth, although projected growth for crisis-affected Asian countries is lower than in previous USDA baselines.  For Russia, negative growth is assumed through 2000, with positive economic gains resuming in 2002, followed by modest growth in later years.

C Additionally, growth in world grain trade is affected by relatively moderate gains projected for import demand by China, reflecting changes in a number of key assumptions (see box, page 93). Revised agricultural policy assumptions for China provide governmental support to rice, wheat, and corn, encouraging output and reducing import demand for these crops. Revised livestock data for China suggest significantly smaller animal inventories and lower feed grain demand throughout the baseline. Finally, an assumption of a declining real exchange rate against the U.S. dollar starting in 2001 reduces net agricultural import demand in China.

C Global supplies for many agricultural commodities are initially large for this baseline, and expanding production potential in a number of foreign countries result in strong export competition throughout the baseline. Increased yield growth for corn, wheat, and soybeans in Argentina and conversion of undeveloped land for soybeans in Brazil, for example, are projected in the baseline (see box, page 103).

As a consequence, in the initial years of the baseline, much of the U.S. agriculture sector is adjusting to a combination of weak demand and large global supplies, before moving back toward longer term trends. In the longer run, strong export competition and only moderate grain import demand in China continue to influence the baseline projections, although more favorable global economic growth supports gains in trade and U.S. agricultural exports. This leads to rising nominal market prices, gains in farm income, and increased stability in the financial condition of the U.S. agricultural sector.

The trend toward fewer but larger farms continues in the baseline. The sector will remain highly competitive, with successful producers having strong technical and managerial skills. Management of risk will be important for farmers, reflecting the reduced role of the government in the sector under the 1996 Farm Act.

Consumer food prices are projected to continue a long-term trend of rising less than the general inflation rate. Trends in consumer food expenditures towards a larger share for meals eaten away from home are expected to continue.

**Macroeconomic Assumptions**

The outlook for the world economy over the next 10 years reflects to a large extent the evolving Asia financial crisis, especially in the first half of the baseline. There are two distinct parts of the forecast. In the near to medium term, the crisis and subsequent recovery dominate the outlook. Negative economic growth in crisis countries for 1 to 3 years is followed by a return to moderately positive growth. Then, in the last 5 years of the baseline, structural reform in crisis countries leads to more stable long-term economic growth, although assumed growth rates are lower than previous expectations. Asian growth is assumed at 4.8 percent for 1997-2002, increasing to 6.1 percent for 2003-2008. While improving in the last 5 years of the baseline, this assumed rate of growth for Asia is 2 percentage points lower than the region's 1991-1996 average annual growth of 8.1 percent. Overall, economic growth for developing economies is slowed by the crisis in Asia, averaging under 5 percent annually in the baseline, compared to 5.4 percent during 1991-1996. The slowdown in economic growth for developing economies is important for global agricultural demand because many developing countries have incomes at

levels where consumers diversify their diets and include more meats and other higher valued food products.

For transition economies, growth is expected to remain strongest among the countries that are further along in the transformation from centrally planned to market economies. Countries of Central and Eastern Europe, particularly Poland and Hungary, are expected to show relatively strong growth. In the near term, however, crisis and structural adjustment characterize most FSU countries, with Russia and Ukraine showing negative growth through 2000. FSU countries are assumed to return to modest rates of economic growth by 2002.

Developed countries are relatively unaffected by the Asia crisis as structural adjustments undertaken throughout the second part of the 1980s and early 1990s have created a foundation for growth. Developed economies, including the United States, are projected to grow at higher rates than in the 1991-1996 period, 2.4 percent compared with 1.9 percent. Low inflation and interest rates characterize the outlook.

The economy of the United States is only moderately affected by the Asia crisis, although U.S. agriculture, as a trade-dependent sector, is very sensitive to conditions in the international economy. U.S. GDP growth is expected to average 2.5 percent in 2003-2008, compared to 2.1 percent growth during 1991-1996, reflecting growth of the labor force and gains in productivity. Inflation is projected at 3.0 percent for 2003-2008.

Despite the near-term declines in economic activity in the crisis-affected countries and their slower long-term growth, world real GDP is projected to grow by about 2.9 percent annually through 2008, compared with 2.3 percent during 1991-1996. Stronger growth in developed countries and in developing and transition countries that are not affected by the crisis account for the increase in global economic gains.

**Agricultural Policy Assumptions**

The baseline incorporates provisions of the 1996 Farm Act and assumes a continuation of current agricultural law through the end of the projections. The baseline also includes policy decisions as of mid-November 1998.

Nearly complete planting flexibility is provided under the 1996 Farm Act, allowing producers to respond to market prices and returns, augmented by marketing loan benefits in low price years. Production flexibility contract payments are largely decoupled because they generally are not related to current plantings or to market prices. Marketing loan/loan deficiency payment provisions of the 1996 Farm Act provide an effective per-unit revenue floor at the loan rate, with a countercyclical effect occurring through marketing loan gains or loan deficiency payments when the price is below the loan rate. The 1999 Appropriations Act provided additional funds in fiscal 1999 for contract crops for market loss assistance. The total funding level provided through fiscal 2002 under the 1996 Farm Act for cotton user marketing certificates (known as the Step 2 program) was reached in December 1998, but the baseline assumes that Step 2 payments resume in fiscal 2003 when the funding for the program is no longer capped.

The baseline assumes that the Conservation Reserve Program (CRP) will gradually build from its recent level of about 30 million acres to its maximum authorized level of 36.4 million acres by 2002. New enrollments in the CRP reflect periodic regular signups and continuous signups. A competitive selection process is used for CRP enrollments. CRP enrollment bids compete for acceptance into the program, based on an environmental benefits index with government costs taken into account.

The baseline assumes full compliance with all bilateral and multilateral agreements affecting agriculture and agricultural trade. Projections assume full compliance with the internal support, market access, and export subsidy provisions of the Uruguay Round (UR) Agreement on Agriculture. The baseline assumes no accession to the World Trade Organization (WTO) by the FSU, China, or Taiwan; no enlargement of the European Union beyond its current 15 members; no implementation of more liberalized trade among the countries of the Asia-Pacific Economic Cooperation; and no expansion of the North American Free Trade Agreement. Agricultural and trade policies in individual foreign countries are assumed to continue to evolve along their current paths.

Annual quantity and expenditure levels for the Export Enhancement Program (EEP) are assumed to be in compliance with reductions in the UR agreement. The baseline assumes that no EEP expenditures occur in fiscal 1999, with EEP expenditures then assumed to resume in the baseline at funding levels set in the 1996 Farm Act of $579 million in FY 2000 and $478 million in FY 2001 and FY 2002. The baseline assumes EEP funding remains at $478 million for subsequent years as well.

P.L. 480 program levels decline in fiscal years 2000 and 2001 and are then assumed constant for the rest of the baseline. Program levels projected for the GSM-102 and GSM-103 credit guarantee programs are nearly constant in the baseline. No special donations beyond the fiscal 1999 Section 416(b) shipments of wheat to Russia and other needy countries are assumed.

**Crops**

In the initial years of the baseline, many crops are adjusting to a combination of weak demand due in part to the Asia financial crisis and large global supplies, before moving back towards longer term trends with more robust growth. World demand is reduced for many U.S. crops over the first few years of the baseline, 1999/2000 to 2001/02. In the longer run, more favorable global economic growth supports increases in trade and U.S. agricultural exports, although gains are somewhat muted by continued strong export competition and only moderate growth in import demand in some markets, such as for grains to China.

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 attained in 1996. However, reflecting low prices for many crops due to weak demand and large global supplies, aggregate area planted to these crops declines somewhat over the next few years before turning upward again in 2002. 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. Marketing loan benefits influence the cropping mix somewhat in the early years of the baseline when many prices are relatively low, but projected acreage gains in the longer term reflect land drawn into production based on strengthening market incentives. 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, with larger absolute increases and growth rates than exports. Increases in corn use also are larger in the domestic market than in trade, although corn exports have a higher growth rate. Strong competition in global corn trade from Argentina as well as moderate world import demand growth, particularly for China, which is projected in the baseline to be a net corn exporter until 2005/06, combine to mute U.S. corn export gains. Increases in disappearance for U.S. wheat, sorghum, and cotton are driven by exports, with U.S. trade gains that are larger in absolute terms and growth rates than for domestic demand. U.S. wheat exports rise steadily in the baseline but face greater competition from the European Union (EU) starting in 2002/03 when the EU is projected to be able to export wheat without subsidies. Cotton exports benefit from the assumed resumption of Step 2 payments in 2002/03.

Domestic demand for most 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 domestic population from Asia and Latin America. 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 and 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 gains.

Stocks-to-use ratios decline for corn, wheat, and soybeans, with nominal prices rising. Rice stocks-to-use ratios change little in the baseline, with relatively smaller increases in nominal prices. Stocks-to-use ratios for cotton also change little in the baseline.

**Livestock**

Changes in the U.S. meat complex in the near term reflect the sharp decline of grain and soybean meal prices from the very high levels of the 1995/96 crop year. In the longer run, lower feed prices than in 1995/96, replenishment of forage supplies, low inflation, domestic demand strength, and gains 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 up only slightly from a cyclical low near 97 million head in 2000, remaining below 100 million head in 2002-2004 before turning downward again as producer returns provide economic incentives for only a brief and moderate expansion. Additionally, shifts toward a breeding herd of larger-framed cattle and heavy 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 continues to move toward a higher 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, including hotel-restaurant trade. However, the emergence of the United States as a long-term net beef exporter will be delayed until near the end of the baseline, after the cow herd is reestablished and weak demand in the Pacific Rim recovers.

The pork sector will continue to transform 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. As a result, a slow expansion in pork production begins in 2002 and continues for the remainder of the baseline. The United States becomes an increasingly important net pork exporter, in part reflecting environmental constraints for a number of competitors that limit their production gains. 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.

Decreases in real prices of meats combined with increases in real disposable income allow consumers to purchase more total meat with a smaller proportion of disposable income. Poultry gains a larger proportion of both total meat consumption and total meat expenditures, reflecting its 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.

The structure of individual meat producing sectors is changing as meats compete with each other for consumer market share (see box, page 68). Both production and marketing practices are affected as the meat producing sectors respond to perceived consumer demand. The beef sector is moving toward an increasingly segmented market, with higher graded, consistent-quality production being directed toward the hotel-restaurant and export markets and generally less desirable quality beef competing with pork and poultry in retail markets. Increased vertical coordination in pork production will lower production costs and improve pork quality and consistency of product, allowing pork to increasingly challenge beef in the hotel-restaurant market as well as at retail. The poultry sector, already with a highly integrated structure, continues to develop new products with the current trend toward home meal replacement in grocery stores.

Per capita consumption of eggs stabilizes in the baseline as greater use of eggs in processed foods, reflecting consumer use of more convenience foods, offsets declining shell egg use.

High milk-feed price ratios and dairy productivity gains push milk output per cow higher. 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 farms in the North. Expansion in commercial use of dairy products will be led by sales of cheese and dairy ingredients for processed foods, while fluid milk sales are stagnant.

**Farm Income and Farm Financial Conditions**

Farm income and financial conditions in the U.S. agricultural sector reflect adjustments in the near-term, followed by improvements beyond 2000 through the end of the baseline. The agricultural sector remains financially strong in the aggregate throughout the projections.

Reflecting the initial weakness in the sector, net farm income declines in the first few years of the baseline, falling to about $44 billion in 2000, slightly below the 1990-1997 average. Lower farm commodity receipts due to large global supplies and weak demand are the main cause of the near-term decline in farm income. 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.

Beyond 2000, due largely to strengthening demand, net farm income gradually moves upward for the rest of the baseline, exceeding $50 billion for the last few years of the projections. Nonetheless, gains in farm income are less than inflation, so real farm income declines. The agriculture sector increasingly relies on the marketplace for its income as direct government payments fall and represent about 2 percent of gross cash income by 2008. Both crop and livestock receipts are up in nominal terms due to larger production and higher prices. Production expenses increase in the baseline, with expenses for non-farm 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.

Higher nominal farm incomes and relatively low interest rates assist in asset accumulation and debt management, thus leading to an improved balance sheet for the farm sector. Farm asset values increase through the baseline, led by gains in agricultural land values. Increases in farm debt rise less rapidly and are not beyond the ability of farmers to service the debt. As a result, debt-to-asset ratios continue the downward trend of the last decade from the high levels of over 20 percent in the mid-1980s, 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, means relative stability in the financial condition of the farm sector.

Management of risk will be important for farmers to buffer potential income variability due to supply and demand variations. The trend toward fewer but larger farms will continue, as producers who are more efficient and better managers acquire the production resources of exiting farmers.

**Food Prices and Expenditures**

Retail food prices in the baseline are projected to rise less than the general inflation rate, continuing a long-term trend. The largest price increases generally occur among the more highly processed foods, such as cereals and bakery products and other prepared foods. Prices of these foods are related more to the costs of processing and marketing than to the costs of farm commodities. Expenditures for meals eaten away from home account for a growing share of food spending, reaching almost half of total food spending by 2008.

**Agricultural Trade**

Growth in global and U.S. agricultural trade will be slowed over the next 2 to 3 years by weakened demand in key markets, particularly in Asia and the former Soviet Union. Global trade will, however, continue to be supported by demand in other developing country markets in Latin America, North Africa, and the Middle East. In the near term, U.S. farm exports are likely to face increased competition stemming from productivity gains by other exporters, particularly Argentina, and from developing and transition economies where currencies have been sharply devalued.

Longer term prospects for global and U.S. trade remain relatively bright. Based on the outlook for an Asian recovery after 3 to 4 years, trade expansion will be driven by generally favorable economic growth in developing countries, and freer trade associated with ongoing unilateral policy reforms and existing multilateral reforms. Relatively strong longer term growth in the volume of global trade in bulk agricultural commodities is projected, with broad-based expansion across developing regions, including China, South and Southeast Asia, Latin America, North Africa, and the Middle East. Income growth in developing countries will continue to have a large impact on demand for agricultural goods, both through increases in direct food use and through derived demand for livestock feeds to meet rising meat demand.

Future trends in China's agricultural trade remain an important question in the global outlook. Significant uncertainty regarding basic data and future policies, combined with the size of China's agricultural economy, make alternative trade projections both plausible and globally significant. The current projections indicate only modest growth in China's import demand for most bulk commodities, particularly wheat and coarse grains.

In the near term, world commodity prices will be depressed by the combination of weakened global demand and increased exportable supplies from traditional and nontraditional competitors. Prices are projected to strengthen over the longer term, as supplies adjust and a recovery in Asian demand is added to steady growth in other regions. However, real prices are projected to continue to decline over the longer term, as productivity gains continue to outpace growth in demand.

Trade in grains is expected to lead the stronger projected growth of bulk commodity trade during 2000-2008. Projected growth in coarse grain trade is particularly strong, predicated on rising incomes in developing regions, diet diversification, and increased demand for livestock products and feeds. 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 the expansion of developing country feed-livestock sectors. Raw cotton demand and trade beyond 2000 are projected to be stronger than in the 1990s, but slower than in the 1980s when there was increased substitution of cotton for synthetic fibers.

U.S. export growth is projected to strengthen for most bulk commodities over the longer term. U.S. wheat and coarse grain exports are projected to expand the fastest, although competition is expected to increase in both markets. By the middle of the projection period, U.S. wheat export growth is projected to slow as stronger world wheat prices and lower internal prices in the European Union (EU) permit the EU to export wheat without subsidies. Little growth in U.S. rice exports is projected, as domestic demand captures most of the gains in U.S. production. U.S. exports of soybeans and products are projected to rise faster than in the 1980s, aided by both yield and acreage gains. U.S. raw cotton exports are projected to strengthen through most of the baseline, benefiting from rising demand and reduced competition in some countries.

Global meat demand and trade and U.S. meat exports will be depressed in the near term by the slowdown in import demand in East Asia and the FSU. Growth in meat trade is, however, projected to resume after 2000, as demand recovers in these key market regions. Already negotiated reductions in trade barriers will support growth in meat trade in East Asia. FSU import demand is likely to be depressed for 3 to 5 years by the impacts of the recent economic crisis.

The total value of U.S. agricultural exports is projected to decline in 1999 and 2000, but then increases to almost $73 billion by 2008. 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 for the rest of the baseline. U.S. imports rise to $50 billion, resulting in an agricultural trade surplus in fiscal 2008 of nearly $23 billion.

# Macroeconomic Assumptions

This section presents the macroeconomic assumptions underlying the USDA baseline. Factors affecting the domestic macroeconomic outlook and assumptions are presented first, followed by a discussion of the conditions determining the international outlook. The macroeconomic assumptions presented this year reflect, to a large extent, the evolving Asia financial crisis, especially in the first half of the baseline. The more recent financial crisis and economic slowdown in Russia is also accounted for in the assumptions, but has generally smaller impacts on global macroeconomic and agricultural trade conditions.

The Asia crisis has proven to be far more severe than initial assessments, and is now expected to have significant intermediate and longer-term implications. While the U.S. macroeconomy is only moderately affected by the crisis, U.S. agriculture, as a trade dependent sector, is very sensitive to conditions in the international economy. The Asia crisis has had impacts on economic growth, trade policies, trade patterns, interest rates, and currency exchange rates in many countries. These changes have far-reaching consequences for U.S. agriculture, including reducing foreign demand for U.S. farm products, U.S. agricultural export earnings, farm income, and farm asset values.

## Domestic Macroeconomic Projections

The U.S. macroeconomic outlook is affected by domestic policies, as well as by global economic conditions that are transmitted to the U.S. economy through changes in trade and financial markets. The Asia crisis has had moderate, mixed effects on the U.S. macroeconomy.

- C  In 1998, the Asian financial crisis slowed world growth and triggered a flight to quality financial assets, which in turn bid up U.S. Treasury bond prices, lowered U.S. interest rates, and boosted the value of the dollar.

- C  The strong dollar and tepid world growth increased the U.S. trade deficit by lowering exports and raising imports, dampening U.S. aggregate demand and GDP growth. However, the trade deficit's drag on aggregate demand was offset by low interest rates which boosted spending on housing, consumer durables, and business equipment. Additionally, with a high level of domestic consumer confidence spurring consumer spending, U.S. economic growth in 1998 was a strong 3.5 percent.

- C  The strong dollar and weak world growth caused industrial commodity prices to fall, lowering inflation by about 0.5 percentage points despite strong wage gains.

### Key Assumptions

In the near term, 1999 and 2000, the Asia crisis is expected to contribute to slower U.S. real GDP growth. Interest rates are expected to remain relatively low during this period. By 2000 and 2001, oil prices are assumed to begin to increase sharply from 1998 lows, adding to U.S. inflation. World economic growth is assumed to begin moving up by 2000, pushing U.S. growth and inflation toward trend levels.

Beyond 2001, the impacts of the financial crisis on the U.S. economy diminish and demand strengthens. With the economy operating close to full employment, GDP growth is driven by the factors that increase U.S. productive capacity. The most important of these are growth of the labor force and the productivity of U.S. labor. While labor force growth is below trend, investment and innovation are increasing the trend growth of U.S. productivity. A number of factors are assumed that shape the growth of demand and productive capacity:

C  Fiscal policy results in small structural surpluses for most of the projection horizon.

C  Monetary policy is relatively stringent while accommodating fiscal surpluses.

C  Real oil prices rise 1.1 percent annually as reflected in the Energy Information Administration's "Annual Long Term Outlook" of January 1998.

C  Labor productivity gains average 1.3 percent from 2003 to 2008, reflecting capital investment, low material price inflation, and favorable real interest rates.

C  Employment growth averages 1.2 percent a year through 2008, broadly consistent with Bureau of Labor Statistics projections, welfare reform, and expected immigration.

C  World GDP growth is expected to average about 3 percent in 2003-2008.

C  The expected continuation of a strong dollar implies persistent U.S. trade deficits for the baseline forecast horizon.

As a result, U.S. GDP growth is expected to average 2.5 percent in 2003-2008, compared with 2.1 percent growth during 1991-1996. More widespread rises in industrial and raw material prices than seen currently, and tight labor markets, will result in short-term interest rates about 70 basis points above recent trends to keep inflation under control. Inflation is expected to be at 3.0 percent for 2003-2008.

### International Macroeconomic Assumptions

The outlook for the world economy over the next 10 years is strongly influenced by the ongoing crisis and structural adjustments in Asia, and by the secondary impacts of that crisis on the rest of the world. Developments in Asia, particularly Japan, are key determinants of the global macroeconomic outcome. The assumptions indicate a dichotomy between those countries that have gone through structural adjustments over the past 10 years, including the United States, EU, and Central and Eastern Europe, and other countries, primarily in Asia, that have recently outgrown their institutional foundations and are experiencing crisis and adjustment.

## Exchange Rate Movements and Agricultural Trade

Exchange rate shifts in importing and competing countries are important determinants of U.S. agricultural exports. A strong U.S. dollar often coincides with periods of poor U.S. export performance, while a weaker dollar often coincides with export growth (see fig. 1). The Asia crisis, by weakening confidence in Asian currencies and shifting capital flows away from Asia and toward the United States, has contributed to appreciation of the U.S. dollar against many foreign currencies since mid-1997. Assumptions regarding future exchange rate movements are key to the baseline projections for agricultural trade.

Exchange rate movements affect U.S. exports by changing the cost of traded goods and, hence, the price incentives to import or export. In Thailand, for example, the abrupt decline in the value of the baht led to a drop in farm imports, including wheat, corn, and soybeans, as consumers adjusted to the sharply higher cost of imports in baht terms. At the same time, the volume of Thailand's farm exports, including rice and poultry, increased as domestic demand declined and producers responded to higher baht export prices. In Korea, depreciation of the won during the crisis contributed to lower agricultural imports. However, Korea's relatively high-income



Figure 1
**Real exchange rates and U.S. farm exports**
Indices (1980=100)

consumers are less responsive to price changes than in Thailand. A key development in Korea has been an increase in pork production by local producers.
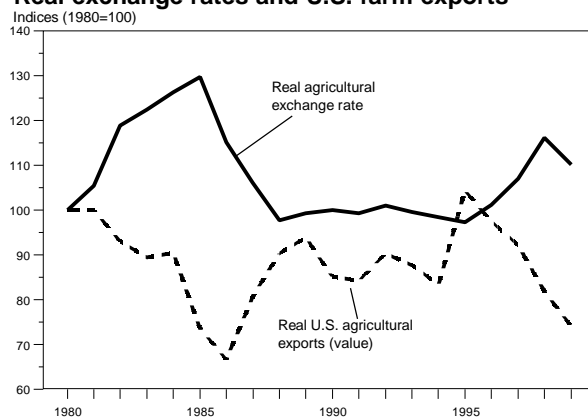
Financial flows underlie the Asian exchange rate movements, with large capital inflows to the region switching to large net outflows during the crisis. A large share of this shift moved to investments in the United States that were perceived to be less risky, leading to further appreciation of the dollar. Future movements in Asian exchange rates are difficult to predict because they will hinge on the pace of financial reform and the return of investor confidence in the region. The appropriate policy mix remains uncertain, with some countries opting for open capital markets with stronger banking regulation, and others, primarily Malaysia, for controls on capital flows.

*The short term.* The initial adjustments of Asian exchange rates during the crisis were probably more than required in the long term. The Thai baht, for example, has recovered significantly from its initial 50-percent fall. The Indonesian rupiah has also rebounded significantly following its initial 85-percent depreciation, with similar patterns in most of the crisis countries. Although it is difficult to predict exchange rate movements over the next few years, the baseline assumes a rebound for most Asian currencies during the first 2-3 years of the projections (1999-2001).

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## Exchange Rate Movements and Agricultural Trade – continued

*The longer term.* Predicting long-term exchange rate changes is equally difficult, particularly with the shocks to the global economy due to the Asian crisis. Foreign-country exchange rate assumptions are based on long-term historical trends in real exchange rates versus the U.S. dollar. These longer-term trends may differ somewhat from the near-term assumptions. Canada, Australia, and China are key examples (see fig. 2). In all three cases, real appreciation is anticipated over the first few years of the baseline, but the longer-term assumption is to remain consistent with historical trends of real depreciation

Figure 2
**Real exchange rates**
Foreign currency units/1990 dollar



against the U.S. dollar. These exchange rate assumptions will tend to maintain the competitiveness of Australian and Canadian farm exports, while constraining growth in China's net agricultural imports during the projection period.
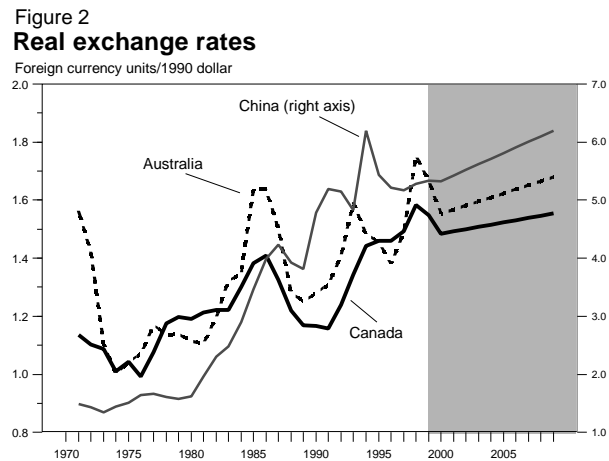
The assumed global macroeconomic outlook is distinctly different in the near term and the longer term. Near- and medium-term assumptions are dominated by the Asia crisis and subsequent recovery. This period includes 1 to 3 years of negative growth in crisis countries, followed by a return to moderately positive economic growth. In the longer term, the last 5 years of the baseline assume that structural reforms lead to stronger and more stable economic growth. Longer-term growth in the crisis-affected Asian countries is, however, generally assumed to be lower than pre-crisis expectations.

Behind current economic conditions and the outlook for Asia is the rapid and sharp turnaround of capital flows between 1996 and 1998. The consequence of the change in financial inflows was significant depreciation of currencies in crisis countries, with a resulting reduction in import demand. The financial crisis has severely curtailed credit, limited investment spending and, consequently, reduced productivity growth. Past failures of the banking and financial systems that led to ineffective investments and a high incidence of nonperforming loans will continue to constrain the availability of capital. Thus, in addition to the substantial short-term curtailment of demand in crisis-affected countries, there will be new constraints on the recovery of their longer-term economic growth.

There is a significant dichotomy between the outlook for crisis countries and for the OECD countries (less Japan). In contrast to the Third World debt crisis of the 1980s, which contributed to recessions and high inflation in both developed and developing countries, the impacts of the current crisis are expected to remain concentrated in developing and transition countries. Following structural adjustments during the 1980s and 1990s, the U.S. and European economies

are fundamentally sound and are expected to endure the crisis with limited impacts.  The developed economies, including the United States, are projected to grow at higher rates than in the 1991-1996 period, 2.4 percent compared with 1.9 percent.  In contrast, the fundamental weakness in the crisis countries implies the need for significant structural adjustments in banking and finance, as well as in other sectors of the affected countries.  These adjustments will take at least 5 years, with economic impacts that extend further and likely reduce growth prospects for the longer term.

Despite slower long-term growth in the crisis-affected countries, world real GDP is projected to grow by about 2.9 percent annually through 2008, compared with 2.3 percent during 1991-1996.  Stronger growth in the developed countries, and in developing and transition countries that are not affected by the crisis, account for this rise in global economic gains.  Asian growth is projected at 4.8 percent for 1997-2002, increasing to 6.1 percent between 2003-08.  While Asian growth is expected to strengthen during 2003-08, the assumed rate of growth is 2 percentage points below the region's 1991-96 average annual growth rate of 8.1 percent.

Reduced growth in Asia represents a significant narrowing of the historical growth differential between Asia and Latin America.  Latin American growth is projected to increase to an average of 4.1 percent during 1997-2002 and 4.3 percent during 2003-08, compared with 3.1 percent during 1991-96.  Relatively strong growth is also assumed in North Africa, the Middle East, and the transition economies of Eastern Europe.  In the former Soviet Union, however, the current economic crisis in Russia is expected to result in economic contraction through 2000, and only very slow growth thereafter.

**Developed Countries**

The developed countries are relatively unaffected by the Asia crisis.  The structural adjustments undertaken throughout the second part of the 1980s and early 1990s have created a solid foundation for future growth.  Low inflation and interest rates characterize the outlook, along with government budgets, except in Japan, that will be largely balanced.

**European Union--**The coming monetary union between qualified EU members and introduction of a single currency will enhance the efficiency of cross-border trade and investment within Western Europe.  More uniform fiscal policies, as well as disciplined monetary policy guided by the German-based central bank, should lead to more stable growth prospects early in the next century.  The European economy is projected to expand by 2.6 percent, on average, between 1997-2002 and 2.2 percent from 2003 to 2008.

Inflation should be well controlled as a strong unified currency, the Euro, acts as an anchor for price stability.  Fiscal consolidation by member countries will reduce inflationary expectations and lower long-term interest rates.  The Euro is projected to appreciate in real terms against the U.S. dollar as the currency becomes widely used for world trade and for international reserves.

**Japan**--The Japanese economy continues to face significant structural problems.  Approximately $1 trillion of nonperforming loans are stifling the banking system.  It is assumed that necessary structural adjustments will be undertaken, allowing modest growth to resume in the medium

term. Real GDP growth is assumed to recover and average 2.3 percent from 2003 to 2008, consistent with the overall growth outlook for developed economies, and slightly below what is projected for the United States. The pace of policy reform and economic recovery in Japan will be a key factor in the rebound of neighboring Asian economies.

Domestic demand in Japan is expected to revive as Japanese banks slowly strengthen their capital base after writing off significant bad loans, and as the property and stock markets rebound. Manufacturing production should lead the way toward more vigorous economic activity, led prominently by exports of high-value products. In the longer run, recovery of Southeast Asian economies will provide additional demand for Japan's capital exports and manufactured goods. The yen is expected to appreciate significantly during 1999 to 2002 as the Japanese economy revives and then return to its long-term trend of moderate appreciation against the dollar.

**Canada**--Canada's growth pattern in the 1990s has roughly tracked the U.S. GDP path because of the close integration of trade and investment between the neighbors. NAFTA has reinforced the growing integration of the two economies. The overhaul of Canada's welfare system has shifted the budget from deficit to surplus and is also a key to the relatively bright future growth prospects. Baseline macroeconomic assumptions call for Canada's economy to grow somewhat faster than the U.S. economy over the next 10 years.

A competitive Canadian dollar, including steady depreciation against the U.S. dollar since 1990, together with lower inflation relative to the United States, has helped boost Canadian price competitiveness. Modest real depreciation of the Canadian dollar against the U.S. dollar is expected to continue to maintain Canada's competitiveness over the longer term.

**Transition Economies**

Countries that are currently ahead in the transformation from centrally planned to market economies are now experiencing higher growth than those that have reformed more slowly. The principal measure of the success of reform, which also coincides with higher GDP growth, is the degree of integration into the global economy--trade flows, investment flows, and currency convertibility. For the baseline, growth is expected to remain strongest among the early reforming countries of Central and Eastern Europe, including Poland and Hungary. Growth is expected to remain weak among the transition economies that are reforming more slowly, including the former Soviet Union.

**Central and Eastern Europe--**Several of the region's larger economies, including Poland, Hungary, and the Czech Republic, are expected to show significant growth, averaging 4.3 percent during 1997 to 2002, after undertaking market reforms and increasing openness to trade and competition. A reorientation of trade from the former Soviet Union to the West has contributed to their strong performance. In some other countries, however, such as Bulgaria and Romania, reforms have lagged and growth is expected to remain relatively slow. Overall, the region's growth is expected to average more than 4 percent annually over the baseline, significantly higher than during the late 1980s and early 1990s.

**The Former Soviet Union**--After almost a decade of economic retrenchments and setbacks, the countries of the former Soviet Union are once again faced with substantial negative growth in the near term and only modest prospects for growth in the longer term. In Russia, real GDP is projected to continue to decline further in 1999. It is difficult to assess how the current crisis will be resolved, but restoration of positive growth will likely take at least several years. Overall GDP growth for the region is assumed to recover modestly and average about 2.2 percent from 2003 to 2008.

**Developing Countries**

The crisis in Asia will affect growth in developing countries, mostly by restricting financial flows into these countries. This implies a slightly lower growth rate, averaging under 5 percent annually in the baseline, compared to 5.4 percent during 1991-1996. Assumed real GDP growth rates for the baseline are more balanced across developing regions than in the past, when growth rates in developing Asia have typically been substantially higher than other developing regions. In the current long term outlook, growth rates in developing Asia are somewhat lower than performance during the 1980s and early 1990s, while growth rates in Latin America, Africa, and the Middle East are somewhat higher.

**Mexico**--The Mexican economy has recovered from a deep recession in 1995. While domestic real wages and consumption have not fully recovered, business investment and export growth are healthy again. Capital inflows and expanded trade with the United States because of NAFTA have boosted Mexico's production and export capacity, and a strong U.S. economy bolsters Mexico's prospects. Medium-term economic growth is expected to average a strong 5.2 percent, followed by more sustainable growth of 4.5 percent in the longer term.

**China--**While China's recent growth has consistently been the strongest in Asia, it is expected to level off from double digits in the early 1990s to a more sustainable annual pace of 7 to 8 percent in the next decade. With population growth of less than 1 percent a year, per capita GDP gains will remain impressive at more than 6 percent annually.

China is expected to continue its process of gradual market-oriented structural reform with a minimum of disruption. However, past high growth in real output is expected to be slowed by adjustment problems of unemployment associated with privatization of state-owned enterprises, and by competition from foreign firms. Competition with other developing countries for lower-value export markets should remain keen. Although China is not expected to devalue its currency in the near term while neighboring economies are in turmoil, China's currency is assumed to continue to depreciate gradually in real terms later in the baseline.

**East and Southeast Asia**--The Asia crisis has a major impact on this region both in the short and longer term. Output growth in East and Southeast Asia is assumed to slow substantially over the next 5 years, then recover slightly in the following 5 years. Overall growth in the region (excluding China) is assumed to average 4.1 percent annually over the baseline, compared with 7.4 percent during 1991-1996. In the near term, growth is slowed by currency devaluation and deflation of asset prices in the region's major economies, including Korea, Taiwan, Thailand, Indonesia, and Malaysia.

Export growth, buoyed by increased exchange rate competitiveness, and domestic demand recovery will be keys to the anticipated longer-term recovery in the region. Prospects for a rapid recovery in the region are dimmed by the fact that about 13 percent of developing Asia's exports are destined for Japan, and another 40 percent for other Asian markets, where growth is now affected by the crisis. Recovery also will be constrained by the fact that intra-regional investment, particularly from Japan, accounts for a large share of trans-border investment in the region. As a result, domestic savings performance and expansion of extra-regional trade will be important factors in the pace of recovery.

**South Asia**--The South Asian economies are expected to sustain relatively strong growth, averaging near that of East and Southeast Asia over the longer term. India, which produces 82 percent of the area's output, is expected to achieve average annual growth of about 5.5 percent annually. Like China, India's large and increasingly liberalized domestic market will provide the bulk of the impetus for expansion. Gains in South Asia's other large economies, Pakistan and Bangladesh, are expected to be somewhat slower than in India.

**Middle East--**Countries in this key agricultural importing region are, on average, expected to achieve stronger growth during the baseline than during the 1980s and 1990s. The region's economic prospects are, however, closely linked to movements in world energy and petroleum prices. Although global petroleum prices have weakened recently due to plentiful supplies and weakened demand stemming from the Asia crisis, the baseline assumptions call for strengthening oil prices over the longer term. Regional growth also will depend on developments in Iran and Iraq, both large economies that have performed poorly in recent years. Prospects for both countries remain uncertain, but they are assumed to maintain moderate growth rates during the baseline, somewhat higher than recent average performance. Overall, the Middle East economies are expected to expand by about 3.8 percent annually during the projection period.

**Africa**--In Africa, growth prospects hinge on the performance of Egypt, Nigeria, and South Africa, the continent's largest economies. Growth in North Africa is expected to be bolstered by the improved performance of the economies of Egypt, Morocco, and Tunisia, in large part due to the success of liberalizing reforms to both domestic and trade policies. In Algeria, however, growth is expected to remain sluggish because of the effects of ongoing internal strife.

Relatively slow growth is assumed for the Sub-Saharan Africa region, and for South Africa. Although some Sub-Saharan economies are now achieving higher and more stable growth than in the past, significant improvements are not anticipated in many countries in the region. Nigeria, the region's largest economy, will likely remain unable to attract foreign investment and exploit its abundant oil resources because of continued political instability, corruption, and a largely unskilled labor force. Ongoing political troubles in countries such as the Sudan and Congo are also expected to be a drag on growth in Sub-Saharan Africa. In South Africa, a large labor force of unskilled workers, high interest rates because of budget problems, and general social discontent will pose risks for investors and limit growth.

**South America--**Although near-term economic growth in the region is assumed to slowed somewhat by financial and trade impacts of the Asia crisis, virtually all of the region's

economies are expected to register stronger long-term growth during the next decade than in the recent past. This stronger growth projected for the area is led by the MERCOSUR core countries of Brazil and Argentina. Freer trade will further integrate these countries' economies as they gear up for eventual hemispheric free trade with NAFTA countries. Behind the strong growth is reduced debt, less government intervention in the private sector, growing intra-regional trade, and heavier foreign direct investment. The recent economic slowdown in Brazil is assumed to be short-lived and to not spread to neighboring countries. The January 1999 devaluation of the Brazilian currency occurred after the baseline was completed and, therefore, is not incorporated in the projections.

The past environment of overvalued currencies, large trade and fiscal deficits, and low internal investment due to low savings is not expected to return. New economic policies now generate less inflation and more competitive industries as import barriers fall. Still, however, savings as a share of GDP are projected to rise only slowly and levels will remain substantially lower than in East and Southeast Asia. Because of this, the region's general dependence on foreign capital introduces the risk of capital flight in response to external shocks, such as higher U.S. interest rates.

**World Population Growth**

Baseline population assumptions were updated in August 1998, using data obtained from the U.S. Bureau of the Census and the United Nations.

Africa and the Middle East are projected to continue to have the fastest growing population over the next decade, averaging 2.3 to 2.5 percent a year. The next fastest regions are Asia and Latin America, averaging 1.3 to 1.4 percent a year. These assumptions indicate that per capita GDP gains in Asia and Latin America will outpace those of Africa and the Middle East by a bigger margin than their GDP growth differentials.

Populations in developed and transition economies are projected to grow by less than 0.5 percent annually, with the slowest rates in Russia, Eastern Europe, Japan, and the European Union. Overall, the number of people in the world will increase at a declining rate, and per capita GDP will rise by an average 2 percent per year. By 2008, the world's population is projected to total nearly 6.7 billion, with over 80 percent living in developing countries.

Table 1. Domestic macroeconomic baseline assumptions

| Item | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **GDP, billion dollars** | | | | | | | | | | | | |
| Nominal | 8,111 | 8,521 | 8,935 | 9,369 | 9,910 | 10,453 | 11,025 | 11,628 | 12,264 | 12,936 | 13,643 | 14,390 |
| Real 1992 chained dollars | 7,270 | 7,524 | 7,698 | 7,859 | 8,063 | 8,265 | 8,472 | 8,684 | 8,901 | 9,123 | 9,351 | 9,585 |
| percent change | 3.9 | 3.5 | 2.3 | 2.1 | 2.6 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |
| | | | | | | | | | | | | |
| **Disposable personal income** | | | | | | | | | | | | |
| Nominal (billions) | 5,795 | 6,057 | 6,376 | 6,653 | 7,052 | 7,452 | 7,868 | 8,298 | 8,752 | 9,231 | 9,736 | 10,259 |
| percent change | 4.7 | 4.5 | 5.3 | 4.3 | 6.0 | 5.7 | 5.6 | 5.5 | 5.5 | 5.5 | 5.5 | 5.4 |
| Nominal per capita, dollars | 21,633 | 22,401 | 23,374 | 24,178 | 25,405 | 26,616 | 27,863 | 29,142 | 30,482 | 31,886 | 33,356 | 34,859 |
| percent change | 3.8 | 3.6 | 4.3 | 3.4 | 5.1 | 4.8 | 4.7 | 4.6 | 4.6 | 4.6 | 4.6 | 4.5 |
| Real (billion 1992 chained) | 5,183 | 5,349 | 5,493 | 5,581 | 5,738 | 5,892 | 6,046 | 6,197 | 6,352 | 6,511 | 6,673 | 6,833 |
| percent change | 2.8 | 3.2 | 2.7 | 1.6 | 2.8 | 2.7 | 2.6 | 2.5 | 2.5 | 2.5 | 2.5 | 2.4 |
| Real per capita, 92 dollars | 19,349 | 19,782 | 20,137 | 20,282 | 20,670 | 21,046 | 21,410 | 21,762 | 22,122 | 22,489 | 22,862 | 23,219 |
| percent change | 1.9 | 2.2 | 1.8 | 0.7 | 1.9 | 1.8 | 1.7 | 1.6 | 1.7 | 1.7 | 1.7 | 1.6 |
| | | | | | | | | | | | | |
| **Consumer spending** | | | | | | | | | | | | |
| Real (billion 1992 chained) | 4,914 | 5,125 | 5,253 | 5,368 | 5,510 | 5,646 | 5,788 | 5,932 | 6,080 | 6,232 | 6,387 | 6,547 |
| percent change | 3.4 | 4.3 | 2.5 | 2.2 | 2.6 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |
| | | | | | | | | | | | | |
| **Inflation measures** | | | | | | | | | | | | |
| GDP price index, chained | 111.6 | 113.2 | 116.1 | 119.2 | 122.9 | 126.5 | 130.1 | 133.9 | 137.8 | 141.8 | 145.9 | 150.1 |
| percent change | 1.9 | 1.5 | 2.5 | 2.7 | 3.1 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 |
| CPI-U, 82-84=100 | 160.5 | 163.4 | 167.8 | 172.5 | 178.0 | 183.4 | 188.9 | 194.5 | 200.4 | 206.4 | 212.6 | 218.9 |
| percent change | 2.3 | 1.8 | 2.7 | 2.8 | 3.2 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| PPI, finished goods 82=100 | 131.8 | 130.5 | 133.4 | 136.8 | 140.4 | 144.0 | 147.6 | 151.4 | 155.2 | 159.2 | 163.2 | 167.3 |
| percent change | 0.4 | -1.0 | 2.2 | 2.5 | 2.6 | 2.6 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |
| PPI, crude goods 82=100 | 111.2 | 99.8 | 100.3 | 101.3 | 102.3 | 103.8 | 105.4 | 107.5 | 109.7 | 112.4 | 115.2 | 118.1 |
| percent change | -2.2 | -10.3 | 0.5 | 1.0 | 1.0 | 1.5 | 1.5 | 2.0 | 2.0 | 2.5 | 2.5 | 2.5 |
| | | | | | | | | | | | | |
| **Crude oil price, $/barrel** | | | | | | | | | | | | |
| Refiner acq. cost, imports | 18.6 | 12.6 | 13.7 | 16.4 | 19.4 | 20.1 | 21.0 | 21.8 | 22.7 | 23.6 | 24.5 | 25.5 |
| percent change | -9.9 | -32.1 | 8.2 | 20.2 | 18.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Real cost, 92 chained dollars | 16.6 | 11.1 | 11.8 | 13.8 | 15.8 | 15.9 | 16.1 | 16.3 | 16.5 | 16.6 | 16.8 | 17.0 |
| percent change | -11.5 | -33.1 | 5.6 | 17.0 | 14.5 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| | | | | | | | | | | | | |
| **Labor compensation per hour** | | | | | | | | | | | | |
| nonfarm business, 92=100 | 114.5 | 119.8 | 124.2 | 129.0 | 134.4 | 139.9 | 145.6 | 151.9 | 158.4 | 165.2 | 172.3 | 179.6 |
| percent change | 3.7 | 4.6 | 3.7 | 3.8 | 4.2 | 4.1 | 4.1 | 4.3 | 4.3 | 4.3 | 4.3 | 4.2 |
| | | | | | | | | | | | | |
| **Interest rates, percent** | | | | | | | | | | | | |
| 3 month T-bills | 5.1 | 5.0 | 5.2 | 5.5 | 5.3 | 5.5 | 5.5 | 5.7 | 5.8 | 5.8 | 5.8 | 5.8 |
| 6 month commercial paper | 5.6 | 5.5 | 5.7 | 6.0 | 5.8 | 6.0 | 6.0 | 6.2 | 6.3 | 6.3 | 6.3 | 6.3 |
| Bank prime rate | 8.5 | 8.5 | 8.8 | 8.6 | 8.3 | 8.3 | 8.3 | 8.4 | 8.5 | 8.5 | 8.5 | 8.5 |
| Treasury bonds (10-year) | 6.4 | 5.6 | 5.9 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 |
| Moody's Aaa bonds | 7.3 | 6.6 | 6.9 | 7.2 | 7.2 | 7.2 | 7.2 | 7.2 | 7.2 | 7.2 | 7.2 | 7.2 |
| | | | | | | | | | | | | |
| **Civilian unemployment** | | | | | | | | | | | | |
| rate, percent | 5.0 | 4.6 | 4.8 | 5.3 | 5.5 | 5.3 | 5.0 | 5.1 | 5.1 | 5.1 | 5.3 | 5.6 |
| Nonfarm payroll emp., millions | 122.7 | 125.9 | 127.0 | 128.6 | 130.1 | 131.8 | 133.4 | 135.0 | 136.6 | 138.2 | 139.9 | 141.4 |
| percent change | 2.6 | 2.6 | 0.9 | 1.2 | 1.2 | 1.3 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.1 |
| | | | | | | | | | | | | |
| Total population, million | 267.9 | 270.4 | 272.8 | 275.2 | 277.6 | 280.0 | 282.4 | 284.7 | 287.1 | 289.5 | 291.9 | 294.3 |
| percent change | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |

Note: All real variables measured in chained 1992 dollars; nominal variables in current dollars. The macroeconomic assumptions were completed in September 1998.

Table 2.  Foreign real GDP baseline growth assumptions

| Region/country | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | Average 1991-1996 | Average 1997-2002 | Average 2003-2008 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | *Percent change* | | | | | |
| World | 2.8 | 3.2 | 2.3 | 2.5 | 2.8 | 2.9 | 2.9 | 2.3 | 2.8 | 3.0 |
| less U.S. | 3.0 | 3.0 | 1.9 | 2.6 | 3.0 | 3.1 | 3.1 | 2.3 | 2.8 | 3.2 |
| | | | | | | | | | | |
| Developed economies | 2.1 | 2.8 | 2.3 | 2.3 | 2.3 | 2.4 | 2.3 | 1.9 | 2.4 | 2.3 |
| United States | 2.4 | 3.9 | 3.5 | 2.3 | 2.1 | 2.6 | 2.5 | 2.1 | 2.8 | 2.5 |
| Canada | 1.5 | 3.6 | 3.2 | 2.7 | 2.6 | 2.7 | 2.8 | 1.5 | 2.9 | 2.8 |
| Japan | 3.6 | 0.9 | -2.0 | 0.5 | 1.8 | 2.1 | 2.3 | 1.8 | 0.9 | 2.3 |
| Australia | 4.0 | 3.3 | 2.8 | 2.7 | 2.3 | 2.5 | 2.5 | 3.5 | 2.7 | 2.5 |
| European Union-15 | 1.3 | 2.6 | 2.9 | 2.8 | 2.5 | 2.3 | 2.2 | 1.8 | 2.6 | 2.2 |
| | | | | | | | | | | |
| Transition economies | -1.1 | 1.9 | -1.0 | -0.5 | 1.4 | 2.2 | 2.6 | -6.8 | 1.1 | 2.9 |
| Eastern Europe | 2.0 | 3.8 | 4.1 | 4.4 | 4.4 | 4.6 | 4.5 | -0.1 | 4.3 | 4.0 |
| Czech Republic | 4.1 | 1.0 | 2.1 | 3.0 | 3.6 | 3.9 | 3.9 | -1.5 | 2.9 | 4.2 |
| Hungary | 1.3 | 4.1 | 5.0 | 5.0 | 5.0 | 5.0 | 4.6 | -0.8 | 4.8 | 4.2 |
| Poland | 5.9 | 6.9 | 6.0 | 6.0 | 5.5 | 5.5 | 5.4 | 2.8 | 5.9 | 4.4 |
| Former Soviet Union | -2.3 | 1.1 | -3.1 | -2.6 | 0.0 | 1.0 | 1.6 | -8.7 | -0.3 | 2.2 |
| Russia | -4.9 | 0.4 | -8.0 | -7.0 | -2.0 | 0.0 | 1.5 | -8.3 | -2.5 | 2.9 |
| Ukraine | -10.0 | -3.2 | -3.0 | -5.0 | -1.0 | 0.0 | 1.0 | -13.0 | -1.9 | 2.8 |
| Other | 1.8 | 2.5 | 1.5 | 1.5 | 1.6 | 1.8 | 1.8 | -8.0 | 1.8 | 1.7 |
| | | | | | | | | | | |
| Developing countries | 6.1 | 5.0 | 2.4 | 3.7 | 4.5 | 4.9 | 5.0 | 5.4 | 4.3 | 5.0 |
| Asia | 7.6 | 6.2 | 1.6 | 3.9 | 5.4 | 5.9 | 6.1 | 8.1 | 4.8 | 6.1 |
| East & Southeast Asia | 7.8 | 6.5 | 0.7 | 3.6 | 5.4 | 6.1 | 6.3 | 9.0 | 4.8 | 6.4 |
| China | 9.9 | 8.8 | 6.6 | 7.0 | 7.5 | 7.8 | 7.8 | 11.9 | 7.6 | 7.7 |
| Hong Kong | 4.7 | 5.3 | -2.0 | 2.3 | 4.9 | 4.8 | 4.8 | 5.4 | 3.4 | 4.7 |
| Korea | 7.1 | 5.5 | -4.0 | 0.5 | 3.5 | 4.5 | 5.0 | 7.5 | 2.5 | 5.5 |
| Taiwan | 5.5 | 6.8 | 4.7 | 5.0 | 5.5 | 5.6 | 5.6 | 8.4 | 5.5 | 5.6 |
| Indonesia | 7.6 | 4.7 | -15.0 | -4.0 | 1.5 | 3.0 | 4.0 | 7.8 | -1.0 | 4.5 |
| Malaysia | 8.0 | 7.8 | -2.6 | -1.0 | 3.0 | 4.5 | 5.0 | 8.6 | 2.8 | 5.0 |
| Philippines | 5.7 | 5.3 | -1.1 | 1.5 | 4.0 | 5.0 | 5.0 | 2.9 | 3.3 | 5.0 |
| Thailand | 6.4 | -0.4 | -4.1 | -1.0 | 3.0 | 5.0 | 5.0 | 8.2 | 1.3 | 5.0 |
| Vietnam | 9.3 | 8.5 | 7.0 | 7.4 | 8.5 | 8.5 | 8.5 | 8.4 | 8.1 | 8.5 |
| South Asia | 7.0 | 5.3 | 4.8 | 5.3 | 5.4 | 5.4 | 5.4 | 5.4 | 5.3 | 5.4 |
| India | 7.5 | 5.5 | 4.9 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.4 | 5.5 |
| Pakistan | 4.6 | 3.8 | 4.2 | 4.4 | 4.8 | 4.8 | 4.8 | 4.8 | 4.5 | 4.8 |
| Bangladesh | 5.3 | 5.4 | 4.9 | 4.3 | 4.3 | 4.3 | 4.3 | 4.3 | 4.6 | 4.3 |
| | | | | | | | | | | |
| Latin America | 3.6 | 4.7 | 2.8 | 3.9 | 4.3 | 4.3 | 4.3 | 3.1 | 4.1 | 4.3 |
| Caribbean & Central America | 2.7 | 3.0 | 3.4 | 3.6 | 3.7 | 3.7 | 3.6 | 3.0 | 3.5 | 3.4 |
| Mexico | 5.9 | 7.0 | 4.6 | 5.0 | 5.0 | 5.0 | 4.8 | 2.2 | 5.2 | 4.5 |
| South America | 3.1 | 4.2 | 2.2 | 3.6 | 4.1 | 4.1 | 4.3 | 3.5 | 3.7 | 4.3 |
| Argentina | 4.4 | 8.4 | 4.1 | 4.5 | 4.5 | 4.5 | 4.7 | 5.1 | 5.1 | 4.7 |
| Brazil | 2.9 | 3.0 | 1.0 | 3.0 | 4.0 | 4.0 | 4.2 | 2.6 | 3.2 | 4.2 |
| Other | 2.4 | 3.8 | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.5 | 3.9 | 4.0 |
| | | | | | | | | | | |
| Middle East | 6.4 | 4.0 | 3.3 | 3.5 | 3.7 | 4.0 | 4.0 | 4.5 | 3.7 | 3.9 |
| Iran | 4.9 | 3.2 | 2.8 | 3.0 | 3.4 | 3.8 | 3.8 | 4.7 | 3.3 | 3.8 |
| Iraq | 42.0 | 10.0 | 1.8 | 2.6 | 3.7 | 4.4 | 4.4 | 2.0 | 4.5 | 4.4 |
| Saudi Arabia | -0.1 | 2.7 | 2.1 | 1.9 | 2.8 | 3.2 | 3.2 | 1.9 | 2.7 | 3.2 |
| Turkey | 6.7 | 7.2 | 5.0 | 5.2 | 4.5 | 4.5 | 4.4 | 3.9 | 5.1 | 4.4 |
| Other | 9.5 | 3.4 | 4.2 | 4.2 | 4.2 | 4.3 | 4.4 | 7.5 | 4.1 | 4.1 |
| | | | | | | | | | | |
| Africa | 5.2 | 2.4 | 3.3 | 3.5 | 3.3 | 3.4 | 3.4 | 2.4 | 3.2 | 3.5 |
| North Africa | 5.7 | 2.6 | 4.5 | 4.4 | 4.2 | 4.1 | 4.1 | 2.5 | 4.0 | 4.1 |
| Algeria | 3.8 | 1.3 | 4.0 | 3.6 | 3.1 | 2.8 | 2.8 | 0.9 | 2.9 | 2.8 |
| Egypt | 5.0 | 4.9 | 4.5 | 4.5 | 4.4 | 4.4 | 4.4 | 3.6 | 4.5 | 4.4 |
| Morocco | 11.5 | -2.2 | 4.8 | 5.0 | 5.0 | 5.0 | 5.1 | 3.1 | 3.8 | 5.1 |
| Tunisia | 7.0 | 5.6 | 5.9 | 6.1 | 6.0 | 5.6 | 5.6 | 4.4 | 5.8 | 5.6 |
| Sub-Saharan Africa | 5.7 | 2.7 | 2.4 | 2.7 | 2.7 | 2.7 | 2.8 | 2.9 | 2.7 | 2.8 |
| South Africa | 3.3 | 1.7 | 3.0 | 3.4 | 3.1 | 3.5 | 3.5 | 1.2 | 3.0 | 3.5 |

Table 3.  Baseline population growth assumptions

| Region/country | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | Average 1991-1996 | Average 1997-2002 | Average 2003-2008 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | *Percent change* | | | | |
| World | 1.4 | 1.4 | 1.4 | 1.4 | 1.3 | 1.3 | 1.3 | 1.5 | 1.3 | 1.2 |
| less U.S. | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.3 | 1.3 | 1.5 | 1.4 | 1.3 |
| | | | | | | | | | | |
| Developed Economies | 0.5 | 0.5 | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.6 | 0.4 | 0.3 |
| United States | 0.9 | 0.9 | 0.9 | 0.9 | 0.8 | 0.8 | 0.8 | 1.0 | 0.9 | 0.8 |
| Canada | 1.3 | 1.2 | 1.1 | 1.1 | 1.0 | 1.0 | 1.0 | 1.3 | 1.1 | 0.9 |
| Japan | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 0.1 |
| Australia | 1.0 | 1.0 | 0.9 | 0.9 | 0.9 | 0.9 | 0.8 | 1.2 | 0.9 | 0.8 |
| European Union-15 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.4 | 0.1 | 0.0 |
| | | | | | | | | | | |
| Transition Economies | -0.1 | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 | 0.2 |
| Eastern Europe | -0.1 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.2 | -0.1 | 0.1 | 0.2 |
| Czech Republic | -0.1 | -0.1 | -0.1 | -0.1 | 0.0 | 0.1 | 0.2 | 0.0 | 0.0 | 0.2 |
| Hungary | -0.3 | -0.3 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 |
| Poland | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 | 0.2 | 0.3 | 0.2 | 0.1 | 0.4 |
| Former Soviet Union | -0.1 | -0.1 | -0.1 | -0.1 | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 0.2 |
| Russia | -0.3 | -0.3 | -0.3 | -0.3 | -0.3 | -0.3 | -0.3 | 0.0 | -0.3 | -0.1 |
| Ukraine | -0.4 | -0.4 | -0.3 | -0.2 | -0.1 | -0.1 | -0.1 | -0.2 | -0.2 | -0.1 |
| Other | 0.4 | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | 0.6 | 0.8 | 0.5 | 0.7 |
| | | | | | | | | | | |
| Developing countries | 1.7 | 1.7 | 1.7 | 1.6 | 1.6 | 1.6 | 1.6 | 1.8 | 1.6 | 1.5 |
| Asia | 1.5 | 1.5 | 1.4 | 1.4 | 1.3 | 1.3 | 1.3 | 1.5 | 1.4 | 1.2 |
| East & Southeast Asia | 1.2 | 1.1 | 1.1 | 1.0 | 1.0 | 0.9 | 0.9 | 1.3 | 1.0 | 0.8 |
| China | 1.0 | 0.9 | 0.9 | 0.8 | 0.7 | 0.7 | 0.7 | 1.1 | 0.8 | 0.6 |
| Hong Kong | 2.6 | 2.6 | 2.4 | 2.1 | 1.7 | 1.5 | 1.4 | 1.9 | 2.0 | 1.0 |
| Korea | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 0.9 | 1.0 | 1.0 | 0.8 |
| Taiwan | 1.0 | 1.0 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 1.0 | 0.9 | 0.8 |
| Indonesia | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.4 | 1.4 | 1.6 | 1.5 | 1.3 |
| Malaysia | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.0 | 2.0 | 2.3 | 2.1 | 1.9 |
| Philippines | 2.2 | 2.2 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.3 | 2.1 | 1.8 |
| Thailand | 1.0 | 1.0 | 1.0 | 1.0 | 0.9 | 0.9 | 0.9 | 1.1 | 0.9 | 0.8 |
| Vietnam | 1.6 | 1.6 | 1.5 | 1.4 | 1.3 | 1.3 | 1.3 | 1.8 | 1.4 | 1.2 |
| South Asia | 1.9 | 1.9 | 1.9 | 1.8 | 1.8 | 1.8 | 1.7 | 2.0 | 1.8 | 1.6 |
| India | 1.8 | 1.8 | 1.7 | 1.7 | 1.7 | 1.6 | 1.6 | 1.9 | 1.7 | 1.5 |
| Pakistan | 2.7 | 2.8 | 2.8 | 2.8 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.5 |
| Bangladesh | 1.9 | 1.8 | 1.8 | 1.7 | 1.7 | 1.7 | 1.6 | 1.9 | 1.7 | 1.5 |
| | | | | | | | | | | |
| Latin America | 1.7 | 1.6 | 1.6 | 1.5 | 1.5 | 1.4 | 1.4 | 1.8 | 1.5 | 1.3 |
| Caribbean & Central America | 1.7 | 1.7 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.7 | 1.6 | 1.5 |
| Mexico | 1.9 | 1.8 | 1.8 | 1.8 | 1.7 | 1.7 | 1.7 | 1.9 | 1.7 | 1.5 |
| South America | 1.6 | 1.6 | 1.5 | 1.4 | 1.4 | 1.3 | 1.3 | 1.7 | 1.4 | 1.2 |
| Argentina | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.2 |
| Brazil | 1.4 | 1.4 | 1.3 | 1.2 | 1.1 | 1.1 | 1.0 | 1.5 | 1.2 | 0.9 |
| Other | 1.9 | 1.9 | 1.8 | 1.8 | 1.8 | 1.7 | 1.7 | 2.0 | 1.8 | 1.6 |
| | | | | | | | | | | |
| Middle East | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.2 |
| Iran | 2.3 | 2.2 | 2.1 | 2.0 | 2.2 | 2.3 | 2.3 | 2.5 | 2.2 | 2.1 |
| Iraq | 2.5 | 2.8 | 2.9 | 3.0 | 3.0 | 2.9 | 2.9 | 2.2 | 2.9 | 2.8 |
| Saudi Arabia | 3.2 | 3.5 | 3.7 | 3.6 | 3.5 | 3.3 | 3.2 | 2.7 | 3.4 | 3.0 |
| Turkey | 1.6 | 1.6 | 1.6 | 1.5 | 1.5 | 1.5 | 1.4 | 1.6 | 1.5 | 1.3 |
| Other | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 2.9 | 3.3 | 3.0 | 2.8 |
| | | | | | | | | | | |
| Africa | 2.7 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.7 | 2.6 | 2.5 |
| North Africa | 2.0 | 2.0 | 1.9 | 1.9 | 1.9 | 1.8 | 1.8 | 2.1 | 1.9 | 1.7 |
| Algeria | 2.3 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.0 | 2.4 | 2.1 | 1.9 |
| Egypt | 2.0 | 1.9 | 1.9 | 1.9 | 1.8 | 1.8 | 1.8 | 2.1 | 1.8 | 1.7 |
| Morocco | 2.0 | 2.0 | 1.9 | 1.9 | 1.8 | 1.8 | 1.8 | 2.1 | 1.9 | 1.7 |
| Tunisia | 1.5 | 1.5 | 1.5 | 1.4 | 1.4 | 1.4 | 1.3 | 1.8 | 1.4 | 1.3 |
| Sub-Saharan Africa | 2.9 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.9 | 2.8 | 2.7 |
| South Africa | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.3 | 2.2 | 2.0 |

# Agricultural Policy Assumptions

Baseline projections assume a continuation of current agricultural legislation and reflect policy decisions as of mid-November 1998. Most of the policy features assumed reflect provisions of the Federal Agriculture Improvement and Reform Act of 1996 (1996 Farm Act). The baseline also reflects applicable provisions of the Agricultural Adjustment Act of 1938, the Agricultural Act of 1949, the Omnibus Budget Reconciliation Act of 1990, the Omnibus Budget Reconciliation Act of 1993, the Emergency Farm Financial Relief Act, and the Omnibus Consolidated and Emergency Supplemental Appropriations Act of Fiscal Year 1999 (1999 Appropriations Act).

## Programs for Contract Crops and Oilseeds

Key policy features of the 1996 Farm Act for "contract crops" (wheat, corn, grain sorghum, barley, oats, rice, and upland cotton) and oilseeds include:

- C planting flexibility;
- C production flexibility contracts;
- C marketing assistance loans, including provisions for loan deficiency payments; and
- C cotton user marketing payments.

The Emergency Farm Financial Relief Act affects the timing of fiscal year 1999 production flexibility payments for contract crops, and the 1999 Appropriations Act provides additional funds in fiscal 1999 for contract crops for market loss and crop loss assistance.

### Planting Flexibility

Planting flexibility increased under the 1996 Farm Act. Participating producers are permitted to plant 100 percent of their contract acreage plus any other cropland acreage on the farm to any crop (with limitations on fruits and vegetables) with no loss in payments, as long as the producer does not violate conservation and wetland provisions. Haying and grazing restrictions and minimum planting requirements of previous legislation have been eliminated on contract acres.

Planting for harvest of fruits and vegetables (other than lentils, mung beans, and dry peas) is prohibited on contract acreage, except in the following situations:

- Harvesting double-cropped fruits and vegetables on contract acreage is permitted, without loss of payments, in any region which has a history of double-cropping contract commodities with fruits and vegetables. An individual farm need not have a double-cropping history, only the region.

- Harvesting of any fruits or vegetables on contract acreage is permitted, with an acre-for-acre loss of contract payments for each contract acre planted to fruits and vegetables, if the Secretary determines that there is a history of planting fruits or vegetables on the farm.

- Harvesting a specific fruit or vegetable on contract acreage is permitted, with an acre-for-acre loss of contract payments for each contract acre planted to the specific fruit or vegetable, if the Secretary determines that the producer has an established planting history of the specific fruit or vegetable. In such a case, the quantity harvested cannot exceed the producer's average annual planting history of the specific fruit or vegetable during the 1991-1995 crop years, excluding any crop year with 0 acres planted.

**Production Flexibility Contracts**

The 1996 Farm Act provides decoupled income support payments over 7 years that are not related to market prices or most farm-level production decisions. To receive payments and be eligible for loans on contract commodities, a producer had to enter into a production flexibility contract (PFC) for 1996-2002 during the one-time enrollment period held in 1996. With exceptions for land exiting the Conservation Reserve Program (CRP), producers who did not enroll in the production flexibility contract program in 1996 are not eligible for program benefits. Eligible land leaving the CRP may be added to an existing PFC or enrolled in a new PFC at the beginning of a fiscal year.

The production flexibility contract requires the participating producer to comply with conservation, wetland, and planting flexibility provisions, as well as to keep the land in agricultural or related uses. A farm was eligible for a production flexibility contract only if it had at least one crop acreage base established for contract commodities that would have been in effect for the 1996 crop under previous farm law. Land eligible to enter into a contract included land enrolled in acreage reduction programs for any of the crop years 1991 through 1995, land considered planted under program rules (certified acreage), or land that had been enrolled in the CRP that had a crop acreage base associated with it. Farmers receive production flexibility contract payments for 7 years, 1996-2002. Payments are based on enrolled contract acreage and generally are not related to current plantings.

Cumulative outlays for contract payments for fiscal 1996-2002 are capped at slightly over $36 billion. Total contract payments will be lower, reflecting payment limitations. Production flexibility contracts are assumed to continue beyond 2002 in the baseline. The fiscal 2002 funding level for production flexibility contracts of $4.008 billion is assumed for subsequent years, as well.

Payment levels are allocated among contract commodities according to percentages specified in the 1996 Farm Act (see table 4). Adjustments were made in 1996 and 1997 for payments of previous years' deficiency payments that occur in those years and repayments of unearned deficiency payments that were due in those years. An additional adjustment is made to add $8.5 million annually to rice payments starting in fiscal 1997. This rice payment adjustment is also assumed in the baseline to continue beyond 2002.

Payment rates for each commodity are derived by dividing the commodity's total annual contract payments (before payment limitation reductions) by the corresponding total payment quantity on all enrolled acreage for the commodity (see table 5). Production flexibility contract payments to

individual farmers are then based on the derived payment rate times the payment quantity on the farm.

Annual production flexibility contract payments are made no later than September 30 of each fiscal year. Generally, in each fiscal year, a 50-percent advance payment is made on either December 15 or January 15 of the fiscal year, at the option of the owner or producer. Owners and producers must give advance notice as to which date they prefer for the advance payment, and the date selected may change from year to year. The Emergency Farm Financial Relief Act, enacted in August 1998, allows farmers to received their fiscal year 1999 PFC payments earlier; at the producer's option, 1999 PFC payments may be received in one payment or in two equal payments at any time during the fiscal year.

Annual contract payments under the 1996 Farm Act are limited to $40,000 per person (except for additional payments that result from repayment of prior-year advanced deficiency payments), a $10,000 reduction from the previous $50,000 limit on deficiency payments. Limits on marketing loan gains and loan deficiency payments are unchanged at $75,000 per person, per crop year, and the three-entity rule is retained.

The 1999 Appropriations Act provides $2.857 billion for market loss assistance (MLA) payments to be paid in fiscal 1999 to farmers who were eligible for PFC payments in fiscal 1998. MLA payments are proportional to 1998 PFC payments and are equivalent to slightly less than 50 percent of those PFC payments. MLA payment rates are shown in the footnote of table 5. Additionally, the 1999 Appropriations Act provides $2.375 billion for crop loss assistance.

**Marketing Assistance Loans**

The 1996 Farm Act retained nonrecourse commodity loans, in a modified form (see table 5). Loan rates for corn, wheat, and oilseeds continue to be based on 85 percent of the preceding 5-year average of farm prices, excluding the highest-price and lowest-price years. Upland cotton loan rates are based on the lower of 85 percent of the 5-year average price, excluding the highest-price and lowest-price years, of base quality cotton in designated U.S. spot markets, or 90 percent of the average price for the 5 lowest priced growths of Middling 1-3/32" cotton C.I.F. Northern Europe during a 15-week period starting July 1 each year, adjusted to a U.S. spot market equivalent.

Maximum loan rates are specified in the 1996 Farm Act for wheat, corn, upland cotton, soybeans, and minor oilseeds. Corn and wheat loan rates are capped at their 1995 levels, while loan rates for soybeans can vary between $4.92 (the 1995 level) and $5.26 per bushel, loan rates for minor oilseeds can vary between $8.70 and $9.30 per hundredweight, and loan rates for upland cotton can vary between $0.50 and $0.5192 a pound (the 1995 level). Corn and wheat loan rates may be adjusted downward based on estimated stocks-to-use ratios. Loan rates for sorghum, barley, and oats are set in relation to the corn loan rate, taking into account their feed values relative to corn as measured by ratios of 5-year lagged moving average prices relative to corn prices. The rice loan rate is frozen for the 1996-2002 crop years at its 1995 level of $6.50 per hundredweight.

## Marketing Assistance Loans and Loan Deficiency Payments

Under the 1996 Farm Act, crops eligible for the commodity loan program are wheat, corn, grain sorghum, barley, oats, rice, and upland cotton produced on a farm with land covered by a production flexibility contract, and all production of oilseeds and extra-long staple cotton. Farmers may receive nonrecourse marketing assistance loans for these crops or, alternatively, receive loan deficiency payments (not available for extra-long staple cotton) when market prices are lower than commodity loan rates.

**Nonrecourse marketing assistance loans** provide interim financing to producers of eligible crops. Instead of selling the crop, farmers pledge the crop as collateral and use the loan proceeds to cover short-term cash needs. Loans may be taken out at any time after harvest through the following March or May, depending on the crop. However, most loan placements occur shortly after harvest when prices tend to be seasonally low.

Farmers may repay the loan (plus interest) anytime prior to maturity and then sell the crop, or they can forfeit the collateral to the government as full payment when the loan matures in 9 months (10 months for cotton). The loan repayment rate, however, will be lower than the loan rate (plus interest) when the local, posted county price or PCP (for wheat, feed grains, and oilseeds), or the prevailing world market price (for rice and upland cotton) is below the loan rate. When a farmer repays the loan at a lower PCP or prevailing world market price, the difference between the loan rate and the loan repayment rate is called a marketing loan gain. In addition, any accrued interest on the loan is waived.

The loan program thereby provides an effective per-unit revenue floor at the loan rate for farmers who put their crops under loan, with a countercyclical effect occurring through marketing loan gains when the price is below the loan rate. However, the loan program does not establish a floor for market prices since commodities can enter the market at prices below the loan rate.

**Loan deficiency payments**. If the PCP or prevailing world market price is below the loan rate, eligible producers may opt for a loan deficiency payment (LDP) instead of securing a commodity loan. If an LDP is paid on a crop, however, that crop cannot subsequently go under loan. The LDP rate is the amount by which the loan rate exceeds the PCP or prevailing world market price, and thus is equivalent to the marketing loan gain that could alternatively be obtained for crops under loan. By taking the LDP and immediately selling the crop, a producer effectively receives a per-unit revenue equal to the loan rate, partly from the market and the rest from the government.

**Supply response effects**. When expected market prices are below loan rates, loan rates provide the economic incentive for planting decisions, and producers plant more acreage to supported crops than they otherwise would. Additionally, if loan rates do not reflect relative market prices, the mix of crops planted may be affected. In such circumstances, loan rates, while providing revenue protection for producers in the short run, may put downward pressure on prices in subsequent years if they result in larger supplies.

Marketing loan provisions are retained, allowing the repayment of commodity loans at less than the loan rate when posted county prices (wheat, feed grains, and oilseeds) or world prices (upland cotton and rice) are below the loan rate.  Also, loan deficiency payments may instead be made to eligible producers of wheat, feed grains, upland cotton, rice, and oilseeds who agree to forgo obtaining a loan (see box, page 25).

**Cotton User Marketing Payments**

Prior to October 1, 1998, the Secretary made payments to domestic users and exporters of upland cotton when the following three conditions were met:

C  the lowest-priced U.S. growth of upland cotton quoted for delivery in Northern Europe exceeded the Northern Europe price by more than 1.25 cents per pound for 4 consecutive weeks;

C  during the same 4-week period, the adjusted world price (AWP) for upland cotton did not exceed 130 percent of the base loan rate; and

C  for each of the preceding 10 consecutive weeks, the lowest-priced U.S. growth, minus 1.25 cents per pound, minus the payment value in the previous week did not exceed the Northern Europe price.

The payment rate in any week which met these conditions was equal to the difference, for the immediately preceding week, between the lowest-priced U.S. growth and the Northern Europe price minus 1.25 cents per pound.

After September 30, 1998, the AWP threshold was raised to 134 percent, and the third condition, which precluded the simultaneous operation of the user marketing program and special import quotas, was eliminated.  After October 23, 1998,  payments are equal to the difference, for the immediately preceding week, between the lowest-priced U.S. growth and the Northern Europe price minus 3.00 cents per pound; however, USDA determined that payments under pre-existing agreements with domestic users and exporters would continue on the basis of the earlier formula's deduction of 1.25 cents per pound.

The 1996 Farm Act capped total expenditures for cotton user marketing certificates during fiscal years 1996-2002 at $701 million.  Funding for this program was used by mid-December 1998. However, the cotton user marketing certificate program is authorized in the 1996 Farm Act through July 31, 2003, beyond the period covered by the program's expenditure cap.  Thus, for fiscal years 2003 and later, the baseline assumes that funding for this program is no longer capped, with annual expenditures at near $150 million (see box, page 43).

### Program Assumptions for Other Commodities

Baseline policy assumptions for selected other commodities--dairy, sugar, and tobacco--are discussed in this section.  Dairy and sugar assumptions are largely based on provisions from the

1996 Farm Act. Policy assumptions for tobacco reflect earlier legislation because the tobacco program was not included in the 1996 Farm Act.

**Dairy**

Dairy price supports are phased down to $9.90 in 1999 and the program ends on December 31, 1999. Starting January 1, 2000, a recourse loan program, in which loans must be repaid with interest, is implemented for butter, nonfat dry milk, and cheddar cheese at loan rates equivalent to $9.90 per hundredweight for milk to assist processors in the management of dairy product inventories.

The 1999 Appropriations Act provides $200 million in fiscal 1999 for dairy farmers for market loss assistance payments.

**Sugar**

The 1996 Farm Act froze the raw cane sugar loan rate at 18 cents per pound, the level in effect since the 1985 crop. The refined beet sugar loan rate was also fixed, at its 1995 level of 22.9 cents per pound. These levels are assumed in the baseline to continue through 2008.

Nonrecourse loans are available when the tariff-rate quota for sugar imports exceeds 1.5 million short tons. Sugar program loans are recourse in years when the tariff-rate quota is at or below 1.5 million short tons, but such loans convert to nonrecourse loans if the tariff-rate quota is increased above 1.5 million short tons. Processors must pay a 1-cent fee on each pound of raw cane sugar and 1.07 cents on each pound of refined beet sugar forfeited to the CCC under a nonrecourse loan.

Sugar marketing assessments, paid on all processed, domestically-grown, sugar, were increased by 25 percent under the 1996 Farm Act. Assessments on raw cane sugar marketings are equal to 1.375 percent of the 18 cent loan rate, 0.2475 cents per pound. Assessments on refined beet sugar marketings are equal to 1.47425 percent of 18 cents, 0.2654 cents per pound.

**Tobacco**

The major provisions of the tobacco program are included in the Agricultural Adjustment Act of 1938, as amended; the No-Net-Cost Tobacco Program Act of 1982; and the Omnibus Budget Reconciliation Act of 1993. The tobacco program was not included in the 1996 Farm Act.

Tobacco marketing quotas and allotments continue, in accordance with the Agricultural Adjustment Act of 1938. Support for flue-cured and burley tobacco are based on statutory formulas that include a 5-year moving average of market prices and a cost-of-production index.

Imports of flue-cured, burley, and certain other tobaccos are covered by a tariff rate quota as authorized by GATT implementing legislation. A tobacco marketing assessment equal to 0.5 percent of the national price support level is assumed to be collected from both the producers and purchasers for the 1994-1998 crops. Additionally, assessments on tobacco imports are assumed

for those crops.  However, the baseline assumes there will be no assessments on domestic producers and purchasers or on importers after crop year 1998.

The baseline incorporates the November 1998 long-term tobacco industry agreement (discussed in the tobacco section, page 47), with tobacco projections including an initial assessment of the effects of the pact.

## Conservation Reserve Program

The baseline assumes that the Conservation Reserve Program (CRP) will gradually build from its recent level of about 30 million acres to its maximum authorized level of 36.4 million acres by 2002 (see table 6).  Authority to sign up and enroll acreage in the CRP is assumed to be extended after 2002 to maintain CRP acreage at 36.4 million acres.  The cropping history allocation of the CRP to specific crops provided in table 6 reflects crops grown in 1996 on farms with CRP acreage.  This CRP allocation is useful for assessing the general effects of the CRP on land availability for plantings.

New enrollments in the CRP reflect periodic regular signups and continuous signups.  A total of 5 million acres of certain highly-valued environmental practices, including acreage in the State Conservation Reserve Enhancement Program (CREP), are estimated to be enrolled under continuous signup provisions.

Enrollment of new and expiring CRP acreage in periodic regular signups is assumed to continue to be guided by the eligibility and selection criteria described in the final rule announced February 12, 1997.  During signups, producers submit rental rate bids for land they would like to enroll (or re-enroll) in the CRP.  All CRP enrollment bids compete for acceptance into the program, based on an environmental benefits index with government costs taken into account.  Environmental considerations for CRP enrollment include soil erosion, water quality, wildlife habitat, enduring environmental benefits beyond the CRP contract period, air quality, and conservation priority areas.

Maximum allowable CRP rental rates that the Government would consider for acceptance (bid caps) are determined based on local average dryland rental rates, adjusted for site-specific, soil-based productivity factors.  In regular signups, producers may submit bids below the bid cap to increase their chances of acceptance.  Under continuous and CREP signup provisions, producers receive additional incentive payments above the bid caps for participating.

## Major Trade Program Assumptions

This section discusses baseline policy assumptions for major U.S. trade programs, including:

- C  the Export Enhancement Program (EEP),
- C  the Dairy Export Incentive Program (DEIP),
- C  export credit guarantee (GSM) programs,
- C  P.L. 480 programs, and
- C  the Food Security Commodity Reserve.

There were no EEP expenditures in fiscal year (FY) 1997 and only small EEP expenditures in FY 1998. Since the EEP program is not currently being used, the baseline assumes that no EEP expenditures occur in FY 1999. However, EEP expenditures are assumed to resume in the baseline starting in FY 2000. Annual EEP funding is assumed at levels set in the 1996 Farm Act for FYs 2000 through 2002 of $579 million in 2000 and $478 million in 2001 and 2002. The baseline assumes EEP funding remains at $478 million for subsequent fiscal years as well.

Estimates of the quantity of dairy products exported under the DEIP and associated expenditures are formulated in the baseline within the maximum allowable expenditure and quantity levels of the Uruguay Round Agreement on Agriculture. The annual maximum expenditures for U.S. dairy product export subsidies are $144.2 million in FY 1999, $130.4 million in FY 2000, and $116.6 million in FY 2001. The baseline assumes that DEIP funding then continues at $116.6 million for subsequent years.

Annual program levels assumed in the baseline for GSM-102 and GSM-103 credit guarantee programs are based on forecast economic and market conditions and the expected supply/demand conditions of the countries to which GSM credit guarantees will be made available. The baseline assumes program levels of $4.721 billion in FY 1999, $4.506 billion in FY 2000, and $4.611 billion in FY 2001 and subsequent years

P.L. 480 program levels in the baseline for FY 1999 reflect the 1999 Appropriations Act-- $203.475 million for Title I Credit, $16.249 million for Title I Ocean Freight Differential, $837 million for Title II, and $25 million for Title III. These FY 1999 funding levels are then adjusted for unobligated funds from prior years and Farmer-to-Farmer Program transfers. For FY 2000 and subsequent years, Title I Credit and Title I Ocean Freight Differential program levels are assumed at $138.324 million and $12 million, respectively. The Title II program level remains at $837 million for FY 2000, and then is assumed at $787 million for the rest of the baseline. Title III is assumed to have a program level of zero. No special donations beyond the FY 1999 Section 416(b) shipments of wheat to Russia and other needy countries are assumed.

The Food Security Commodity Reserve is assumed to remain at its current level of about 2.5 million metric tons (about 93 million bushels) of wheat through the baseline. The reserve is authorized for up to 4 million metric tons of grain (wheat, rice, corn, and sorghum) to meet humanitarian food aid needs. The 1996 Farm Act raised the existing 300,000 ton release authority for urgent humanitarian relief in disasters to 500,000 metric tons in the case of unanticipated need and allows for the release of an additional 500,000 metric tons of eligible commodities that could have been released but were not released in previous years. The Secretary is authorized to release eligible commodities from the reserve when supplies are so limited that eligible commodities cannot be made available for programming under P.L. 480. The 1996 Farm Act authorizes replenishment of the reserve, but does not set a specific time for replenishment. Also, funds for any commodity purchases for replenishment must be authorized in an appropriations act. The baseline assumes that funds for replenishment of the reserve through commodity purchases will not be appropriated.

Beginning in FY 2000, the Africa: Seeds of Hope Act of 1998 allows the retention and use of funds from P.L. 480 reimbursements to purchase grain to replace supplies released from the reserve. The purchases would be limited to no more than $20 million per fiscal year. CCC also is authorized to hold money as well as commodities in the reserve. However, the baseline assumes no release of grain from the reserve.

## Other Agricultural Policy Assumptions

- *Ethanol tax credit.* The federal tax credit for ethanol use is assumed in the baseline, reflecting its extension through 2007 in the Transportation Equity Act for the Twenty First Century.

- *Bilateral and Multilateral Agreements.* The baseline assumes full compliance with all bilateral and multilateral agreements affecting agriculture and agricultural trade. Examples include full compliance with internal support, market access, and export subsidy provisions of the Uruguay Round (UR) Agreement on Agriculture.

- *World Trade Organization (WTO).* The baseline assumes no accession to the WTO by the former Soviet Union, China, or Taiwan.

- *EU Enlargement.* The baseline assumes no enlargement of the EU-15.

- *Asia-Pacific Economic Cooperation (APEC).* No implementation of more liberalized trade among the APEC countries is assumed.

- *North American Free Trade Agreement (NAFTA).* No expansion of NAFTA to include additional countries is assumed.

- *Export Subsidy Carryover Credit.* The baseline assumes no carryover to later years of unused UR agreement export subsidies.

- *Other Agricultural Policy Trends.* Agricultural and trade policies in individual foreign countries are assumed to continue to evolve along their current paths. In particular, the process of liberalizing economic and trade policies underway in many developing countries will continue.

Table 4.  Production flexibility contract payments under the 1996 Farm Act

| Commodity | Commodity share | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|
| | *Percent* | | | | *Million dollars* | | | |

**1996 Farm Act gross contract payments**

| Commodity | Commodity share | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|
| Wheat | 26.26 | 1,463 | 1,414 | 1,523 | 1,471 | 1,347 | 1,085 | 1,053 |
| Corn | 46.22 | 2,574 | 2,489 | 2,681 | 2,590 | 2,371 | 1,909 | 1,852 |
| Sorghum | 5.11 | 285 | 275 | 296 | 286 | 262 | 211 | 205 |
| Barley | 2.16 | 120 | 116 | 125 | 121 | 111 | 89 | 87 |
| Oats | 0.15 | 8 | 8 | 9 | 8 | 8 | 6 | 6 |
| Upland cotton | 11.63 | 648 | 626 | 675 | 652 | 597 | 480 | 466 |
| Rice | 8.47 | 472 | 456 | 491 | 475 | 435 | 350 | 339 |
| Total payments, unadjusted | | 5,570 | 5,385 | 5,800 | 5,603 | 5,130 | 4,130 | 4,008 |

**Adjusted contract payments, before payment limitations 1/**

| Commodity | | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|
| Wheat | | 1,976 | 1,426 | 1,534 | 1,483 | 1,347 | 1,085 | 1,053 |
| Corn | | 1,771 | 3,434 | 2,695 | 2,603 | 2,371 | 1,909 | 1,852 |
| Sorghum | | 206 | 347 | 298 | 288 | 262 | 211 | 205 |
| Barley | | 140 | 117 | 126 | 122 | 111 | 89 | 87 |
| Oats | | 9 | 8 | 9 | 9 | 8 | 6 | 6 |
| Upland cotton | | 746 | 639 | 689 | 665 | 597 | 480 | 466 |
| Rice 2/ | | 472 | 461 | 498 | 480 | 443 | 358 | 348 |
| Total adjusted payments | | 5,321 | 6,433 | 5,848 | 5,650 | 5,139 | 4,139 | 4,017 |

**Projected contract payments after payment limitations and other adjustments**

| Commodity | | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|
| Wheat | | 1,941 | 1,397 | 1,497 | 1,462 | 1,328 | 1,069 | 1,037 |
| Corn | | 1,745 | 3,384 | 2,633 | 2,574 | 2,345 | 1,888 | 1,832 |
| Sorghum | | 201 | 338 | 287 | 282 | 256 | 206 | 200 |
| Barley | | 137 | 113 | 120 | 118 | 108 | 87 | 84 |
| Oats | | 9 | 8 | 9 | 8 | 8 | 6 | 6 |
| Upland cotton | | 699 | 597 | 637 | 634 | 568 | 458 | 444 |
| Rice | | 455 | 448 | 478 | 466 | 430 | 348 | 338 |
| Total payments | | 5,186 | 6,286 | 5,661 | 5,544 | 5,042 | 4,061 | 3,941 |

1/ Adjusted for prior-year earned deficiency payments paid in these years, repayments of unearned 1995 deficiency payments, and repayments of prior-year PFC payments.  These adjusted contract payments are used for payment rate calculations.

2/ 1996 Farm Act includes additional rice payments of $8.5 million annually, FY 1997 through FY 2002.

Note:  FY-1999 appropriations for agriculture provide $3.057 billion for market loss assistance, with $2.857 billion to be paid to farmers eligible for production flexibility payments in the previous year.

Table 5.  Summary baseline policy variables

| | 1997/98 | 1998/99 | 1999/2000 | 2000/01 | 2001/02 | 2002/03 | 2003/04 | 2004/05 | 2005/06 | 2006/07 | 2007/08 | 2008/09 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Marketing assistance loan rates (Dollars per unit)** | | | | | | | | | | | | |
| Corn | 1.89 | 1.89 | 1.89 | 1.89 | 1.85 | 1.81 | 1.81 | 1.89 | 1.89 | 1.89 | 1.89 | 1.89 |
| Sorghum | 1.76 | 1.74 | 1.75 | 1.75 | 1.68 | 1.67 | 1.68 | 1.76 | 1.75 | 1.75 | 1.75 | 1.75 |
| Barley | 1.57 | 1.56 | 1.58 | 1.58 | 1.54 | 1.46 | 1.45 | 1.54 | 1.55 | 1.55 | 1.55 | 1.55 |
| Oats | 1.11 | 1.11 | 1.14 | 1.15 | 1.17 | 1.08 | 1.06 | 1.11 | 1.11 | 1.10 | 1.10 | 1.10 |
| Wheat | 2.58 | 2.58 | 2.58 | 2.58 | 2.58 | 2.58 | 2.58 | 2.58 | 2.58 | 2.58 | 2.58 | 2.58 |
| Rice | 6.50 | 6.50 | 6.50 | 6.50 | 6.50 | 6.50 | 6.50 | 6.50 | 6.50 | 6.50 | 6.50 | 6.50 |
| Upland cotton | 0.5192 | 0.5192 | 0.5192 | 0.5192 | 0.5192 | 0.5192 | 0.5192 | 0.5192 | 0.5192 | 0.5192 | 0.5192 | 0.5192 |
| Soybeans | 5.26 | 5.26 | 5.26 | 5.26 | 4.92 | 4.92 | 4.92 | 4.92 | 4.92 | 4.92 | 4.92 | 5.00 |
| **Production flexibility contract payment rates (Dollars per unit)** | | | | | | | | | | | | |
| Corn | 0.49 | 0.38 | 0.36 | 0.33 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 |
| Sorghum | 0.54 | 0.45 | 0.44 | 0.39 | 0.32 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 |
| Barley | 0.28 | 0.28 | 0.27 | 0.24 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 |
| Oats | 0.03 | 0.03 | 0.03 | 0.03 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 |
| Wheat | 0.63 | 0.66 | 0.64 | 0.57 | 0.46 | 0.44 | 0.44 | 0.44 | 0.44 | 0.44 | 0.44 | 0.44 |
| Rice | 2.71 | 2.92 | 2.82 | 2.60 | 2.10 | 2.04 | 2.04 | 2.04 | 2.04 | 2.04 | 2.04 | 2.04 |
| Upland cotton | 0.076 | 0.082 | 0.079 | 0.070 | 0.057 | 0.055 | 0.055 | 0.055 | 0.055 | 0.055 | 0.055 | 0.055 |
| **Production flexibility contract payments (Dollars per PFC acre, average)** | | | | | | | | | | | | |
| Corn | 42.44 | 32.85 | 31.66 | 28.68 | 23.08 | 22.38 | 22.38 | 22.38 | 22.38 | 22.38 | 22.38 | 22.38 |
| Sorghum | 26.48 | 21.87 | 21.04 | 18.92 | 15.22 | 14.74 | 14.74 | 14.74 | 14.74 | 14.74 | 14.74 | 14.74 |
| Barley | 11.09 | 11.28 | 10.75 | 9.54 | 7.67 | 7.41 | 7.41 | 7.41 | 7.41 | 7.41 | 7.41 | 7.41 |
| Oats | 1.33 | 1.36 | 1.30 | 1.15 | 0.92 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 |
| Wheat | 18.61 | 19.44 | 18.67 | 16.73 | 13.46 | 13.03 | 13.03 | 13.03 | 13.03 | 13.03 | 13.03 | 13.03 |
| Rice | 110.97 | 119.62 | 115.42 | 106.38 | 86.04 | 83.54 | 83.54 | 83.54 | 83.54 | 83.54 | 83.54 | 83.54 |
| Upland cotton | 39.42 | 41.99 | 40.45 | 36.10 | 29.05 | 28.17 | 28.17 | 28.17 | 28.17 | 28.17 | 28.17 | 28.17 |

Note:  Units for marketing assistance loan rates and production flexibility payment rates are dollars per bushel except for upland cotton (per pound) and rice (per hundredweight).

Market loss assistance payment rates, to be paid in FY-1999 to farmers eligible for production flexibility payments in the previous year, are:  wheat, $0.33; corn, $0.187; sorghum, $0.225; barley, $0.141; oats, $0.016; rice, $1.45; and upland cotton, $0.041.


Table 6.  Conservation Reserve Program acreage assumptions

| | 1997/98 | 1998/99 | 1999/2000 | 2000/01 | 2001/02 | 2002/03 | 2003/04 | 2004/05 | 2005/06 | 2006/07 | 2007/08 | 2008/09 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | *Million acres* | | | | | | |
| **Cropping History 1/** | | | | | | | | | | | | |
| Corn | 4.7 | 3.9 | 4.0 | 4.4 | 4.5 | 4.5 | 4.4 | 4.4 | 4.4 | 4.4 | 4.4 | 4.4 |
| Sorghum | 1.1 | 1.2 | 1.3 | 1.4 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 |
| Barley | 0.7 | 0.8 | 0.8 | 0.9 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Oats | 0.3 | 0.4 | 0.5 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 |
| Wheat | 9.1 | 9.5 | 9.8 | 10.9 | 11.2 | 11.4 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 |
| Upland cotton | 1.0 | 1.1 | 1.1 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 |
| Soybeans | 3.8 | 3.3 | 3.2 | 3.4 | 3.4 | 3.3 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 |
| Subtotal | 20.7 | 20.2 | 20.7 | 23.0 | 23.4 | 23.7 | 23.6 | 23.6 | 23.6 | 23.6 | 23.6 | 23.6 |
| Fallow | 2.8 | 3.1 | 3.4 | 4.0 | 4.1 | 4.3 | 4.4 | 4.4 | 4.4 | 4.4 | 4.4 | 4.4 |
| Other | 9.3 | 7.0 | 7.0 | 7.4 | 8.2 | 8.4 | 8.4 | 8.4 | 8.4 | 8.4 | 8.4 | 8.4 |
| Total | 32.8 | 30.3 | 31.1 | 34.4 | 35.8 | 36.4 | 36.4 | 36.4 | 36.4 | 36.4 | 36.4 | 36.4 |

1/ The cropping history allocation is based on 1996 plantings on farms with CRP acreage, and is used as a general indicator influencing land available for plantings.

*USDA Baseline Projections, February 1999*

# Crops

Baseline projections are made in a setting of the market oriented agricultural policy of the 1996 Farm Act. In the initial years of the baseline, many crops are adjusting to a combination of weak demand due in part to the Asia financial crisis and large global supplies, before moving back towards longer term trends with more robust growth. World demand is reduced for many U.S. crops over the first few years of the baseline, 1999/2000 to 2001/02. In the longer run, more favorable global economic growth supports increases in trade and U.S. agricultural exports, although gains are somewhat muted by continued strong export competition and only moderate growth in import demand in some markets, such as for grains to China.

The 1996 Farm Act provides producers nearly full planting flexibility to adjust supply in response to changes in market returns. However, marketing loan benefits also enter into acreage response decisions, especially for soybeans in the baseline projections. Marketing loan provisions of the 1996 Farm Act provide a minimum revenue per unit of production when market prices are below the loan rate (see box, page 25). Consequently, these provisions affect acreage planting decisions when market prices are near or below market assistance loan rates.

Production flexibility contract payments decline over the next 4 years, 1999 through 2002, and then are assumed in the baseline to remain constant for each contract crop. However, since these payments are unrelated to production levels, they are not a significant consideration in supply response decisions.

## Land Use

Changes in land use in the baseline reflect nearly complete planting flexibility of the 1996 Farm Act, without governmental supply management programs of previous farm law. This flexibility allows producers to respond to market prices and returns, augmented by marketing loan benefits in low price years.

Area planted to the eight major U.S. field crops (corn, sorghum, barley, oats, wheat, rice, upland cotton, and soybeans) expands to 265.2 million acres in 2008 (table 7), exceeding the recent high level of plantings for these crops attained 1996. However, reflecting low prices for many crops due to weak demand and large global supplies, aggregate area planted to these crops declines somewhat through 2001 before turning upward again in 2002. Reductions in soybean and corn area account for most of the drop in aggregate area over the next few years. Total area then rises through 2008, with wheat, corn, and soybeans accounting for most of the growth. Harvested acreage for the major crops mirrors total area planted, generally declining in the next few years before rising for the rest of the baseline.

Total feed grain area increases over the projection period, mostly due to gains for corn and sorghum. Corn plantings initially decline in response to continued low prices, reflecting strong foreign competition and weak exports due in part to the Asia financial crisis. Soybean planted area also declines in the next few years and, although it rises after 2002, does not return to the level of 72.5 million acres projected in the baseline for 1999, because most of the growth in demand is met by gains in yields. Wheat plantings, after declining in 1999, increase each year

during the remainder of the baseline because demand growth exceeds gains in yields. Rice area is projected at 3.2 million acres throughout the baseline, as larger production, due to yield gains, and rising imports nearly match increases in domestic demand. Rising yields for upland cotton keep production gains similar to demand increases with acreage remaining near 13 million acres through the baseline.

Area devoted to the Conservation Reserve Program (CRP) is projected to reach 36.4 million acres, the maximum specified by the 1996 Farm Act (see CRP discussion, page 28, and table 6). The CRP is expected to increase from 30.3 million acres in 1998 to its maximum in 2002. About half of this increase comes from land with a cropping history of being planted to wheat.

## Crop Supply and Demand Overview

During the first 3 years of the baseline, many of the major crops adjust to a near-term weak price outlook. Initially, cropland plantings decline in response to low producer returns, which reflect large global supplies and strong foreign competition for many crops along with weak global demand due in part to the Asia financial crisis. Later in the projection period, acreage returns to production in response to growing world demand. However, with strong export competition and moderate import demand growth in some markets tempering trade pressures, yield gains for many crops are sufficient to provide much of the needed production growth, thereby mitigating pressure on total land use.

Projected consumption increases of U.S. soybeans, barley, and rice are primarily driven by domestic demand. Domestic use for these crops registers larger absolute increases and growth rates than exports. Increases in corn use also are larger in the domestic market than in trade, although corn exports have a higher growth rate. In contrast, disappearance gains for U.S. wheat, sorghum, and cotton are driven by exports, with U.S. trade showing larger absolute gains and growth rates than domestic demand. Stocks-to-use ratios decline for corn, wheat, and soybeans, with nominal prices rising. Rice stocks-to-use ratios change little in the baseline, with relatively smaller increases in nominal prices. Stocks-to-use ratios for cotton also change little in the baseline.

Low feed grain prices are projected for the initial baseline years, 1999/2000 and 2000/01, due to abundant feed grain supplies relative to use. Although domestic use continues to grow, exports recover slowly in the early years from recent low levels. In the later years of the baseline, additional feed grain area is needed for growth in exports, combined with steady gains in the domestic market. Larger livestock and poultry inventories boost feed use, while food, seed, and industrial (FSI) use increases mainly due to higher corn sweetener and ethanol use. Feed grain exports are strengthened by recovering global incomes. By the end of the baseline, feed grain acreage is about equal to the recent peak reached in 1996.

Lower soybean farm prices in crop years 1999 and 2000 are projected to reduce loan rates and potential marketing loan benefits starting in crop year 2001. Combined with an increasing corn prices, this leads to projected cuts in U.S. soybean plantings through crop year 2002. Thereafter, soybean area planted is expected to increase in tandem with demand growth, and prices are expected to rise above $6.10 per bushel by baseline end because of more normal stocks relative

to use.  Ample soybean supplies are projected to contribute to increased soybean crushing during crop years 1999 to 2000.  Thereafter, the world demand for soymeal and livestock products will determine the rate of soybean crush.  During the period of declining soybean prices, meal exports are projected to rise relative to foreign competition, but beyond 2002 U.S. export potential is expected to be curtailed, due to growth in U.S. meal consumption, moderating supplies, and increasing foreign production.

Wheat production drops in 1999 but then expands during the remainder of the baseline period in response to increased demand and higher prices.  Wheat acreage is expected to rise to 73 million acres by 2008.  Wheat prices increase at a faster rate than for other crops, in part because of slower yield growth.  Total demand for U.S. wheat rises throughout the projection period.  Per capita food use continues to rise, but at a declining rate.  Feed and residual use decreases through crop year 2001 and then stabilizes for the remainder of the baseline period, as wheat prices rise relative to other feed grain prices.  U.S. wheat exports rise steadily over the projection period but face greater competition from the European Union (EU) starting in 2002/03, as stronger international wheat prices and lower internal EU prices allow the EU to export wheat without subsidies.  Consequently, EU wheat exports exceed quantity limits on subsidized wheat exports in the UR agreement.

Moderate gains in U.S. rice prices are expected to maintain rice plantings through the baseline.  Steady growth in domestic use of rice is projected in the baseline, although gains will be substantially slower than in recent years.  Strong competition from low-cost Asian exporters in some international rice markets and a growing differential between domestic and world rice prices result in only slight gains in U.S. rice exports in the baseline.  U.S. world market share drops to under 9 percent of global trade by 2008/09.  Slow, but steady growth in the domestic market with modest expansion in production causes the U.S. farm price for rice to rise from $9.00 per hundredweight in 1999/2000 to $10.37 per hundredweight in 2008/09.

Upland cotton area is projected to fluctuate around 13 million acres and production is expected to rise in response to increases in domestic mill use and export demand.   Domestic mill use rises slightly over 1 percent annually despite the easing of restrictions on textile import quotas and greater competition from man-made fibers.  Cotton exports are expected to increase 2 percent annually after 2001/02, gaining market share of global cotton trade as Step 2 payments resume in 2002/03 (see Cotton User Marketing Payments, page 26, and Step 2 box, page 43).  Ending stocks of upland cotton rise slightly during the last half of the baseline, keeping the stocks-to-use ratio fairly stable.

### Feed Grains

Feed grain production increases in 2000/01 through the remainder of the baseline.  Yield gains account for most the increase, particularly in the early years.  Corn is expected to continue increasing its share of total feed grain production and use.  After initially declining, corn acres slowly increase over the remainder of the projection period.  However, no significant turnaround in plantings of the other feed grains is foreseen and no major improvement in their net returns is projected.

Despite growth over the entire period, feed grain exports are not expected to be that strong by historical measures. It is only at the end of the baseline that exports surpass the previous record. In addition to sluggish growth in global imports over the first half of the baseline, the United States is projected to face strong competition throughout. Given the strength of domestic demand, however, total feed grain use is projected to be record high over the entire baseline.

U.S. ending stocks are projected to rise to more than 50 million tons early in the baseline before dropping to around 35 million tons. This is slightly below the average ending stocks of the 1990s, but less than half of the 1980s when much higher stockholding was common due to government programs. Although the decline in stocks relative to use will provide support to prices, the price increase over the baseline is moderate. Without a major shock from exports, increases in productivity are expected to nearly keep pace with demand growth and only a modest increase in plantings will be required.

**Corn**

The corn sector starts the baseline in a low price environment, reflecting large supplies relative to demand. At the onset of the baseline, domestic corn use is already at record high levels, and subsequent growth is moderate. For many importers, the favorable impact of low prices is overwhelmed by economic hardships, so a resumption of growth for U.S. exports will largely hinge on improved economic prospects and an easing of competition from other exporters.

Corn area is projected to be fairly stable in the baseline and remain relatively large. Planted area initially declines in response to continued low prices, but as demand strengthens and prices improve, corn plantings increase later in the baseline. Corn primarily competes with soybeans for land, and is also used extensively in rotations with soybeans. Relative net returns are expected to favor soybeans over corn in the early part of the baseline. Although prices for both crops are projected to be low in the next few years, the loan rate for soybeans is relatively more favorable than that of corn. Only a modest decline in total corn and soybean plantings is projected, given few practical alternatives in the Corn Belt. Most reductions in corn area are likely in more marginal producing areas, such as the South, where production risks are greater. About midway through the baseline, price movements are expected to bolster corn plantings, in part because the loan rate for soybeans falls.

Strong yield gains for corn are projected to continue over the entire period, led by more improvements in genetics as well as gains from farming practices, such as timely planting and effective input use. The widespread adoption of Bt corn and the likelihood of more innovations from biotechnology support productivity gains and could raise the yield path above the yield trend of 1.7 bushels per year used for the baseline.

Corn production is projected to increase from 1999 through the end of the baseline, breaking the old record of 10.1 billion bushels by 2003.

Feed and residual use starts at a record high level and grows throughout the projection period, reflecting record meat production and a record number of grain-consuming animal units in the U.S. livestock sector. No significant contraction is apparent as steadily increasing production of

broilers and moderate gains in hog output outweigh cyclical movements in cattle numbers. In addition, feed and residual use of the other grains, including wheat, remains low relative to earlier periods, reinforcing corn's dominant role as the leading feed grain.

Food, seed, and industrial (FSI) use of corn also starts at record highs and increases over the entire baseline, rising at an average pace of 2 percent a year. For the two largest components, high fructose corn syrup (HFCS) and ethanol, expansion is projected to be slower than in most of the previous decade. Policies remain a critical determinant for the volume of corn used for ethanol (see ethanol box, page 38). Other segments of FSI use, such as food and starch use, are fairly mature and gains are largely related to population growth.

Projected exports remain below earlier peaks until the end of the baseline. Increases in corn exports are largest early in the baseline, as they recover from recent depressed levels. Annual gains are moderate in the middle years and then increase more rapidly toward the end of the baseline as foreign incomes improve and global import demand picks up.

Ending stocks of corn gradually decline to around 1.2 billion bushels, where they remain for the last half of the period. Given rising use, this results in progressively lower stocks-to-use ratios. Prices strengthen from $2.00 per bushel to a plateau of $2.50 for 2003/04 to 2007/08, before starting to rise again. Market net returns for corn rise from about $158 per acre to about $193 per acre by 2008.

## Sorghum

Sorghum production is projected to grow to 710 million by 2008. This reflects an increase in plantings from 9.8 million acres to 10.7 million acres, and trend yield growth of 0.6 bushels per year. By 2006, sorghum yields would about match the current record of 72.8 bushels per acre.

Since growth in both supply and demand are about equal, ending stocks are projected to remain about the same throughout the projection period. The largest gains occur in exports, largely fueled by projected increases in shipments to Mexico. Because of smaller increases in domestic use, exports account for a larger share over time. Only modest increases in feed and residual use are projected, keeping it lower than most earlier periods. Small increases in the industrial use of sorghum, stemming from more use for ethanol, are projected to keep this category record high. Prices for sorghum are projected to stay relatively low and in line with historical price relationships, within 90 to 95 percent of the corn price.

## Barley

Barley production increases modestly over the baseline, reaching 435 million bushels by 2008, with higher yields accounting for nearly all of the gain. Planted acreage remains close to its historical lows, increasing just 200,000 acres, with no major turnaround in barley's ability to compete for land. In contrast to sorghum, most of the increase in barley supply goes to feed and

## Future of Ethanol Tied to Policies and Technology, as Well as Market Forces

The ethanol sector has developed from virtual non-existence in the mid- to late-1970s to an industry that now produces about 1.5 billion gallons a year and uses over 500 million bushels of corn a year. This strong historical growth, as well as expected future gains for ethanol, reflects interactions of policies, technological developments, and market forces.

Ethanol production is projected to increase at an average rate of about 1.7 percent a year in the baseline (see figure 3), generally in line with growth in overall U.S. gasoline use projected by the Energy Information Administration (Department of Energy). Production gains for ethanol are stronger in the early years of the baseline and then get slower. Historically, ethanol production expanded very rapidly until 1995/96, when there was a major contraction due to tight corn supplies and record high corn prices. Since then, ethanol output has rebounded about 10 percent a year and is expected to about match the 1994/95 record in 1998/99.

Figure 3
**Corn used for ethanol production**
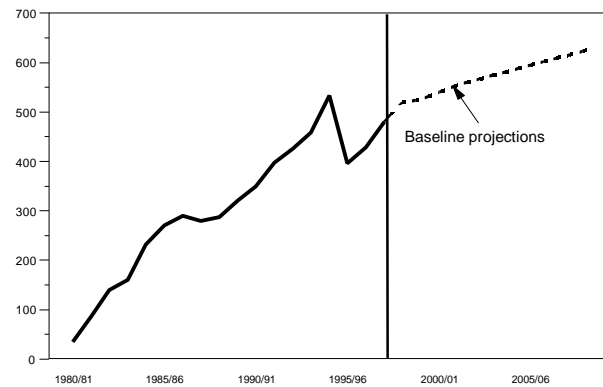


Corn accounts for around 90 percent of the feedstocks used to make ethanol, followed by sorghum at about 8 percent. These shares are expected to remain fairly steady through the baseline. Other feedstocks include wheat, barley, wheat gluten, and some waste products and residues from agricultural processing industries such as brewing and dairy. There is limited substitution among feedstocks, largely for technical reasons since the majority of plants use wet milling processing designed for corn. However, there are a number of dry milling ethanol plants that can switch among grains and typically use the cheapest grain available. Some of these plants routinely use sorghum as the principal feedstock but may switch to corn if sorghum supplies are tight.

In the short term, market forces are critical determinants of ethanol production. More than half of all fuel ethanol is blended into conventional gasoline as a fuel extender or octane enhancer. Prices of ethanol (including the Federal blending credit equivalent to 54 cents for every gallon of ethanol blended) relative to gasoline prices is a key component for determining how much ethanol is blended. The rest of the ethanol is used for blending into reformulated gasoline and oxygenated gasoline for the winter carbon monoxide program. While use of oxygenates basically stems from mandated clean air requirements, fuel producers can choose among competing oxygenates based on their relative prices. Some States offer incentives that also influence demand for ethanol. For instance, Illinois has a sales tax exemption for ethanol while Minnesota has mandated a year round minimum oxygen content requirement for all gasoline sold there.

Net production costs relative to ethanol prices are critical to profitability and production decisions. Net costs are determined by the cost of the corn or other feedstock adjusted for the value of co-products from ethanol production that are sold. Ethanol wet mills produce corn gluten feed, corn gluten meal, and corn oil as co-products, while dry mills produce distillers' dried grains.

--**continued**

**Future of Ethanol Tied to Policies and Technology, as Well as Market Forces** – continued

Over the longer run, policies and technological developments also will play important roles in the supply and demand outlook for ethanol. In 1998, Congress extended the federal tax credit of 54 cents per gallon for ethanol blending past the original 2000 expiration date to 2007, but specified 1-cent reductions in 2001, 2003, and 2005 to settle at 51 cents. This credit encourages consumption and also provides incentives for building new plants or expanding old ones. Many States, most notably Minnesota and Nebraska, also provide incentives to encourage ethanol production. Most of the new ethanol plants that have opened in the last few years have been in Minnesota, which has strongly supported the industry as a way to add value to corn and aid the State's farmers. Most of these recently opened plants are relatively small and are operated by cooperatives.

Because of improvements in technology, newer ethanol plants are more efficient and have lower costs than the older plants. If costs were to come down more, this would tend to make ethanol more competitive. No significant technological changes are assumed in the baseline. However, much research is underway to broaden the range of feedstocks used to make ethanol, particularly by turning cellulose into alcohol and using "biomass" materials, such as grasses, fast growing trees, crop residues, agricultural processing wastes, and other materials that are cheaper than crops. Although promising, these alternatives are not yet cost effective.

Clean air policies are very critical for the demand side of ethanol. Some metropolitan areas are required to use reformulated gasoline (RFG), which contain ethanol blends, to reduce ozone pollution, and a few areas opt in voluntarily. To meet carbon monoxide (CO) standards, many cities choose to use oxygenated fuels. These may contain ethanol or other oxygenates, mainly ethyl tertiary butyl ether (ETBE), an ethanol-based fuel additive, or methyl tertiary butyl ether (MTBE), a petroleum-based additive. A number of cities have met or will soon meet CO attainment standards and can discontinue use of oxygenated fuels.

The choice of strategies employed to meet clean air objectives can vary by State or locality. California is the largest fuel consuming State and it has very stringent clean air measures for fuels, but it currently uses very little ethanol. Instead, it relies on special formulations of gasoline and widespread use of MTBE. Recent concerns in California about ground water contamination from leaks of MTBE might lead to future restrictions on MTBE use and a potential boost to ethanol or other alternative means of meeting mandated standards. California has asked EPA to remove the oxygen minimum specification for RFG but that would require a congressional action.

Future policy changes on a national or local level could also affect ethanol use in the next decade. One change that will be required under Federal legislation (RFG Phase II) beginning in 2000 is a tightening of fuel standards for ozone control, lowering the required Reid Vapor Pressure (RVP) of fuel to less than 7 pounds per square inch. This will dampen demand for ethanol for blending because of its relatively high blending RVP. On the other hand, Tier II emissions standards are being considered that would reduce the sulfur content of fuel. This would tend to push ethanol demand higher since the loss of sulfur could lower the gasoline octane pool, which would require additional octane boosters such as ethanol. Finally, although not assumed in the baseline, even broader changes in fuel and ethanol markets could be set in motion under the Kyoto Protocol which would mandate sharp reductions in greenhouse gas emissions.

residual use. Food and industrial use, dominated by malting for brewing beer, is expected to show no growth. Barley exports are projected at a relatively high 70 million bushels per year, around the maximum quantity of subsidized feed grain exports permitted under the UR agreement. Imports are expected to remain constant at 55 million bushels. The average barley price is projected to rise throughout the baseline, from $1.90 per bushel to $2.35.

## Oats

The long-term downward trend in oat acreage is projected to bottom out early in the baseline, with oat acreage then stabilizing. The crop will remain important in some rotations, and as a cover crop. Production is projected to range from 155 to 165 million bushels over most of the period, while total use stays about 270 million bushels. Imports of 100 million bushels a year make up the difference, contributing particularly to food and specialty feed use. Food use grows very slowly in line with population increases, and total feed and residual use is flat. Again, reflecting the general level of corn prices, oat prices begin the projection period at $1.15 per bushel, which are historically low, and increase to only $1.50 by 2008/09.

## Wheat

For most of the baseline, growth of wheat demand is greater than gains in yields, requiring additional area to be planted. Prices strengthen as the stocks-to-use ratio gradually declines. Farmers respond to increasing prices by moving more land into wheat production. Acreage seeded to wheat is projected to increase to 73 million acres by 2008.

Domestic use of wheat is projected to decline through 2001/02, and then begin to increase during the remainder of the baseline period. Feed and residual use declines steadily through 2001/02 as wheat prices rise compared with feed grains, and then is projected to stabilize at 225 million bushels annually. Food use of wheat is projected to grow about 10 million bushels a year during the baseline. This growth reflects increasing population as well as gains in per capita consumption of wheat products as personal incomes rise in the future.

U.S. wheat exports rise in the baseline as global imports expand. However, growth in world wheat trade will be hindered by weak economic conditions in Asian importing nations, especially over the next few years. Early in the baseline, reduced competition from the EU, which faces limits on the amount of subsidized wheat it can export, increases marketing opportunities for the United States. By 2002/03, however, the combination of higher global wheat prices and declining internal EU prices will allow the EU to export wheat without subsidies. This, together with tighter supplies and strengthening prices, will limit growth in U.S. exports in the later years of the baseline.

Under the 1996 Farm Act, production flexibility contract payments decline each year from crop years 1998 to 2002, and then are assumed to remain constant through 2008. Strengthening prices will result in market net returns for wheat producers rising through the baseline.

# Rice

Moderate gains in domestic and world rice prices are expected to maintain U.S. rice acreage through the baseline. Domestic price gains are due to continued growth in domestic use as well as strong international demand for both rough rice and high-quality milled rice. Rising international prices are the result of a greater level of world rice trade than previously experienced and expectations that the global stocks-to-use ratio will remain tight. However, weak demand across much of Asia will continue to limit growth in international rice prices during the early part of the baseline.

Steady U.S. rice area coupled with small increases in yields will pull rice production up slightly in the baseline. U.S. yield growth is projected to increase about 0.5 percent annually due to better farm management practices and some improvements in rice varieties. This growth is less than achieved in the 1980s and early 1990s.

U.S. rice imports are projected to expand 2.5 percent annually in the baseline, reaching 12.8 million cwt by 2008/09. This is a significant slowdown from growth rates of the 1980s and early 1990s. A major factor limiting the expansion of imports is that most internationally traded rice is of lower quality than demanded domestically. U.S. rice imports are predominantly high quality, specialty varieties--mostly Thai Jasmine as well as Basmati from India and Pakistan.

Small annual increases in domestic demand will capture nearly all of the gains in U.S. rice production, with exports projected to increase only marginally through 2008/09. Total domestic use is projected to rise about 1 percent a year and reach almost 120 million hundredweight by 2008/09, up more than 10 percent from 1998/99. Food use will account for virtually all of the growth in domestic use, reaching nearly 95 million hundredweight by 2008/09. A growing share of the U.S. population from Asia and Latin America and a greater emphasis on healthier life styles account for most of the expansion in domestic food use of rice.

The pace of food use expansion will be much slower than the nearly 4 percent annual growth achieved during the 1980s and the first half of the 1990s. Fewer home cooked meals, increasing popularity of precooked meals, a premium on minimal preparation time, strong competition from other side dishes at restaurants, and the growing popularity of meals that can be eaten on-the-run are behind the slowdown in expansion in food use of rice. In addition, higher prices slow growth of rice in some processed uses, such as pet foods which expanded rapidly in the 1980s and early 1990s when rice prices were lower. While food use is expected to expand at a slower rate than in recent decades, per capita use will still rise.

Brewers' use of rice, which has been virtually stagnant since the late 1980s, is projected to remain at 15.4 million cwt from 1998/99 to 2008/09. No growth in per capita beer consumption and the greater popularity of light beers--which use less rice than regular beers--prevent any expansion in brewers' use of rice. Seed use, essentially a function of planted area, will remain at 4 million hundredweight.

U.S. rice exports are projected to be relatively stable in the baseline, between 87 and 88 million hundredweight from 2000/01 to 2008/09, up slightly from the start of the projection period. U.S.

prices rise faster than world prices, making U.S. rice exports less competitive in some international markets and thereby preventing any significant expansion of U.S. rice exports in the baseline. The United States exports mostly to high-quality markets, rarely competing with the low cost Asian exporters in low-quality milled rice markets. Thailand is the principle competitor of the United States in certain high quality markets such as the Middle East and South Africa. In addition, rough rice--mostly going to Latin America--accounts for 20 to 30 percent of U.S. rice exports. Asian countries do not export rough rice.

With the domestic market projected to expand modestly each year, the near-stagnant level of exports means that the international market will account for a declining share of U.S. rice use. The export share of total use is projected to drop from over 44 percent in 1998/99 to 42 percent in 2008/09.

Ending stocks grow slowly to just over 29 million hundredweight in 2008/09, maintaining a stocks-to-use ratio of 14 percent for the baseline, nearly equal to the past 5-year average but low by historical standards.

Steady demand growth in the domestic market with very modest expansion in production will cause season-average U.S. farm prices for rice to rise annually, from $9.00 per hundredweight projected for 1999/2000 to $10.37 per hundredweight in 2008/09, well above levels during most of the 1980s and early 1990s. Market returns to rice producers rise 15 percent from crop year 1998/99 to 2008/09, growing to $192 per acre by the end of the baseline. These gains from the marketplace help to offset declining production flexibility contract payments.

Strong U.S. rough rice exports and steady growth in domestic use will continue to put upward pressure on nominal rice prices through the baseline. In addition, greater demand for higher quality rices will provide some upward price pressure. For example, brewers now use mostly whole grain rice with high quality standards instead of the lower priced brewers' rice used prior to the early 1990s. In addition, U.S. food aid shipments, which are typically the lower quality portion of U.S. rice, are a much smaller share of U.S. exports than in previous years.

## Upland Cotton

With the continuation of planting flexibility as established in the 1996 farm legislation, upland cotton area will remain responsive to its own price, competing crop prices, and other market signals. In 1999, upland planted area is expected to rise 5 percent in response to cotton's relative price strength compared with other commodities. Production is expected to reach 17-18 million bales, assuming a yield of 680 pounds per harvested acre and a normal acreage abandonment. Stocks rebuild as production would more than offset expected demand.

Demand for upland cotton in 1999/2000 is expected to rebound somewhat as the effects of the world financial crisis diminish and demand for raw cotton and cotton textile products improves. U.S. upland cotton demand is projected to rise to about 16 million bales, but remains well below the quantity demanded during the mid-1990s.

### Step 2 Payments Affect Upland Cotton Baseline

The 1996 Farm Act capped total expenditures for cotton user marketing certificates (Step 2 payments) during fiscal years 1996-2002 at $701 million, but funding for the program was exhausted by the end of calendar year 1998. However, the cotton user marketing certificate program is authorized in the 1996 Farm Act through July 31, 2003, 10 months beyond the period covered by the program's expenditure cap. Thus, for fiscal years 2003 and later, the baseline assumes that funding for this program is no longer capped. As a result, annual Step 2 expenditures near $150 million are assumed in the baseline for crop years 2002/03 through 2008/09.

The cotton user marketing certificate program was established under the 1990 Farm Act with the purpose of keeping U.S. upland cotton competitive, particularly when U.S. and world prices diverged. The Step 2 payments are made after certain price and time conditions are met, and are made to both domestic users and exporters of U.S. upland cotton. When in effect, these payments boost the competitiveness of U.S. cotton as intended. However, several concurrent developments in 1998 led to the early depletion of the program's funding set forth in the 1996 Farm Act.

The impact of the loss of Step 2 funding during 1998/99 is twofold. First, U.S. cotton exports are expected to suffer as U.S. prices will be less competitive with foreign growths. Second, the depletion of Step 2 funds has increased the potential for triggering import quotas under Step 3. Step 3 special import quotas are put into effect depending on the difference between the U.S. and the world price, and may be announced beginning in early March 1999. Once triggered, weekly Step 3 quotas of approximately 200,000 bales could be announced until U.S. prices became "competitive" once again.

The impact of the elimination of Step 2 funding during 1999/2000 through 2001/02 is likely to result in slightly lower exports and domestic mill use than would be achieved if Step 2 funding continued. Analysis of Step 2 spending through 1997/98--incorporating assumptions about the transmission of spending to price adjustments and assumptions about the responsiveness of exports and domestic mill use to these price adjustments--suggests exports could be 100,000 to 200,000 bales lower and mill use less than 100,000 bales lower. Revisions to the program during 1998/99 add uncertainty to estimating future impacts based on historical evidence.

The assumed resumption of the Step 2 program in marketing years 2002/03 through 2008/09 would--all other things being equal--increase U.S. exports, world market share, domestic mill consumption, and U.S. cotton prices. These effects are included in the cotton baseline projections.

Ending stocks for upland cotton in 1999/2000 are projected to rise dramatically from the low beginning level. Market returns over variable costs are expected to be above those for 1998/99, but will be below those of the previous two seasons.

For crop years 2000 through 2008, upland area is projected to fluctuate around the 13-million-acre level as increases in productivity are expected to nearly keep pace with growth in use. This acreage incorporates average abandonment of 7 percent and trend yield increases of 9 pounds per year. Record yields for upland cotton would begin in 2002, reaching 761 pounds per harvested acre by 2008. As a result of rising yields, projected production during crop years 2000 through 2008 ranges from 17.2 to 18.9 million bales. Growth in production and demand are projected to about offset each other, keeping the stocks-to-use ratio relatively stable.

Between 2000/01 and 2008/09, demand for U.S. cotton is projected to rise about 1 percent annually from 17.5 million bales to 18.7 million by the end of the baseline period. Upland mill use is expected to grow steadily from 11 million bales in 2000/01 to 11.5 million by 2005/06. After 2005/06, further easing of the restrictions on cotton textile import quotas are likely to result in larger textile imports, primarily apparel. Upland mill use stabilizes during this period because trade agreements like NAFTA and the Caribbean Basin Initiative encourage larger cotton textile imports that more than offset larger textile exports.

Exports of cotton, on the other hand, are projected to range between 6.3 and 7.2 million bales over the 2000/01 to 2008/09 period. After a small decline in 2001/02, exports increase an average of 2 percent annually through 2008/09, similar to the long-term growth expected for foreign consumption. World trade is projected to expand 1 to 2 percent annually. U.S. market share rises from 21 percent in 1999/2000 to an average of 25 percent for the second half of the baseline. Step 2 payments, which are assumed in the baseline to resume in 2002/03, aid the increase in U.S. cotton exports starting in 2002/03 and beyond (see Cotton User Marketing Payments, page 26, and Step 2 box, page 43).

Ending stocks of upland cotton are relatively stable but rise slightly during the last half of the baseline. As a result, ending stocks range from 3.6 million to 4.1 million bales during the 2000/01 through 2008/09 period. The implied stocks-to-use ratio over this time period is 20 to 22 percent. Returns over variable costs rise throughout the baseline. Between 2000/01 and 2008/09, the market returns are estimated to range between $192 and $221 per acre.

## Soybeans

U.S. soybean planted area in 1999 is expected to remain near 1998 levels. Despite a soybean farm price that is expected to drop sharply, the marketing loan for soybeans will support farm returns at $5.26 through 2000/01. This would generate a soybean net return per acre that would still be comparatively better than other commodities. However, the marketing loan, which is based on the 5-year olympic average farm price, is projected in the baseline to fall to the statutory minimum of $4.92 in 2001/02 and stay at this level through 2007/08. This lower loan rate, strengthening corn prices, and larger CRP enrollment would ultimately cut U.S. soybean plantings by 2001 and 2002. Such a reduction would return the stocks-to-use balance to a more

normal level, allowing for subsequent increases in area planted consistent with demand growth. By 2008, soybean production is expected to exceed 3.1 billion bushels on 70.7 million acres harvested.

Projected declines in soybean prices through 2000/01 assume normal trend growth in soybean yields by U.S. and foreign producers. Total demand would not increase enough to prevent stocks accumulation to near 490 million bushels. After falling to a low around $4.55 per bushel in 2000/01, U.S. soybean farm prices are projected to rise above $6.00 by the end of the baseline as supplies come into closer balance with demand. For the next few years, loan deficiency payments or marketing loan gains (which cover the deficit between the farm sales price and the CCC loan rate) will supplement farm marketings. However, soybean net returns do not match the 1997/98 level again until late in the baseline.

Lower market prices increase projected soybean exports early in the baseline and help the United States capture a larger share of the world soybean market in 1999/2000 and 2000/01. Foreign soybean production should resume growth following this period, resulting in flat U.S. exports until world demand strengthens again around 2005/06.

Similarly, ample soybean supplies substantially accelerate domestic crushing in 1999/2000 and 2000/01. Subsequent yearly increases are expected to moderate. The crush pace will be largely determined by world demand for soybean meal and livestock products. The average price for soybean meal is projected to decline in 1999/2000 and remain low for 2000/01. Consequently, U.S. soybean meal exports should gain at the expense of foreign competition, climbing to about 9.7 million short tons by 2001/02. But rising prices, due to continued growth in domestic soybean meal consumption (spurred particularly by increasing poultry production) and slowing supply growth, and a rebound in foreign production curtail U.S. export potential in 2002/03 and beyond.

Soybean prices are pressured during 1999/2000 to 2001/02 by relatively weaker values for soybean oil. U.S. oil prices are anticipated to decline early in the baseline and then gradually increase above 30 cents by 2008/09. Domestic disappearance of soybean oil is expected to rise at a relatively steady rate, reaching approximately 18.5 billion pounds by 2008/09. U.S. exports of soybean oil will rise to a peak near 3.8 billion pounds in 2003/04. However, foreign trade slips in later years as world palm oil production regains strength, and moderating crush and domestic needs begin to tighten U.S. soybean oil supplies available for export.

## Sugar

Moderate beet acreage expansion is projected until FY 2004. There is expansion of beet processing capacity in the Upper Great Plains and room for additional acreage expansion in Washington State to take advantage of the new processing facility that opened in FY 1998. The rate of acreage expansion after FY 2004 is expected to decrease and stabilize at 1.541 million acres by FY 2007. Technological improvements in harvesting and refining are projected to increase national sugar yield per harvested acre by 0.015 tons a year over the projection period. Sugar produced from the desugaring of molasses is projected at 258,000 short tons, raw value,

(STRV) in FY 2000, and is expected to increase 12,000-15,000 STRV each year up to a total of 375,000 STRV in FY 2009.

Florida acreage harvested for sugar is projected to hold steady at 430,000 acres over the projection period.  Acreage withdrawals associated with Everglades restoration are projected to be matched by acreage expansion onto less environmentally-sensitive sandy soils.  Historical yearly cane yield growth of 0.25 tons per acre is projected to tail off by FY 2002.  The projected cane yield for Florida is about 36.3 tons per acre from FY 2002 to the end of the projection period.  Nonetheless, refinements in harvesting and milling technology are expected to increase sugar yield per acre at historical levels of 0.029 tons a year throughout the projection period.

Westward expansion in Louisiana acreage harvested for sugar is projected to increase until FY 2002 and stabilize at 420,000 acres.  At the same time, continued adoption of high-yielding cane varieties is projected to increase the state-average cane yield per acre to about 31.5 tons.  Continued improvements in harvesting and manufacturing increase projected growth in sugar yield per acre of 0.024 tons a year throughout the projection period.

Texas cane for sugar acreage is projected to increase to 35,000 acres in FY 2001 and remain at that level.  Sugar yield per acre is projected to continue to grow at a trend of 0.029 tons a year.  Hawaii acreage is projected to remain steady at 30,000 acres.  Sugar yield per acre in Hawaii is projected at a constant 11.0 tons throughout the baseline, reflecting a lack of a measurable historical trend.  Sugar production in Puerto Rico is projected at 20,000 tons over the projection period.

The projected rate of increase in consumption through FY 2009 is 156,000 tons a year, 90 percent of the rate for FY 1992-98.  Over the period FY 1992-98, sugar consumption grew at a high yearly rate of 174,000 tons.  The rate of increase after FY 1999 is projected to decrease to levels more consistent with analysis over a longer time period.   Sugar consumption per capita grows from a projected 67.5 pounds in FY 1999 to 73.0 pounds in FY 2009.

The FY 1999 tariff-rate quotas (TRQs) for raw, refined, and specialty sugars were announced on September 17, 1998.  The raw sugar TRQ was established by the U.S. Department of Agriculture (USDA) at 1,780,164 STRV, and 1,284,123 tons were allocated by the U.S. Trade Representative.  TRQ tranches of 165,347 STRV will be allocated in January, March, and May if the ending fiscal year stocks-to-use ratio projection, as published in the USDA's *World Agricultural Supply and Demand Estimates* (*WASDE*) report, in those same months is equal to or below 15.5 percent.  If the stocks-to-use ratio projection exceeds 15.5 percent, the tranche will be canceled.  The refined sugar TRQ was established at 55,116 STRV.  Non-TRQ imports are projected at 445,000 STRV in FY 1999.

Until FY 2007, the combined sugar TRQs less expected shortfall are projected to be at a level that results in an ending stocks-to-use ratio of 14.5 percent.  In FY 2000 sugar imported under the TRQ is projected at 1.45 million STRV.  This amount plus an expected shortfall of 50,000 tons STRV would leave the announced TRQ at 1.50 million, the level at which the sugar loan program becomes recourse.  For FY 2001 through 2007, sugar imported under the TRQ is projected well above the levels at which the sugar loan program becomes recourse.  Starting in FY 2005, non-quota imports from Mexico are projected to enter the U.S. sugar market in

significant quantities. The initial level is projected at 50,000 STRV. It grows to 100,000 STRV in FY 2006 and 300,000 STRV in FY 2007. These non-TRQ imports reduce the projected levels of the corresponding TRQs on a one-to-one basis.

Under the terms of the side letter agreement of the North American Free Trade Agreement (NAFTA), Mexican sugar exports to the U.S. market will be duty free with no quantitative restrictions starting in FY 2008. It is currently projected that the level of imports from Mexico in FY 2008 and 2009 will reach 1.5 million STRV, reducing the TRQ to the UR minimum of 1.256 million STRV under USDA's current administrative approach. At this level of imports, the stocks-to-use ratio is projected to increase to 19.2 percent in FY 2008 and to 23.0 percent in FY 2009.

Domestic sugar prices are projected to be flat through FY 2007. The raw sugar price (New York No.14 contract) averaged 22.09 cents a pound through FY 1998, and is projected to average 22.00 cents through FY 2007. Falling domestic sugar prices are projected to accompany the increase in the projected stocks-to-use ratio starting in FY 2008. The projected FY 2008 price is 20.29 cents a pound and the projected FY 2009 price is 18.93 cents a pound.

Grower prices for sugar beets derive from the wholesale refined beet sugar price, and grower prices for sugarcane derive from the raw cane sugar price. The sugar beet price is projected at $40.00 a ton through FY 2007, and the sugarcane price is projected at $30.00 a ton for the same time period. In FY 2008 projected grower prices decrease to $36.89 a ton for sugar beets and to $27.67 a ton for sugarcane. The prices are projected to drop more in FY 2009 as projected raw sugar prices decrease: to $34.41 a ton for beets and to $25.81 a ton for sugarcane.

## Tobacco

In November 1998 cigarette manufacturers entered into a long-term agreement with 46 States, the District of Columbia, and various territories (4 States settled previously). Goals of the new agreement are reimbursing States for smoking-related health costs under Medicaid, reducing underage smoking, and ending the uncertainty of continuing lawsuits for cigarette manufacturers. The baseline includes an initial assessment of the effects of this agreement.

Key elements of the pact are:

  C  $206 billion to be paid to States over 25 years, including $300 million annually to fund research into reducing youth smoking and support other anti-smoking measures,
  C  Limitations on advertising,
  C  Ban on cartoon characters in advertising,
  C  Ban on "branded" merchandise,
  C  Limitations on sporting event sponsorship, and
  C  Disbands tobacco trade organizations.

Following the agreement, two major cigarette companies raised the wholesale price of their cigarettes by 45 cents per pack, the largest increase in history. Other manufacturers followed. While the entire increase is not likely to reach retail levels, cigarette prices will increase

substantially and it is apparent that most of the settlement's cost will be passed on to consumers. The tobacco baseline reflects this price increase.

Higher cigarette prices could cause U.S. cigarette consumption to slide as much as 25 percent in 10 years, compared with a 17-percent estimate before the settlement. Lower cigarette consumption will dampen demand for tobacco leaf.

Tobacco leaf grown in the United States is primarily used both for domestic manufacture of cigarettes and exported for cigarette production in other countries. U.S. cigarette consumption is declining due to higher prices, taxes, greater awareness of the health effects of smoking, and increasing restrictions on where people can smoke. Prospects for lower U.S. cigarette production, reduced cigarette exports, and uncertain prospects for U.S. leaf exports are expected to contribute to declining demand for U.S. tobacco leaf. In addition, use of imported tobacco leaf in U.S. cigarette production could compound the erosion in demand for U.S. tobacco.

Flue-cured production fell in 1998 after reaching over 1 billion pounds in 1997. Production is expected to continue trending downward as lower cigarette output reduces demand for flue-cured by domestic manufacturers. Export demand is also expected to fall over time as foreign users lower consumption and switch to more economical sources of leaf. Flue-cured marketings are limited by a quota, based on a formula which includes domestic and export demand, and stock levels. Lower cigarette output will have a dampening effect on the quota through 2008. Domestic supplies of flue-cured will likewise trend downward. Higher world supply and increasing leaf quality in countries such as Brazil and Zimbabwe will constrain U.S. exports and make foreign-grown leaf more attractive to domestic cigarette manufacturers, further dampening demand.

Burley production trends mirror flue-cured since both are used primarily in cigarette production. Production peaked in 1997 and marketings peaked a year later in 1998. Declining domestic demand for cigarettes is the major cause of expected declines in burley tobacco use through 2008. Domestic burley use is expected to decline about 100 million pounds over the next decade. Exports are also expected to decline during this period due to lower cigarette production in Japan and in the European Union, and increased price competitiveness of burley leaf produced in Malawi and other countries. Marketing quotas will reflect declining domestic use and lower exports. Foreign supplies are currently at high levels but should more closely approach demand over the next few years.

Tobacco yields remain constant throughout the baseline. Poundage quotas reduce incentives to raise production per acre. Prices for U.S. grown tobacco will continue to advance, reflecting increases in support prices which are based partially on costs of production.

## Horticulture

The farm value of U.S. horticultural crop production is projected to reach about $39 billion in 1999, up an estimated 3 percent from 1998. While this growth rate is slightly higher than in 1998, it is well below the nearly 8-percent increase in 1997, mostly reflecting the expected large decline in 1999 citrus production. During 1998, large production declines both for noncitrus

fruit and nuts reduced the total value of fruit crops, but the total U.S. horticultural crop value remained above the previous year due mostly to higher prices of fresh vegetables and potatoes. For the remainder of the baseline, horticultural production is projected to increase between $1.5 billion and $1.7 billion annually, expanding at a rate of 3 to 4 percent each year, based on 1 to 2 percent increases in both output and price.

Export markets will continue to be vital to the success of the U.S. horticulture sector. For domestic producers, projections of slight increases in domestic fruit and vegetable consumption point to the continued importance of export demand in realizing higher prices and revenues. Export sales are projected to generate an average of 29 percent of U.S. horticultural production value during 1999-2008, up from the 1990-98 average share of 25 percent. Calendar-year exports are forecast to increase nearly 3 percent in 1999, reaching about $10 billion. Export growth is projected to be around 5 to 6 percent per year after 1999, with fruit and vegetable exports accounting for 97 percent of total export value and the remainder accounted for by exports of greenhouse and nursery products. Based upon this trend, horticultural exports could reach $16 billion in 2008. The United States, however, will continue to remain a net importer of horticultural products, with the total value rising 3 to 4 percent annually during 1999-2008.

World economic growth will help shape the long-term growth in U.S. horticultural exports. As countries become wealthier, their demand for high-valued commodities such as fruit and vegetables is expected to increase. In developing countries, the effect of income growth is more pronounced. Compared with developed countries, developing countries are more likely to spend larger shares of their new income on food items, including fruit and vegetable products. In addition, developing countries are also projected to experience higher than average economic growth over the baseline. Between 1990 and 1997, U.S. fruit and vegetable export share increases were only in developing countries or regions, and the largest increases in export shares were in Asia. East and Southeast Asia's combined share (including China, excluding Japan) of U.S. fruit and vegetable exports increased from 11 percent in 1990 to 17 percent in 1997. Reduced economic growth and currency devaluations in East and Southeast Asia, however, have been largely responsible for reduced U.S. exports of fruit and vegetables to these Pacific regions in 1998 and will likely continue to dim the prospects for U.S. horticultural exports to this region in the short run. When economic and financial conditions in Asia improve, U.S. fruit and vegetable exports there will likely regain strength. Another developing region where growth in U.S. fruit and vegetable exports has been strong in the 1990s is South America. Economic growth in this region is projected to remain strong, continuing to be a source of demand growth for U.S. fruit and vegetables in the baseline.

In the domestic market, demand for U.S. produced fresh-market vegetables is expected to increase slightly more than 1 percent annually during 1999-2008. Per capita consumption of fresh vegetables is projected to grow 0.4 percent annually and population growth is projected at slightly less than 1 percent. At nearly the same pace, U.S. production of fresh vegetables is projected to increase annually by 1 percent during the next 10 years. With the volume of exports projected to average about the same pace as imports, the United States will likely remain a net importer of fresh vegetables through 2008 (both in volume and value).

## New Varieties in U.S. Apple Production

In the baseline, apples, like other horticultural products, are treated as a homogeneous product. In recent years, however, consumers around the world have been purchasing apples in a wider range of varieties. Varietal expansion, particularly in the United States, is firmly entrenched in the production and marketing strategies of the industry, shaping new trends in supply, demand, and trade for apples.

Some apple varieties are grown and consumed widely throughout the world and others are found in confined areas where a local demand exists. Apple varieties are distinguished by a range of characteristics, including color, shape, taste (sweetness and juiciness), and texture (skin and flesh); resistance to specific diseases, pests, and frost; and ability to maintain quality during storage.

Apples are typically referred to as "traditional" varieties and "new" varieties. The major traditional varieties in the U.S. include the Red Delicious, Golden Delicious, Macintosh, Rome Beauty, Granny Smith, and Jonathan. New varieties have been known in some countries for decades (and by breeders everywhere), but these varieties are just starting to be widely adopted by producers and consumers around the world. These include Fuji, Gala, Jonagold, Empire, and Braeburn, which have been available to U.S consumers since the early 1990s. The newest varieties, such as Pink Lady, Cameo, and Pacific Rose, are just entering the U.S. market.

Figure 4
**Selected apple varieties produced in the United States**
Share of total production, percent
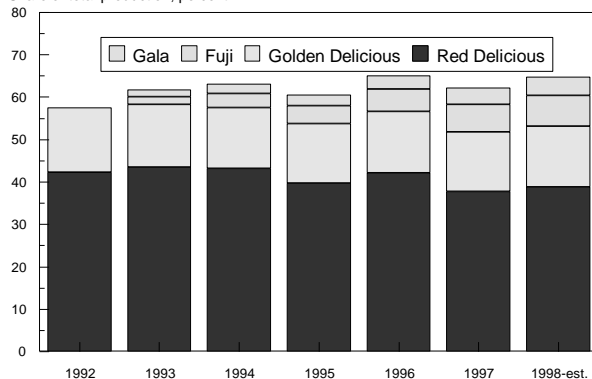


Source: U.S. Apple Association

Figure 5
**Season average prices of apples, selected varieties**
Dollars per 42-lb. box
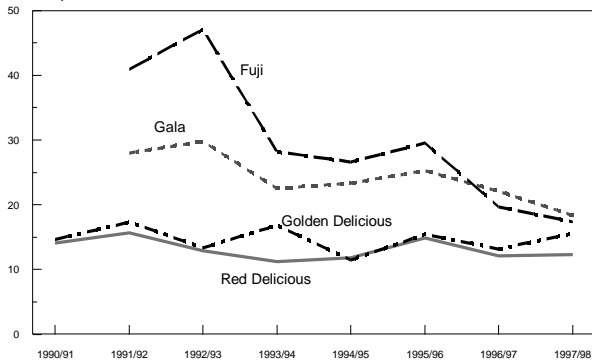


Source: Washington Growers Clearing House Bulletin
Marketing season: August - August

U.S. growers have adopted new apple varieties mostly by expanding acreage and also, to some extent, by replacing traditional varieties with new ones. Important plantings of Fuji and Gala have taken place starting in 1989. In response to favorable prices, plantings of new varieties continued through the mid-1990s, adding Braeburns and Jonagolds. As a result, Red Delicious, the leading variety for decades, has seen its share of total U.S. production decrease in recent years, falling from 43 percent in 1993 to 39 percent in 1998 (figure 4). During this time, the shares for Fuji and Gala production have gone from 1.9 percent and 1.7 percent, respectively, to 7.3 percent and 4.3 percent of the total volume of production in the United States.

Production of the new varieties varieties should continue to grow through the turn of the century as more trees come to bearing maturity. Fuji, Gala, Braeburn, and Jonagold together are expected to account for more than 25 percent of production in Washington State, the largest producing state, by the year 2000 (O'Rourke, 1997).

**--continued**

**New Varieties in U.S. Apple Production** -- continued

The expansion of trade, gains in the domestic market, and improvements in storage and transportation techniques and facilities have favored varietal diversification for U.S. growers. Trade incentives have played a crucial role. Fresh apple exports nearly tripled in value between 1989 and 1997, to reach more than $395 million in 1997. The expansion of apple exports made it more critical for domestic growers to include varietal preferences of foreign customers in their planting decisions. Fuji and Gala apples are popular in East Asia, where export growth was the strongest until the Asia financial crisis occurred. U.S. fresh apple exports to East Asia, including Japan and China, declined by more than 30 percent for the first 10 months of 1998, both in volume and value. Macroeconomic assumptions in the baseline indicate a possible turnaround in the crisis for most countries of East Asia by the year 2000. Therefore, export prospects for U.S. apples to this region are projected to improve in the next few years.

New apple varieties are enjoying a growing popularity among U.S. consumers. Although data are not available for apple consumption by varieties, Fuji, Gala, Braeburn, and Jonagold account for an increasing share of U.S. domestic sales. Varietal choice has become a major promotional factor for growers' associations hoping to boost domestic sales. However, with domestic consumption of fresh apples remaining relatively constant in the U.S. in the last two decades at approximately 20 pounds per capita, new varieties are to a large extent competing with traditional varieties for market shares, both in the diets of consumers and for shelf and counter space in grocery stores.

The impact of improved storage and transportation techniques on varietal expansion is difficult to comprehensively assess. Some of the new varieties, such as Fuji and Braeburn, remain crisp and firm in storage and can be sold fresh later in the marketing season. Those varieties are well suited for shipping to more distant markets such as Southeast Asia where they are preferred by consumers.

Relative prices have reflected supply and demand conditions in the apple market. Data from the Washington Growers Clearing House show that new varieties initially had a large price premium over traditional varieties in the early 1990s. However, as supplies increased, price differentials have diminished (figure 5). Prices of Red Delicious and Golden Delicious have remained fairly constant, while Fuji and Gala prices have declined to near the level of traditional varieties. Prices of the new varieties may continue to fall as supplies increase with more trees coming to maturity. On the other hand, as plantings of Red and Golden Delicious have decreased significantly, production of those varieties could decline in the near future, with their price rising.

**References**

O'Rourke, A. D., *Trends in Production, Utilization, and Price of Washington Apples to 2005*, Impact Center Information Series #90, March 1997.

U.S. Apple Association, *Production and Utilization Analysis (1998 Edition)*, USApple: McLean Va., August 1998.

Fruit and nut production in 1999 is expected to decline almost 8 percent from the previous year due primarily to the anticipated smaller citrus crop. For the rest of the baseline, however, production is projected to expand at the rate of about 2 percent. Domestic demand for fresh fruit and nuts in the baseline will increase slightly more than the rate of population growth. Per capita consumption of bananas, which are almost all imported, is projected to increase nearly 2 percent annually during 1999-2008. Per capita consumption of nuts and other noncitrus fruit, such as apples, grapes, pears, and peaches, is projected to increase less than 1 percent, while fresh citrus consumption is projected to remain flat in the baseline. Fresh fruit exports are projected to increase between 4 and 5 percent annually after the turn of the century, faster than the increase in imports. However, the United States will likely remain a net importer of fresh fruit in the next 10 years.

The use of U.S.-produced fruits (including nuts) and vegetables for processing is projected to increase during 1999-2008, reflecting increases in both domestic and export demand. The major processed products are fruit juices and wine, tomatoes for processing, and frozen potatoes. Domestic consumption of processed fruits and vegetables is projected to increase from 438 pounds (farm-weight equivalent) per person in 1999 to 464 pounds in 2008, increasing less than 1 percent annually. The value of processed fruit and vegetable exports will continue to increase between 5 and 7 percent annually during 1999-2008, along with that of other high-value farm products.

Table 7. Planted and harvested acreage for major field crops, baseline projections

| | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | *Million acres* | | | | | | |
| **Planted acreage**, 8 major crops | | | | | | | | | | | | |
| Corn | 80.2 | 80.8 | 80.0 | 79.0 | 79.0 | 80.0 | 81.0 | 81.5 | 82.0 | 82.0 | 82.0 | 82.0 |
| Sorghum | 10.1 | 9.7 | 9.8 | 10.0 | 10.0 | 10.3 | 10.3 | 10.3 | 10.5 | 10.5 | 10.5 | 10.7 |
| Barley | 6.9 | 6.5 | 6.8 | 6.8 | 6.8 | 6.8 | 6.9 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 |
| Oats | 5.2 | 4.9 | 4.9 | 4.8 | 4.7 | 4.7 | 4.7 | 4.7 | 4.7 | 4.7 | 4.7 | 4.7 |
| Wheat | 71.0 | 66.2 | 64.0 | 65.0 | 67.0 | 69.0 | 70.0 | 70.5 | 71.0 | 71.5 | 72.0 | 73.0 |
| Rice | 3.1 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 |
| Upland cotton | 13.6 | 12.6 | 13.3 | 13.0 | 12.7 | 12.9 | 13.0 | 13.0 | 13.0 | 12.9 | 12.8 | 12.8 |
| Soybeans | 70.6 | 72.7 | 72.5 | 71.0 | 69.3 | 68.0 | 68.5 | 69.5 | 70.3 | 70.8 | 71.3 | 71.8 |
| Total | 260.7 | 256.6 | 254.5 | 252.8 | 252.7 | 254.9 | 257.6 | 259.7 | 261.7 | 262.6 | 263.5 | 265.2 |
| **Harvested acreage**, 8 major crops | | | | | | | | | | | | |
| Corn | 73.7 | 73.8 | 73.5 | 72.5 | 72.5 | 73.5 | 74.5 | 75.0 | 75.5 | 75.5 | 75.5 | 75.5 |
| Sorghum | 9.4 | 7.8 | 8.7 | 8.9 | 8.9 | 9.2 | 9.2 | 9.2 | 9.4 | 9.4 | 9.4 | 9.6 |
| Barley | 6.4 | 6.0 | 6.4 | 6.4 | 6.4 | 6.4 | 6.5 | 6.6 | 6.6 | 6.6 | 6.6 | 6.6 |
| Oats | 2.9 | 2.8 | 2.8 | 2.7 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 |
| Wheat | 63.6 | 59.1 | 56.4 | 57.3 | 59.0 | 60.8 | 61.7 | 62.1 | 62.6 | 63.0 | 63.4 | 64.3 |
| Rice | 3.0 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 |
| Upland cotton | 13.0 | 10.1 | 12.3 | 12.1 | 11.8 | 12.0 | 12.1 | 12.1 | 12.1 | 12.0 | 11.9 | 11.9 |
| Soybeans | 69.6 | 71.6 | 71.4 | 69.9 | 68.2 | 66.9 | 67.4 | 68.4 | 69.2 | 69.7 | 70.2 | 70.7 |
| Total | 241.6 | 234.4 | 234.7 | 233.0 | 232.6 | 234.6 | 237.2 | 239.2 | 241.2 | 242.0 | 242.8 | 244.4 |

Table 8.  Selected supply, use, and price variables for major field crops, baseline projections

| | 1997/98 | 1998/99 | 1999/2000 | 2000/01 | 2001/02 | 2002/03 | 2003/04 | 2004/05 | 2005/06 | 2006/07 | 2007/08 | 2008/09 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Yields** 1/ | | | | | | | | | | | | |
| Corn | 127.0 | 133.3 | 131.7 | 133.4 | 135.1 | 136.8 | 138.5 | 140.2 | 141.9 | 143.6 | 145.3 | 147.0 |
| Sorghum | 69.5 | 66.5 | 68.7 | 69.3 | 69.9 | 70.5 | 71.1 | 71.7 | 72.3 | 72.9 | 73.5 | 74.1 |
| Barley | 58.3 | 59.9 | 60.6 | 61.2 | 61.8 | 62.4 | 63.0 | 63.6 | 64.2 | 64.8 | 65.4 | 66.0 |
| Oats | 60.5 | 60.5 | 59.6 | 59.9 | 60.2 | 60.5 | 60.8 | 61.1 | 61.4 | 61.7 | 62.0 | 62.3 |
| Wheat | 39.7 | 43.3 | 39.5 | 39.8 | 40.1 | 40.4 | 40.7 | 41.0 | 41.3 | 41.6 | 41.9 | 42.2 |
| Rice | 5,896 | 5,660 | 5,905 | 5,935 | 5,964 | 5,994 | 6,024 | 6,054 | 6,084 | 6,115 | 6,145 | 6,176 |
| Upland cotton | 673 | 606 | 680 | 689 | 698 | 707 | 716 | 725 | 734 | 743 | 752 | 761 |
| Soybeans | 38.8 | 38.6 | 40.0 | 40.5 | 41.0 | 41.5 | 42.0 | 42.5 | 43.0 | 43.5 | 44.0 | 44.5 |
| **Production** 2/ | | | | | | | | | | | | |
| Corn | 9,366 | 9,836 | 9,680 | 9,670 | 9,795 | 10,055 | 10,320 | 10,515 | 10,715 | 10,840 | 10,970 | 11,100 |
| Sorghum | 653 | 521 | 600 | 615 | 620 | 650 | 655 | 660 | 680 | 685 | 690 | 710 |
| Barley | 374 | 358 | 390 | 390 | 395 | 400 | 410 | 420 | 425 | 430 | 430 | 435 |
| Oats | 176 | 170 | 165 | 160 | 155 | 155 | 160 | 160 | 160 | 160 | 160 | 160 |
| Wheat | 2,527 | 2,557 | 2,225 | 2,281 | 2,366 | 2,456 | 2,511 | 2,546 | 2,585 | 2,621 | 2,656 | 2,713 |
| Rice | 178.9 | 180.4 | 186.7 | 187.6 | 188.6 | 189.5 | 190.5 | 191.4 | 192.4 | 193.3 | 194.3 | 195.3 |
| Upland cotton | 18,245 | 12,785 | 17,400 | 17,400 | 17,200 | 17,700 | 18,000 | 18,300 | 18,500 | 18,600 | 18,600 | 18,900 |
| Soybeans | 2,703 | 2,763 | 2,855 | 2,830 | 2,795 | 2,775 | 2,830 | 2,905 | 2,975 | 3,030 | 3,085 | 3,145 |
| **Exports** 2/ | | | | | | | | | | | | |
| Corn | 1,504 | 1,675 | 1,775 | 1,925 | 2,000 | 2,050 | 2,150 | 2,225 | 2,300 | 2,375 | 2,425 | 2,500 |
| Sorghum | 212 | 195 | 225 | 235 | 240 | 250 | 255 | 260 | 270 | 280 | 290 | 300 |
| Barley | 74 | 35 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 |
| Oats | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Wheat | 1,040 | 1,150 | 1,175 | 1,250 | 1,250 | 1,300 | 1,325 | 1,350 | 1,375 | 1,400 | 1,450 | 1,500 |
| Rice | 85.2 | 85.0 | 84.9 | 87.1 | 87.5 | 87.5 | 87.7 | 87.8 | 87.9 | 88.0 | 88.0 | 88.2 |
| Upland cotton | 7,060 | 4,160 | 5,100 | 6,500 | 6,300 | 6,500 | 6,700 | 6,800 | 6,900 | 7,000 | 7,100 | 7,200 |
| Soybeans | 870 | 840 | 930 | 965 | 965 | 955 | 955 | 965 | 990 | 1,015 | 1,040 | 1,065 |
| Soybean meal | 9,350 | 8,650 | 9,200 | 9,600 | 9,700 | 9,600 | 9,500 | 9,450 | 9,350 | 9,300 | 9,350 | 9,425 |
| **Ending stocks** 2/ | | | | | | | | | | | | |
| Corn | 1,308 | 1,779 | 1,859 | 1,659 | 1,389 | 1,239 | 1,189 | 1,194 | 1,234 | 1,234 | 1,224 | 1,174 |
| Sorghum | 49 | 55 | 55 | 55 | 50 | 55 | 55 | 55 | 60 | 60 | 50 | 45 |
| Barley | 120 | 116 | 119 | 117 | 115 | 113 | 116 | 119 | 117 | 115 | 113 | 111 |
| Oats | 74 | 72 | 74 | 70 | 70 | 69 | 72 | 74 | 75 | 75 | 74 | 72 |
| Wheat | 722 | 827 | 673 | 493 | 450 | 435 | 440 | 444 | 451 | 459 | 440 | 417 |
| Rice | 27.7 | 24.6 | 27.2 | 27.7 | 27.8 | 28.1 | 28.3 | 28.4 | 28.6 | 28.7 | 28.9 | 29.1 |
| Upland cotton | 3,822 | 2,224 | 3,919 | 3,819 | 3,619 | 3,619 | 3,619 | 3,719 | 3,819 | 3,919 | 3,919 | 4,119 |
| Soybeans | 200 | 365 | 480 | 490 | 435 | 350 | 295 | 275 | 270 | 265 | 260 | 255 |
| **Prices** 3/ | | | | | | | | | | | | |
| Corn | 2.43 | 2.00 | 2.00 | 2.10 | 2.30 | 2.45 | 2.50 | 2.50 | 2.50 | 2.50 | 2.50 | 2.55 |
| Sorghum | 2.21 | 1.85 | 1.85 | 1.95 | 2.15 | 2.30 | 2.30 | 2.30 | 2.30 | 2.30 | 2.35 | 2.40 |
| Barley | 2.38 | 1.95 | 1.90 | 2.00 | 2.15 | 2.25 | 2.30 | 2.30 | 2.30 | 2.30 | 2.30 | 2.35 |
| Oats | 1.60 | 1.15 | 1.15 | 1.25 | 1.35 | 1.45 | 1.45 | 1.45 | 1.45 | 1.45 | 1.45 | 1.50 |
| Wheat | 3.38 | 2.65 | 3.00 | 3.55 | 3.75 | 3.90 | 4.00 | 4.05 | 4.05 | 4.05 | 4.15 | 4.25 |
| Rice | 9.64 | 9.25 | 9.00 | 9.10 | 9.15 | 9.26 | 9.44 | 9.62 | 9.81 | 9.99 | 10.17 | 10.37 |
| Soybeans | 6.47 | 5.45 | 4.65 | 4.55 | 4.90 | 5.35 | 5.65 | 5.80 | 5.90 | 5.95 | 6.00 | 6.10 |
| Soybean oil | 0.258 | 0.268 | 0.255 | 0.245 | 0.243 | 0.253 | 0.270 | 0.288 | 0.303 | 0.310 | 0.308 | 0.303 |
| Soybean meal | 185.5 | 145.0 | 125.0 | 128.5 | 146.5 | 161.0 | 165.0 | 163.0 | 161.0 | 159.0 | 161.5 | 168.0 |

1/  Bushels per acre except for upland cotton and rice (pounds per acre).
2/  Million bushels except for upland cotton (thousand bales), rice (million hundredweight), and soybean meal (thousand tons).
3/  Dollars per bushel except for soybean oil (per pound), rice (per hundredweight), and soybean meal (per ton).

Table 9. Corn baseline

| Item | 1997/98 | 1998/99 | 1999/2000 | 2000/01 | 2001/02 | 2002/03 | 2003/04 | 2004/05 | 2005/06 | 2006/07 | 2007/08 | 2008/09 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Acreage (million acres): | | | | | | | | | | | | |
| CRP acres: | | | | | | | | | | | | |
| Cropping history 1/ | 4.7 | 3.9 | 4.0 | 4.4 | 4.5 | 4.5 | 4.4 | 4.4 | 4.4 | 4.4 | 4.4 | 4.4 |
| Planted acres | 80.2 | 80.8 | 80.0 | 79.0 | 79.0 | 80.0 | 81.0 | 81.5 | 82.0 | 82.0 | 82.0 | 82.0 |
| Harvested acres | 73.7 | 73.8 | 73.5 | 72.5 | 72.5 | 73.5 | 74.5 | 75.0 | 75.5 | 75.5 | 75.5 | 75.5 |
| Yields (bushels per acre): | | | | | | | | | | | | |
| Yield/harvested acre | 127.0 | 133.3 | 131.7 | 133.4 | 135.1 | 136.8 | 138.5 | 140.2 | 141.9 | 143.6 | 145.3 | 147.0 |
| Supply and use (million bushels): | | | | | | | | | | | | |
| Beginning stocks | 883 | 1,308 | 1,779 | 1,859 | 1,659 | 1,389 | 1,239 | 1,189 | 1,194 | 1,234 | 1,234 | 1,224 |
| Production | 9,366 | 9,836 | 9,680 | 9,670 | 9,795 | 10,055 | 10,320 | 10,515 | 10,715 | 10,840 | 10,970 | 11,100 |
| Imports | 9 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Supply | 10,258 | 11,154 | 11,469 | 11,539 | 11,464 | 11,454 | 11,569 | 11,714 | 11,919 | 12,084 | 12,214 | 12,334 |
| Feed & residual | 5,664 | 5,850 | 5,950 | 6,025 | 6,100 | 6,150 | 6,175 | 6,200 | 6,250 | 6,300 | 6,350 | 6,400 |
| Food, seed, & industrial | 1,782 | 1,850 | 1,885 | 1,930 | 1,975 | 2,015 | 2,055 | 2,095 | 2,135 | 2,175 | 2,215 | 2,260 |
| Domestic | 7,446 | 7,700 | 7,835 | 7,955 | 8,075 | 8,165 | 8,230 | 8,295 | 8,385 | 8,475 | 8,565 | 8,660 |
| Exports | 1,504 | 1,675 | 1,775 | 1,925 | 2,000 | 2,050 | 2,150 | 2,225 | 2,300 | 2,375 | 2,425 | 2,500 |
| Total use | 8,950 | 9,375 | 9,610 | 9,880 | 10,075 | 10,215 | 10,380 | 10,520 | 10,685 | 10,850 | 10,990 | 11,160 |
| Ending stocks | 1,308 | 1,779 | 1,859 | 1,659 | 1,389 | 1,239 | 1,189 | 1,194 | 1,234 | 1,234 | 1,224 | 1,174 |
| Stocks/use ratio, percent | 14.6 | 19.0 | 19.3 | 16.8 | 13.8 | 12.1 | 11.5 | 11.3 | 11.5 | 11.4 | 11.1 | 10.5 |
| Prices (dollars per bushel): | | | | | | | | | | | | |
| Farm price | 2.43 | 2.00 | 2.00 | 2.10 | 2.30 | 2.45 | 2.50 | 2.50 | 2.50 | 2.50 | 2.50 | 2.55 |
| Loan rate | 1.89 | 1.89 | 1.89 | 1.89 | 1.85 | 1.81 | 1.81 | 1.89 | 1.89 | 1.89 | 1.89 | 1.89 |
| Variable costs of production (dollars): | | | | | | | | | | | | |
| Per acre | 160.40 | 158.03 | 158.58 | 161.95 | 166.45 | 170.29 | 174.11 | 177.89 | 181.63 | 185.36 | 189.09 | 192.87 |
| Per bushel | 1.26 | 1.19 | 1.20 | 1.21 | 1.23 | 1.24 | 1.26 | 1.27 | 1.28 | 1.29 | 1.30 | 1.31 |
| Returns over variable costs (dollars per acre): | | | | | | | | | | | | |
| Market returns | 148.21 | 108.57 | 104.82 | 118.19 | 144.28 | 164.87 | 172.14 | 172.61 | 173.12 | 173.64 | 174.16 | 181.98 |

1/ The cropping history allocation is based on 1996 plantings on farms with CRP acreage, and is used as a general indicator influencing land available for plantings.

Table 10.  Sorghum baseline

| Item | 1997/98 | 1998/99 | 1999/2000 | 2000/01 | 2001/02 | 2002/03 | 2003/04 | 2004/05 | 2005/06 | 2006/07 | 2007/08 | 2008/09 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Acreage (million acres): | | | | | | | | | | | | |
| CRP acres: | | | | | | | | | | | | |
| Cropping history 1/ | 1.1 | 1.2 | 1.3 | 1.4 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 |
| Planted acres | 10.1 | 9.7 | 9.8 | 10.0 | 10.0 | 10.3 | 10.3 | 10.3 | 10.5 | 10.5 | 10.5 | 10.7 |
| Harvested acres | 9.4 | 7.8 | 8.7 | 8.9 | 8.9 | 9.2 | 9.2 | 9.2 | 9.4 | 9.4 | 9.4 | 9.6 |
| Yields (bushels per acre): | | | | | | | | | | | | |
| Yield/harvested acre | 69.5 | 66.5 | 68.7 | 69.3 | 69.9 | 70.5 | 71.1 | 71.7 | 72.3 | 72.9 | 73.5 | 74.1 |
| Supply and use (million bushels): | | | | | | | | | | | | |
| Beginning stocks | 47 | 49 | 55 | 55 | 55 | 50 | 55 | 55 | 55 | 60 | 60 | 50 |
| Production | 653 | 521 | 600 | 615 | 620 | 650 | 655 | 660 | 680 | 685 | 690 | 710 |
| Imports | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Supply | 701 | 570 | 655 | 670 | 675 | 700 | 710 | 715 | 735 | 745 | 750 | 760 |
| Feed & residual | 385 | 275 | 320 | 320 | 320 | 330 | 330 | 330 | 335 | 335 | 335 | 340 |
| Food, seed, & industrial | 55 | 45 | 55 | 60 | 65 | 65 | 70 | 70 | 70 | 70 | 75 | 75 |
| Domestic | 440 | 320 | 375 | 380 | 385 | 395 | 400 | 400 | 405 | 405 | 410 | 415 |
| Exports | 212 | 195 | 225 | 235 | 240 | 250 | 255 | 260 | 270 | 280 | 290 | 300 |
| Total use | 652 | 515 | 600 | 615 | 625 | 645 | 655 | 660 | 675 | 685 | 700 | 715 |
| Ending stocks | 49 | 55 | 55 | 55 | 50 | 55 | 55 | 55 | 60 | 60 | 50 | 45 |
| Stocks/use ratio, percent | 7.5 | 10.7 | 9.2 | 8.9 | 8.0 | 8.5 | 8.4 | 8.3 | 8.9 | 8.8 | 7.1 | 6.3 |
| Prices (dollars per bushel): | | | | | | | | | | | | |
| Farm price | 2.21 | 1.85 | 1.85 | 1.95 | 2.15 | 2.30 | 2.30 | 2.30 | 2.30 | 2.30 | 2.35 | 2.40 |
| Loan rate | 1.76 | 1.74 | 1.75 | 1.75 | 1.68 | 1.67 | 1.68 | 1.76 | 1.75 | 1.75 | 1.75 | 1.75 |
| Variable costs of production (dollars): | | | | | | | | | | | | |
| Per acre | 83.33 | 81.50 | 81.78 | 83.63 | 86.04 | 88.07 | 90.06 | 92.04 | 94.00 | 95.95 | 97.91 | 99.89 |
| Per bushel | 1.20 | 1.23 | 1.19 | 1.21 | 1.23 | 1.25 | 1.27 | 1.28 | 1.30 | 1.32 | 1.33 | 1.35 |
| Returns over variable costs (dollars per acre): | | | | | | | | | | | | |
| Market returns | 70.27 | 41.52 | 45.32 | 51.50 | 64.24 | 74.08 | 73.47 | 72.87 | 72.29 | 71.72 | 74.81 | 77.95 |

1/ The cropping history allocation is based on 1996 plantings on farms with CRP acreage, and is used as a general indicator influencing land available for plantings.

Table 11. Barley baseline

| Item | 1997/98 | 1998/99 | 1999/2000 | 2000/01 | 2001/02 | 2002/03 | 2003/04 | 2004/05 | 2005/06 | 2006/07 | 2007/08 | 2008/09 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Acreage (million acres): | | | | | | | | | | | | |
| CRP acres: | | | | | | | | | | | | |
| Cropping history 1/ | 0.7 | 0.8 | 0.8 | 0.9 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Planted acres | 6.9 | 6.5 | 6.8 | 6.8 | 6.8 | 6.8 | 6.9 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 |
| Harvested acres | 6.4 | 6.0 | 6.4 | 6.4 | 6.4 | 6.4 | 6.5 | 6.6 | 6.6 | 6.6 | 6.6 | 6.6 |
| Yields (bushels per acre): | | | | | | | | | | | | |
| Yield/harvested acre | 58.3 | 59.9 | 60.6 | 61.2 | 61.8 | 62.4 | 63.0 | 63.6 | 64.2 | 64.8 | 65.4 | 66.0 |
| Supply and use (million bushels): | | | | | | | | | | | | |
| Beginning stocks | 109 | 120 | 116 | 119 | 117 | 115 | 113 | 116 | 119 | 117 | 115 | 113 |
| Production | 374 | 358 | 390 | 390 | 395 | 400 | 410 | 420 | 425 | 430 | 430 | 435 |
| Imports | 40 | 30 | 40 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 |
| Supply | 524 | 508 | 546 | 564 | 567 | 570 | 578 | 591 | 599 | 602 | 600 | 603 |
| Feed & residual | 158 | 185 | 185 | 205 | 210 | 215 | 220 | 230 | 240 | 245 | 245 | 250 |
| Food, seed, & industrial | 172 | 172 | 172 | 172 | 172 | 172 | 172 | 172 | 172 | 172 | 172 | 172 |
| Domestic | 330 | 357 | 357 | 377 | 382 | 387 | 392 | 402 | 412 | 417 | 417 | 422 |
| Exports | 74 | 35 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 |
| Total use | 404 | 392 | 427 | 447 | 452 | 457 | 462 | 472 | 482 | 487 | 487 | 492 |
| Ending stocks | 120 | 116 | 119 | 117 | 115 | 113 | 116 | 119 | 117 | 115 | 113 | 111 |
| Stocks/use ratio, percent | 29.7 | 29.6 | 27.9 | 26.2 | 25.4 | 24.7 | 25.1 | 25.2 | 24.3 | 23.6 | 23.2 | 22.6 |
| Prices (dollars per bushel): | | | | | | | | | | | | |
| Farm price | 2.38 | 1.95 | 1.90 | 2.00 | 2.15 | 2.25 | 2.30 | 2.30 | 2.30 | 2.30 | 2.30 | 2.35 |
| Loan rate | 1.57 | 1.56 | 1.58 | 1.58 | 1.54 | 1.46 | 1.45 | 1.54 | 1.55 | 1.55 | 1.55 | 1.55 |
| Variable costs of production (dollars): | | | | | | | | | | | | |
| Per acre | 80.16 | 78.82 | 79.10 | 80.82 | 83.10 | 85.04 | 86.96 | 88.86 | 90.74 | 92.62 | 94.51 | 96.41 |
| Per bushel | 1.37 | 1.32 | 1.31 | 1.32 | 1.34 | 1.36 | 1.38 | 1.40 | 1.41 | 1.43 | 1.45 | 1.46 |
| Returns over variable costs (dollars per acre): | | | | | | | | | | | | |
| Market returns | 58.59 | 37.98 | 36.04 | 41.58 | 49.77 | 55.36 | 57.94 | 57.42 | 56.92 | 56.42 | 55.91 | 58.69 |

1/ The cropping history allocation is based on 1996 plantings on farms with CRP acreage, and is used as a general indicator influencing land available for plantings.

Table 12.  Oats baseline

| Item | 1997/98 | 1998/99 | 1999/2000 | 2000/01 | 2001/02 | 2002/03 | 2003/04 | 2004/05 | 2005/06 | 2006/07 | 2007/08 | 2008/09 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Acreage (million acres):** | | | | | | | | | | | | |
| CRP acres: | | | | | | | | | | | | |
| Cropping history 1/ | 0.3 | 0.4 | 0.5 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 |
| Planted acres | 5.2 | 4.9 | 4.9 | 4.8 | 4.7 | 4.7 | 4.7 | 4.7 | 4.7 | 4.7 | 4.7 | 4.7 |
| Harvested acres | 2.9 | 2.8 | 2.8 | 2.7 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 |
| **Yields (bushels per acre):** | | | | | | | | | | | | |
| Yield/harvested acre | 60.5 | 60.5 | 59.6 | 59.9 | 60.2 | 60.5 | 60.8 | 61.1 | 61.4 | 61.7 | 62.0 | 62.3 |
| **Supply and use (million bushels):** | | | | | | | | | | | | |
| Beginning stocks | 67 | 74 | 72 | 74 | 70 | 70 | 69 | 72 | 74 | 75 | 75 | 74 |
| Production | 176 | 170 | 165 | 160 | 155 | 155 | 160 | 160 | 160 | 160 | 160 | 160 |
| Imports | 98 | 90 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Supply | 341 | 334 | 337 | 334 | 325 | 325 | 329 | 332 | 334 | 335 | 335 | 334 |
| Feed & residual | 170 | 165 | 165 | 165 | 155 | 155 | 155 | 155 | 155 | 155 | 155 | 155 |
| Food, seed, & industrial | 95 | 95 | 96 | 97 | 98 | 99 | 100 | 101 | 102 | 103 | 104 | 105 |
| Domestic | 265 | 260 | 261 | 262 | 253 | 254 | 255 | 256 | 257 | 258 | 259 | 260 |
| Exports | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Total use | 267 | 262 | 263 | 264 | 255 | 256 | 257 | 258 | 259 | 260 | 261 | 262 |
| Ending stocks | 74 | 72 | 74 | 70 | 70 | 69 | 72 | 74 | 75 | 75 | 74 | 72 |
| Stocks/use ratio, percent | 27.7 | 27.5 | 28.1 | 26.5 | 27.5 | 27.0 | 28.0 | 28.7 | 29.0 | 28.8 | 28.4 | 27.5 |
| **Prices (dollars per bushel):** | | | | | | | | | | | | |
| Farm price | 1.60 | 1.15 | 1.15 | 1.25 | 1.35 | 1.45 | 1.45 | 1.45 | 1.45 | 1.45 | 1.45 | 1.50 |
| Loan rate | 1.11 | 1.11 | 1.14 | 1.15 | 1.17 | 1.08 | 1.06 | 1.11 | 1.11 | 1.10 | 1.10 | 1.10 |
| **Variable costs of production (dollars):** | | | | | | | | | | | | |
| Per acre | 54.67 | 53.70 | 53.90 | 55.08 | 56.57 | 57.76 | 58.99 | 60.23 | 61.45 | 62.68 | 63.91 | 65.16 |
| Per bushel | 0.90 | 0.89 | 0.90 | 0.92 | 0.94 | 0.95 | 0.97 | 0.99 | 1.00 | 1.02 | 1.03 | 1.05 |
| **Returns over variable costs (dollars per acre):** | | | | | | | | | | | | |
| Market returns | 42.13 | 15.87 | 14.64 | 19.79 | 24.70 | 29.96 | 29.17 | 28.36 | 27.58 | 26.79 | 25.99 | 28.29 |

1/ The cropping history allocation is based on 1996 plantings on farms with CRP acreage, and is used as a general indicator influencing land available for plantings.

Table 13. Wheat baseline

| Item | 1997/98 | 1998/99 | 1999/2000 | 2000/01 | 2001/02 | 2002/03 | 2003/04 | 2004/05 | 2005/06 | 2006/07 | 2007/08 | 2008/09 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Acreage (million acres):** | | | | | | | | | | | | |
| CRP acres: | | | | | | | | | | | | |
| Cropping history 1/ | 9.1 | 9.5 | 9.8 | 10.9 | 11.2 | 11.4 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 |
| Planted acres | 71.0 | 66.2 | 64.0 | 65.0 | 67.0 | 69.0 | 70.0 | 70.5 | 71.0 | 71.5 | 72.0 | 73.0 |
| Harvested acres | 63.6 | 59.1 | 56.4 | 57.3 | 59.0 | 60.8 | 61.7 | 62.1 | 62.6 | 63.0 | 63.4 | 64.3 |
| **Yields (bushels per acre):** | | | | | | | | | | | | |
| Yield/harvested acre | 39.7 | 43.3 | 39.5 | 39.8 | 40.1 | 40.4 | 40.7 | 41.0 | 41.3 | 41.6 | 41.9 | 42.2 |
| **Supply and use (million bushels):** | | | | | | | | | | | | |
| Beginning stocks | 444 | 722 | 827 | 673 | 493 | 450 | 435 | 440 | 444 | 451 | 459 | 440 |
| Production | 2,527 | 2,557 | 2,225 | 2,281 | 2,366 | 2,456 | 2,511 | 2,546 | 2,585 | 2,621 | 2,656 | 2,713 |
| Imports | 95 | 90 | 95 | 100 | 115 | 115 | 115 | 115 | 115 | 115 | 115 | 115 |
| Supply | 3,065 | 3,370 | 3,147 | 3,054 | 2,974 | 3,021 | 3,061 | 3,101 | 3,144 | 3,187 | 3,230 | 3,268 |
| Food | 917 | 925 | 935 | 945 | 955 | 965 | 975 | 985 | 995 | 1,005 | 1,015 | 1,025 |
| Seed | 93 | 93 | 89 | 91 | 94 | 96 | 96 | 97 | 98 | 98 | 100 | 101 |
| Feed & residual | 293 | 375 | 275 | 275 | 225 | 225 | 225 | 225 | 225 | 225 | 225 | 225 |
| Domestic | 1,302 | 1,393 | 1,299 | 1,311 | 1,274 | 1,286 | 1,296 | 1,307 | 1,318 | 1,328 | 1,340 | 1,351 |
| Exports | 1,040 | 1,150 | 1,175 | 1,250 | 1,250 | 1,300 | 1,325 | 1,350 | 1,375 | 1,400 | 1,450 | 1,500 |
| Total use | 2,342 | 2,543 | 2,474 | 2,561 | 2,524 | 2,586 | 2,621 | 2,657 | 2,693 | 2,728 | 2,790 | 2,851 |
| Ending stocks | 722 | 827 | 673 | 493 | 450 | 435 | 440 | 444 | 451 | 459 | 440 | 417 |
| Stocks/use ratio, percent | 30.8 | 32.5 | 27.2 | 19.3 | 17.8 | 16.8 | 16.8 | 16.7 | 16.8 | 16.8 | 15.8 | 14.6 |
| **Prices (dollars per bushel):** | | | | | | | | | | | | |
| Farm price | 3.38 | 2.65 | 3.00 | 3.55 | 3.75 | 3.90 | 4.00 | 4.05 | 4.05 | 4.05 | 4.15 | 4.25 |
| Loan rate | 2.58 | 2.58 | 2.58 | 2.58 | 2.58 | 2.58 | 2.58 | 2.58 | 2.58 | 2.58 | 2.58 | 2.58 |
| **Variable costs of production (dollars):** | | | | | | | | | | | | |
| Per acre | 70.49 | 69.40 | 69.65 | 71.16 | 73.13 | 74.79 | 76.46 | 78.12 | 79.76 | 81.39 | 83.04 | 84.70 |
| Per bushel | 1.78 | 1.60 | 1.76 | 1.79 | 1.82 | 1.85 | 1.88 | 1.91 | 1.93 | 1.96 | 1.98 | 2.01 |
| **Returns over variable costs (dollars per acre):** | | | | | | | | | | | | |
| Market returns | 63.70 | 45.34 | 48.85 | 70.13 | 77.24 | 82.77 | 86.34 | 87.93 | 87.51 | 87.09 | 90.85 | 94.65 |

1/ The cropping history allocation is based on 1996 plantings on farms with CRP acreage, and is used as a general indicator influencing land available for plantings.

Table 14. Rice baseline, rough basis

| Item | 1997/98 | 1998/99 | 1999/2000 | 2000/01 | 2001/02 | 2002/03 | 2003/04 | 2004/05 | 2005/06 | 2006/07 | 2007/08 | 2008/09 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Acreage (thousand acres):** | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Planted | 3,056 | 3,215 | 3,200 | 3,200 | 3,200 | 3,200 | 3,200 | 3,200 | 3,200 | 3,200 | 3,200 | 3,200 |
| Harvested | 3,034 | 3,187 | 3,162 | 3,162 | 3,162 | 3,162 | 3,162 | 3,162 | 3,162 | 3,162 | 3,162 | 3,162 |
| | | | | | | | | | | | | |
| **Yields (pounds per acre):** | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Yield/harvested acre | 5,896 | 5,660 | 5,905 | 5,935 | 5,964 | 5,994 | 6,024 | 6,054 | 6,084 | 6,115 | 6,145 | 6,176 |
| | | | | | | | | | | | | |
| **Supply and use (million cwt):** | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Beginning stocks | 27.2 | 27.7 | 24.6 | 27.2 | 27.7 | 27.8 | 28.1 | 28.3 | 28.4 | 28.6 | 28.7 | 28.9 |
| Production | 178.9 | 180.4 | 186.7 | 187.6 | 188.6 | 189.5 | 190.5 | 191.4 | 192.4 | 193.3 | 194.3 | 195.3 |
| Imports | 9.2 | 10.0 | 10.3 | 10.5 | 10.8 | 11.0 | 11.3 | 11.6 | 11.9 | 12.2 | 12.5 | 12.8 |
| Total supply | 215.3 | 218.0 | 221.6 | 225.3 | 227.0 | 228.4 | 229.9 | 231.3 | 232.7 | 234.1 | 235.5 | 237.0 |
| | | | | | | | | | | | | |
| Domestic use | 101.4 | 102.9 | 104.0 | 105.1 | 106.2 | 107.3 | 108.4 | 109.6 | 110.7 | 111.9 | 113.1 | 114.2 |
| Exports | 85.2 | 85.0 | 84.9 | 87.1 | 87.5 | 87.5 | 87.7 | 87.8 | 87.9 | 88.0 | 88.0 | 88.2 |
| Residual | 1.0 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 |
| Total use | 187.6 | 193.4 | 194.4 | 197.7 | 199.2 | 200.3 | 201.6 | 202.9 | 204.1 | 205.4 | 206.6 | 207.9 |
| | | | | | | | | | | | | |
| Ending stocks (million cwt.) | 27.7 | 24.6 | 27.2 | 27.7 | 27.8 | 28.1 | 28.3 | 28.4 | 28.6 | 28.7 | 28.9 | 29.1 |
| Stocks/use ratio, percent | 14.7 | 12.7 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 |
| | | | | | | | | | | | | |
| Milling rate, percent | 72.0 | 72.0 | 72.0 | 72.0 | 72.0 | 72.0 | 72.0 | 72.0 | 72.0 | 72.0 | 72.0 | 72.0 |
| | | | | | | | | | | | | |
| **Prices (dollars per cwt.):** | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| World price | 8.45 | 7.75 | 7.90 | 8.05 | 8.21 | 8.36 | 8.52 | 8.69 | 8.85 | 9.02 | 9.18 | 9.36 |
| Average market price | 9.64 | 9.25 | 9.00 | 9.10 | 9.15 | 9.26 | 9.44 | 9.62 | 9.81 | 9.99 | 10.17 | 10.37 |
| Loan rate | 6.50 | 6.50 | 6.50 | 6.50 | 6.50 | 6.50 | 6.50 | 6.50 | 6.50 | 6.50 | 6.50 | 6.50 |
| | | | | | | | | | | | | |
| **Variable costs of production (dollars):** | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Per acre | 368 | 356 | 361 | 370 | 382 | 391 | 401 | 410 | 420 | 429 | 439 | 449 |
| Per cwt. | 6.24 | 6.30 | 6.11 | 6.24 | 6.40 | 6.53 | 6.65 | 6.78 | 6.90 | 7.02 | 7.14 | 7.26 |
| | | | | | | | | | | | | |
| **Returns over variable costs (dollars per acre):** | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Market returns | 201 | 167 | 171 | 170 | 164 | 164 | 168 | 172 | 177 | 182 | 186 | 192 |

Table 15.  Upland cotton baseline

| Item | 1997/98 | 1998/99 | 1999/2000 | 2000/01 | 2001/02 | 2002/03 | 2003/04 | 2004/05 | 2005/06 | 2006/07 | 2007/08 | 2008/09 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Acreage (million acres):** | | | | | | | | | | | | |
| CRP acres: | | | | | | | | | | | | |
| Cropping history 1/ | 1.0 | 1.1 | 1.1 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 |
| Planted acres | 13.6 | 12.6 | 13.3 | 13.0 | 12.7 | 12.9 | 13.0 | 13.0 | 13.0 | 12.9 | 12.8 | 12.8 |
| Harvested acres | 13.0 | 10.1 | 12.3 | 12.1 | 11.8 | 12.0 | 12.1 | 12.1 | 12.1 | 12.0 | 11.9 | 11.9 |
| **Yields (pounds per acre):** | | | | | | | | | | | | |
| Yield/harvested acre | 673 | 606 | 680 | 689 | 698 | 707 | 716 | 725 | 734 | 743 | 752 | 761 |
| **Supply and use (thousand bales):** | | | | | | | | | | | | |
| Beginning stocks | 3,920 | 3,822 | 2,224 | 3,919 | 3,819 | 3,619 | 3,619 | 3,619 | 3,719 | 3,819 | 3,919 | 3,919 |
| Production | 18,245 | 12,785 | 17,400 | 17,400 | 17,200 | 17,700 | 18,000 | 18,300 | 18,500 | 18,600 | 18,600 | 18,900 |
| Imports | 13 | 300 | 200 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| Supply | 22,178 | 16,907 | 19,824 | 21,324 | 21,024 | 21,324 | 21,624 | 21,924 | 22,224 | 22,424 | 22,524 | 22,824 |
| Domestic use | 11,234 | 10,500 | 10,800 | 11,000 | 11,100 | 11,200 | 11,300 | 11,400 | 11,500 | 11,500 | 11,500 | 11,500 |
| Exports | 7,060 | 4,160 | 5,100 | 6,500 | 6,300 | 6,500 | 6,700 | 6,800 | 6,900 | 7,000 | 7,100 | 7,200 |
| Total use | 18,294 | 14,660 | 15,900 | 17,500 | 17,400 | 17,700 | 18,000 | 18,200 | 18,400 | 18,500 | 18,600 | 18,700 |
| Ending stocks | 3,822 | 2,224 | 3,919 | 3,819 | 3,619 | 3,619 | 3,619 | 3,719 | 3,819 | 3,919 | 3,919 | 4,119 |
| Stocks/use ratio, percent | 20.9 | 15.2 | 24.6 | 21.8 | 20.8 | 20.4 | 20.1 | 20.4 | 20.8 | 21.2 | 21.1 | 22.0 |
| **Prices (dollars per pound): 2/** | | | | | | | | | | | | |
| Loan rate | 0.5192 | 0.5192 | 0.5192 | 0.5192 | 0.5192 | 0.5192 | 0.5192 | 0.5192 | 0.5192 | 0.5192 | 0.5192 | 0.5192 |
| **Variable costs of production (dollars):** | | | | | | | | | | | | |
| Per acre | 304.41 | 299.23 | 307.70 | 314.88 | 324.78 | 334.20 | 343.25 | 352.24 | 361.24 | 370.26 | 379.39 | 388.65 |
| Per pound | 0.45 | 0.49 | 0.45 | 0.46 | 0.47 | 0.47 | 0.48 | 0.49 | 0.49 | 0.50 | 0.50 | 0.51 |
| **Returns over variable costs (dollars per acre):** | | | | | | | | | | | | |
| Market returns | 200.74 | 157.75 | 181.49 | 192.36 | 197.18 | 201.56 | 205.85 | 209.71 | 212.01 | 214.33 | 217.24 | 220.76 |

1/ The cropping history allocation is based on 1996 plantings on farms with CRP acreage, and is used as a general indicator influencing land available for plantings.
2/ USDA is prohibited from publishing cotton price projections.

Table 16.  Soybean and products baseline

| Item | 1997/98 | 1998/99 | 1999/2000 | 2000/01 | 2001/02 | 2002/03 | 2003/04 | 2004/05 | 2005/06 | 2006/07 | 2007/08 | 2008/09 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Soybeans** | | | | | | | | | | | | |
| Acreage (million acres) | | | | | | | | | | | | |
| Planted | 70.6 | 72.7 | 72.5 | 71.0 | 69.3 | 68.0 | 68.5 | 69.5 | 70.3 | 70.8 | 71.3 | 71.8 |
| Harvested | 69.6 | 71.6 | 71.4 | 69.9 | 68.2 | 66.9 | 67.4 | 68.4 | 69.2 | 69.7 | 70.2 | 70.7 |
| Yield/harvested acre (bushels) | 38.8 | 38.6 | 40.0 | 40.5 | 41.0 | 41.5 | 42.0 | 42.5 | 43.0 | 43.5 | 44.0 | 44.5 |
| Supply (million bushels) | | | | | | | | | | | | |
| Beginning stocks, Sep. 1 | 131 | 200 | 365 | 480 | 490 | 435 | 350 | 295 | 275 | 270 | 265 | 260 |
| Production | 2,703 | 2,763 | 2,855 | 2,830 | 2,795 | 2,775 | 2,830 | 2,905 | 2,975 | 3,030 | 3,085 | 3,145 |
| Imports | 5 | 6 | 7 | 6 | 4 | 7 | 9 | 6 | 4 | 6 | 8 | 10 |
| Total supply | 2,839 | 2,968 | 3,227 | 3,316 | 3,289 | 3,217 | 3,189 | 3,206 | 3,254 | 3,306 | 3,358 | 3,415 |
| Disposition (million bushels) | | | | | | | | | | | | |
| Crush | 1,597 | 1,615 | 1,665 | 1,710 | 1,740 | 1,765 | 1,790 | 1,815 | 1,840 | 1,870 | 1,900 | 1,935 |
| Seed and residual | 171 | 148 | 152 | 151 | 149 | 147 | 149 | 151 | 154 | 156 | 158 | 160 |
| Exports | 870 | 840 | 930 | 965 | 965 | 955 | 955 | 965 | 990 | 1,015 | 1,040 | 1,065 |
| Total disposition | 2,639 | 2,603 | 2,747 | 2,826 | 2,854 | 2,867 | 2,894 | 2,931 | 2,984 | 3,041 | 3,098 | 3,160 |
| Carryover stocks, Aug. 31 | | | | | | | | | | | | |
| Total ending stocks | 200 | 365 | 480 | 490 | 435 | 350 | 295 | 275 | 270 | 265 | 260 | 255 |
| Stocks/use ratio, percent | 7.6 | 14.0 | 17.5 | 17.3 | 15.2 | 12.2 | 10.2 | 9.4 | 9.0 | 8.7 | 8.4 | 8.1 |
| Prices (dollars per bushel) | | | | | | | | | | | | |
| Loan rate | 5.26 | 5.26 | 5.26 | 5.26 | 4.92 | 4.92 | 4.92 | 4.92 | 4.92 | 4.92 | 4.92 | 5.00 |
| Soybean price, farm | 6.47 | 5.45 | 4.65 | 4.55 | 4.90 | 5.35 | 5.65 | 5.80 | 5.90 | 5.95 | 6.00 | 6.10 |
| Variable costs of production (dollars): | | | | | | | | | | | | |
| Per acre | 80.21 | 80.81 | 80.71 | 81.75 | 83.72 | 85.79 | 87.67 | 89.50 | 91.26 | 92.98 | 94.72 | 96.47 |
| Per bushel | 2.07 | 2.09 | 2.02 | 2.02 | 2.04 | 2.07 | 2.09 | 2.11 | 2.12 | 2.14 | 2.15 | 2.17 |
| Returns over variable costs (dollars per acre): | | | | | | | | | | | | |
| Net returns | 170.83 | 129.56 | 129.69 | 131.28 | 118.00 | 136.23 | 149.63 | 157.00 | 162.44 | 165.84 | 169.28 | 174.98 |
| | | | | | | | | | | | | |
| **Soybean oil** (million pounds) | | | | | | | | | | | | |
| Beginning stocks, Oct. 1 | 1,520 | 1,384 | 1,590 | 1,930 | 2,240 | 2,355 | 2,215 | 1,875 | 1,635 | 1,555 | 1,660 | 1,855 |
| Production | 18,143 | 18,250 | 18,780 | 19,295 | 19,645 | 19,935 | 20,235 | 20,535 | 20,840 | 21,195 | 21,555 | 21,960 |
| Imports | 58 | 56 | 60 | 65 | 70 | 75 | 75 | 75 | 80 | 85 | 90 | 95 |
| Total supply | 19,721 | 19,690 | 20,430 | 21,290 | 21,955 | 22,365 | 22,525 | 22,485 | 22,555 | 22,835 | 23,305 | 23,910 |
| Domestic disappearance | 15,162 | 15,400 | 15,700 | 16,000 | 16,300 | 16,600 | 16,900 | 17,200 | 17,500 | 17,800 | 18,125 | 18,450 |
| Exports | 3,175 | 2,700 | 2,800 | 3,050 | 3,300 | 3,550 | 3,750 | 3,650 | 3,500 | 3,375 | 3,325 | 3,400 |
| Total demand | 18,337 | 18,100 | 18,500 | 19,050 | 19,600 | 20,150 | 20,650 | 20,850 | 21,000 | 21,175 | 21,450 | 21,850 |
| Ending stocks, Sep. 30 | 1,384 | 1,590 | 1,930 | 2,240 | 2,355 | 2,215 | 1,875 | 1,635 | 1,555 | 1,660 | 1,855 | 2,060 |
| Soybean oil price (dollars per lb) | 0.258 | 0.268 | 0.255 | 0.245 | 0.243 | 0.253 | 0.270 | 0.288 | 0.303 | 0.310 | 0.308 | 0.303 |
| | | | | | | | | | | | | |
| **Soybean meal** (thousand short tons) | | | | | | | | | | | | |
| Beginning stocks, Oct. 1 | 210 | 218 | 250 | 250 | 250 | 225 | 225 | 225 | 225 | 225 | 225 | 225 |
| Production | 38,171 | 38,232 | 39,550 | 40,610 | 41,350 | 41,950 | 42,500 | 43,150 | 43,750 | 44,400 | 45,150 | 45,925 |
| Imports | 55 | 50 | 50 | 65 | 75 | 75 | 100 | 100 | 100 | 100 | 100 | 100 |
| Total supply | 38,436 | 38,500 | 39,850 | 40,925 | 41,675 | 42,250 | 42,825 | 43,475 | 44,075 | 44,725 | 45,475 | 46,250 |
| Domestic disappearance | 28,868 | 29,600 | 30,400 | 31,075 | 31,750 | 32,425 | 33,100 | 33,800 | 34,500 | 35,200 | 35,900 | 36,600 |
| Exports | 9,350 | 8,650 | 9,200 | 9,600 | 9,700 | 9,600 | 9,500 | 9,450 | 9,350 | 9,300 | 9,350 | 9,425 |
| Total demand | 38,218 | 38,250 | 39,600 | 40,675 | 41,450 | 42,025 | 42,600 | 43,250 | 43,850 | 44,500 | 45,250 | 46,025 |
| Ending stocks, Sep. 30 | 218 | 250 | 250 | 250 | 225 | 225 | 225 | 225 | 225 | 225 | 225 | 225 |
| Soybean meal price (dollars per ton) | 185.54 | 145.00 | 125.00 | 128.50 | 146.50 | 161.00 | 165.00 | 163.00 | 161.00 | 159.00 | 161.50 | 168.00 |
| | | | | | | | | | | | | |
| Crushing yields (pounds per bushel) | | | | | | | | | | | | |
| Soybean oil | 11.36 | 11.30 | 11.28 | 11.29 | 11.29 | 11.30 | 11.31 | 11.32 | 11.33 | 11.34 | 11.35 | 11.35 |
| Soybean meal | 47.80 | 47.34 | 47.44 | 47.50 | 47.50 | 47.50 | 47.50 | 47.50 | 47.50 | 47.50 | 47.50 | 47.50 |
| Crush margin (dollars per bushel) | 0.90 | 1.00 | 1.19 | 1.27 | 1.32 | 1.33 | 1.32 | 1.33 | 1.36 | 1.34 | 1.33 | 1.33 |

1/ Net returns include loan rate value when prices are lower than the loan rate.

Table 17.  U.S. Sugar:  Supply, disappearance, and prices, fiscal years 1/

| Item | Units | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sugarbeets | | | | | | | | | | | | | | |
| Planted area | 1,000 acres | 1,368 | 1,459 | 1,494 | 1,506 | 1,527 | 1,536 | 1,544 | 1,554 | 1,562 | 1,567 | 1,572 | 1,572 | 1,572 |
| Harvested area | 1,000 acres | 1,323 | 1,428 | 1,456 | 1,476 | 1,497 | 1,506 | 1,514 | 1,523 | 1,531 | 1,536 | 1,541 | 1,541 | 1,541 |
| Yield | Tons/acre | 20.2 | 20.9 | 22.3 | 20.3 | 20.3 | 20.3 | 20.3 | 20.3 | 20.3 | 20.3 | 20.3 | 20.4 | 20.4 |
| Production | Mil. s. tons | 26.7 | 29.9 | 32.4 | 29.9 | 30.4 | 30.5 | 30.7 | 30.9 | 31.1 | 31.2 | 31.3 | 31.4 | 31.4 |
| | | | | | | | | | | | | | | |
| Sugarcane | | | | | | | | | | | | | | |
| Harvested area | 1,000 acres | 848 | 878 | 891 | 910 | 925 | 935 | 935 | 935 | 935 | 935 | 935 | 935 | 935 |
| Yield | Tons/acre | 33.0 | 34.4 | 33.2 | 34.3 | 34.5 | 34.9 | 34.9 | 34.9 | 34.9 | 34.9 | 34.9 | 34.9 | 34.9 |
| Production | Mil. s. tons | 28.0 | 30.2 | 29.6 | 31.2 | 31.9 | 32.7 | 32.7 | 32.7 | 32.7 | 32.7 | 32.7 | 32.7 | 32.7 |
| | | | | | | | | | | | | | | |
| Supply: | | | | | | | | | | | | | | |
| Beginning stocks | 1,000 s. tons | 1,492 | 1,488 | 1,675 | 1,700 | 1,502 | 1,525 | 1,548 | 1,572 | 1,595 | 1,619 | 1,642 | 1,665 | 2,241 |
| Production | 1,000 s. tons | 7,205 | 8,020 | 8,047 | 8,259 | 8,441 | 8,610 | 8,679 | 8,765 | 8,835 | 8,897 | 8,960 | 9,007 | 9,063 |
| Beet sugar | 1,000 s. tons | 4,013 | 4,389 | 4,500 | 4,424 | 4,508 | 4,558 | 4,605 | 4,667 | 4,713 | 4,752 | 4,790 | 4,814 | 4,847 |
| Cane sugar | 1,000 s. tons | 3,192 | 3,631 | 3,547 | 3,836 | 3,933 | 4,052 | 4,074 | 4,098 | 4,122 | 4,145 | 4,169 | 4,193 | 4,216 |
| Total imports | 1,000 s. tons | 2,774 | 2,165 | 2,178 | 1,899 | 2,100 | 2,093 | 2,185 | 2,260 | 2,352 | 2,451 | 2,550 | 3,216 | 3,221 |
| TRQ | 1,000 s. tons | 2,277 | 1,729 | 1,733 | 1,449 | 1,640 | 1,623 | 1,705 | 1,780 | 1,832 | 1,886 | 1,795 | 1,256 | 1,256 |
| Other imports | 1,000 s. tons | 497 | 436 | 445 | 450 | 460 | 470 | 480 | 480 | 520 | 565 | 755 | 1,960 | 1,965 |
| Total supply | 1,000 s. tons | 11,470 | 11,673 | 11,900 | 11,858 | 12,043 | 12,228 | 12,412 | 12,597 | 12,782 | 12,966 | 13,151 | 13,888 | 14,525 |
| | | | | | | | | | | | | | | |
| Use: | | | | | | | | | | | | | | |
| Domestic disappearance | 1,000 s. tons | 9,742 | 9,812 | 10,025 | 10,182 | 10,338 | 10,494 | 10,650 | 10,807 | 10,963 | 11,119 | 11,276 | 11,432 | 11,588 |
| Exports | 1,000 s. tons | 211 | 179 | 175 | 175 | 180 | 185 | 190 | 195 | 200 | 205 | 210 | 215 | 220 |
| Miscellaneous | 1,000 s. tons | 31 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total use | 1,000 s. tons | 9,984 | 9,998 | 10,200 | 10,357 | 10,518 | 10,679 | 10,840 | 11,002 | 11,163 | 11,324 | 11,486 | 11,647 | 11,808 |
| Ending stocks | 1,000 s. tons | 1,486 | 1,675 | 1,700 | 1,502 | 1,525 | 1,548 | 1,572 | 1,595 | 1,619 | 1,642 | 1,665 | 2,241 | 2,716 |
| Stocks/use ratio 2/ | Percent | 14.9 | 16.8 | 16.7 | 14.5 | 14.5 | 14.5 | 14.5 | 14.5 | 14.5 | 14.5 | 14.5 | 19.2 | 23.0 |
| Raw sugar prices: | | | | | | | | | | | | | | |
| N.Y. (No. 14) | Cents/lb. | 22.00 | 22.09 | 22.00 | 22.00 | 22.00 | 22.00 | 22.00 | 22.00 | 22.00 | 22.00 | 22.00 | 20.29 | 18.93 |
| Raw sugar loan rate | Cents/lb. | 18.00 | 18.00 | 18.00 | 18.00 | 18.00 | 18.00 | 18.00 | 18.00 | 18.00 | 18.00 | 18.00 | 18.00 | 18.00 |
| Beet sugar loan rate | Cents/lb. | 22.90 | 22.90 | 22.90 | 22.90 | 22.90 | 22.90 | 22.90 | 22.90 | 22.90 | 22.90 | 22.90 | 22.90 | 22.90 |
| Grower prices: | | | | | | | | | | | | | | |
| Sugarbeets | Dol./ton | 40.70 | 40.00 | 40.00 | 40.00 | 40.00 | 40.00 | 40.00 | 40.00 | 40.00 | 40.00 | 40.00 | 36.89 | 34.41 |
| Sugarcane | Dol./ton | 28.10 | 30.00 | 30.00 | 30.00 | 30.00 | 30.00 | 30.00 | 30.00 | 30.00 | 30.00 | 30.00 | 27.67 | 25.81 |

1/ Fiscal year is October 1 through September 30.
2/ For 1999, the projected stocks-to-use ratio of 16.7 percent is based on the November 1998 *World Agricultural Supply and Demand Estimates* report, published prior to the January 1999 tranche decision.

Table 18.  Flue-cured tobacco baseline

| Item | Unit | 1997/98 | 1998/99 | 1999/2000 | 2000/01 | 2001/02 | 2002/03 | 2003/04 | 2004/05 | 2005/06 | 2006/07 | 2007/08 | 2008/09 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Acreage, yield, and production:** | | | | | | | | | | | | | |
| Planted area | 1,000 acres | 454 | 385 | 328 | 318 | 340 | 331 | 324 | 313 | 307 | 302 | 298 | 293 |
| Harvested area | 1,000 acres | 454 | 385 | 328 | 318 | 340 | 331 | 324 | 313 | 307 | 302 | 298 | 293 |
| Yield | lbs./acre | 2,306 | 2,140 | 2,250 | 2,250 | 2,250 | 2,250 | 2,250 | 2,250 | 2,250 | 2,250 | 2,250 | 2,250 |
| Production | Mil. lbs. | 1,047 | 823 | 738 | 715 | 765 | 745 | 730 | 705 | 690 | 680 | 670 | 660 |
| **Supply:** | | | | | | | | | | | | | |
| Beg. stocks | Mil. lbs. | 1,116 | 1,252 | 1,208 | 1,111 | 1,011 | 981 | 951 | 926 | 896 | 876 | 871 | 871 |
| Marketings | Mil. lbs. | 1,014 | 816 | 738 | 715 | 765 | 745 | 730 | 705 | 690 | 680 | 670 | 660 |
| Total 1/ | Mil. lbs. | 2,130 | 2,068 | 1,946 | 1,826 | 1,776 | 1,726 | 1,681 | 1,631 | 1,586 | 1,556 | 1,541 | 1,531 |
| Imports | Mil. lbs. | (220) | (200) | (200) | (200) | (200) | (220) | (240) | (260) | (260) | (260) | (260) | (260) |
| **Use:** | | | | | | | | | | | | | |
| Domestic | Mil. lbs. | 544 | 520 | 500 | 485 | 470 | 455 | 440 | 425 | 405 | 380 | 365 | 345 |
| Exports | Mil. lbs. | 334 | 340 | 335 | 330 | 325 | 320 | 315 | 310 | 305 | 305 | 305 | 305 |
| Total 1/ | Mil. lbs. | 878 | 860 | 835 | 815 | 795 | 775 | 755 | 735 | 710 | 685 | 670 | 650 |
| **Ending stocks:** | | | | | | | | | | | | | |
| Total | Mil. lbs. | 1,252 | 1,208 | 1,111 | 1,011 | 981 | 951 | 926 | 896 | 876 | 871 | 871 | 881 |
| **Price:** | | | | | | | | | | | | | |
| Avg. to growers | $/cwt | 172.0 | 175.5 | 177.0 | 179 | 182 | 185 | 188 | 191 | 193 | 196 | 198 | 201 |
| Support | $/cwt | 162.1 | 162.8 | 163.2 | 168 | 171 | 173 | 175 | 178 | 180 | 183 | 185 | 188 |

1/ Domestic tobacco only.

Table 19  Burley tobacco baseline

| Item | Unit | 1997/98 | 1998/99 | 1999/2000 | 2000/01 | 2001/02 | 2002/03 | 2003/04 | 2004/05 | 2005/06 | 2006/07 | 2007/08 | 2008/09 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Acreage, yield, and production:** | | | | | | | | | | | | | |
| Planted area | 1,000 acres | 315 | 322 | 248 | 224 | 200 | 200 | 214 | 214 | 210 | 205 | 205 | 200 |
| Harvested area | 1,000 acres | 315 | 322 | 248 | 224 | 200 | 200 | 214 | 214 | 210 | 205 | 205 | 200 |
| Yield | lbs./acre | 2,059 | 1,960 | 2,100 | 2,100 | 2,100 | 2,100 | 2,100 | 2,100 | 2,100 | 2,100 | 2,100 | 2,100 |
| Production | Mil. lbs. | 649 | 632 | 520 | 470 | 420 | 420 | 450 | 450 | 440 | 430 | 430 | 420 |
| **Supply:** | | | | | | | | | | | | | |
| Beg. stocks | Mil. lbs. | 751 | 832 | 897 | 872 | 812 | 717 | 637 | 602 | 582 | 562 | 547 | 542 |
| Marketings | Mil. lbs. | 628 | 630 | 520 | 470 | 420 | 420 | 450 | 450 | 440 | 430 | 430 | 420 |
| Total 1/ | Mil. lbs. | 1,379 | 1,462 | 1,417 | 1,342 | 1,232 | 1,137 | 1,087 | 1,052 | 1,022 | 992 | 977 | 962 |
| Imports | Mil. lbs. | (150) | (160) | (165) | (175) | (175) | (175) | (185) | (195) | (195) | (200) | (200) | (200) |
| **Use:** | | | | | | | | | | | | | |
| Domestic | Mil. lbs. | 379 | 385 | 370 | 360 | 350 | 340 | 330 | 320 | 310 | 300 | 290 | 280 |
| Exports | Mil. lbs. | 168 | 180 | 175 | 170 | 165 | 160 | 155 | 150 | 150 | 145 | 145 | 145 |
| Total 1/ | Mil. lbs. | 547 | 565 | 545 | 530 | 515 | 500 | 485 | 470 | 460 | 445 | 435 | 425 |
| **Ending stocks:** | | | | | | | | | | | | | |
| Total | Mil. lbs. | 832 | 897 | 872 | 812 | 717 | 637 | 602 | 582 | 562 | 547 | 542 | 537 |
| **Price:** | | | | | | | | | | | | | |
| Avg. to growers | $/cwt | 189 | 190 | 197 | 200 | 204 | 207 | 211 | 214 | 217 | 220 | 223 | 226 |
| Support | $/cwt | 176 | 178 | 181 | 184 | 187 | 190 | 193 | 196 | 199 | 202 | 205 | 208 |

1/ Domestic tobacco only.

Table 20.  Fruit, vegetable, and greenhouse/nursery baseline

| Item | Unit | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Production value: | $ Mil. | 37,606 | 38,095 | 39,397 | 41,048 | 42,558 | 44,073 | 45,614 | 47,183 | 48,780 | 50,408 | 52,069 | 53,764 |
| Fruits | $ Mil. | 12,683 | 12,277 | 12,585 | 13,097 | 13,628 | 14,179 | 14,748 | 15,337 | 15,947 | 16,579 | 17,234 | 17,913 |
| Vegetables | $ Mil. | 13,531 | 13,884 | 14,378 | 15,017 | 15,496 | 15,960 | 16,431 | 16,911 | 17,398 | 17,894 | 18,400 | 18,916 |
| Greenhouse/nursery | $ Mil. | 11,393 | 11,934 | 12,434 | 12,934 | 13,434 | 13,934 | 14,434 | 14,934 | 15,434 | 15,934 | 16,434 | 16,934 |
| Production: | 1,000 MT | 90,723 | 88,806 | 86,857 | 88,577 | 90,133 | 91,552 | 92,974 | 94,401 | 95,835 | 97,279 | 98,735 | ###### |
| Fruits | | | | | | | | | | | | | |
| Citrus | 1,000 MT | 15,646 | 16,356 | 13,739 | 14,079 | 14,420 | 14,764 | 15,108 | 15,452 | 15,799 | 16,146 | 16,496 | 16,848 |
| Noncitrus | 1,000 MT | 16,850 | 15,502 | 15,688 | 15,873 | 16,060 | 16,250 | 16,439 | 16,628 | 16,819 | 17,011 | 17,205 | 17,401 |
| Nuts | 1,000 MT | 542 | 381 | 389 | 398 | 406 | 415 | 423 | 432 | 440 | 448 | 457 | 465 |
| Total | 1,000 MT | 33,039 | 32,239 | 29,816 | 30,350 | 30,886 | 31,428 | 31,970 | 32,512 | 33,058 | 33,605 | 34,157 | 34,714 |
| Vegetables | | | | | | | | | | | | | |
| Fresh | 1,000 MT | 19,422 | 19,427 | 19,631 | 19,836 | 20,042 | 20,252 | 20,463 | 20,674 | 20,887 | 21,101 | 21,319 | 21,539 |
| Processed | 1,000 MT | 14,701 | 13,131 | 13,337 | 13,537 | 13,738 | 13,941 | 14,143 | 14,346 | 14,549 | 14,752 | 14,957 | 15,163 |
| Potatoes 1/ | 1,000 MT | 21,478 | 21,863 | 22,093 | 22,837 | 23,410 | 23,836 | 24,265 | 24,696 | 25,131 | 25,569 | 26,012 | 26,459 |
| Pulses | 1,000 MT | 1,731 | 1,794 | 1,624 | 1,658 | 1,693 | 1,727 | 1,762 | 1,797 | 1,832 | 1,867 | 1,902 | 1,938 |
| Mushrooms | 1,000 MT | 352 | 352 | 356 | 360 | 364 | 368 | 372 | 376 | 380 | 384 | 388 | 392 |
| Total | 1,000 MT | 57,684 | 56,567 | 57,041 | 58,228 | 59,247 | 60,125 | 61,005 | 61,888 | 62,777 | 63,673 | 64,578 | 65,492 |
| Trade: 2/ | | | | | | | | | | | | | |
| Imports | $ Mil. | 12,936 | 14,148 | 14,743 | 15,281 | 15,811 | 16,454 | 17,117 | 17,801 | 18,507 | 19,237 | 19,991 | 20,769 |
| Fruit | | | | | | | | | | | | | |
| Fresh | $ Mil. | 2,357 | 2,517 | 2,649 | 2,758 | 2,807 | 2,916 | 3,028 | 3,143 | 3,261 | 3,382 | 3,506 | 3,633 |
| Processed | $ Mil. | 649 | 584 | 601 | 618 | 636 | 655 | 674 | 694 | 714 | 735 | 756 | 778 |
| Other | $ Mil. | 3,138 | 3,173 | 3,243 | 3,314 | 3,387 | 3,462 | 3,539 | 3,618 | 3,698 | 3,781 | 3,865 | 3,952 |
| Total | $ Mil. | 6,144 | 6,273 | 6,493 | 6,691 | 6,830 | 7,033 | 7,241 | 7,455 | 7,674 | 7,898 | 8,128 | 8,363 |
| Vegetables | | | | | | | | | | | | | |
| Fresh | $ Mil. | 1,833 | 2,283 | 2,367 | 2,503 | 2,643 | 2,788 | 2,938 | 3,092 | 3,252 | 3,416 | 3,586 | 3,761 |
| Processed | $ Mil. | 631 | 667 | 789 | 811 | 835 | 858 | 883 | 908 | 934 | 960 | 987 | 1,015 |
| Potatoes | $ Mil. | 280 | 395 | 315 | 257 | 236 | 249 | 263 | 277 | 292 | 307 | 322 | 338 |
| Pulses | $ Mil. | 43 | 35 | 56 | 58 | 60 | 63 | 65 | 68 | 70 | 73 | 76 | 78 |
| Other | $ Mil. | 1,152 | 1,316 | 1,384 | 1,452 | 1,520 | 1,588 | 1,656 | 1,725 | 1,793 | 1,861 | 1,929 | 1,997 |
| Total | $ Mil. | 3,939 | 4,697 | 4,911 | 5,082 | 5,295 | 5,547 | 5,805 | 6,069 | 6,340 | 6,617 | 6,900 | 7,190 |
| Greenhouse/nursery | $ Mil. | 1,009 | 1,070 | 1,134 | 1,202 | 1,274 | 1,350 | 1,431 | 1,517 | 1,608 | 1,705 | 1,807 | 1,916 |
| Exports | $ Mil. | 10,079 | 9,883 | 10,131 | 10,673 | 11,288 | 11,931 | 12,588 | 13,261 | 13,949 | 14,652 | 15,373 | 16,110 |
| Fruits | | | | | | | | | | | | | |
| Fresh | $ Mil. | 2,019 | 1,701 | 1,493 | 1,531 | 1,596 | 1,677 | 1,760 | 1,846 | 1,934 | 2,026 | 2,120 | 2,217 |
| Processed | $ Mil. | 689 | 715 | 735 | 757 | 779 | 802 | 825 | 849 | 874 | 899 | 926 | 953 |
| Other | $ Mil. | 2,267 | 2,375 | 2,524 | 2,709 | 2,899 | 3,093 | 3,291 | 3,494 | 3,702 | 3,914 | 4,132 | 4,354 |
| Total | $ Mil. | 4,976 | 4,791 | 4,752 | 4,997 | 5,274 | 5,571 | 5,876 | 6,189 | 6,510 | 6,839 | 7,177 | 7,524 |
| Vegetables | | | | | | | | | | | | | |
| Fresh | $ Mil. | 1,045 | 1,071 | 1,127 | 1,152 | 1,213 | 1,275 | 1,340 | 1,407 | 1,476 | 1,547 | 1,620 | 1,695 |
| Processed | $ Mil. | 719 | 684 | 759 | 817 | 877 | 939 | 1,003 | 1,069 | 1,138 | 1,208 | 1,282 | 1,357 |
| Potatoes | $ Mil. | 644 | 674 | 759 | 820 | 882 | 947 | 1,015 | 1,084 | 1,156 | 1,230 | 1,307 | 1,386 |
| Pulses | $ Mil. | 261 | 347 | 288 | 302 | 316 | 331 | 346 | 362 | 378 | 395 | 412 | 429 |
| Other | $ Mil. | 1,563 | 1,489 | 1,600 | 1,724 | 1,847 | 1,971 | 2,095 | 2,218 | 2,342 | 2,466 | 2,589 | 2,713 |
| Total | $ Mil. | 4,232 | 4,265 | 4,534 | 4,815 | 5,136 | 5,464 | 5,798 | 6,140 | 6,489 | 6,845 | 7,209 | 7,581 |
| Greenhouse/nursery | $ Mil. | 283 | 308 | 315 | 322 | 329 | 337 | 345 | 353 | 361 | 369 | 378 | 386 |
| Prices: | | | | | | | | | | | | | |
| Grower | | | | | | | | | | | | | |
| Fruits | 1990-92=100 | 108 | 110 | 113 | 115 | 117 | 119 | 121 | 123 | 125 | 127 | 130 | 132 |
| Vegetables | 1990-92=100 | 121 | 128 | 131 | 134 | 136 | 139 | 142 | 145 | 147 | 150 | 153 | 155 |
| Potatoes | $/MT | 125 | 144 | 155 | 159 | 162 | 166 | 169 | 173 | 176 | 180 | 183 | 187 |
| Dry beans | $/MT | 390 | 380 | 501 | 504 | 508 | 511 | 515 | 519 | 522 | 526 | 529 | 533 |
| Retail | | | | | | | | | | | | | |
| Fruits | | | | | | | | | | | | | |
| Fresh | 1982-84=100 | 236 | 247 | 259 | 258 | 269 | 279 | 289 | 300 | 310 | 320 | 331 | 341 |
| Processed | 1982-84=100 | 149 | 151 | 154 | 157 | 160 | 163 | 166 | 169 | 172 | 176 | 179 | 182 |
| Vegetables | | | | | | | | | | | | | |
| Fresh | 1982-84=100 | 195 | 216 | 209 | 216 | 224 | 231 | 238 | 245 | 253 | 260 | 267 | 274 |
| Processed | 1982-84=100 | 147 | 151 | 154 | 158 | 162 | 165 | 169 | 172 | 176 | 179 | 183 | 187 |

1/ Includes sweet potatoes.

2/ Total for imports includes beer and malt beverages.  Fruit imports includes bananas.  Melons are included in vegetables.  Other fruit includes juices, wine, and tree nuts.  Other vegetables includes mushrooms, dehydrated vegetables, and miscellaneous processed foods.

# Livestock

Changes in the U.S. meat complex in the near term reflect the sharp decline of grain and soybean meal prices from the very high levels of the 1995/96 crop year. Both the poultry and pork sectors expanded in response to higher meat prices and lower feed costs. Expanded pork production began to pressure hog and pork prices in late 1997 and, despite lower grain prices, producer returns above cash costs are forecast to remain negative through 1999. The beef sector is expected to continue to decline over the next 2 years, reflecting producers' response to drought, poor returns, and the longer biological lags inherent in beef production.

Over the baseline, lower feed prices than in 1995/96 and replenishment of forage supplies should moderate production costs in the meat sector. Continued low inflation, domestic demand strength from slow but steady income growth, and gains in export sales are expected to contribute to producer returns that encourage higher pork and poultry output. However, as feed costs increase beyond 2000, beef and poultry production gains slow, especially near the end of the baseline. Pork production declines in 2000 due to low hog prices in 1998, but expands for the rest of the baseline.

Decreases in real prices of meats combined with increases in real disposable income allow consumers to purchase more total meat with a smaller proportion of disposable income, continuing a long-term trend. Consumption gains exceed population growth, with per capita meat consumption reaching about 228 pounds (retail weight) by 2008, about 13 pounds more than in 1998. The meats will vie for domestic market share through product development, advertising, and promotion. Poultry gains a larger proportion of both total meat consumption and total meat expenditures, reflecting its lower production costs and prices relative to other meats. On a retail weight basis, total poultry consumption is projected to exceed total red meat consumption at the end of the baseline.

Total egg production expands slightly in the baseline in part to support larger broiler production. Per capita consumption of shell eggs declines slowly, but growing use in processed foods keeps total egg use per person relatively stable. Real egg prices continue to fall.

High milk-feed price ratios and dairy productivity gains push milk output per cow higher and real costs lower. Milk production grows despite slowly declining cow numbers throughout the period. Sales of cheese and dairy ingredients for processed foods lead expansion in commercial use of dairy products, while fluid milk sales are stagnant.

## Beef

Lower feeder cattle prices due to record grain prices in 1995/96 were compounded by poor forage supplies in 1996 through 1998. Low returns to the cow-calf sector, large beef cow slaughter in 1996-1998, and the length of the biological lag is likely to prevent herd expansion until 2000. Returns above cash costs per cow were near break-even in 1997 but were under drought-induced pressure in 1998 and more heifers were placed in feedlots rather than retained for calving. Increased returns in 1999-2000 are not expected to be sufficient to encourage expansion above 100 million head in the next cattle cycle. The cattle herd builds from a cyclical

low of about 97 million head in 2000, not quite reaching 100 million head in 2002-2004.  Shifts toward higher grading, larger-framed cattle that result in heavier slaughter weights partly offset the need for expanding cattle inventories to previous levels.

Beef production declines through 2000, reflecting sector adjustments to low cow-calf returns through 1998.  Coupled with larger exports and declining imports after 2001, per capita beef consumption in 2008 is down about 10 pounds, retail weight, from the cyclical peak in 1998.  The beef production mix continues to shift toward a larger proportion of fed beef as nearly all steers and heifers are fed in feedlots, resulting in calf slaughter continuing at relatively low levels as most are placed on feed.

Feeder cattle will remain on grass longer and will be marketed at heavier weights.  Cattle will remain in feedlots for 120 to 140 days to Select or Choice grade, with dressed slaughter weights growing slowly during the baseline.  Heavier placement weights coupled with less finish required to reach Choice grade will hold down feed grain use and feed fed per pound of fed beef produced.  The strongest prices will be received for cattle that grade Choice or higher for the growing export and domestic hotel-restaurant markets.

Adequate land resources will remain available to the cattle and crop sectors into the next decade.  In addition, the 1996 Farm Act further expands the forage base by allowing haying and grazing at any time on land enrolled in production flexibility contracts.  Conservation Reserve Program acreage will remain over 30 million acres.  Grazing and haying on CRP acreage will continue to be allowed under restricted conditions during emergencies such as drought and floods.  This increased availability of forage for the reduced cattle sector, combined with a shift toward cow-calf-yearling operations, allows flexibility in the use of forage and the marketing of feeder cattle.  In the event of poor forage conditions, for example, feeder cattle can be marketed early, allowing the cow herd to be maintained.

Veal production falls through 2008.  A larger share of veal production will come from higher valued formula-fed calves marketed at heavier weights.  Declining dairy cow numbers reduce the supply of dairy calves.  High stocker and feeder cattle prices encourage more of these dairy calves to move into feedlot channels rather than being slaughtered as young calves.

The emergence of the United States as a long-term net beef exporter will be delayed until near the end of the baseline, after the cow herd is reestablished and weak demand in the Pacific Rim recovers.  Adjustments in world beef trade will continue as market access is opened under the UR agreement, but long-term growth in meat demand in the Pacific Rim may be slower than previously thought.  Beef exports will rise from about 8 percent to 11 percent of production.  The U.S. remains the primary source of high quality, fed beef for export, including exports for hotel-restaurant trade.  High-quality beef exports continue to increase through the baseline, primarily to Pacific Rim nations.  Australia and perhaps New Zealand will also increase exports to Pacific Rim nations, although their beef will be mostly lower quality, grass-fed beef.  However, the United States will remain an important market for Oceania, especially while the beef cow inventory remains low.

## Competition for Consumer Meat Demand Drives Structural Change in Meat Sectors

The structure of individual meat producing sectors is changing as meats compete with each other for consumer market share.  These changes affect the types of meat available to consumers at the retail level and in the food service industry as the meat producing sectors respond to perceived consumer demand, and also have impacts on producers and their production and marketing practices.

The beef sector is moving toward an increasingly segmented market as beef supplies decline in the next few years.  Choice-Prime, consistent-quality beef receives a price premium and is being directed toward the hotel-restaurant and export markets.  Select and ungraded, highly-variable quality beef competes in the retail commodity meat market with pork and poultry. The price spread between choice-prime beef and select grade beef is likely to widen as beef supplies decline.  Relatively large quantities of grass-fed beef are likely to continue to be imported for use in hamburger and processed products as smaller quantities of cow beef will be available domestically.

The best quality beef will be directed to the hotel-restaurant and export markets, leaving smaller supplies of beef (with generally less desirable quality) available for the retail market.  Beef is expected to have limited success against pork and poultry at the retail level because of its higher production costs and resulting higher retail prices.  The beef sector will need to reduce the cost of producing select beef to be competitive with pork and poultry while increasing the proportion of consistent quality beef.  Highly variable quality beef at retail reduces its competitiveness. Consumers are likely to be more hesitant to buy beef if a lack of consistency at retail increases the risk of getting an unsatisfactory cut with lower quality (for tenderness and flavor, for example) than they expect.

Pork production is expected to become more vertically coordinated over the baseline period. This should lower production costs and further improve pork quality.  The type of coordination may differ from the nearly complete production contracting that is used for broilers. Coordinated pork production involves more marketing agreements, continued private ownership of meat producing stock, and use of farm-produced feed.  Processing companies may provide access to improved genetic stock and give technical assistance in order to get the uniformity, product safety, and consistency of product that they need at the wholesale and retail level.  Large supplies of pork, particularly loins and chops at relatively low prices, will increasingly challenge beef in the hotel-restaurant market as well as at retail.

The already highly integrated structure of the poultry industry is expected to be maintained through the baseline period.  The poultry sector continues to develop new products with the current trend toward home meal replacement in grocery stores.  Ready-to-prepare meals are packaged with choices of side dishes to complement the seasoned or marinated chicken entrees. Broiler breast meat is also likely to increase market share in the hotel-restaurant market.

U.S. emphasis on fed beef production and the smaller cattle inventory will result in relatively high beef imports of processing beef. Most processing beef will be used in higher valued hamburger as large supplies of low priced, processing quality poultry and pork are used in lower valued manufactured products.

## Pork

The pork sector will continue to transform 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. These larger operations are able to spread fixed costs across more animals and purchase feed in large quantities, resulting in greater efficiency. Breeding inventories are low relative to pork production and will likely fall further as the number of pigs per litter increases and better utilization of the breeding herd continues with increased use of artificial insemination.

Pork production grows from 19 billion pounds in 1998 to nearly 22 billion pounds by 2008, with little change in 2000 and 2001 as producers adjust due to unfavorable returns in 1998 and early 1999. Slow expansion begins in 2002 and continues for the remainder of the baseline. The lack of any supply or demand shocks in the baseline, combined with the more vertically coordinated industry structure, dampens the hog cycle. Pork production growth remains slow as higher grain prices and competition from beef and poultry moderate returns.

Per capita pork consumption on a retail basis remains in a range of 52 to 55 pounds per person through the baseline. Nominal hog prices slowly rise after 1999 and peak near $40 per hundredweight in 2005.

The United States becomes an increasingly important net pork exporter, although projected gains are somewhat muted by reduced growth prospects to Russia and the Pacific Rim. Nonetheless, exports will continue to expand while pork imports remain steady. Longer term gains in pork exports reflect in part environmental constraints in a number of competitor countries that limit their production growth. The major growth markets for U.S. pork exports will remain Pacific Rim nations, Mexico, and Russia. Yearly trade variations will depend upon major foreign suppliers such as Canada and Denmark, as well as exchange rate fluctuations.

## Poultry and Eggs

Poultry production expands as broiler meat gains an increasing share of total meat consumption. Poultry meat will be less expensive than other meats so consumers can purchase more poultry meat per dollar. Poultry firms will continue aggressive market development and promote poultry's image of providing lean, convenient products. Further processed products including those seasoned, marinated, and packaged with other food products for easy meal preparation are recent trends. Production gains for turkeys reflect projected growth in the further-processed market and exports.

Poultry production gains rebound in 1999 and 2000 from a slowdown in 1997-1998 caused by high feed costs in 1995/96, hatching egg shortages for broilers, and continued low profitability for turkey producers. Increases in production then slow for the rest of the baseline to more sustainable long-term growth near 3.5 percent annually. Poultry meat prices in the baseline are relatively flat in real terms.

The broiler and turkey industries have kept the cost of production 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. While some further technological improvement and continued vertical integration occur during the baseline, these factors will not affect production costs as significantly as in the past 10 years.

Turkey production will expand slowly with per capita consumption falling slowly from 18 to about 16 pounds (retail weight). Low returns in recent years have slowed product development and larger pork production will provide more competition in the marketplace.

Continued competition in world poultry meat markets holds U.S. poultry exports to moderate gains. Declines in exports during 1998 and 1999 for broilers reflect slower growth in sales to Asia and the sharp reduction in exports to Russia. Slow recovery in both markets is expected from 2000 through the end of the baseline period. Increases are expected in exports of broiler parts to other markets, especially for dark meat. Turkey exports were reduced in 1998 because of declines in sales to Hong Kong, Korea, and Japan. Russia had been a strong market early in 1998 but sales fell sharply in the last 4 months of the year.

Table egg producers expand production slowly through the baseline in response to lower industry net returns. A larger expansion in total U.S. egg production reflects increased broiler hatching egg production to accommodate broiler sector expansion.

Shell egg consumption per person falls more slowly than the long-term historical trend of 1 to 3 eggs a year. Per capita consumption of total eggs stabilizes at about 246 eggs throughout the baseline. Processed egg products are an increasing part of the egg market as ingredients in many prepared foods. As consumers opt for more convenience foods, consumption of egg products will continue to increase, as negative egg attributes are less noticeable in processed products.

Wholesale egg prices trend upward, with increases less than the inflation rate. A competitive market with little product differentiation will result in supplies that keep prices near the cost of production.

U.S. egg exports grow slowly over the baseline as many countries will likely continue to experience surpluses of eggs. World import demand will remain relatively static as domestic production will generally meet increased domestic demands in most countries.

**Dairy**

Total milk production and commercial use are projected to increase at a generally moderate rate, with milk prices rising slightly more slowly than the general inflation rate once the pending adjustments to recent high prices are completed. High milk-feed price ratios are expected to sustain growth in milk per cow, while milk cow numbers decline slowly. The strength of domestic demand is expected to keep U.S. markets relatively isolated from international markets, except for the fairly constant trade resulting from import quotas and subsidized export restrictions.

Lower real milk prices are likely to continue to push weaker farms (and some of their land) out of dairying. Intensive grazing may prolong the existence of some operations, particularly in areas of marginal land. However, these techniques are not expected to make very many of the currently marginal operations viable into the next generation.

Milk production will expand in the West, although the proportional rate may be slower because of more limited alfalfa supplies and environmental constraints. Large, industrial-style Northern operations will become much more numerous. However, the pace of development of large-scale dairying may be moderate because of the need to adapt systems to local climate and feed conditions and because of the risks and financial problems of rapid farm expansion. Expansion by stronger farms is expected to hold declines in U.S. milk cow numbers to slightly less than 1 percent over the baseline period.

Economic growth and population increases will support slight increases in total demand for dairy products. Demand is expected to grow for cheese and for dairy ingredients in processed foods. Fluid sales likely will be stagnant, while use of some products will continue to slip.

International dairy product prices are projected to edge higher once the effects of the current demand weakness are overcome. However, international prices are expected to average 25 to 50 percent below domestic levels. The Dairy Export Incentive Program (DEIP) will continue, but DEIP amounts are tightly controlled by UR agreement limits. Unsubsidized exports will generally be small, although some up trend is expected as U.S. producers develop particularly favorable markets. Imports will generally fill most of the quotas. Even so, occasional periods of price competitiveness for milkfat or skim solids may occur due to price volatility in both domestic and international markets.

The 1999/2000 marketing year is projected to deviate substantially from the general pattern. Milk production is projected to rise sharply during 1999 as a result of generally high returns of recent years. Meanwhile, commercial use may be a bit sluggish as users adjust fully to high 1998/99 prices. This will result in a fairly brief period of sharply lower prices until production and commercial use further adjust.

Table 21.  Per capita meat consumption, retail and boneless weight

| Item | Units | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Retail weight:** | | | | | | | | | | | | | |
| Total beef | Pounds | 66.9 | 68.1 | 63.4 | 61.7 | 61.0 | 61.9 | 62.2 | 61.3 | 60.3 | 59.5 | 58.8 | 58.2 |
| Total veal | Pounds | 1.0 | 0.8 | 0.8 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.6 | 0.6 | 0.6 | 0.6 |
| Total pork | Pounds | 48.7 | 52.7 | 53.4 | 52.7 | 52.1 | 52.7 | 52.9 | 53.0 | 52.8 | 53.1 | 53.6 | 54.3 |
| Lamb and mutton | Pounds | 1.0 | 1.1 | 1.0 | 1.0 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.8 | 0.8 |
| Total red meat | Pounds | 117.7 | 122.6 | 118.5 | 116.1 | 114.7 | 116.1 | 116.7 | 115.8 | 114.6 | 114.1 | 113.8 | 113.9 |
| | | | | | | | | | | | | | |
| Broilers | Pounds | 72.7 | 74.1 | 78.4 | 82.0 | 83.9 | 85.8 | 87.5 | 89.2 | 91.4 | 93.5 | 95.9 | 98.0 |
| Other chicken | Pounds | 0.5 | 0.4 | 0.5 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| Turkeys | Pounds | 17.6 | 18.0 | 17.5 | 17.5 | 17.5 | 17.4 | 17.0 | 16.6 | 16.5 | 16.4 | 16.2 | 16.1 |
| Total poultry | Pounds | 90.9 | 92.5 | 96.4 | 99.8 | 101.6 | 103.5 | 104.8 | 106.2 | 108.2 | 110.2 | 112.4 | 114.5 |
| | | | | | | | | | | | | | |
| Red meat & poultry | Pounds | 208.6 | 215.1 | 215.0 | 215.9 | 216.3 | 219.6 | 221.5 | 222.0 | 222.8 | 224.3 | 226.2 | 228.4 |
| | | | | | | | | | | | | | |
| **Boneless weight:** | | | | | | | | | | | | | |
| Total beef | Pounds | 63.4 | 64.5 | 60.0 | 58.5 | 57.7 | 58.6 | 58.9 | 58.1 | 57.1 | 56.4 | 55.7 | 55.2 |
| Total veal | Pounds | 0.9 | 0.7 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| Total pork | Pounds | 45.8 | 49.5 | 50.2 | 49.5 | 48.9 | 49.5 | 49.7 | 49.7 | 49.6 | 49.9 | 50.4 | 51.0 |
| Lamb & mutton | Pounds | 0.8 | 0.8 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.6 | 0.6 | 0.6 | 0.6 |
| Total red meat | Pounds | 110.8 | 115.4 | 111.6 | 109.3 | 107.9 | 109.3 | 109.8 | 109.0 | 107.9 | 107.4 | 107.2 | 107.2 |
| | | | | | | | | | | | | | |
| Broilers | Pounds | 51.5 | 52.5 | 55.5 | 58.1 | 59.3 | 60.7 | 61.9 | 63.2 | 64.7 | 66.2 | 67.8 | 69.4 |
| Other chicken | Pounds | 0.3 | 0.2 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| Turkeys | Pounds | 13.9 | 14.2 | 13.8 | 13.8 | 13.8 | 13.8 | 13.4 | 13.1 | 13.0 | 13.0 | 12.8 | 12.7 |
| Total poultry | Pounds | 65.7 | 66.9 | 69.6 | 72.1 | 73.3 | 74.6 | 75.6 | 76.5 | 77.9 | 79.3 | 80.8 | 82.3 |
| | | | | | | | | | | | | | |
| Red meat and poultry | Pounds | 176.5 | 182.3 | 181.2 | 181.3 | 181.3 | 184.0 | 185.4 | 185.5 | 185.7 | 186.7 | 188.0 | 189.5 |

Table 22.  Consumer expenditures for meats

| Item | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Beef, dollars per person | 187.38 | 187.98 | 179.28 | 178.67 | 180.87 | 180.73 | 181.67 | 183.75 | 185.40 | 186.82 | 187.85 | 188.72 |
| Percent of income | 0.87 | 0.84 | 0.77 | 0.74 | 0.71 | 0.68 | 0.65 | 0.63 | 0.61 | 0.59 | 0.56 | 0.54 |
| Percent of meat expenditures | 43.70 | 42.64 | 41.19 | 40.86 | 40.57 | 40.53 | 40.47 | 40.14 | 39.73 | 39.38 | 39.00 | 38.66 |
| | | | | | | | | | | | | |
| Pork, dollars per person | 113.04 | 121.14 | 119.70 | 119.37 | 120.60 | 119.77 | 119.20 | 120.55 | 121.59 | 122.36 | 122.98 | 123.42 |
| Percent of income | 0.52 | 0.54 | 0.51 | 0.49 | 0.47 | 0.45 | 0.43 | 0.41 | 0.40 | 0.38 | 0.37 | 0.35 |
| Percent of meat expenditures | 26.36 | 27.48 | 27.50 | 27.30 | 27.05 | 26.86 | 26.55 | 26.33 | 26.05 | 25.79 | 25.53 | 25.28 |
| | | | | | | | | | | | | |
| Broilers, dollars per person | 109.83 | 113.78 | 118.59 | 121.66 | 126.73 | 128.32 | 131.39 | 136.90 | 143.09 | 148.58 | 154.25 | 159.59 |
| Percent of income | 0.51 | 0.51 | 0.51 | 0.50 | 0.50 | 0.48 | 0.47 | 0.47 | 0.47 | 0.47 | 0.46 | 0.46 |
| Percent of meat expenditures | 25.61 | 25.81 | 27.25 | 27.82 | 28.42 | 28.78 | 29.27 | 29.90 | 30.66 | 31.32 | 32.03 | 32.69 |
| | | | | | | | | | | | | |
| Turkeys, dollars per person | 18.54 | 17.97 | 17.67 | 17.61 | 17.64 | 17.07 | 16.65 | 16.61 | 16.60 | 16.66 | 16.56 | 16.45 |
| Percent of income | 0.09 | 0.08 | 0.08 | 0.07 | 0.07 | 0.06 | 0.06 | 0.06 | 0.05 | 0.05 | 0.05 | 0.05 |
| Percent of meat expenditures | 4.32 | 4.08 | 4.06 | 4.03 | 3.96 | 3.83 | 3.71 | 3.63 | 3.56 | 3.51 | 3.44 | 3.37 |
| | | | | | | | | | | | | |
| Total meat, dollars per person | 428.79 | 440.88 | 435.24 | 437.31 | 445.85 | 445.89 | 448.92 | 457.81 | 466.69 | 474.42 | 481.64 | 488.17 |
| Percent of income | 1.98 | 1.97 | 1.86 | 1.81 | 1.75 | 1.68 | 1.61 | 1.57 | 1.53 | 1.49 | 1.44 | 1.40 |

Table 23. Beef baseline

| Item | Units | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Beginning stocks | Mil. lbs. | 377 | 465 | 400 | 350 | 335 | 350 | 375 | 400 | 425 | 450 | 475 | 475 |
| Commercial production | Mil. lbs. | 25,384 | 25,687 | 24,075 | 23,492 | 23,495 | 24,242 | 24,702 | 24,629 | 24,550 | 24,496 | 24,521 | 24,563 |
| Change | Percent | -0.1 | 1.2 | -6.3 | -2.4 | 0.0 | 3.2 | 1.9 | -0.3 | -0.3 | -0.2 | 0.1 | 0.2 |
| Farm production | Mil. lbs. | 106 | 106 | 106 | 106 | 106 | 106 | 106 | 106 | 106 | 106 | 106 | 106 |
| Total production | Mil. lbs. | 25,490 | 25,793 | 24,181 | 23,598 | 23,601 | 24,348 | 24,808 | 24,735 | 24,656 | 24,602 | 24,627 | 24,669 |
| Imports | Mil. lbs. | 2,343 | 2,611 | 2,790 | 2,800 | 2,800 | 2,750 | 2,700 | 2,700 | 2,650 | 2,650 | 2,600 | 2,600 |
| Total supply | Mil. lbs. | 28,210 | 28,869 | 27,371 | 26,748 | 26,736 | 27,448 | 27,883 | 27,835 | 27,731 | 27,702 | 27,702 | 27,744 |
| Exports | Mil. lbs. | 2,136 | 2,158 | 2,340 | 2,150 | 2,200 | 2,316 | 2,402 | 2,472 | 2,552 | 2,632 | 2,714 | 2,795 |
| Ending stocks | Mil. lbs. | 465 | 400 | 350 | 335 | 350 | 375 | 400 | 425 | 450 | 475 | 475 | 475 |
| Total consumption | Mil. lbs. | 25,609 | 26,311 | 24,681 | 24,263 | 24,186 | 24,757 | 25,081 | 24,938 | 24,729 | 24,595 | 24,513 | 24,474 |
| Per capita, carcass weight | Pounds | 95.6 | 97.3 | 90.5 | 88.2 | 87.1 | 88.4 | 88.8 | 87.6 | 86.1 | 85.0 | 84.0 | 83.2 |
| Per capita, retail weight | Pounds | 66.9 | 68.1 | 63.4 | 61.7 | 61.0 | 61.9 | 62.2 | 61.3 | 60.3 | 59.5 | 58.8 | 58.2 |
| Change | Percent | -1.8 | 1.8 | -7.0 | -2.5 | -1.2 | 1.5 | 0.5 | -1.4 | -1.7 | -1.3 | -1.2 | -1.0 |
| Prices: | | | | | | | | | | | | | |
| Beef cattle, farm | $/cwt | 63.34 | 59.95 | 71.00 | 70.93 | 72.73 | 72.54 | 73.45 | 75.25 | 77.30 | 79.03 | 80.62 | 82.03 |
| Calves, farm | $/cwt | 82.27 | 82.09 | 93.75 | 96.82 | 90.97 | 86.66 | 89.96 | 93.91 | 97.46 | 99.69 | 101.64 | 103.42 |
| Choice steers, Nebraska | $/cwt | 66.32 | 61.87 | 72.00 | 71.92 | 73.75 | 73.56 | 74.48 | 76.31 | 78.39 | 80.14 | 81.76 | 83.19 |
| Deflated price | $/cwt | 41.32 | 37.86 | 42.91 | 41.70 | 41.43 | 40.11 | 39.43 | 39.23 | 39.12 | 38.83 | 38.46 | 38.00 |
| Yearling steers, Okla. City | $/cwt | 76.19 | 72.60 | 83.50 | 86.24 | 81.02 | 77.19 | 80.12 | 83.64 | 86.80 | 88.79 | 90.52 | 92.11 |
| Deflated price | $/cwt | 47.47 | 44.43 | 49.76 | 49.99 | 45.52 | 42.09 | 42.41 | 43.00 | 43.31 | 43.02 | 42.58 | 42.08 |
| Retail: Beef and veal | 1982-84=100 | 136.8 | 136.5 | 139.0 | 142.1 | 145.7 | 143.5 | 143.6 | 147.2 | 151.1 | 154.2 | 156.9 | 159.2 |
| Retail: Other meats | 1982-84=100 | 148.1 | 146.8 | 148.0 | 151.3 | 155.1 | 152.7 | 152.8 | 156.7 | 160.9 | 164.2 | 167.1 | 169.4 |
| ERS retail beef | $/lb. | 2.80 | 2.76 | 2.83 | 2.89 | 2.97 | 2.92 | 2.92 | 3.00 | 3.08 | 3.14 | 3.19 | 3.24 |
| Costs and returns, cow-calf enterprise: | | | | | | | | | | | | | |
| Variable expenses | $/cow | 216.91 | 211.87 | 193.62 | 194.65 | 201.85 | 212.96 | 222.22 | 228.20 | 232.46 | 236.83 | 241.29 | 246.49 |
| Fixed expenses | $/cow | 118.52 | 119.55 | 123.72 | 127.20 | 129.99 | 132.80 | 136.09 | 140.04 | 144.03 | 147.61 | 150.98 | 154.62 |
| Total cash expenses | $/cow | 335.43 | 331.42 | 317.34 | 321.86 | 331.84 | 345.76 | 358.31 | 368.24 | 376.49 | 384.44 | 392.26 | 401.11 |
| Returns above cash costs | $/cow | -1.03 | -18.95 | 44.49 | 57.96 | 32.85 | 7.44 | 12.53 | 23.96 | 35.85 | 42.64 | 48.36 | 52.47 |
| Cattle inventory | 1,000 head | 101,460 | 99,501 | 97,577 | 96,742 | 97,697 | 99,189 | 99,544 | 99,032 | 98,368 | 97,814 | 97,445 | 97,129 |
| Beef cow inventory | 1,000 head | 34,271 | 33,683 | 32,925 | 32,241 | 32,755 | 33,233 | 33,376 | 33,156 | 32,942 | 32,820 | 32,777 | 32,756 |

Table 24. Pork baseline

| Item | Units | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Beginning stocks | Mil. lbs. | 366 | 408 | 475 | 490 | 450 | 450 | 450 | 450 | 400 | 400 | 400 | 400 |
| Commercial production | Mil. lbs. | 17,244 | 18,942 | 19,425 | 19,214 | 19,253 | 19,659 | 20,018 | 20,223 | 20,456 | 20,823 | 21,274 | 21,757 |
| Change | Percent | 0.9 | 9.8 | 2.5 | -1.1 | 0.2 | 2.1 | 1.8 | 1.0 | 1.2 | 1.8 | 2.2 | 2.3 |
| Farm production | Mil. lbs. | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |
| Total production | Mil. lbs. | 17,274 | 18,972 | 19,455 | 19,244 | 19,283 | 19,689 | 20,048 | 20,253 | 20,486 | 20,853 | 21,304 | 21,787 |
| Imports | Mil. lbs. | 633 | 680 | 700 | 660 | 640 | 635 | 645 | 650 | 650 | 660 | 665 | 670 |
| Total supply | Mil. lbs. | 18,273 | 20,060 | 20,630 | 20,394 | 20,373 | 20,774 | 21,143 | 21,353 | 21,536 | 21,913 | 22,369 | 22,857 |
| Exports | Mil. lbs. | 1,044 | 1,232 | 1,355 | 1,270 | 1,300 | 1,325 | 1,425 | 1,525 | 1,600 | 1,700 | 1,800 | 1,875 |
| Ending stocks | Mil. lbs. | 408 | 475 | 490 | 450 | 450 | 450 | 450 | 400 | 400 | 400 | 400 | 400 |
| Total consumption | Mil. lbs. | 16,821 | 18,353 | 18,785 | 18,674 | 18,623 | 18,999 | 19,268 | 19,428 | 19,536 | 19,813 | 20,169 | 20,582 |
| Per capita, carcass weight | Pounds | 62.8 | 67.9 | 68.9 | 67.9 | 67.1 | 67.9 | 68.2 | 68.2 | 68.0 | 68.4 | 69.1 | 69.9 |
| Per capita, retail weight | Pounds | 48.7 | 52.7 | 53.4 | 52.7 | 52.1 | 52.7 | 52.9 | 53.0 | 52.8 | 53.1 | 53.6 | 54.3 |
| Change | Percent | -0.7 | 8.1 | 1.5 | -1.5 | -1.1 | 1.1 | 0.6 | 0.0 | -0.3 | 0.6 | 1.0 | 1.2 |
| Prices: | | | | | | | | | | | | | |
| Hogs, farm | $/cwt | 52.04 | 33.47 | 33.64 | 35.92 | 38.22 | 37.89 | 37.84 | 38.88 | 39.70 | 39.56 | 38.81 | 37.66 |
| Iowa, So. Minn. market | $/cwt | 51.36 | 32.27 | 33.00 | 35.42 | 37.72 | 37.39 | 37.34 | 38.38 | 39.20 | 39.06 | 38.31 | 37.16 |
| Deflated price | $/cwt | 32.00 | 19.75 | 19.67 | 20.53 | 21.19 | 20.39 | 19.77 | 19.73 | 19.56 | 18.92 | 18.02 | 16.98 |
| Retail: pork | 1982-84=100 | 155.9 | 148.5 | 144.0 | 145.7 | 148.9 | 146.2 | 144.7 | 146.3 | 148.0 | 148.1 | 147.4 | 146.2 |
| ERS retail pork | $/lb. | 2.32 | 2.30 | 2.24 | 2.27 | 2.32 | 2.27 | 2.25 | 2.28 | 2.30 | 2.30 | 2.29 | 2.27 |
| Costs and returns, farrow to finish: | | | | | | | | | | | | | |
| Variable expenses | $/cwt | 41.38 | 35.93 | 29.20 | 26.48 | 26.54 | 28.88 | 30.76 | 31.55 | 31.74 | 31.95 | 32.18 | 32.65 |
| Fixed expenses | $/cwt | 4.98 | 5.15 | 5.18 | 5.21 | 5.20 | 5.21 | 5.24 | 5.30 | 5.37 | 5.42 | 5.48 | 5.55 |
| Total cash expenses | $/cwt | 46.36 | 41.08 | 34.38 | 31.68 | 31.75 | 34.09 | 36.00 | 36.85 | 37.11 | 37.38 | 37.65 | 38.20 |
| Returns above cash costs | $/cwt | 5.00 | -8.81 | -1.38 | 3.74 | 5.97 | 3.29 | 1.34 | 1.53 | 2.09 | 1.68 | 0.66 | -1.03 |
| Hog inventory, Dec. 1, previous year | 1,000 head | 56,141 | 60,915 | 62,200 | 61,566 | 61,684 | 62,901 | 63,978 | 64,590 | 65,290 | 66,388 | 67,741 | 69,188 |

Table 25. Young chicken baseline

| Item | Units | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Beginning stocks | Mil. lbs. | 641 | 607 | 625 | 650 | 650 | 700 | 700 | 700 | 750 | 750 | 800 | 800 |
| Federally inspected slaughter | Mil. lbs. | 27,271 | 27,798 | 29,225 | 30,689 | 31,789 | 32,899 | 33,965 | 35,066 | 36,249 | 37,493 | 38,763 | 40,029 |
| Change | Percent | 3.6 | 1.9 | 5.1 | 5.0 | 3.6 | 3.5 | 3.2 | 3.2 | 3.4 | 3.4 | 3.4 | 3.3 |
| Production | Mil. lbs. | 27,041 | 27,554 | 28,968 | 30,442 | 31,533 | 32,634 | 33,692 | 34,783 | 35,957 | 37,191 | 38,451 | 39,707 |
| Total supply | Mil. lbs. | 27,682 | 28,161 | 29,593 | 31,092 | 32,183 | 33,334 | 34,392 | 35,483 | 36,707 | 37,941 | 39,251 | 40,507 |
| Change | Percent | 3.7 | 1.7 | 5.1 | 5.1 | 3.5 | 3.6 | 3.2 | 3.2 | 3.4 | 3.4 | 3.5 | 3.2 |
| Exports | Mil. lbs. | 4,664 | 4,466 | 4,325 | 4,450 | 4,700 | 5,000 | 5,250 | 5,500 | 5,750 | 6,000 | 6,250 | 6,500 |
| Ending stocks | Mil. lbs. | 607 | 625 | 650 | 650 | 700 | 700 | 700 | 750 | 750 | 800 | 800 | 800 |
| Consumption | Mil. lbs. | 22,411 | 23,070 | 24,618 | 25,992 | 26,783 | 27,634 | 28,442 | 29,233 | 30,207 | 31,141 | 32,201 | 33,207 |
| Per capita, carcass weight | Pounds | 83.7 | 85.3 | 90.2 | 94.4 | 96.5 | 98.7 | 100.7 | 102.7 | 105.2 | 107.6 | 110.3 | 112.8 |
| Per capita, retail weight | Pounds | 72.7 | 74.1 | 78.4 | 82.0 | 83.9 | 85.8 | 87.5 | 89.2 | 91.4 | 93.5 | 95.9 | 98.0 |
| Change | Percent | 2.8 | 1.9 | 5.7 | 4.7 | 2.2 | 2.3 | 2.0 | 2.0 | 2.4 | 2.3 | 2.5 | 2.3 |
| Prices: | | | | | | | | | | | | | |
| Broilers, farm | Cents/lb. | 37.0 | 39.6 | 36.3 | 35.9 | 38.0 | 38.6 | 39.8 | 41.6 | 43.2 | 44.4 | 45.2 | 45.7 |
| 12-city market price | Cents/lb. | 58.8 | 62.8 | 58.3 | 59.9 | 63.3 | 64.4 | 66.3 | 69.4 | 72.0 | 74.0 | 75.3 | 76.2 |
| Deflated wholesale price | Cents/lb. | 36.6 | 38.4 | 34.7 | 34.7 | 35.5 | 35.1 | 35.1 | 35.7 | 35.9 | 35.8 | 35.4 | 34.8 |
| Change | Percent | -6.1 | 4.9 | -9.6 | -0.1 | 2.4 | -1.2 | 0.0 | 1.6 | 0.8 | -0.3 | -1.1 | -1.7 |
| Composite retail broiler price | Cents/lb. | 151.0 | 153.5 | 151.3 | 148.3 | 151.1 | 149.6 | 150.1 | 153.4 | 156.5 | 158.9 | 160.9 | 162.8 |
| Costs and returns: | | | | | | | | | | | | | |
| Total costs | Cents/lb. | 53.00 | 49.00 | 48.40 | 48.47 | 49.01 | 53.50 | 57.18 | 58.98 | 59.76 | 60.56 | 61.37 | 62.62 |
| Net returns | Cents/lb. | 5.80 | 13.80 | 9.90 | 11.40 | 14.26 | 10.89 | 9.12 | 10.39 | 12.28 | 13.39 | 13.92 | 13.62 |

Table 26. Turkey baseline

| Item | Units | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Beginning stocks | Mil. lbs. | 328 | 415 | 300 | 275 | 325 | 375 | 375 | 375 | 375 | 375 | 350 | 350 |
| Federally inspected slaughter | Mil. lbs. | 5,478 | 5,237 | 5,250 | 5,379 | 5,464 | 5,543 | 5,569 | 5,575 | 5,592 | 5,619 | 5,652 | 5,692 |
| Change | Percent | 0.2 | -4.4 | 0.2 | 2.5 | 1.6 | 1.4 | 0.5 | 0.1 | 0.3 | 0.5 | 0.6 | 0.7 |
| Production | Mil. lbs. | 5,412 | 5,173 | 5,186 | 5,315 | 5,399 | 5,477 | 5,503 | 5,509 | 5,526 | 5,553 | 5,586 | 5,624 |
| Total supply | Mil. lbs. | 5,740 | 5,588 | 5,486 | 5,590 | 5,724 | 5,852 | 5,878 | 5,884 | 5,901 | 5,928 | 5,936 | 5,974 |
| Change | Percent | 1.2 | -2.6 | -1.8 | 1.9 | 2.4 | 2.2 | 0.4 | 0.1 | 0.3 | 0.4 | 0.1 | 0.7 |
| Exports | Mil. lbs. | 598 | 428 | 430 | 450 | 500 | 600 | 700 | 775 | 800 | 825 | 850 | 875 |
| Ending stocks | Mil. lbs. | 415 | 300 | 275 | 325 | 375 | 375 | 375 | 375 | 375 | 350 | 350 | 350 |
| Consumption | Mil. lbs. | 4,727 | 4,860 | 4,781 | 4,815 | 4,849 | 4,877 | 4,803 | 4,734 | 4,726 | 4,753 | 4,736 | 4,749 |
| Per capita | Pounds | 17.6 | 18.0 | 17.5 | 17.5 | 17.5 | 17.4 | 17.0 | 16.6 | 16.5 | 16.4 | 16.2 | 16.1 |
| Change | Percent | -4.5 | 1.9 | -2.5 | -0.2 | -0.2 | -0.3 | -2.4 | -2.2 | -1.0 | -0.3 | -1.2 | -0.5 |
| Prices: | | | | | | | | | | | | | |
| Turkey, farm | Cents/lb. | 40.1 | 38.0 | 38.0 | 37.4 | 37.6 | 36.5 | 36.4 | 37.2 | 37.5 | 37.7 | 38.0 | 37.9 |
| Hen turkey (whsle.) East | Cents/lb. | 64.9 | 62.0 | 62.5 | 62.4 | 62.6 | 60.8 | 60.7 | 61.9 | 62.5 | 62.9 | 63.3 | 63.2 |
| Deflated hen turkey | Cents/lb. | 40.4 | 37.9 | 37.2 | 36.2 | 35.2 | 33.1 | 32.1 | 31.9 | 31.2 | 30.5 | 29.8 | 28.9 |
| Retail frozen turkey | Cents/lb. | 105.1 | 100.0 | 100.8 | 100.6 | 101.0 | 98.0 | 97.9 | 99.9 | 100.8 | 101.5 | 102.1 | 101.9 |
| Retail: poultry | 1982-84=100 | 156.6 | 157.1 | 154.5 | 152.0 | 154.4 | 152.3 | 152.7 | 155.9 | 158.8 | 160.9 | 162.7 | 164.2 |
| Costs and returns: | | | | | | | | | | | | | |
| Total costs | Cents/lb. | 68.73 | 62.00 | 59.93 | 59.07 | 59.74 | 65.20 | 64.01 | 62.62 | 61.97 | 61.97 | 61.98 | 62.21 |
| Net returns | Cents/lb. | -3.83 | 0.00 | 2.57 | 3.33 | 2.87 | -4.43 | -3.30 | -0.67 | 0.56 | 0.94 | 1.31 | 0.99 |

Table 27.  Egg baseline

| Item | Units | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Beginning stocks | Mil. doz. | 9 | 7 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| Production | Mil. doz. | 6,460 | 6,625 | 6,790 | 6,905 | 7,016 | 7,121 | 7,192 | 7,300 | 7,373 | 7,484 | 7,559 | 7,672 |
| Change | Percent | 1.4 | 2.6 | 2.5 | 1.7 | 1.6 | 1.5 | 1.0 | 1.5 | 1.0 | 1.5 | 1.0 | 1.5 |
| Imports | Mil. doz. | 7 | 4 | 6 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| Total supply | Mil. doz. | 6,476 | 6,636 | 6,801 | 6,914 | 7,026 | 7,131 | 7,202 | 7,310 | 7,383 | 7,494 | 7,569 | 7,682 |
| Change | Percent | 1.4 | 2.5 | 2.5 | 1.7 | 1.6 | 1.5 | 1.0 | 1.5 | 1.0 | 1.5 | 1.0 | 1.5 |
| Hatching use | Mil. doz. | 895 | 922 | 970 | 1,019 | 1,055 | 1,092 | 1,127 | 1,164 | 1,203 | 1,244 | 1,287 | 1,329 |
| Exports | Mil. doz. | 228 | 226 | 243 | 260 | 270 | 275 | 280 | 285 | 290 | 295 | 300 | 305 |
| Ending stocks | Mil. doz. | 7 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| Consumption | Mil. doz. | 5,345 | 5,483 | 5,583 | 5,631 | 5,696 | 5,759 | 5,790 | 5,856 | 5,885 | 5,949 | 5,977 | 6,043 |
| Per capita | Number | 239.4 | 243.3 | 245.6 | 245.5 | 246.2 | 246.8 | 246.0 | 246.8 | 246.0 | 246.6 | 245.7 | 246.4 |
| Change | Percent | 0.7 | 1.6 | 0.9 | 0.0 | 0.3 | 0.2 | -0.3 | 0.3 | -0.3 | 0.3 | -0.4 | 0.3 |
| Prices: | | | | | | | | | | | | | |
| Eggs, farm | Cents/doz. | 69.8 | 65.5 | 62.4 | 60.1 | 57.5 | 56.7 | 60.6 | 58.8 | 64.9 | 60.6 | 64.9 | 60.6 |
| New York, Grade A large | Cents/doz. | 81.2 | 76.0 | 72.5 | 69.5 | 66.5 | 65.5 | 70.0 | 68.0 | 75.0 | 70.0 | 75.0 | 70.0 |
| Deflated wholesale prices | Cents/doz. | 50.6 | 46.5 | 43.2 | 40.3 | 37.4 | 35.7 | 37.1 | 35.0 | 37.4 | 33.9 | 35.3 | 32.0 |
| Retail, Grade A, large | Cents/doz. | 106 | 104 | 101 | 97 | 93 | 92 | 97 | 95 | 103 | 98 | 103 | 98 |
| Retail: Eggs | 1982-84=100 | 140.0 | 135.4 | 132.5 | 128.6 | 124.6 | 124.0 | 131.5 | 130.2 | 142.0 | 135.5 | 144.0 | 137.5 |
| Costs and returns: | | | | | | | | | | | | | |
| Total costs | Cents/doz. | 72.00 | 63.11 | 60.00 | 55.13 | 55.75 | 60.85 | 65.04 | 67.09 | 67.97 | 68.88 | 69.81 | 71.23 |
| Net returns | Cents/doz. | 9.20 | 12.89 | 12.50 | 14.37 | 10.75 | 4.65 | 4.96 | 0.91 | 7.03 | 1.12 | 5.19 | -1.23 |

Table 28.  Dairy baseline

| Item | Units | 1997/98 | 1998/99 | 1999/2000 | 2000/01 | 2001/02 | 2002/03 | 2003/04 | 2004/05 | 2005/06 | 2006/07 | 2007/08 | 2008/09 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Production data: | | | | | | | | | | | | | |
| Milk production | Bil. lbs. | 157.0 | 159.3 | 162.9 | 163.7 | 165.2 | 166.7 | 169.0 | 170.3 | 172.3 | 174.3 | 176.7 | 178.3 |
| Number of cows | 1,000 | 9,200 | 9,150 | 9,100 | 9,000 | 8,910 | 8,830 | 8,765 | 8,680 | 8,605 | 8,530 | 8,455 | 8,380 |
| Milk per cow | Pounds | 17,065 | 17,405 | 17,905 | 18,185 | 18,540 | 18,875 | 19,280 | 19,615 | 20,020 | 20,430 | 20,900 | 21,275 |
| Commercial use: | | | | | | | | | | | | | |
| Milkfat basis | Bil. lbs. | 159.1 | 161.4 | 164.1 | 165.0 | 166.3 | 167.7 | 170.2 | 171.4 | 173.6 | 175.5 | 178.1 | 179.6 |
| Skim solids | Bil. lbs. | 155.4 | 158.2 | 163.2 | 164.7 | 166.1 | 167.5 | 170.0 | 171.2 | 173.4 | 175.3 | 178.0 | 179.4 |
| Net removals: | | | | | | | | | | | | | |
| Milkfat basis | Bil. lbs. | 0.7 | 0.3 | 0.9 | 0.9 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| Skim solids | Bil. lbs. | 4.5 | 3.5 | 2.1 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 |
| Prices: | | | | | | | | | | | | | |
| Basic Formula Price | $/cwt | 13.28 | 13.15 | 11.90 | 12.85 | 13.45 | 14.10 | 14.60 | 14.85 | 15.15 | 15.45 | 15.75 | 16.05 |
| All milk | $/cwt | 14.56 | 14.90 | 13.00 | 13.95 | 14.55 | 15.20 | 15.70 | 15.95 | 16.25 | 16.55 | 16.85 | 17.15 |
| Retail, all dairy products | 1982-84=100 | 148.6 | 156.5 | 153.0 | 155.5 | 160.0 | 164.5 | 168.5 | 171.5 | 175.0 | 178.0 | 182.0 | 185.0 |
| Costs and returns: | | | | | | | | | | | | | |
| Ration value | $/cwt | 8.12 | 7.11 | 6.80 | 6.85 | 7.35 | 7.80 | 8.10 | 8.25 | 8.35 | 8.45 | 8.55 | 8.75 |
| Returns above concentrate costs | $/cwt | 11.15 | 11.91 | 10.14 | 11.07 | 11.46 | 11.92 | 12.30 | 12.49 | 12.74 | 13.00 | 13.26 | 13.48 |
| Milk-feed ratio | ratio | 1.79 | 2.09 | 1.91 | 2.04 | 1.98 | 1.95 | 1.94 | 1.93 | 1.95 | 1.96 | 1.97 | 1.96 |

# Farm Income and Farm Financial Conditions

Farm income and financial conditions in the U.S. agricultural sector reflect adjustments in the near-term, followed by improvements beyond 2000 through the end of the baseline. The agricultural sector remains financially strong in the aggregate throughout the projections.

## Net Farm Income

Net farm income is projected to be lower in the short-term, but prospects are for income gains beyond 2000. Farm income projections for the 1998-2008 baseline forecast period are similar to levels experienced from 1990 through 1997. Net farm income averaged $45 billion in 1990-97, with a record high of $53.4 billion in 1996. If current projections hold, net farm income for 1998-2008 would average modestly higher than during 1990-97, but would not be likely to reach the 1996 record. In the near term, net farm income has been declining since its peak in 1996, a year of both exceptional harvests and market opportunities. Income is expected to continue declining through 2000, to $43.8 billion, modestly lower than the 1990-97 average. Beyond 2000, net farm income begins climbing to reach a plateau of about $50 billion from 2005 onward. With net farm income falling until 2000 and then growing by only about 1.7 percent per year while inflation (GDP deflator) increases at 3.0 percent per year, the real value of net farm income declines throughout the period of 1998 to 2008.

## Farm Cash Receipts

Cash receipts are lower in 1998-1999 but increase in the 2000s with stronger prices expected. Lower farm commodity receipts, particularly for crops, is the key reason for declining net farm income from 1998 to 2000. Some of the adverse impact of low grain prices on net farm income in 1998 and 1999 is countered by approximately $5.6 billion in additional government support provided under the 1999 Appropriations Act and by declining production expenses. Given price and production projections in the baseline period, crop cash receipts will bottom out in 1999 and begin rising in 2000 and continue to grow through 2008. Total cash receipts from sales of farm commodities can be expected to grow at approximately 3.0 percent from 2000 onward.

Reductions in acreage devoted to corn, wheat, and soybeans, occurring in response to low prices, will likely reverse in the early 2000s. As prices strengthen, largely due to a recovery in agricultural export value, acreage of these crops is expected to rise through the rest of the baseline. With yields also trending upward and strengthened prices, total crop receipts could reach $135 billion by 2008, compared with the $104.7 billion forecast for 1998 (30 percent increase). Prices of major crops over the baseline period, however, are not expected to rise to the levels of 1996.

Livestock receipts, are also expected to grow from a 1998 forecast of $93.4 billion to $118 billion by 2008. Cattle and calves returns represent 44 percent of the increased livestock receipts, pork 10 percent, and broilers 18 percent. Most of the remaining increase comes from dairy production.

Cattle production surged in 1998 due in part to a sustained liquidation of the beef herd (involving both cows and heifers) that led to weak producer prices. In 1999, however, sharply lower supplies of feeder cattle and a comparable drop in beef production are expected. Cattle production is expected to be below the 1998 output through the remainder of the baseline. Lower beef supplies, in turn, are expected to lead to stronger prices, higher cash receipts, and a return to profitability for cattle producers.

The outlook for pork production, prices, and revenue is almost the opposite of cattle. Hog prices in 1999 are expected to remain near 1998 levels, which were significantly below 1997 and any other year in the decade before. Further, hog prices are expected increase only marginally through 2008, and will not approach the average price of $47 a hundredweight for the 1988-1997 period. A moderate expansion of hog output is anticipated through 2008. Significant structural changes that have been occurring in recent years have lowered the cost of production and may have lengthened producers' planning periods. For large operations and for producers under contracts to processors with substantial investments in existing plants, production plans may be based more on the outlook for prospects over several years rather than several months. Earnings of the producers under contract are determined by fee schedules established in the contract and are not based on cash market prices. Overall, total annual revenue from hog production is likely to remain close to the average for the previous decade.

Broiler production is projected to rise in 1999 due to a substantial decline in feed costs and the higher prices that led to increasing profitability during 1998. For the rest of the baseline, both quantity and prices are expected to continue rising. Broiler output has been steadily rising over the last decade, and shows no indication of changing course.

**Government Payments**

Additional government assistance bolsters gross income in the short term, but without new programs government payments will be a declining share of sector revenue. Expected government payments for 1998 and 1999 changed substantially due to:

    C   supplemental support from the provisions of last fall's appropriations bill (the Omnibus Consolidated and Emergency Supplemental Appropriations Act for Fiscal Year 1999),

    C   the emerging importance of loan deficiency payments, and

    C   the offer to farmers of taking 100 percent of their fiscal year 1999 production flexibility contract payments before January 1, 1999.

Disbursement of disaster relief funds, market loss assistance payments, and loan deficiency payments significantly boosted government payments in 1998 and 1999. Current projections are for $12.9 billion to be received by farmers by the end of calendar 1998 and $11.3 billion in 1999. With the exception of 1993, these are the highest levels of direct government payments in the 1990s. Barring program changes, government payments will decline in 2000 and remain lower through 2008.

The 1996 Farm Act's production flexibility were pegged to a declining budget allocation. Regardless of commodity prices, participants would have received about $5.7 billion in production flexibility payments in 1998 and $5.5 billion in 1999. Legislation enacted in the summer of 1998 changed the rules so that farmers could elect to take all of their fiscal 1999 production flexibility payments any time in the fiscal year (instead of a limit of 50 percent of the fiscal year's PFC payments in December, under payment timing provisions of the 1996 Farm Act), potentially shifting payments from calendar year 1999 to calendar 1998. It was assumed that some farmers, particularly those in areas affected most by climatic disasters and lower prices for grains and soybeans, took their entire fiscal 1999 payment in calendar year 1998 rather than waiting. This action does not increase payment levels, but simply shifts amounts between the calendar years.

However, almost $6.0 billion of new funding was introduced in the October appropriations bill that does affect the agricultural sector, of which about $5.6 billion is expected be disbursed as direct government payments in 1998 and 1999. An amount of $2.857 billion was intended as market loss assistance payments, to be paid before the end of the calendar year 1998 (proportionate to the fiscal 1998 payments under production flexibility contracts). The bulk of the remaining funding is intended for disaster payments. Most of the disaster component is likely to be disbursed in calendar 1999.

Loan deficiency payments (see Marketing Assistance Loans and Loan Deficiency Payments box, page 25) emerged as a significant portion of direct government payments in 1998, rising to more than $1.5 billion. Current expectations are that loan deficiency payments will be still higher in 1999 and 2000, but will then decline as commodity prices strengthen later in the baseline.

Government payments are forecast to be over 5 percent of gross cash income for 1998 and 1999, then decline to 3 percent by 2002 and to slightly over 2 percent by 2008. Unless new policies and programs develop, government payments will be a small part of farm revenues by the end of the period.

**Farm Production Expenses**

A recent decline in farm production expenses is helping to offset lower cash receipts in the near term, but the long-term trend is toward increased expenses. Countering a long-term trend, production expenses are expected to be lower in 1998 and 1999. By the end of 1998, interest rates and fuel prices were at the lowest levels seen in recent years and will help farmers hold down production costs in 1999. Low fuel prices should translate into stable to lower fertilizer prices. Lower grain prices have contributed to lower costs for feed and for livestock feeders. Also, farmers likely sought lower rental rates from landlords in response to lower crop returns per acre.

Beginning with 2000, farm production expenses are expected to begin growing again. Farm expenses are projected to rise almost as rapidly as farm receipts, limiting the growth in net farm income during the next decade. The cost of farm-origin inputs, which represent approximately 25 percent of expenses, is expected to increase. The higher crop prices projected will increase feed costs for livestock producers. Higher cattle prices, due to lower overall cattle production, will

result in more expensive feeder calves and replacements. Expanded crop acreage will increase expenditures for seeds.

Expenditures on manufactured farm inputs are expected to increase more rapidly than inputs of farm origin. Low prices of fuel and oil in 1998 and 1999 are not expected to continue. Even with larger equipment and field crop practices which reduce machinery use per acre, overall costs of fuel and oil are expected to increase. Fertilizer and pesticide expenses also are expected to increase, reflecting higher prices and expanding area planted.

Hired labor expenses, about 12 percent of total production costs, are expected to increase an average of 2.5 percent annually.

While interest rates for both farm real estate and production expense are forecast to be stable over the 1998-2008 period, total interest expenditures are expected to rise as a result of increasing debt. Debt from nonreal estate loans rises more than real estate debt, related to larger planted area and increased operating loans. Even so the share of production costs represented by interest payments is about 8.6 percent in 1998 and is expected to decline slightly by the end of the period.

Rental payments to nonoperator landlords are expected to fall in the short term, with lower expected crop earnings, but they are most likely to rise again as crop receipts begin rising and area planted increases. The projection is for rental expenditures to rise by about 28 percent by the 2008.

**Farm Balance Sheet**

In large part, the viability of the farm economy is represented by the financial soundness of the balance sheet. Assets continue to increase in value through the baseline, although at a slower rates for 1998 and 1999 than in the recent past. Growth in farm debt is expected to level off in the short-term, but when debt begins to grow again it will be at a lower rate than farm assets, so farm equity will continue to expand. Farmers' equity in agricultural assets is projected to increase through the baseline, reaching $1.4 trillion by 2008.

Most, but not all, financial problems faced by producers in 1999 will be cash-flow related. These cash-flow difficulties, however, will reflect different conditions than in the early 1980s. At that time, falling asset values and excessive debt in the farm sector together with high inflation and interest rates in a fragile general economy triggered a widespread financial crisis. For 1998 through 2000, while many farms may struggle with cash flow due to low commodity prices and the inevitable occurrences of unfavorable weather, overall financial prospects for the sector look fairly good.

Farm real estate, which represents the largest component of farm assets, is expected to increase in value in 1999, partly due to favorable returns to assets and relatively low inflation and borrowing costs. While net farm income has been falling since 1996, cash receipts remain historically high and are expected to rise over the baseline period, returns to farm assets are favorable, and borrowing costs and inflation are relatively low. These factors provide the

foundation for continued growth in farm real estate values. In addition, nonfarm demand for farmland in many parts of the nation supports farm real estate values.

As a measure of the solvency of the farm sector, the debt-to-asset ratio will remain favorable for 1998-1999 and is forecast to decline continually through 2008, indicating that the agricultural sector will remain financially strong. The debt-to-asset ratio indicates the relative dependence of farm businesses on debt and their ability to use additional credit without impairing their risk-bearing ability.

Table 29. Farm receipts, expenses, and incomes in nominal dollars

| | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Billion dollars* | | | | | | | | | | | |
| Cash receipts: | | | | | | | | | | | | |
|   Crops | 112.1 | 104.7 | 102.0 | 104.4 | 108.3 | 114.0 | 119.0 | 123.0 | 126.2 | 129.2 | 132.1 | 135.4 |
|   Livestock and products | 96.6 | 93.4 | 96.0 | 94.9 | 97.7 | 100.1 | 103.9 | 107.2 | 110.4 | 112.8 | 115.6 | 117.8 |
|   All commodities | 208.7 | 198.0 | 198.0 | 199.3 | 206.0 | 214.1 | 222.9 | 230.2 | 236.6 | 242.0 | 247.7 | 253.2 |
| Farm-related income | 11.8 | 11.8 | 11.6 | 11.6 | 11.7 | 11.7 | 11.8 | 11.9 | 11.9 | 12.0 | 12.0 | 12.1 |
| Government payments | 7.5 | 12.9 | 11.3 | 9.2 | 7.8 | 6.7 | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 |
| Gross cash income | 228.0 | 222.7 | 220.9 | 220.1 | 225.4 | 232.5 | 240.8 | 248.2 | 254.6 | 260.0 | 265.8 | 271.3 |
| | | | | | | | | | | | | |
| Cash expenses | 167.2 | 163.6 | 164.3 | 167.5 | 172.3 | 178.8 | 185.9 | 191.9 | 197.5 | 202.9 | 208.4 | 214.5 |
| Net cash income | 60.8 | 59.1 | 56.6 | 52.7 | 53.2 | 53.7 | 55.0 | 56.2 | 57.1 | 57.1 | 57.4 | 56.9 |
| | | | | | | | | | | | | |
| Value of inventory change | -0.4 | -1.0 | -0.4 | 0.7 | 1.2 | 0.9 | 0.4 | 0.2 | 0.3 | 0.2 | 0.1 | 0.0 |
| Non-money income | 10.7 | 11.3 | 11.9 | 11.9 | 11.9 | 12.0 | 12.1 | 12.2 | 12.2 | 12.5 | 12.7 | 13.0 |
| Gross farm income | 238.3 | 233.0 | 232.4 | 232.7 | 238.6 | 245.4 | 253.4 | 260.5 | 267.1 | 272.7 | 278.7 | 284.3 |
| | | | | | | | | | | | | |
| Noncash expenses | 15.8 | 15.9 | 16.1 | 15.8 | 15.3 | 14.9 | 14.5 | 13.9 | 13.2 | 13.3 | 13.4 | 13.6 |
| Operator dwelling expenses | 5.5 | 5.6 | 5.7 | 5.7 | 5.7 | 5.7 | 5.7 | 5.8 | 5.8 | 5.8 | 5.8 | 5.8 |
| Total production expenses | 188.4 | 185.1 | 186.1 | 188.9 | 193.3 | 199.4 | 206.1 | 211.6 | 216.6 | 222.0 | 227.6 | 233.9 |
| Net farm income | 49.8 | 48.0 | 46.4 | 43.8 | 45.3 | 46.0 | 47.3 | 49.0 | 50.5 | 50.6 | 51.0 | 50.4 |
| | | | | | | | | | | | | |
| Farm assets | 1,088.8 | 1,124.7 | 1,162.9 | 1,189.2 | 1,226.0 | 1,271.0 | 1,325.0 | 1,381.2 | 1,436.4 | 1,488.8 | 1,547.6 | 1,607.2 |
| Farm debt | 165.4 | 170.4 | 169.1 | 173.6 | 177.6 | 182.8 | 188.4 | 193.5 | 198.7 | 203.5 | 208.3 | 213.6 |
| Farm equity | 923.4 | 954.3 | 993.8 | 1,015.6 | 1,048.4 | 1,088.1 | 1,136.6 | 1,187.7 | 1,237.7 | 1,285.4 | 1,339.3 | 1,393.6 |
| | *Percent* | | | | | | | | | | | |
| Debt/equity ratio | 17.9 | 17.9 | 17.0 | 17.1 | 16.9 | 16.8 | 16.6 | 16.3 | 16.1 | 15.8 | 15.6 | 15.3 |
| Debt/assets ratio | 15.2 | 15.2 | 14.5 | 14.6 | 14.5 | 14.4 | 14.2 | 14.0 | 13.8 | 13.7 | 13.5 | 13.3 |

Table 30. Farm receipts, expenses, and incomes in 1992 dollars

| | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Billion 1992 dollars 1/* | | | | | | | | | | | |
| Cash receipts: | | | | | | | | | | | | |
|   Crops | 100.5 | 92.4 | 87.9 | 87.5 | 88.1 | 90.1 | 91.4 | 91.8 | 91.6 | 91.1 | 90.5 | 90.2 |
|   Livestock and products | 86.6 | 82.4 | 82.7 | 79.6 | 79.5 | 79.1 | 79.9 | 80.1 | 80.2 | 79.6 | 79.2 | 78.5 |
|   All commodities | 187.0 | 174.9 | 170.6 | 167.2 | 167.6 | 169.3 | 171.3 | 171.9 | 171.7 | 170.7 | 169.8 | 168.6 |
| Farm-related income | 10.6 | 10.4 | 10.0 | 9.7 | 9.5 | 9.3 | 9.1 | 8.9 | 8.7 | 8.4 | 8.2 | 8.1 |
| Government payments | 6.7 | 11.4 | 9.7 | 7.7 | 6.3 | 5.3 | 4.7 | 4.5 | 4.4 | 4.3 | 4.1 | 4.0 |
| Gross cash income | 204.3 | 196.7 | 190.3 | 184.7 | 183.4 | 183.9 | 185.1 | 185.3 | 184.8 | 183.4 | 182.2 | 180.7 |
| | | | | | | | | | | | | |
| Cash expenses | 149.8 | 144.5 | 141.5 | 140.5 | 140.2 | 141.4 | 142.8 | 143.3 | 143.4 | 143.1 | 142.8 | 142.9 |
| Net cash income | 54.5 | 52.2 | 48.8 | 44.2 | 43.2 | 42.5 | 42.3 | 42.0 | 41.4 | 40.3 | 39.3 | 37.9 |
| | | | | | | | | | | | | |
| Value of inventory change | -0.4 | -0.9 | -0.3 | 0.6 | 1.0 | 0.7 | 0.3 | 0.2 | 0.2 | 0.1 | 0.1 | 0.0 |
| Non-money income | 9.6 | 10.0 | 10.2 | 10.0 | 9.7 | 9.5 | 9.3 | 9.1 | 8.9 | 8.8 | 8.7 | 8.6 |
| Gross farm income | 213.6 | 205.8 | 200.2 | 195.2 | 194.1 | 194.0 | 194.7 | 194.6 | 193.8 | 192.3 | 191.0 | 189.4 |
| | | | | | | | | | | | | |
| Noncash expenses | 14.1 | 14.0 | 13.9 | 13.2 | 12.5 | 11.8 | 11.1 | 10.4 | 9.6 | 9.4 | 9.2 | 9.0 |
| Operator dwelling expenses | 4.9 | 4.9 | 4.9 | 4.8 | 4.6 | 4.5 | 4.4 | 4.3 | 4.2 | 4.1 | 4.0 | 3.9 |
| Total expenses | 168.9 | 163.4 | 160.3 | 158.5 | 157.3 | 157.7 | 158.4 | 158.0 | 157.2 | 156.6 | 156.0 | 155.8 |
| Net farm income | 44.7 | 42.3 | 40.0 | 36.7 | 36.8 | 36.4 | 36.4 | 36.6 | 36.6 | 35.7 | 35.0 | 33.6 |
| | | | | | | | | | | | | |
| Farm assets | 975.9 | 993.2 | 1,001.9 | 997.6 | 997.5 | 1,005.0 | 1,018.2 | 1,031.5 | 1,042.4 | 1,050.0 | 1,060.7 | 1,070.5 |
| Farm debt | 148.3 | 150.5 | 145.7 | 145.6 | 144.5 | 144.6 | 144.8 | 144.5 | 144.2 | 143.5 | 142.8 | 142.3 |
| Farm equity | 827.7 | 842.7 | 856.2 | 852.0 | 853.0 | 860.4 | 873.4 | 886.9 | 898.2 | 906.5 | 918.0 | 928.2 |

1/ Nominal dollar values divided by the GDP deflator.

# Food Prices and Expenditures

The Consumer Price Index (CPI) for food is projected to rise moderately in the baseline, increasing at an average rate of about 2.3 percent from 1998 to 2008.  This compares to a 3.0-percent average rise expected in the CPI for all items, continuing a long-term trend of food prices increasing at slightly less than the general inflation rate.  Moderate but steady economic growth, with sustained increases in disposable personal income, will have a positive impact on consumer demand for food.

Increases for prices for food away from home, which contain a large service component, are being held down by competition in the food industry.  As a result, away-from-home prices rise at a moderate annual average rate of about 2.4 percent from 1998 to 2008.  Prices for food at home also increase about 2.2 percent per year.  For foods purchased for consumption at home, the strongest price increases generally occur among the more highly processed foods such as cereals and bakery products and other prepared foods.  Prices for these foods are related more to the costs of processing and marketing than to the costs of farm commodities and, therefore, rise at a rate close to the general inflation rate.

Total food expenditures rise at a 3.8-percent average annual rate in the baseline.  Expenditures for meals eaten away from home account for a growing share of food spending, reaching almost half of total food expenditures by 2008.  Growth in expenditures for food eaten away from home will average 4.4 percent a year while expenditures for food at home will rise 3.2 percent annually.

Table 31.  Consumer food price indexes and food expenditures baseline

| CPI category | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Consumer price indexes:** | | | | | | | *1982-84=100* | | | | | | |
| All food | 153.3 | 157.3 | 160.7 | 163.9 | 166.9 | 171.3 | 174.8 | 178.9 | 183.4 | 188.2 | 192.6 | 197.2 | 201.5 |
| Food away from home | 152.7 | 157.0 | 161.1 | 165.1 | 168.8 | 173.1 | 177.3 | 181.6 | 185.9 | 190.4 | 195.0 | 199.7 | 204.4 |
| Food at home | 154.3 | 158.1 | 161.1 | 163.8 | 166.4 | 170.9 | 174.1 | 178.0 | 182.7 | 187.6 | 191.9 | 196.5 | 200.6 |
| Meats | 140.2 | 144.4 | 141.6 | 142.0 | 144.8 | 148.3 | 145.9 | 145.5 | 148.6 | 151.9 | 154.2 | 155.9 | 157.2 |
| Beef and veal | 134.5 | 136.8 | 136.5 | 139.0 | 142.1 | 145.7 | 143.5 | 143.6 | 147.2 | 151.1 | 154.2 | 156.9 | 159.2 |
| Pork | 148.2 | 155.9 | 148.5 | 144.0 | 145.7 | 148.9 | 146.2 | 144.7 | 146.3 | 148.0 | 148.1 | 147.4 | 146.2 |
| Other meats | 144.0 | 148.1 | 146.8 | 148.0 | 151.3 | 155.1 | 152.7 | 152.8 | 156.7 | 160.9 | 164.2 | 167.1 | 169.4 |
| Poultry | 152.4 | 156.6 | 157.1 | 154.5 | 152.0 | 154.4 | 152.3 | 152.7 | 155.9 | 158.8 | 160.9 | 162.7 | 164.2 |
| Fish and seafood | 173.1 | 177.1 | 181.7 | 185.8 | 192.3 | 199.0 | 206.0 | 213.2 | 220.7 | 228.4 | 236.4 | 244.7 | 253.3 |
| Eggs | 142.1 | 140.0 | 135.4 | 132.5 | 128.6 | 124.6 | 124.0 | 131.5 | 130.2 | 142.0 | 135.5 | 144.0 | 137.5 |
| Dairy products | 142.1 | 145.5 | 150.8 | 156.5 | 153.0 | 155.5 | 160.0 | 164.5 | 168.5 | 171.5 | 175.0 | 178.0 | 182.0 |
| Fats and oils | 140.5 | 141.7 | 146.9 | 151.2 | 152.9 | 155.4 | 158.8 | 164.0 | 170.2 | 176.7 | 182.9 | 188.1 | 192.2 |
| Fruits and vegetables | 183.9 | 187.5 | 198.2 | 200.9 | 204.0 | 211.1 | 217.3 | 223.8 | 230.3 | 237.1 | 243.5 | 250.3 | 256.7 |
| Sugar and sweets | 143.7 | 147.8 | 150.2 | 153.2 | 156.4 | 160.1 | 163.7 | 167.3 | 171.0 | 174.8 | 178.7 | 182.7 | 183.0 |
| Cereals and bakery products | 174.0 | 177.6 | 181.1 | 184.8 | 191.7 | 199.0 | 205.3 | 211.5 | 217.6 | 223.8 | 230.0 | 236.6 | 243.5 |
| Nonalcoholic beverages | 128.6 | 133.4 | 133.0 | 136.3 | 139.7 | 143.2 | 146.8 | 150.5 | 154.3 | 158.2 | 162.2 | 166.3 | 170.5 |
| Other foods | 156.2 | 161.2 | 165.5 | 169.8 | 174.4 | 179.8 | 185.1 | 190.5 | 196.0 | 201.7 | 207.5 | 213.5 | 219.6 |
| **Food expenditures:** | | | | | | | *Billion dollars* | | | | | | |
| All food | 688.3 | 714.9 | 743.9 | 765.8 | 790.8 | 823.2 | 854.8 | 888.8 | 924.4 | 961.6 | 998.9 | 1,037.8 | 1076.5 |
| Food at home | 380.1 | 394.6 | 408.9 | 415.7 | 425.9 | 441.7 | 456.4 | 472.8 | 490.2 | 508.2 | 525.5 | 543.5 | 560.7 |
| Food away from home | 308.2 | 320.3 | 335.0 | 350.1 | 364.9 | 381.5 | 398.4 | 416.0 | 434.2 | 453.4 | 473.4 | 494.3 | 515.8 |

Table 32.  Changes in consumer food prices, baseline

| CPI category | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | *Percent* | | | | | | |
| All food | 3.3 | 2.6 | 2.2 | 2.0 | 1.8 | 2.6 | 2.0 | 2.3 | 2.5 | 2.6 | 2.3 | 2.4 | 2.2 |
| Food away from home | 2.5 | 2.8 | 2.6 | 2.5 | 2.2 | 2.5 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 |
| Food at home | 3.7 | 2.5 | 1.9 | 1.7 | 1.6 | 2.7 | 1.9 | 2.2 | 2.6 | 2.7 | 2.3 | 2.4 | 2.1 |
| Meats | 3.5 | 3.0 | -1.9 | 0.3 | 2.0 | 2.4 | -1.6 | -0.3 | 2.1 | 2.2 | 1.5 | 1.1 | 0.8 |
| Beef and veal | -0.3 | 1.7 | -0.2 | 1.8 | 2.2 | 2.5 | -1.5 | 0.1 | 2.5 | 2.6 | 2.1 | 1.8 | 1.5 |
| Pork | 9.9 | 5.2 | -4.7 | -3.0 | 1.2 | 2.2 | -1.8 | -1.0 | 1.1 | 1.2 | 0.1 | -0.5 | -0.8 |
| Other meats | 3.6 | 2.8 | -0.9 | 0.8 | 2.2 | 2.5 | -1.5 | 0.1 | 2.6 | 2.7 | 2.1 | 1.8 | 1.4 |
| Poultry | 6.2 | 2.8 | 0.3 | -1.7 | -1.6 | 1.6 | -1.4 | 0.3 | 2.1 | 1.9 | 1.3 | 1.1 | 0.9 |
| Fish and seafood | 0.9 | 2.3 | 2.6 | 2.3 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| Eggs | 17.9 | -1.5 | -3.3 | -2.1 | -2.9 | -3.1 | -0.5 | 6.0 | -1.0 | 9.1 | -4.6 | 6.3 | -4.5 |
| Dairy products | 7.0 | 2.4 | 3.6 | 3.8 | -2.2 | 1.6 | 2.9 | 2.8 | 2.4 | 1.8 | 2.0 | 1.7 | 2.2 |
| Fats and oils | 2.3 | 0.9 | 3.7 | 2.9 | 1.1 | 1.6 | 2.2 | 3.3 | 3.8 | 3.8 | 3.5 | 2.8 | 2.2 |
| Fruits and vegetables | 3.5 | 2.0 | 5.7 | 1.4 | 1.5 | 3.5 | 2.9 | 3.0 | 2.9 | 3.0 | 2.7 | 2.8 | 2.6 |
| Sugar and sweets | 4.5 | 2.9 | 1.6 | 2.0 | 2.1 | 2.4 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 0.2 |
| Cereals and bakery products | 3.9 | 2.1 | 2.0 | 2.0 | 3.7 | 3.8 | 3.2 | 3.0 | 2.9 | 2.8 | 2.8 | 2.9 | 2.9 |
| Nonalcoholic beverages | -2.4 | 3.7 | -0.3 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |
| Other foods | 3.4 | 3.2 | 2.7 | 2.6 | 2.7 | 3.1 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 |

# Agricultural Trade

Growth in global agricultural trade will be slowed over the next 2 to 3 years by weakened demand in key markets, particularly in Asia and the former Soviet Union (FSU).  In these regions, import demand will be constrained by reduced incomes, and by the impact of large currency devaluations on both consumer and producer prices.  Global trade will, however, continue to be supported by relatively strong demand in other developing country markets in Latin America, North Africa, and the Middle East.  U.S. agricultural exports will slow over the next 2 to 3 years, reflecting slowed growth in global trade, as well as increased competition.  In the near term, U.S. farm exports are likely to face increased competition stemming from productivity gains by other exporters, particularly Argentina, and from developing and transition economies where currencies have been sharply devalued.

Longer term prospects for global and U.S. trade remain relatively bright.  The Asian economies are assumed to recover to relatively strong rates of growth over a 3 to 4 year period, and long-term growth in other developing regions is expected to higher than during the 1980s.  This generally favorable economic outlook for developing countries is expected to drive faster gains in agricultural trade after 2000.  Trade expansion will also be aided by freer trade associated with ongoing unilateral policy reforms and existing multilateral reforms.  Relatively strong growth in import demand for bulk agricultural commodities is projected, supported by broad-based expansion across developing regions, including China, South and Southeast Asia, Latin America, North Africa, and the Middle East.  The FSU, formerly a key grain importer, is not expected to be a source of significant import demand over the projection period.  Higher incomes in developing countries, where consumers tend to spend a relatively large share of new income on food, will be a key determinant of demand and trade growth.  As incomes rise in developing countries, the demand for agricultural goods expands rapidly, both through increases in direct food use and through derived demand for livestock feeds to meet rising meat demand.

Future trends in China's agricultural trade remain an important question in the global outlook.  Significant uncertainty regarding basic data and future policies, combined with the size of China's agricultural economy, make alternative trade projections both plausible and globally significant.  The current projections indicate only modest growth in China's import demand for most bulk commodities, particularly wheat and coarse grains.  Recent developments in China suggest that there is still significant potential for boosting crop yields, and that historical growth in meat demand and feed use has been slower than once thought.

World commodity prices are expected to remain depressed in the near term by the combination of weakened global demand and increased exportable supplies from traditional and nontraditional competitors.  Prices are projected to strengthen over the longer term, as supplies adjust and a recovery in Asian demand is added to steady growth in other regions.  However, particularly with limited growth in imports by China and the FSU, real prices are projected to continue to decline over the longer term as productivity gains continue to outpace growth in demand.

Grains are expected to lead the stronger projected growth of bulk commodity trade during 2000-2008. Projected gains in coarse grain trade are particularly strong, predicated on rising incomes in developing regions and increased demand for livestock products and feeds. Wheat and vegetable oil trade will also continue to expand in response to rising incomes and urbanization in developing countries. Trade in soybeans and meal also is projected to show solid long-term growth as a result of the expansion of meat consumption and production in developing countries. Raw cotton demand and trade are expected to strengthen after 2000, but growth is expected to be slower than in the 1980s, when there was increased substitution of cotton for synthetic fibers.

Table 33. International trade summary, by decade or indicated period 1/

| Years | Wheat | Rice | Coarse grains | Soybeans | Soybean meal | Soybean oil | Cotton |
|---|---|---|---|---|---|---|---|
| **World trade growth, annual percent 2/** | | | | | | | |
| 1960 to 1970 3/ | 1.1 | 2.2 | 4.9 | 11.4 | 14.4 | 11.3 | 0.8 |
| 1970 to 1980 | 4.7 | 4.9 | 8.7 | 8.2 | 11.7 | 12.8 | 1.2 |
| 1980 to 1990 | -0.3 | 0.6 | -1.0 | -0.4 | 2.9 | 0.5 | 2.5 |
| 1990 to 2000 | -0.7 | 6.1 | 0.4 | 5.3 | 4.4 | 6.6 | -0.9 |
| 2000 to 2008 | 2.3 | 2.7 | 2.8 | 1.6 | 1.9 | 2.8 | 1.9 |
| | | | | | | | |
| **U.S. export growth, annual percent** | | | | | | | |
| 1960 to 1970 3/ | -0.8 | 6.3 | 3.8 | 12.6 | 13.0 | 5.3 | -5.4 |
| 1970 to 1980 | 6.4 | 6.8 | 12.7 | 7.2 | 5.8 | 5.4 | 6.1 |
| 1980 to 1990 | -3.3 | -0.5 | -0.7 | -3.7 | -1.8 | -5.5 | 2.3 |
| 1990 to 2000 | -0.4 | 0.5 | 0.4 | 4.7 | 5.7 | 11.6 | -1.7 |
| 2000 to 2008 | 2.3 | 0.8 | 3.3 | 1.3 | -0.4 | 3.3 | 1.6 |
| | | | | | | | |
| **U.S. share of world trade, average percent 2/** | | | | | | | |
| 1960 to 1970 3/ | 37.6 | 19.0 | 50.0 | 90.6 | 65.6 | 66.6 | 18.3 |
| 1970 to 1980 | 43.0 | 22.1 | 59.4 | 82.6 | 43.5 | 37.5 | 19.8 |
| 1980 to 1990 | 37.3 | 20.2 | 59.4 | 72.6 | 23.7 | 19.3 | 21.5 |
| 1990 to 2000 | 31.3 | 14.0 | 56.0 | 64.5 | 19.7 | 16.1 | 25.1 |
| 2000 to 2008 | 33.6 | 9.4 | 57.3 | 62.2 | 20.2 | 22.2 | 24.6 |

1/ Years refer to the first year of the commodity marketing year.
2/ Trade and trade shares include intra-FSU trade for periods starting in 1990 and later; intra-FSU trade for cotton also is included in the 1980 to 1990 and the 1970 to 1980 periods.
3/ Data for soybeans, soybean meal, and soybean oil begin in 1964.

U.S. exports are projected to strengthen for most bulk commodities over the longer term. U.S. wheat and coarse grain exports are projected to expand the fastest, although competition is expected to increase in both markets. By the middle of the projection period, U.S. wheat exports are projected to slow when higher world prices and declining internal EU prices permit the EU to export wheat without subsidy. U.S. corn exports are expected to face continued competition from China and, particularly, Argentina. U.S. rice exports are projected to be roughly constant, as domestic demand captures nearly all the gains in U.S. production. Anticipated growth in U.S. exports of soybeans and products is faster than in the 1980s because of projected gains in both area and yields, despite weaker market prices. U.S. raw cotton exports are projected to

strengthen in the longer term, benefiting from rising demand and reduced competition in some countries.

Global meat demand and trade, and U.S. meat exports, will be depressed in the near term by the slowdown in import demand in East Asia and the FSU. Growth in meat trade is, however, projected to resume after 2000, as demand recovers in these key markets. Already negotiated reductions in trade barriers will support gains in meat trade in East Asia. Although FSU import demand is likely to be depressed for 3 to 5 years by the recent economic crisis, imports are expected to rebound in the longer term, with the return of modest economic growth and only slow expansion in the domestic feed-livestock sector.

## U.S. Agricultural Trade Value

The total value of U.S. agricultural exports is projected to decline in 1999 and 2000, but then grows for the rest of the baseline, reaching about $73 billion by 2008. U.S. imports rise to $50 billion in 2008. The resulting agricultural trade surplus in fiscal 2008 is projected at $22.5 billion.

Table 34. U.S. agricultural trade values, baseline projections, fiscal years

| | 1997 | 1998 | 1999 1/ | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 1998-2008 growth rate |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | *Billion dollars* | | | | | | | *Percent* |
| Agricultural exports: | | | | | | | | | | | | | |
| Animals and products | 11.4 | 11.2 | 11.3 | 11.4 | 11.9 | 12.3 | 12.9 | 13.5 | 14.2 | 14.8 | 15.4 | 15.9 | 3.5 |
| Grains, feeds, and products | 16.5 | 14.1 | 13.9 | 14.1 | 15.8 | 17.0 | 18.1 | 18.9 | 19.5 | 20.1 | 21.2 | 21.4 | 4.2 |
| Oilseeds and products | 11.4 | 11.1 | 9.3 | 7.1 | 7.2 | 7.7 | 8.2 | 8.7 | 9.0 | 9.3 | 9.6 | 9.8 | -1.2 |
| Horticultural products | 10.6 | 10.3 | 10.1 | 10.7 | 11.4 | 12.0 | 12.7 | 13.4 | 14.2 | 14.9 | 15.7 | 16.5 | 4.8 |
| Tobacco, unmanufactured | 1.6 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.3 | 1.3 | 1.3 | 1.3 | 1.4 | -0.6 |
| Cotton and linters | 2.7 | 2.5 | 1.6 | 1.9 | 2.4 | 2.4 | 2.5 | 2.6 | 2.6 | 2.7 | 2.7 | 2.8 | 1.0 |
| Other exports | 3.0 | 2.9 | 2.9 | 3.6 | 3.8 | 3.9 | 4.1 | 4.2 | 4.4 | 4.5 | 4.6 | 4.8 | 5.2 |
| | | | | | | | | | | | | | |
| Total agricultural exports | 57.3 | 53.6 | 50.5 | 50.2 | 53.9 | 56.7 | 59.9 | 62.8 | 65.2 | 67.6 | 70.6 | 72.6 | 3.1 |
| Bulk commodities exports | 23.3 | 20.0 | 18.0 | 17.5 | 19.7 | 21.0 | 22.5 | 23.6 | 24.2 | 25.0 | 26.2 | 26.5 | 2.8 |
| High-value product exports | 33.9 | 33.6 | 32.5 | 32.7 | 34.2 | 35.7 | 37.4 | 39.2 | 41.0 | 42.7 | 44.4 | 46.1 | 3.2 |
| High-value product share | 59.2% | 62.7% | 64.4% | 65.1% | 63.5% | 62.9% | 62.4% | 62.5% | 62.8% | 63.1% | 62.9% | 63.5% | |
| | | | | | | | | | | | | | |
| Agricultural imports: | | | | | | | | | | | | | |
| Animals and products | 6.4 | 6.8 | 6.8 | 6.9 | 7.0 | 7.1 | 7.4 | 7.7 | 8.0 | 8.3 | 8.6 | 9.0 | 2.8 |
| Grains, feeds, and products | 2.9 | 2.9 | 3.0 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 | 3.6 | 3.7 | 3.7 | 3.7 | 2.5 |
| Oilseeds and products | 2.2 | 2.2 | 2.4 | 2.5 | 2.6 | 2.9 | 3.2 | 3.2 | 3.5 | 3.5 | 3.6 | 3.6 | 5.0 |
| Horticultural products | 12.7 | 13.9 | 14.5 | 15.1 | 15.8 | 16.5 | 17.2 | 17.9 | 18.5 | 19.2 | 19.7 | 20.3 | 3.9 |
| Tobacco, unmanufactured | 1.2 | 0.8 | 0.9 | 1.1 | 1.1 | 1.2 | 1.2 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 5.0 |
| Sugar and related products | 1.9 | 1.7 | 1.8 | 1.9 | 2.0 | 2.2 | 2.3 | 2.4 | 2.5 | 2.5 | 2.5 | 2.5 | 3.9 |
| Coffee, cocoa, and rubber | 6.4 | 6.3 | 6.5 | 6.6 | 6.7 | 6.7 | 6.7 | 6.8 | 6.8 | 6.9 | 6.9 | 7.0 | 1.0 |
| Other imports | 2.1 | 2.4 | 2.6 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.6 | 0.9 |
| | | | | | | | | | | | | | |
| Total agricultural imports | 35.8 | 37.0 | 38.5 | 39.6 | 40.8 | 42.3 | 43.7 | 45.2 | 46.7 | 47.9 | 48.9 | 50.0 | 3.1 |
| Net agricultural trade balance | 21.5 | 16.6 | 12.0 | 10.6 | 13.1 | 14.5 | 16.1 | 17.6 | 18.5 | 19.8 | 21.7 | 22.5 | 3.1 |

1/ The projections were completed in November 1998 based on policy decisions and other information known at that time. For updates of the nearby year forecasts, see USDA's *Outlook for U.S. Agricultural Trade* report, published in February, May, August, and December.

Note: Other exports consists of seeds, sugar and tropical products, and beverages and preparations. Essential oils are included in horticultural products. Bulk commodities include wheat, rice, feed grains, soybeans, cotton, and tobacco. High-value products (HVP's) is calculated as total exports less the bulk commodities. HVP's includes semi-processed and processed grains and oilseeds, animals and products, horticultural products, and sugar and tropical products. Other imports includes seeds, beverages except beer and wine, and miscellaneous commodities.

Declining prices resulting from large world supplies, weak global demand, and a strong U.S. dollar led to lower export value in FY 1998, with exports of both bulk and high-value products (HVP's) declining. U.S. export value is projected in the baseline to fall to near $50 billion for FY 1999 and 2000. After 2000, however, growth in both bulk and HVP exports is expected to rebound for the remainder of the baseline. Averaging 2.8 percent per year during 1998-2008, projected bulk commodity value growth exceeds growth in both the 1980s and the 1990s, lending strength to total export earnings. HVP export growth is projected to average 3.2 percent annually during 1998-2008. Much of the HVP gain is in horticultural products. Exports of animals and products, led by beef, pork, and poultry, also show significant growth.

U.S. imports are projected to rise from $37 billion in fiscal 1998 to $50 billion in fiscal in 2008, an average annual increase of 3 percent. From 1994 to 1997, agricultural imports increased 10 percent annually. Import growth has recently returned to the expected long-term growth pace due to slower increases in domestic prices of meats and grain-based foods. While a stronger U.S. dollar has reduced prices of imported commodities, a small response in the import volume for many high-value food items has lessened the growth in the value of imports. Imports of horticultural products, the largest component of U.S. agricultural imports, are expected to increase by $6.4 billion from 1998 to 2008, with average annual growth of 4 percent. Beverages, fruits, and vegetables will be supplied largely by Mexico, Canada, Chile, and the European Union.

### Foreign Agricultural Policy Assumptions and Highlights

Policy assumptions underlying both U.S. and foreign projections are based on full compliance with all bilateral and multilateral agreements affecting agriculture and agricultural trade as of November 1998. Bilateral agreements affecting agricultural trade between the United States and Canada, the United States and Mexico, the United States and Japan (beef and citrus), and the United States and Korea (beef) are examples of agreements for which full compliance is assumed. In contrast, no compliance is assumed for any agreements not formally ratified by November 1998.

For multilateral agreements, the projections assume full compliance with the internal support, market access, and export subsidy provisions of the Uruguay Round Agreement on Agriculture by all parties to the agreement. Several potential multilateral agreements that could have a significant impact on agricultural trade are now under consideration, but are assumed *not* to occur in these projections. These include:

C No accession to the World Trade Organization (WTO) by the FSU, China, or Taiwan;

C No enlargement of the EU-15 to add one or more Central or East European countries;

C No implementation of more liberalized trade among the Asia-Pacific Economic Cooperation (APEC) countries, and;

C No expansion of NAFTA to include additional countries.

Domestic agricultural and trade policies in individual foreign countries are assumed to continue to evolve along their current path, based on the consensus judgment of regional and commodity analysts. In particular, economic and trade reform underway in many developing countries is assumed to continue. Similarly, the development and use of agricultural technology and changes in consumer preferences are assumed to continue to evolve based on past performance and analyst judgment regarding future developments. Key assumptions underlying the projections for major foreign countries are summarized below.

**European Union**

The projections for the European Union (EU) incorporate policy changes adopted as part of the 1992/93 reform of the Common Agricultural Policy (CAP), as well as EU commitments under the Uruguay Round (UR) agreement that limit subsidized exports and improve market access. The final price cuts under the 1992 CAP Reform took place during 1995/96 and, for most commodities, basic support prices are assumed to remain constant in the baseline at 1995/96 nominal levels. Two potential changes with significant implications for agriculture that are not included in the projections are the accession of the Central and Eastern European (CEE) countries, and the adoption of agricultural reforms included in the Agenda 2000 proposal. They are not incorporated into the baseline at this time because of the high degree of uncertainty regarding the final terms and timing of these initiatives.

The baseline assumes that the EU's UR commitment on internal support is not a binding constraint, since many policies resulting from CAP reform meet the WTO "production-limiting" criteria and are exempt from reduction commitments. Tariffication of nontariff barriers and tariff reductions are assumed to have little impact because the high tariff equivalents established for most products are unlikely to permit significant additional imports beyond minimum access tariff-rate quotas. Continued high levels of import protection mean that price transmission from the world market will be negligible for all baseline commodities except oilseeds and their products and, in years when unsubsidized exports occur, wheat. The most important UR commitments for the baseline are the limits on subsidized exports and the minimum import levels agreed under the market access provisions.

There is significant uncertainty regarding the measures the EU will adopt to cope with the prospects for large surpluses that are likely to emerge under current CAP provisions and UR commitments. The European Commission's own forecasts suggest that grain stocks will accumulate to more than 70 million tons by 2005, with large increases also anticipated in stocks of beef, butter, and skim milk powder. The EU must make adjustments in the CAP to deal with the inevitable market imbalances forecast for the next decade, and is currently considering a set of reforms under the Agenda 2000 initiative. The outcome of the Agenda 2000 process is, however, uncertain and it is necessary to adopt a set of EU policy assumptions for the current baseline projections. There are several options:

   C   The EU could be permitted to accumulate stocks as indicated in the Commission's own analyses. Stock accumulation, however, is probably not a viable long-run policy option. The Commission views its forecast stock increases as an indicator of the scale of the policy problem the EU faces.

## Proposed EU Policy Reforms Under Agenda 2000

In March 1998, the European Commission proposed significant reforms to EU agricultural and financial policies, as well as guidance on EU enlargement to Central and Eastern Europe (CEE). These reforms, dubbed Agenda 2000, would result in considerable changes to the current Common Agricultural Policy (CAP) of the EU. EU farm ministers are currently debating the Agenda 2000 reforms, and a final proposal should be agreed on in March 1999 at the Cardiff Summit. At this time, however, there is considerable uncertainty about what actual reforms will be agreed upon. Although it is not clear that the reforms outlined in Agenda 2000 proposals will be adopted as written, the proposals are indicative of direction in which policies may change.

For agriculture, the Agenda 2000 reforms adhere to the following principles:

**Reducing Gaps Between EU and World Prices.** The Commission proposes a 30-percent reduction in the intervention price of beef, a 20-percent reduction in the intervention price of cereals, and a 15-percent reduction in the intervention price of dairy products (butter and skimmed milk powder).

**Increasing Direct Income Support.** Grain producers were overcompensated by the 1992 CAP reform because market prices did not fall to anticipated levels. Once again, the Commission believes that internal grain prices will not fall to new intervention levels because of increased EU demand for grain feeds. This time, it is proposed that grain producers will be compensated through direct payments for only 50 percent of the price cut. Per-head payments will increase in the beef sector, and cow payments will be instituted in the dairy sector. In contrast, oilseed prices are not expected to fall because they are not currently subsidized, and per-ton compensation payments for oilseeds are slated to fall roughly 60 percent.

The extent to which the direct income supports will be linked (coupled) to current production levels and influence producer behavior is a key issue in determining the impacts of the proposed reforms. The current proposal calls for payments to be based on per-unit support rates derived from historical averages and current levels of production.

**Reducing the Default Land Set-Aside Rate.** With the reduction in support prices, the EU is expected to be less dependent on export subsidies to export grain surpluses, reducing the potential for accumulating intervention stocks and the need for supply controls. The proposal calls for reducing the default set-aside rate from 17.5 percent to zero, while maintaining the option of increasing the set-aide rate in case over-production once again becomes a problem. Additionally, the voluntary set-aside would continue to be allowed at a minimum level of 10 percent.

**Maintaining the Milk Quota.** The milk quota would be increased by 2 percent and maintained through 2006. Half of the increase would go to young farmers (i.e. new entrants to farming) and half to farmers in mountainous regions. The lower prices for dairy products would allow the 2-percent increase in the milk production quota.

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C   The EU could pursue more restrictive production and marketing controls. The maximum set-aside rate for arable crops could be increased beyond the current 17.5 percent, and current provisions for voluntary set-aside could allow significant additional idling of land by revision of national restrictions. However, approval of a very large obligatory set-aside is seen as politically unlikely.

C   The EU could allow internal market prices to decline. The EU only makes intervention purchases of bread quality wheat. It has allowed feed wheat prices to decline well below intervention prices, significantly increasing wheat feed use. The management committees have the authority to tighten quality standards for intervention in the feed grains and could pursue a course like that taken for wheat, establishing market prices below intervention levels. It has been proposed that intervention prices for feed grains be reduced relative to bread wheat, but that would require ministerial level action by EU members.

For the purpose of the baseline, it is assumed that EU policy permits internal market prices of grains to fall below intervention, along with adjustments to the land set-aside within current CAP provisions. For grains, production in excess of intervention purchases and on-farm use that

cannot be exported depresses the internal market price, dampening output and increasing use. Grain stocks are assumed to remain at constant percentages of domestic use that are consistent with historical experience. By 2002, declining internal market prices for wheat converge with world prices, permitting EU wheat exports to rise above the UR limits for subsidized exports. Internal coarse grain prices, however, never fall enough to permit unsubsidized exports. Despite increases in domestic use and exports, the area set-aside must be increased to prevent stock accumulation. The area set-aside increased from 5 percent in 1998/99, to 10 percent in 1999/2000, 15 percent in 2000/01, and the statutory maximum of 17.5 percent in 2003/04. Internal market prices for wheat end up falling a maximum of 12 percent below intervention prices, while barley prices fall a maximum of 15 percent below intervention.

There is also uncertainty regarding what measures that will be adopted to deal with a projected imbalance between beef supply and use stemming, in part, from the bovine spongiform encephalopathy (BSE) crisis. The extent of the potential oversupply problem is now believed to be less serious than once thought. The accelerated slaughtering program in the United Kingdom has effectively liquidated the affected portion of the herd, and beef consumption has not dropped as much as anticipated, in part due to increasing confidence in the safety of the beef supply. To the extent that beef surpluses continue to accumulate, it is assumed that revisions to the CAP will further reduce beef producer incentives.

The current baseline assumes that there will be no enlargement of the EU-15 to add one or more Central or East European country during the projection period. Accession of the large agricultural-producing CEE countries could cause serious problems for the CAP in its current form, providing impetus for policy changes to further reduce levels of price and budget support below those implied by the current projections. Similarly, implementation of the Agenda 2000 policy reforms (see Agenda 2000 box, page 89), as currently written, could also have significant impacts on the projections.

**Asia and Oceania**

**Australia.** The economic slowdown in Asia is expected to continue to slow the Australian economy for another two years. In Australia, the shock of the crisis has been cushioned by depreciation of the Australian dollar, which helped retain export competitiveness, and by diversification of exports away from Asia and toward the United States and Europe.

Production for export dominates Australian agriculture. Australian producers are expected to continue to adjust cropping patterns, and to switch between crop and livestock enterprises, to maximize returns. With increasing populations and incomes forecast globally, exports and production of the major commodities are forecast to continue to expand. Key issues in the outlook for production are the response of producers to uncertainties regarding price variability and the availability of water. Until more irrigated area is available, area expansion will be slow for some crops. Crops will again be planted in the area of the Ord River project in Western Australia, and several new dams are in the planning stage.

While little growth in wheat area is expected, growth in wheat yields is projected to support increases in both exports and domestic feeding of wheat. However, further growth in rice

exports will be very limited due to constraints on increasing both area and yield. Increases in barley output will depend primarily on yield gains, with the share of barley area and exports devoted to malting barley continuing to rise. Cotton yield, production, and export growth remain heavily dependent on the availability of irrigation water and are projected to show only moderate gains. Although low prices and more favorable returns for other enterprises may limit growth of the cattle herd in the short run, beef production and exports are projected to increase in the medium term.

**China.** China's economy is assumed to continue to grow at a rapid but gradually declining rate over the projection period. In the near term, real GDP growth is expected to slow to about 7 percent due to the weaker performance of neighboring Asian countries. By 2000, growth is expected to recover to around 8 percent annually, somewhat below rates achieved in the recent past, before slowing gradually to about 7.5 percent annually by the end of the projection period. It is assumed that China will continue to reform its economy gradually, with reform efforts focusing on restructuring and improving the performance of state-owned enterprises. Also, domestic and foreign direct investment are assumed to continue to grow, but at a slower rate than in the past. It is expected that two of the principle bottlenecks to future economic growth, transport and energy, will remain the focus of investment and provide the infrastructure necessary to support the projected future growth of agricultural output and trade flows.

Agricultural policy intervention is now expected to focus more narrowly on maintaining self-sufficiency in the grain sectors, while relaxing earlier policies aimed at self-sufficiency in other commodities. Administrative and financial support is expected to give priority to boosting output and limiting imports of wheat, rice, and, to a lesser extent, corn. The new focus on the grain sector is expected to lead to reduced support and greater potential reliance on imports for commodities other than grains.

China's agricultural trade system is assumed to continue to be slowly reformed. Although central government quantitative controls on trade in key commodities, including wheat, rice, corn, and cotton, are expected to be maintained, the share of trade handled by private and joint private-public trade companies will likely expand. Trade in other agricultural commodities is also expected to be influenced by policy, but mostly through non-quantitative measures, such as licensing, tariffs, and export taxes. The baseline assumes that China will not become a member of the WTO during the projection period. Although China has applied for WTO membership, the ultimate provisions and timing of a final agreement are very uncertain.

Production of most major crops is expected to increase as rising domestic prices boost yields by stimulating more use of improved varieties, fertilizer, and better management. It is assumed that the government's recent multi-year commitment to annual real increases in agricultural research and technology investment funding will be sustained through the projection period. It is expected that total cultivated area will continue its current gradual decline under pressure from non-agricultural uses.

Assumptions regarding agricultural policy, the data and parameters used for projecting livestock production and feed use, and future movements in China's real exchange rate are important keys to the current China projections (see box, page 93), and are all subject to a high degree of

# Assumption Changes for China Lower Grain Import Projections

The China baseline projections are sharply different from last year because of altered assumptions for government agricultural policy and the real exchange rate, as well as a revised outlook for meat production and feed demand. These changes contribute to lower projections of grain imports, but have generally offsetting impacts for other agricultural commodities.

*Agricultural Policy*. China's agricultural policies have been in a state of flux over the last several years as priorities have shifted and reform initiatives have been adjusted. The most important changes, especially in terms of their trade impacts, are in the grain sector. The so-called "Grain Reform" policy initiated in 1998 reverses several years of liberalization by severely restricting private grain marketing. Also, numerous pronouncements by senior officials have indicated the government's intent to maintain support for grain farmers via price supports, government purchase programs, and continued restriction of imports. Our interpretation of the recent policy moves is that the central government will increase its intervention in grain production and trade, even while reducing intervention in other sectors of agriculture.

Government support will induce increased output of rice, wheat and, to a lesser extent, corn, than would otherwise have occurred, reducing projected increases in imports. However, imports of a number of other commodities, including oilseeds, meals, and oils, are expected to continue to rise due to relaxation of trade and domestic marketing restrictions. The recently announced elimination of the state's cotton pricing, purchasing, and distribution monopoly beginning with the 1999 harvest is a further indicator of the intent to reduce intervention in nongrain sectors.

*Anticipated Livestock Data Revisions.* In October of 1998, China's official statistical agency, the State Statistical Bureau (SSB), released revised 1996 livestock sector data which indicate lower animal inventory and meat production levels of 20 to 30 percent (see table 35). However, the revised data were not released early enough to permit a complete revision of historical meat and feed supply and use data to be incorporated into the current China projections. Also, SSB did not revise the historical data series, leaving unanswered the question of what adjustments might be needed in long-term meat production growth rates.

The current baseline projections incorporate a preliminary assessment of the impacts of the forthcoming data revisions on future growth in the supply, demand, and trade of meats and feeds. This assessment is based on the recent official revisions for 1996, as well as ongoing ERS research on China's feed-livestock statistics. Accordingly, the projections are based on estimates of reasonable long-term growth in meat supply and use extrapolated from ERS estimates of revised historical data.

The recent data revisions prompted a reexamination of projected supply and demand growth for all meats. In general, the changes in long-term meat production growth mean smaller animal inventories and reduced levels of feed demand. Some of the reduced feed demand implies less

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**Assumption Changes for China Lower Grain Import Projections** -- continued

use of non-grain feeds, such as slops, weeds, and grain husks, which still compose a substantial portion of the total feed ration in China. Nevertheless, the lower estimates of future meat production, combined with the policy initiatives that are expected to stimulate domestic grain output, contribute to sharply lower long term projections of net coarse grain imports compared with earlier USDA baselines.

Table 35. Revised China livestock inventory and meat production statistics for 1996

|  | Original 1996 | Revised 1996 | Percent change |
|---|---|---|---|
|  | *1,000 head* | | |
| Yearend inventories: | | | |
| Cattle | 139,813 | 110,318 | -21.1 |
| Hogs | 457,357 | 362,836 | -20.7 |
|  | *1,000 metric tons* | | |
| Meat production: | | | |
| Beef | 4,949 | 3,557 | -28.1 |
| Pork | 40,377 | 31,580 | -21.8 |
| Poultry 1/ | 10,746 | 8,472 | -21.2 |

Source: 1998 *China Statistical Yearbook*
1/ Revised poultry meat production data estimated by ERS.

*Real Exchange Rate*. In the longer term, the baseline assumes a gradual but steady depreciation of China's real exchange rate against the U.S. dollar. This assumption is based on a review of the macroeconomic fundamentals, leading to a decision to maintain the clear long-term trend of real depreciation against the dollar since the 1970s. This differs from previous baselines, which have assumed that China's real exchange rate would remain roughly constant. For the current baseline, China's currency is assumed to depreciate during 2000-2008 at about half the rate implied by the historical trend. In the near term, however, the currency is expected to continue to appreciate in real terms, as it has since 1994 due to tight domestic monetary policy and large capital inflows, as China holds off future devaluations until neighboring economies stabilize.

The depreciating real exchange rate reduces the long-term projections of China's net agricultural imports by both increasing the local currency cost of imports and increasing export competitiveness. Changing assumptions from a constant real exchange rate to annual depreciation has the most impact on net imports of commodities where supply or demand is relatively responsive to price changes. Net imports of grains and meats in 2008 declined 35-40 percent compared with a constant exchange rate scenario, while net imports of oilseeds and products were down 5-15 percent.

uncertainty.  Projections of China's future demand and trade for many commodities, particularly meats, feeds and edible oils, are also highly dependent on the assumption of continued rapid economic growth.  Future economic performance and agricultural trade are now more uncertain due to the crisis affecting many other Asian economies.  Likewise, small changes in technical parameters, including feed-conversion rates and income elasticities of demand, which are very difficult to estimate reliably, can result in dramatic changes in trade projections for a country of 1.2 billion people.

**East Asia.**  South Korea and Japan are projected to remain large net importers of livestock products.  Barriers to imports continue to fall in both countries, as dictated by the Uruguay Round agreement.  Deficiency payments to assist the beef cattle sector and dairy import quotas will support cattle production at about present levels, but growing demand will be met through imported beef.  Pork and poultry meat production in both countries has been strengthened by structural change and encouraged by the weakness of the won and the yen.  Imports will grow more to satisfy new consumer demand than to replace domestic production, and the rate of import growth is likely to be slower than in the past unless additional tariff reductions are negotiated.  South Korea's imports of pork and poultry meat are projected to be smaller than in previous projections as the impacts of 1998 financial crisis both reduce demand and increase domestic production relative to previous baselines.  Japan is expected to make maximum use of the pork and beef safeguard mechanisms negotiated in the Uruguay Round, which permit temporary hikes in tariffs and levies in order to limit imports.

Taiwan's livestock sector has been deeply affected by liberalization accompanying its WTO membership application, and by the lingering effects of the 1997 outbreak of foot-and-mouth disease (FMD) on its huge hog farms.  Taiwan's import ban on offal, chicken meat, and pork cuts (other than hams, loins, and shoulders) was lifted slightly and a quota instituted after the February 1998 agreement with the United States about WTO accession.  The outbreak of FMD in March 1997 has completely shut down Taiwan's pork exports.  Exports of uncooked pork are not expected to resume for a few years, and then to recover to only about half of the 1990-96 average export level by 2008.

All three East Asian economies are assumed to maintain tight state control over rice trade.  Rice production in South Korea will continue to be insufficient to both meet domestic needs and maintain adequate stocks, but Korea's aversion to imports is so strong that it is assumed to take the risk of low stock levels through much of the projection period.  Japan and South Korea will continue to meet their minimum access commitments, but will not import above those levels.

Wheat, barley, and soybean production in Japan, and barley and soybean production in South Korea, are maintained through border protection and the use of domestic products by processors in response to government mandates or subsidies.  The quota for corn for new industrial uses introduced during the Uruguay Round should expand Japan's non-feed imports of corn.

The projections assume that East Asian governments will continue enormous expenditures to help domestic agriculture restructure itself.  A continued outflow of labor from farming will help full-time farmers achieve larger operations and economies of size.

**Asian Growth: Recovery Key for Agricultural Trade**

With 40 percent of U.S. agricultural exports going to Asia, strong Asian economies have been an engine of growth for U.S. agricultural trade in the last few decades. The financial crisis that hit Asia in mid-1997, and spread to other regions in 1998, has affected global trade and contributed significantly to declines in U.S. agricultural trade in the near term, and has created uncertainty regarding longer-term prospects.

Agricultural impacts of the crisis, including reductions to import demand, have reflected the effects of both lower incomes in the region and currency devaluations. Improvements in import demand in the region, global agricultural trade, and U.S. agricultural exports during the baseline will depend heavily on the timing and magnitude of Asian economic recovery.

The crisis has reduced Asian growth and wealth, depressed commodity demand and prices, and decelerated world trade growth. The World Bank (*Global Economic Prospects Report*, 1998) estimates that the crisis reduced world GDP growth by 0.3 to 0.4 percentage points in 1998. The pace of the region's recovery remains highly uncertain. Japan, already in recession, has announced domestic stimulus packages with income tax cuts and banking reforms, but the pace of recovery remains slow. China's 1998 growth is expected to be below target at 7.8 percent, with a slowdown in both the domestic economy and exports. South Korea and Thailand have begun to make reforms and restore investor confidence. The Malaysian economy has stabilized behind capital controls, but reform and recovery remain elusive in Indonesia.

**Keys to Asian Recovery**

Prospects for improved Asian economic performance in the medium to long-term depends critically on several factors:

C      recovery in Japan,
C      successful structural and financial reform in crisis countries, and
C      the return of investor confidence in emerging markets.

*Japan's recovery*. The delay in Japan's recovery could prolong the region's comeback. In November 1998, Japan announced an Emergency Economic Package that will provide over 17 trillion yen ($145 billion at 117 yen per dollar) to help put the Japanese economy on the recovery track in 1999 and 2000. A permanent tax deduction will increase the package to a total of 20 trillion yen ($171 billion). The package aims to increase domestic demand and employment, stabilize the financial system, and increase international coordination. To finance the package, the government plans to double the volume of government bonds in the next fiscal year, leading to a decline in bond prices and a further decrease in stock prices. Amidst these developments, the IMF has forecast further contraction of the Japanese economy. Japan's recovery path remains uncertain.

*Policy reform in crisis countries*. Policy reform has moved most rapidly in Korea and Thailand. In both countries, long-term measures in IMF-led packages aim to speed up trade liberalization and open capital markets. Each country is implementing difficult financial and structural reforms to expedite recovery

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**Asian Growth: Recovery Key for Agricultural Trade** -- continued

through fiscal expansion and cautious monetary policy. Initial high interest rates have been reduced, providing more credit. Banking reforms have begun, leading to closure of failed banks or mergers with the stronger ones. Bankruptcy laws have been strengthened. Sharp declines in imports have strengthened current account balances and provided stability to exchange rates. Both countries have added more measures to increase foreign direct investment and privatization in order to allow greater business participation. Even with these reforms, full recovery in Korea and Thailand is likely to take longer than once expected.

Reforms in other countries have moved more slowly than in Korea and Thailand. In Malaysia, the introduction of capital controls to stabilize financial flows is controversial and may hinder the restoration of inward investment and growth. In Indonesia, Southeast Asia's largest economy, both political and economic reforms continue to move slowly.

*Restoring investor confidence*. The pace at which investor confidence is restored in the future of the region's economies will be key to recovery. The sudden withdrawal of investment capital by foreign creditors through recalled loans and equities has had major impacts, increasing the vulnerability of weak financial institutions, and increasing liquidity pressure in already highly leveraged economies. Prior to the crisis, strong investor confidence led to net capital inflows to the Asian 5 (Indonesia, Korea, Malaysia, Philippines, and Thailand) of $84 billion in 1995 and $94 billion in 1996. In 1997, when the turmoil started, these inflows shifted to a net outflow of $100 billion of capital from the region in 1997. Only a small portion of this capital flight has returned and the region still faces a severe credit crunch. Longer-term prospects remain difficult to assess, but there are positive signs. Korea's credit rating has recently been upgraded, and the country has begun to pay back IMF loans.

**Impacts on Other Developing Countries**

While there are now signs of restored financial stability in Asia, some non-Asian developing and transition regions, including the former Soviet Union and Latin America, remain at risk. Russia's declaration of a debt moratorium in August 1998, and the potential for a Russian default, increased the vulnerability of other regions, particularly Latin America, to financial instability.

In Latin America, the financial turmoil in Asia and Russia, together with associated declines in commodity prices, are threats to recent economic stability and growth. According to the UN, Latin American economic growth in 1998 was slowed by about 1 percentage point as a result of the Asian financial crisis. Financial conditions have deteriorated because of reduced inflows of capital that help finance budget and current account deficits, and depressed prices for key primary exports, including oil, grains, oilseeds, and minerals.

In Brazil, reduced foreign investor confidence led to a large drawdown of foreign reserves. For the baseline, Brazil's economy is assumed to be slowed by these events, but a $41.5 billion reserve and austerity package negotiated with the IMF in November 1998 is expected to prevent a deep or prolonged recession. The January 1999 devaluation of the Brazilian currency occurred after the baseline was completed and, therefore, is not incorporated in the projections.

**Southeast Asia.** The region's financial crisis is expected to result in continued exchange rate instability and slowed economic growth during 1998-2000. For several countries in the region, including Indonesia, Malaysia, and Thailand, long-term real GDP growth rates during 2001-2008 are now expected to average 1-3 percentage points below historical rates due to the impacts of the crisis (see box, page 96). As a result, projected growth in demand of relatively income-sensitive commodities, including meats and feeds, is projected to be significantly slower than in previous projections. Higher local consumer and producer prices stemming from currency devaluations across the region will also play a key role in slowing imports by reducing consumption and raising domestic producer incentives.

Although real GDP growth rates are, in many cases, not expected to fully recover to previous rates, steady growth in import demand for foods and, particularly, feeds is expected to resume by about 2000. Rice imports in the region are expected to continue to increase, as production remains handicapped by slow increases in yields and land constraints in importing countries. Although wheat import demand is slowed in the near term by smaller incomes, higher local currency prices, and Indonesia's reduced consumer subsidy, longer term prospects are still for strong import growth as wheat continues to account for a growing share of diets in the region. Recent rapid growth in production and consumption of livestock products in the region have been dealt a severe setback by the financial crisis, and the pace of recovery of supply and demand remains highly uncertain. Demand for meats and feeds is relatively more responsive to changes in incomes and prices than is demand for other food items. The current projections assume that meat production and per capita consumption will recover to pre-crisis levels over a 3-5 year period. Consumption and imports of feed grains and proteins are also expected to recover during this period, then resume growth at long-term rates somewhat below pre-crisis projections. The pace of recovery of local meat production in the region, and the extent to which sharply higher producer price incentives will stimulate more production of corn and soybeans, are important uncertainties in the projections for the region.

The impacts of the crisis on the region's agricultural exports, including rice, palm oil, and poultry, are expected to be mixed. With their devalued currencies, Thailand and Vietnam are expected to remain large and very competitive rice exporters. Thailand's exports of poultry are expected to continue to receive a competitive boost from devaluation of the baht, although overall poultry output is likely to be down due to weakened internal demand. Indonesian and Malaysian palm oil exports may receive a near-term boost as devaluation shifts some local consumption into export markets, but financial constraints could reduce plantings over a 2-3 year period and slow longer term growth in exportable supplies.

Indonesia's economy and political stability have been the most severely affected by the crisis, and prospects for recovery remain the most uncertain. The economy is assumed to return to modest positive growth by 2000 and reach 6-percent average growth, 2 percent below historical performance, for 2003-2008. Agricultural policy is expected to evolve under the framework agreed with the IMF, involving reduced government intervention, more privatization, and more open trade. Such shifts in policy, combined with reduced resources for developing irrigated rice land off-Java, are expected to increase dependence on imported rice compared with pre-crisis projections. Wheat import demand is projected lower due to the combination of lower incomes

and the removal of consumer subsidies.  Meat production, particularly poultry, is down sharply due to the crisis.  Meat production and feed demand are expected to recover over a 5-6 year period, but gains in corn production could limit any recovery in corn imports.

**South Asia.**  India's farm sector is expected to continue to benefit from improving terms of trade, as agricultural price incentives are maintained and liberalizing reforms steadily reduce protection in nonfarm sectors.  A strong policy emphasis on improving producer price incentives is, however, unlikely during the baseline because relatively fragile coalition governments are likely to give priority to assuring consumer price stability.  Food grain production is expected to receive a boost from reduced protection of oilseeds resulting from the recent shift from state trading to tariffication of vegetable oil imports.  India's exports of soymeal are expected to continue to grow, as soybean producer incentives are less affected than other oilseeds by lower internal oil prices and domestic feed demand remains limited.  Domestic surpluses of rice continue in the baseline, with India's relatively low-quality rice maintaining a significant global market share of trade.  While some wheat imports are projected, there may also continue to be periodic surpluses of relatively low-quality wheat sold on the world market. With the reform of vegetable oil trade remaining in place, vegetable oil imports will grow rapidly.  Price incentives and productivity gains will sustain strong growth in cotton production, with most production consumed domestically to meet domestic and export demand for cotton-based products.

Economic growth projections for Pakistan have been reduced because of declining capital inflows and continued low rates of domestic savings and investment.  Agricultural policy is expected to continue to support gains in cotton area, leading to stagnation of wheat yields due to late planting on double-cropped land.  As a result, dependence on imported wheat is expected to continue to rise.  Cotton yields are expected to recover gradually from recent pest-related problems.  As with India, most cotton production is likely to be processed domestically, contributing to strong growth in exports of cotton-based products.  Small increases in rice area will allow rice exports to slowly expand over the baseline.  Relatively liberal import policies will likely permit continued growth in vegetable oil imports.  Growing livestock product demand is expected to lead to growing soybean meal imports and, possibly, the emergence of feed corn imports during the baseline.

**Africa and the Middle East**

**Sub-Saharan Africa.**  Food grain consumption in Sub-Saharan Africa will be driven primarily by population growth, which is projected to remain relatively high at roughly 3 percent per year.  Real per capita incomes are expected to remain, on average, constant across the region.  Production is projected to nearly keep pace with consumption, resulting in slow growth in imports.  Food grain imports will continue to be constrained by only small gains in the region's capacity to import commercially, and by the availability of food aid.  Although very little growth in global cereal food aid supplies is assumed in the baseline, an increasing share of the available aid is expected to go to Sub-Saharan Africa, allowing some growth in the region's food grain imports over the projection period.

**North Africa.**  Growth in import demand for grains and feeds in North Africa is projected to be stronger than during the 1980s because of the outlook for improved economic growth, limited

production potential, and more open trade policies. In Algeria, wheat and corn imports are projected to rise as crop production is hampered by high input prices, input shortages, and lack of credit. In Egypt, average annual real GDP growth of more than 4 percent, combined with recent policy reforms, generate more growth in wheat, corn, soybean meal, and vegetable oil imports. Since joining the WTO in 1995, Egypt has eliminated or reduced producer and consumer subsidies in agriculture and has opened up trade of grains, cotton, and other commodities to the private sector.

Morocco's real GDP growth of 4 to 5 percent annually, together with further steps to liberalize trade and phase out subsidies in grains, oilseeds, and sugar, are expected to spark stronger growth in import demand. In Tunisia, which began liberalizing its domestic markets and trade in 1992, annual real GDP growth of 5 to 6 percent is projected to boost import demand for wheat, corn, soybean oil, sunflower oil, refined sugar, and livestock products. Tunisia, a member of the WTO, has also signed a Free Trade Zone agreement with the EU, which will gradually eliminate tariffs by 2008.

**Middle East.** Economic growth in the Middle East region will be slowed by weakened global demand and lower oil prices. The region's economies are projected to experience moderate economic growth during 1999-2008, somewhat higher than occurred during the 1980s. Prospects for recovery in Iran are highly dependent on both oil prices and the implementation of structural reform. Moderate economic growth, together with limited success in improving crop yields, and an ambitious livestock/dairy development program, lead to the projected growth in Iran's wheat, rice, corn, and barley imports. Both economic and political prospects in Iraq remain highly uncertain. Recent increases in oil export revenues have led to rising imports of wheat, rice, and other foodstuffs. Under the assumptions of 4 to 5 percent annual real GDP growth, continued modest recovery in petroleum export revenues, and expansion of trade under the current oil-for-food arrangement, Iraq's food imports are projected to recover gradually from the lows of the early 1990s. Although Iraq's feed-livestock sector has yet to begin its recovery, some expansion of poultry production and feed imports is likely during the projection period.

In Saudi Arabia, economic growth will be tempered by the weaker outlook for petroleum prices. Grain output is expected to continue to decline as budget constraints force subsidy cuts. Concern about depletion of water resources will also reduce grain output. Rising imports of rice and wheat are projected as population growth continues strong. Ambitious expansion of the livestock/dairy/poultry sectors, combined with recent steps to privatize feed grain imports, are expected to result in higher imports of feed grains and oil meals.

Turkey's expanding population is becoming increasingly urbanized, raising demand for livestock and poultry products. While poultry output is rising sharply, livestock development continues to lag, resulting in high meat prices that contribute to inflationary pressures. Lack of a strong commitment to privatization and restructuring in the farm sector is expected to affect output growth throughout the projection period. High support prices are likely to continue to stimulate domestic grain production in the near term. It is assumed, however, that high current price supports for wheat and coarse grains will not be sustained in the longer term, leading to slower output growth and rising imports later in the projection period. Rice imports are expected to grow steadily. Cotton consumption is projected to rise as the textile sector expands and, despite

area expansion on new lands in the Southeastern Anatolian Project towards the latter half of the projection period, imports should remain strong and exports small.

**Western Hemisphere**

**Canada.** The global slowdown resulting from the Asian financial crisis and its spillover effects to other regions will affect Canada's economic growth over the next few years. Canada's competitive position continues to improve because of depreciation of the Canadian dollar against the U.S. dollar, slower growth in domestic unit labor costs, and lower inflation. While some strengthening of the Canadian dollar is anticipated over the next 2 years, the long-term trend of real depreciation against the U.S. dollar is expected to continue during 2000-2008.

Domestic support for agriculture, through programs such as the Net Income Stabilization Account (NISA), Crop Insurance, Companion Programs, Advance Payments Program, and Price Pooling Program, is expected to decline during the projection period. The major support program, NISA, is assumed to be production neutral in the baseline analysis. Supply management programs are expected to be maintained for dairy, eggs, and poultry products. In addition, it is assumed that WTO commitment levels will extend to the year 2008.

Canada is facing a major restructuring as a result of transportation and marketing deregulation. Pending completion of an ongoing official Canadian review, it is assumed that current transport and marketing regulations remain in effect, with no significant change in transportation policy with respect to grain movement to export position.

The 1995 elimination of transportation subsidies encouraged production of high value products such as livestock and canola in Western Canada. In the near term, the livestock sector will be depressed by weak Asian demand. Despite low meat prices, adjustments to current low grain prices are expected to include both expansion of herd size for future production and longer retention of animals on feedlots. In the long term, it is expected that more Canadian-produced feeds will be fed domestically to support growing livestock operations.

Crop production patterns are expected to continue to favor canola in Western Canada, with wheat acreage remaining below 13 million hectares in the near term. Canada is expected to continue to maintain a number of important niche export markets, including oats in the United States; barley malt in China, Latin America, the Middle East, and Japan; and durum wheat in the United States and North Africa.

**Mexico.** Mexico is expected to show the fastest economic and population growth in North America over the next decade. Relatively fast growth, along with trade liberalization and domestic policy reform, will be the key factors shaping the outlook for Mexican agriculture during 1999-2008. Mexico is expected to be a progressively larger importer of grains, oilseed products, and meats during the projection period. Production capacity will remain limited by scarce water and land and low levels of technology, while rising incomes drive up demand for livestock products and feeds.

Agricultural policy is expected to continue to be driven by the Alianza para el Campo, of which the PROCAMPO program is a major component, and by NAFTA. Under PROCAMPO, the government continues to reduce its role in supporting grain prices. With lower import duties on corn, sorghum, and wheat, there will be more price transmission between the world and the Mexican domestic grain markets. PROCAMPO direct payments, which require planting but are otherwise decoupled, will continue to be phased out. Mexico is also expected to continue to reduce consumer subsidies. Subsidies on animal feed through CONASUPO will also be eliminated as feed compounders procure corn directly from farmers.

Under NAFTA, all tariffs on baseline commodities will be eliminated by 2008. Because of the price-competitiveness and quality of U.S. corn, pork, poultry, and eggs, particularly to the border areas, it is assumed that Mexico will import at least the tariff-rate quota quantities. In the case of poultry, it is assumed that Mexico will continue to not enforce the TRQ, leading to steady modest growth in imports.

New programs aimed at improving agricultural productivity are assumed to have a small impact on farm output during the projection period. The new programs include initiatives for water distribution and irrigation investment, improved genetic material and equipment for livestock producers, technology transfer for the cattle and oilseed sectors, certified seed exchange, and an extension initiative for corn. The objective is to provide producers with the tools to operate in an environment largely free of government intervention but, until there is concrete progress in implementing the programs, it is assumed that impacts will be relatively small.

**South America.** Although near-term economic growth in the region is assumed to slowed somewhat by financial and trade impacts of the Asia crisis, virtually all of the region's economies are expected to register stronger long-term growth during the next decade than in the recent past. Growth is expected to be led by the two largest economies in the region, Argentina and Brazil. Like many countries in the region, they are expected to continue to benefit from their successful evolution from semi-authoritarian political systems and managed economies to political pluralism and market-oriented economies.

Crop production in Argentina exceeded all expectations in 1997, as record production levels were established for corn and soybeans, with wheat output within 10 percent of the record set a year earlier. Near-perfect weather conditions induced by El Nino helped farmers achieve yields that eclipsed previous highs by more than 10 percent for wheat and soybeans, and more than 30 percent for corn. Even with substantial increases in domestic use and stocks, Argentina sharply increased corn exports.

Over the 10-year horizon of the baseline, Argentine production potential will continue to expand rapidly (see box, page 103), although this expansion may be tempered somewhat if global demand and commodity prices remain weak. Argentina's transportation infrastructure, which has largely been privatized, continues to be upgraded to handle the expanding supply of products more efficiently and at lower costs. The livestock sector, which has recently been suffering through a period of depressed cattle prices, is poised to rebound, as Argentina has been declared free of foot-and-mouth disease, opening new markets for Argentine fresh and frozen beef.

## Expanding Production Potential in Brazil and Argentina

Brazil and Argentina both have tremendous agricultural production potential, which has only begun to be fully exploited during the past 10 years. In the current economic environment, however, much of this potential may remain untapped for a considerable time. International commodity prices are weak and the Asia crisis limits the ability of export markets to absorb new production, so there is considerably less incentive for growth. Brazil's current economic problems limit its ability to fund large-scale development projects in the near term.

Brazil is one of the few countries to increase its agricultural land base during the 1990s. According to FAO, Brazil's arable land area rose from 45.6 million hectares in 1990 to 53.5 million hectares in 1995. The large increase was in cultivated pastures, especially in Mato Grosso, Mato Grosso do Sul, and Tocantins, converted from forests and woodlands (Brazil; 1995 Agricultural Census). Cropland, however, did not expand. Total cropped area, including area in traditional and well-developed agricultural areas, declined between 1985 and 1995. Declines in wheat, rice, barley, sorghum, and cotton area more than offset increases in sugarcane and soybeans.

In Brazil, new soybean area has been developed through investments that improved river and rail traffic, opening up new areas of production where it was not economically feasible before. Introduction of new varieties suitable for cultivation in Brazil's tropical savannah area (cerrados) in Goias, Mato Grosso do Sul, and Mato Grosso, has also permitted area expansion. Soybean area increased from about 11.5 million hectares in the late 1980s to 13 million in 1997 and yields improved by more than 20 percent, boosting output from 23 million metric tons to 31 million.
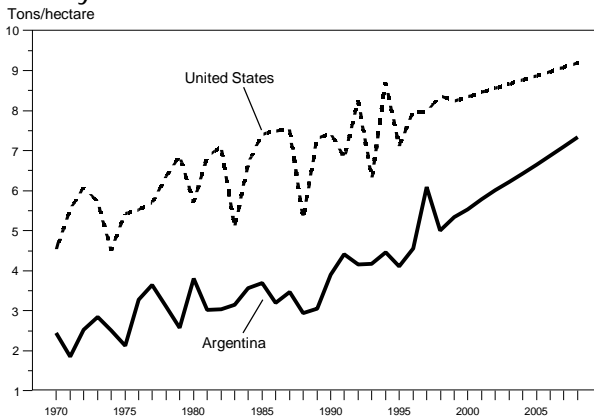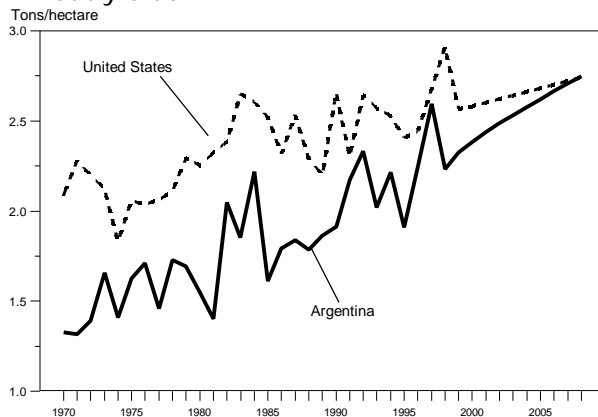
Figure 6
### Corn yields
Tons/hectare



Figure 7
### Wheat yields
Tons/hectare



In Argentina, both grain and oilseed production have increased dramatically since the late 1980s. Gains are associated with the more favorable economic climate provided by currency realignment and other market-oriented reforms, by allocation of road and railroad concessions to the private sector, by privatization of communications and power sectors and ports, and by strong world commodity prices for part of the period. These changes have transformed the way the country produces and markets agricultural commodities. Between 1990 and 1997, production of

**--continued**

**Expanding Production Potential in Brazil and Argentina** – continued

wheat increased from 10.9 to 14.8 million tons, corn from 7.6 to 19.4 million tons, sunflowerseed from 4.2 to 5.4 million tons, and soybeans from 11.5 to 18.7 million tons.  Gains have been driven by area expansion, and by dramatic increases in yields due to improved genetics and to more use of fertilizers, irrigation, and machinery.  The favorable weather effects of El Nino also aided 1997 crops.
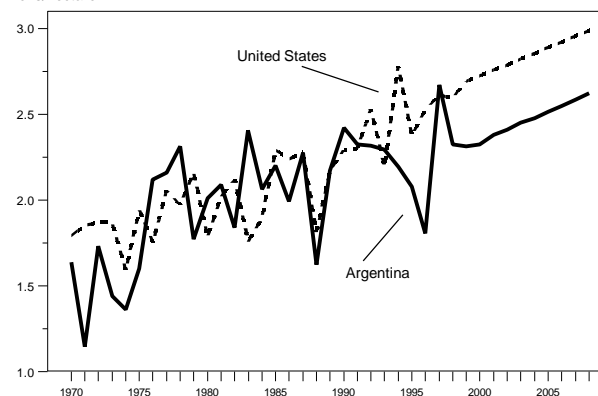
The current baseline projections anticipate that agricultural production growth rates in Brazil and Argentina will remain strong.  Growth, however, is not expected to be as spectacular as in the past few years, as only moderate increases in commodity prices and the effects of the current financial crisis weigh on expansion plans.  If favorable market conditions do develop, however, Brazil and Argentina are poised to resume their spectacular growth rates of 1990-97.

Figure 8

Soybean yields
Tons/hectare



In the states of Maranhao and Tocantins in north-central Brazil, for example, the potential exists to increase soybean area from only 0.2 million hectares in 1998 to about 3 million hectares, putting this region on a par with the main traditional soybean producing areas of Rio Grande do Sul and Mato Grosso.  With the devaluation of the Brazilian currency, Brazilian soybeans and products will be even more competitive with U.S. exports in the international market.

In Argentina, future growth will likely manifest itself in the form of higher yields, rather than area expansion.  Yields of wheat, and especially corn and soybeans, are still considerably lower than in the United States (see figures 6-8).  But, with continued adoption of higher-yielding plant varieties and more intensive input use, Argentina may more rapidly close this gap.

After enjoying prosperity and stability since late 1994, Brazil's economy is expected to turn downward in 1999.  Despite the successes of the Real Plan, large trade and budget deficits necessitated sharp hikes in real interest rates in an attempt to choke off currency speculation.  The November 1998 IMF agreement, providing a $41.5 billion reserve package to accompany austerity measures, is expected to help return Brazil to a relatively strong growth path over the next 2-3 years.

Brazil's agricultural production prospects are expected to improve in the longer term (see box, page 103), despite near-term constraints on investment in processing facilities and other infrastructure stemming from the current austerity measures.  With continued gradual real depreciation of the exchange rate over the long term, Brazilian producers should continue to face stronger price incentives in local currency terms.  Waterway and railroad transportation is also expected to improve, making more agricultural production accessible to terminals and more competitive in international markets.  The conversion of undeveloped land to arable land is

expected to gain momentum in the decade, leading to further gains in soybean area and, particularly, cultivated pastures to support livestock expansion. Area planted to wheat and corn is, however, expected to show little or no growth because of competition from more efficient producing areas in neighboring Argentina.

**Transition Economies**

**Former Soviet Union.** The economic crisis that hit Russia in August 1998, and the ensuing replacement of the reformist government under Prime Minister Kirienko by the more conservative government of Prime Minister Primakov, requires substantial reassessment of macroeconomic assumptions for Russia. Russia's crisis was precipitated by the twin decisions of the government in August to default on the state's short-term debt and devalue the ruble. The effects (already in progress) are large-scale capital flight, major depreciation of the ruble (in both nominal and real terms), high inflation following the depreciation, and a fall in GDP, mainly because the capital flight will reduce investment and consumer demand. Russia's crisis has also spread to Ukraine.

The anti-reform policies of the new Russian (and Ukrainian) government are likely to include increased subsidies to support industrial and agricultural production, stronger controls over foreign trade and exchange earnings, and possibly price controls, particularly if the government finances the new spending by the inflationary printing of money. The baseline assumes, however, that after a few years, the anti-reform policies in both countries will lead to such serious economic problems (mainly growth stagnation and inflation, either open or repressed) that market reform policies will be renewed (see box, page 106).

In Russia and Ukraine, GDP is assumed to fall through 2000. The drop in GDP in Ukraine is expected to be smaller than in Russia because it has less reform progress to lose. As reform is renewed early in the next decade, GDP in both countries is assumed to rise at an annual rate of 3 percent. Over the next 4 years the exchange rates of both countries are assumed to depreciate in real terms by about 50 percent. When reform is renewed, real exchange rates are assumed to again appreciate in real terms by 50 percent. However, this leaves rates at the end of the projection period lower in real terms by about 25 percent, reflecting long-term suspicion of the currency's strength after the huge recent depreciation. Price transmission between world and domestic markets is assumed throughout the forecast period to be 75 percent, which means that a 1 percent change in the world price for a good would result in a 0.75 percent change in the domestic price.

Productivity gains in both the crop and livestock sectors are assumed to remain small, particularly during the anti-reform years. Government concern during this time will be with increasing output by raising subsidies to push up input use in agriculture, rather than pursuing institutional-type reforms which could increase productivity by improving incentives to use inputs more wisely. Agricultural productivity growth is assumed to pick up when reform begins again around 2002.

### The Russian Economic Crisis: Impacts on Agriculture

Russia's agricultural trade will be strongly affected by both the current economic crisis and the government policy response to the crisis. The general effect of both developments will be to reduce Russia's agriculture and food imports. The crisis will decrease imports for two reasons. First, GDP, employment, and consumer income are all going to decline over the next few years, and have already begun to do so. This will reduce demand for imported foodstuffs, particularly meat and other high value imports for which demand is relatively sensitive to drops in consumer income. Second, the severe depreciation of the ruble has made all imports much more expensive relative to domestic goods.

In addition to these market-driven impacts, agricultural trade will also be affected by the trade policy measures adopted by the new Russian government in response to the crisis. The new regime is expected to impose an economy-wide increase in government controls, including more restrictions on foreign trade and the use of foreign exchange. During this period of anti-reform, assumed to extend until 2001, trade is expected to become more administratively driven. Russia's agriculture and food imports consist mainly of high value products, such as meat, fruit, beverages, and confectionary products. In spending its scarce foreign exchange, the new regime is not likely to favor imports of Western high value foods. The one exception might be poultry. Poultry is the only major foodstuff in Russia for which imports supply more than half of total domestic consumption. Imported poultry has become very popular in Russia, particularly dark meat, which means the regime might continue to import it in order to please consumers.

In addition to reducing imports of meat and other high-value products, the depreciation of the ruble could potentially increase net exports of certain commodities. In the last few years Russia has been a small net importer of grain, but the sharp depreciation of the ruble could increase the price-competitiveness of Russian grain enough to permit significant net exports. It is unlikely, however, that the anti-reform government would allow this market-driven result to occur. Although the government values foreign exchange earnings, it has equally strong concerns about national food security (whether justified or not) and containing consumer price inflation. Just as regional governments are currently restricting grain outflows, it is likely that the central government will control and restrict grain exports during the next few years. Therefore, it is assumed in the projections that grain exports, although likely to rise somewhat, will be restricted by the equivalent of export taxes in the period of anti-reform measures through 2001.

**Central and Eastern Europe.** The economic outlook for the region calls for continued income growth and falling inflation. As the economic transition proceeds, it is assumed that most of the rigidities inherited from the Communist period of central planning will be removed, leading to fuller transmission of world market prices to internal markets. The projections are based on the assumption that most world agricultural commodity prices will be fully transmitted to domestic markets and that import tariffs in most cases will not exceed 30 percent. In the short term, policies in the Visegrad countries (Poland, Hungary, the Czech Republic, and Slovakia) have kept domestic producer prices near world levels. These measures have tended to counter the downward pressures on prices coming from lingering bottlenecks in the downstream sectors. As

a result, it is assumed that domestic producer prices will not differ greatly from world market prices. Pressure to keep state budgets in balance is expected to remain the principal constraint on agricultural policy. Of the Visegrad Four countries, only Hungary seeks to be a major grain exporter. Others aim for self-sufficiency.

The projections also incorporate the assumption of a steady increase in efficiency in the agricultural sector, reflected in moderate gains in crop yields and greater feeding efficiency in the livestock sector. These productivity increases are expected to come about as a result of continuing progress toward market reform in all the CEE countries. Rising incomes and lower interest rates will bring badly needed investment to both agriculture and food processing. There will likely be some consolidation of the small fragmented farms that currently dominate much of the landscape. It is anticipated that land tenure will become more permanent, bottlenecks in issuing titles will be resolved, and true land markets will develop as capital markets improve.

The baseline assumes that none of the CEE countries will join the EU during the projection period. Although some CEE countries may join the EU by 2003, the timing and terms of accession are uncertain. When CEE countries do accede to the EU, significant changes in domestic and trade policies from those assumed here are likely.

### Commodity Trade Highlights

Growth in global and U.S. trade of most bulk commodities will be slowed during the next 2 to 3 years by weakened demand associated with the Asia crisis. U.S. near-term trade prospects will also be affected by increased competition associated with productivity gains, particularly in Argentina, and with sharp devaluation of currencies by some competitors. Near-term growth in both global and U.S. meat trade will be affected by depressed Asian demand and, particularly, the drop in effective demand in the key Russian market.

In the longer term, during 2000-2008, growth in global and U.S. bulk commodity trade is projected to strengthen, with trade volume for most commodities expanding faster than during the 1980s or 1990s. Projected growth is driven by the anticipated recovery of the Asian economies within 3 to 4 years, combined with broad-based expansion in other developing areas, including Asia, Latin America, North Africa, and the Middle East. Growth in world meat trade is also expected to recover after 2000, along with the recovery of the large East Asian markets, but long term growth is projected to remain slower than during the 1980s or 1990s. Competition from other suppliers, including the EU (wheat), Argentina (corn, wheat, and soybeans), Brazil (soybeans), and China (corn), will continue to limit gains in U.S. market share.

Rising per capita consumption of meat, feed, wheat, and vegetable oils, driven by higher incomes and urbanization across developing countries, are the key source of the strong projected growth of bulk commodity trade. Future developments in China and the FSU are among the key uncertainties in the outlook. In the current projections, China's grain imports are expected to show only moderate growth over the projections period, and little growth is anticipated in FSU trade, even in the longer term.

World commodity prices are expected to remain depressed in the near term by the combination of weakened global demand and increased competition. Prices are projected to strengthen over the longer term, as supplies adjust and a recovery in Asian demand is added to steady growth in other regions. However, particularly with limited growth in imports by China and the FSU, real prices are projected to continue to decline over the longer term as productivity gains continue to outpace growth in demand.

**Coarse Grains**

Demand for coarse grains is expected to grow robustly over the next decade, increasing faster than during the 1980s and 1990s, but slower than during 1970s. An important constraint on coarse grain demand over the last decade was the decline in animal numbers and reduced feeding in the former Soviet Union and Eastern Europe as these economies experienced structural reform. Even though these transition economies are expected to increase grain feeding only modestly over the next decade, declines in these regions will no longer offset the growth in demand that occurs elsewhere. Despite a slowdown in demand in the early years of the baseline caused by the Asian financial crisis, developing regions, especially China, Latin America, North Africa, and the Middle East, are expected to lead world growth in feed grain demand over the next decade.

About two-thirds of global coarse grain supplies is used as animal feed, and coarse grain that is traded is primarily used as feed. Thus, rising incomes and associated gains in per capita meat consumption, particularly in developing countries, drive projected gains in coarse grain feed use and trade. Industrial uses, such as starch production, ethanol, and malting, are relatively small but growing. Food use of coarse grains is concentrated in parts of Latin America, Africa, and Asia, and has generally declined over time as consumers tend to shift consumption toward wheat, rice, or other foods as incomes rise.

As with demand, foreign coarse grain production is projected to rise more rapidly in the baseline projections than during recent decades. Except for corn, coarse grain area has been falling for decades in most countries, as producers turned to higher priority or more profitable crops. The projections indicate that foreign coarse grain area will stop declining. Foreign corn area is expected to continue to increase at the strong pace of recent decades, while sorghum, barley, and other coarse grain area stabilizes or increases slowly. Growing demand for malting barley is expected to support barley area. With corn yields expected to growth much faster than for other feed grains, corn will account for an increasingly dominant share of feed grain use and trade.

World coarse grain import demand is projected to strengthen, with projected annual growth of about 3 percent reversing a decline that began in the early 1980s. Global coarse grain trade is projected to exceed the 1980/81 record of 108 million tons in 2003/04 and reach 126 million tons by 2008. Strong economic growth is expected to fuel higher coarse grain imports by China, North Africa, and Latin America. East Asia's imports are projected to remain mostly steady despite near-term macroeconomic problems, as these countries tend to maintain domestic livestock and poultry production, while slowing meat imports. Taiwan's feed imports are expected to begin recovering by 2000, as hog numbers start to rebound and poultry production continues to expand. Southeast Asian feed grain imports are expected to be slowed by the

effects of the financial crisis, but show strong longer term growth. The FSU, one of the world's largest importers during the 1980s, is expected to be a modest net exporter of coarse grains, mostly barley. Only slow growth in consumer demand and livestock output is anticipated in the FSU.

World corn trade is projected to expand rapidly in the baseline, reaching 91 million tons by 2008. The largest gains in corn imports are expected to occur in Southeast Asia, Latin America, North Africa, and the Middle East, where demand for feed for livestock is expected to expand modestly and production potential for corn is limited. Also, China is projected to become a net importer of corn by 2005, as feed demand outpaces productivity gains.

For barley, much of the demand growth will occur in China and other malting barley markets. Feed barley imports by Saudi Arabia are expected to expand but, in most other markets, growth in feed barley imports may be slowed by constrained supplies and substitution of other feeds. Crop competition will likely reduce feed barley area in Canada and Australia, and EU exports will be constrained by the Uruguay Round limits on subsidized exports. Although some increase in net barley exports by the FSU is anticipated following the depreciation of the ruble, the quantities that can be exported outside the FSU may be limited. The responses of barley exporters and importers to changing price signals are important uncertainties in the coarse grain trade projections.

U.S. coarse grain exports are projected to grow about 3 percent annually during the baseline, reaching the 1979/80 record of 71 million tons by 2008. U.S. exports of corn are projected to rise by an average of 2 million tons per year and reach 63.5 million tons by 2008. The U.S. share of world coarse grain trade is projected to increase modestly to about 58 percent in 2006, and then stabilize.

Competitor corn exports are also expected to increase, with Argentina achieving particularly rapid gains in market share because of rising yields and improved infrastructure. China is projected to remain a significant corn exporter even after shifting to a net import position late in the baseline.

**Wheat**

World use of wheat is projected to rise slightly faster in the baseline than than during the past 10 years, but only half the rate of the 1972-86 period. Developing countries account for 81 percent of the projected increase; the transition economies of the former Soviet Union and Central and Eastern Europe about 12 percent, and; developed countries about 6 percent. In the United States, domestic use of wheat is stagnant as small increases in food use demanded by a slowly expanding population are offset by lower feed use. The lack of growth in U.S. domestic use indicates that increases in U.S. production will need to find foreign markets.

The trend in average world per capita use of wheat and flour is expected to be flat during the projection period. Demand is constrained by somewhat slower income growth now projected for the developing economies, particularly in Asia. World average per capita use peaked at 106 kilograms in 1990 before falling to 96 kilograms in 1995. Since the projected growth rate in

total use slightly exceeds the global population growth rate of 1.3 percent per year, per capita use is projected to climb slowly from the 1996-98 average of 100 kilograms per year to 102 kilograms by 2008.

World wheat production is expected to increase by about 1.5 percent per year. World wheat area is projected to expand gradually as a slightly increasing price ratio of wheat to other grains attracts additional area. However, world area is not projected to exceed the 1996 level until about 2004, and remains about 3 million hectares below the 1981 record of 239 million hectares at the end of the baseline. The global average wheat yield declined slightly in 1998 from the record 2.66 metric tons per hectare set in 1997, but is projected to climb about 1 percent annually over the next 10 years. The trend growth rate for world wheat yields has been declining for the last 3 decades, caused in part by lower quality soils being brought into production and reduced budgets for research and development.

World wheat trade (including the wheat equivalent of wheat flour) is projected to grow at an average annual rate of 2.3 percent during 2000-2008. Projected growth in imports is concentrated in the developing countries, primarily in North Africa, the Middle East, China, Indonesia, and Pakistan. Very small increases in imports are expected in the newly industrialized countries of East Asia or the FSU, and small declines in wheat imports are projected in Eastern Europe.

Although nominal wheat prices are expected to increase over the next 10 years, real wheat prices are projected to continue to decline, consistent with the long-term trend. The share of world exports supplied by developing and transition economy competitiors, including Argentina, Kazakstan, Ukraine, and Eastern Europe, is projected to increase slightly. Canada's market share is projected to decline somewhat. The United States is projected to maintain a roughly constant one-third share of the world market.

Limits on export subsidies under the UR agreement, coupled with budgetary pressures, are expected to make export subsidies less important in determining wheat market shares in the future than they have been in the past. However, a portion of budgeted EEP funds are assumed to be used for wheat starting in 1999/2000, so targeted U.S. export markets receive larger exporter subsidies than in recent years. Over the longer term, however, export market share is likely to be determined by the cost effectiveness of wheat production, transportation, and marketing. Wheat production and exports in the United States are expected to be limited by the slow growth in wheat yields relative to other crops. In Canada, higher transportation costs, may encourage area shifts toward higher-valued crops, including canola. In Australia, increasing wool prices, and limited areas with enough rainfall, will limit expansion. Argentina is expected to shift area between wheat, corn and oilseeds, depending on relative world market prices.

The EU is expected to lose market share during the next several years as exports are constrained by export subsidy limits set by the UR agreement. All other exporters, including the United States, are expected to gain some market share from the EU until the combination of higher world prices and lower internal EU prices permits the EU to export without subsidy. Projected world and EU internal prices permit unsubsidized EU wheat exports beginning in 2002, after which the EU market share begins to recover.

**Rice**

Global rice trade is projected to grow more than 2 percent annually from 2000 (MY 1999/2000) through 2008.  World trade is expected to drop in 1999 as the impacts of the 1997 and 1998 El Nino diminish.  World trade is projected to rise to 22 million tons in 2001, and reach 26.7 million tons by 2008--more than 6 percent above the current record of  25.1 million set in 1998.  Projected trade growth is faster than in the 1980s, but slower than in the 1970s and much of the 1990s.  The growth in trade is expected to exceed the pace of expansion in production, resulting in trade's share of production rising from a little more than 5 percent currently to more than 6 percent by 2008.

Trade is expected to continue to consist predominantly of long-grain varieties, despite anticipated gains in medium-grain (japonica) rice imports by Japan and South Korea under the Uruguay Round agreement.  Nominal prices are expected to rise throughout the projection period, while real prices are expected to fall, although less rapidly than in the past.  Global medium-grain rice prices are expected to rise relative to long-grain prices due to limited world export supplies of high-quality japonica rice and greater import demand.

Foreign production is projected to rise gradually, growing about 1 percent per year.  Projected growth is slower than in the 1970s and 1980s, when irrigation expanded more rapidly in Asia and Green Revolution technology was widely adopted.  Slower production growth stems primarily from a projected slowdown in yield increases.  Global acreage growth is expected to remain extremely small, as it has since the mid-1970s.

Foreign consumption is projected to rise slightly more than 1 percent annually, markedly slower than during the 1980s and early 1990s.  Per capita rice consumption in higher income Asian countries has been declining, and is expected to continue to decline, as larger portions of the population achieve middle-class incomes and consumption of rice declines in favor of other foods, such as wheat products, fruits and vegetables, and meat.  Per capita rice use in other countries, such as China, is projected to flatten or decline during the coming decade, as consumers continue to shift from lower-quality to higher-quality rice varieties and to diversify their diets away from rice in response to rising incomes.  These developments are expected to offset consumption gains in other regions, primarily lower income rice producing countries--such as India--and higher income nonproducing countries--such as Canada and northern and eastern Europe, where per capita rice use is still rising.

The U.S. export market share for rice varied from 15 to 18 percent between 1991 and 1995, and averaged 12.5 percent from 1996 to 1998.  It is projected to average about 11 percent from 1999 to 2001, and then steadily decline to under 9 percent by 2008.  Small U.S. production gains, continued growth in domestic use, and high U.S. prices relative to Asian competitors are expected to limit the volume of U.S. rice exports.  By 2008, total U.S. exports are projected at 2.4 million tons, while total imports are expected to rise to 0.54 million tons, leaving the United States a net exporter of almost 1.9 million tons of rice in 2008.

As a major exporter of medium-grain rice, the United States has benefited significantly from the Uruguay Round agreement.  But, despite significant market access gains in East Asian medium-grain markets under the agreement, total U.S. rice export volume is projected to increase only marginally in the baseline.  The extent of U.S. gains in medium-grain markets depends on U.S. capacity to expand production and exports on a sustainable basis.  California, the primary U.S. producer of high-quality japonica rice, faces increasing environmental restrictions on expanding acreage and improving already high yields.  Limited availability of additional water prevents any substantial increase in California rice area as well.  Other U.S. growing regions have yet to develop suitable japonica-type varieties for cultivation.  The outlook for a widening long-grain export price premium compared with top-quality Asian exports implies that the United States will lose some of its long-grain exports in the more "price-sensitive" markets such as the Middle East.  Further, under fixed budget levels, higher domestic prices imply lower program-assisted exports.

Historically, rice trade and prices have exhibited greater volatility than those of other cereals.  This volatility stems from the dependence of many large producers and traders, including Indonesia, the Philippines, Thailand, Vietnam, and India on the timing and amount of rainfall during the Asian monsoon season.  In addition, only a small share (about 5 percent annually) of world rice production is traded.  These factors will continue to affect the world rice market during the next 10 years, with the potential to create dramatic annual swings in trade and prices that could deviate significantly from the trends projected in this baseline.

**Cotton**

Growth in foreign production and use of cotton both slowed to negligible rates during the last 10 years but, until the Asia crisis, both had begun to rebound.   Growth is expected to resume, but not to return to the long-term average growth rate of 2.2 percent per year during the baseline.  World cotton consumption is projected to expand approximately 1.5 percent annually during the baseline, underpinning the outlook for relatively strong import growth.  However, a key uncertainty in the projection is the extent to which earlier gains in cotton consumption, associated with a shift in consumer fiber preference toward cotton and away from synthetics, can be sustained.  Sustained Asian investment in polyester capacity up to the onset of the region's financial reversals suggests vigorous competition for fiber share in coming years.

Foreign cotton production stagnated in the decade up to the mid-1990s, as smaller harvests in China and the FSU offset gains elsewhere.  High levels of input use and poor water management have rendered useless much of the area abandoned in Central Asia during the 1990s, and this area is expected to remain out of production during the projection period.  Pesticide resistance and competition from other crops hampered production in China, although recently yield growth has apparently resumed.  Further losses in these regions are not expected, and Central Asia's production is expected to resume growth, although not as quickly as elsewhere.

World cotton trade is expected to average about 2-percent annual growth in the baseline, reversing much of the decline suffered during the previous 10 years.  World cotton trade fell from a peak of 33.4 million bales in 1988 to as low as 25.6 million in 1992, in large part due to declining Russian imports.  Imports have again slipped to about 25 million bales in 1998 as the

Asian financial crisis cut purchases by some Asian importers, and Russia's imports again fell. China also switched from a large importer to an exporter in 1998. Import growth is foreseen in Russia, China, and elsewhere after 1999 and, by 2008, world exports are projected at 31.4 million bales.

World trade contracted for two reasons beginning in the late 1980s--the virtual collapse of Russia as a consumer and importer of cotton, and the continued shift of spinning from traditional importers to cotton-producing countries. Neither factor is expected to be as important in the future. Russia's cotton consumption fell more than 80 percent between 1989 and 1996 during the restructuring of Russia's political, economic, and foreign trade systems. Elsewhere, other traditional cotton-importing countries found it less expensive to purchase cotton yarn and fabric for their textile industries as inexpensive textile imports flooded their markets, particularly from Pakistan through the early 1990s. These imports took the place of imported raw cotton.

With Russian and Central and East European consumption beginning to rebound after 1999, world cotton trade is likely to grow during the next 10 years. Also, pest and disease control problems have constrained Pakistan's ability to maintain its earlier growth rates in cotton production, cotton consumption, and textile exports. This strengthens prospects for raw cotton demand by some cotton-importing textile exporters who will face less competition. Finally, several countries that were net suppliers to world markets as late as 1990 have become importers instead. In past years, increasing cotton use in Mexico, Brazil, and Turkey in part represented shifts in consumption from importing countries to non-importing producers. As consumption gains have consistently outpaced production in all three countries, they have begun to steadily import, driving world trade higher.

Foreign export growth is expected to recover during 1999-2008, but to remain below the long-term trend. By 2008, foreign exports are expected to total 23.7 million bales. Foreign export growth will be supported by some resumption of trade relations between countries of the FSU, and by growing import demand from China, Latin America, and Southeast Asia.

U.S. exports are also expected to trend up during 1999-2008, growing to 7.7 million bales by 2008. The U.S. share of world trade is projected to average about 24 percent, below its average share during 1990-1997. U.S. export share was boosted during much of the 1990s by extremely large imports by China and by Step 2 payments to domestic users and exporters of U.S. upland cotton which increased the competitiveness of U.S. cotton.

The rapid consumption growth of the 1980s, spurred by prolonged economic expansion and sharp share gains by cotton versus other fibers in some markets, is not expected to resume. In the short term, demand growth by several cotton importers is likely to be constrained by relatively sluggish economic performance and economic restructuring. In the longer term, the liberalization of textile trade under the Uruguay Round agreement will also constrain cotton imports by the most developed traditional importers, such as the EU and Japan. In contrast, relatively fast demand growth is expected in many developing countries, while steady growth continues in major cotton-producing countries. However, the pace of this structural shift will depend on how the phaseout of the Multi-Fiber Arrangement is implemented. While it is anticipated that the most significant changes will probably be delayed until the end of the

implementation period in 2005, large uncertainties remain about the timing of liberalization and shifts in garment production both to and among developing countries.

**Soybeans and Products**

World trade in both total oilseeds and soybeans is projected to increase faster in the baseline than during the 1980s, but much more slowly than in the early 1990s.  The Asia crisis will limit trade growth for oilmeals (including soybean meal) over the short term but trade is projected to strengthen as those economies recover.  During 2000-2008, global exports of soybeans and meal are projected to rise at annual rates of 1.6 and 1.9 percent, each reaching 46.2 million tons by 2008.  Combined exports of soybeans and meal, on a soybean-equivalent basis, are projected at 95.3 million tons by 2003 and 104.7 million tons by 2008.

World vegetable oil trade is projected to grow about 3 percent annually in the baseline, less than the rates achieved in the 1980s and the early 1990s.  Soybean oil trade is projected to slow even more than total vegetable oil trade, although both world and U.S. exports of soybean oil are projected to grow faster than exports of soybeans.  With the outlook for continued faster growth in trade in oil relative to meal, incentives to produce high-oil content oilseeds and palm oil are expected to strengthen.

*Soybeans and Meal*

U.S. exports of soybeans and soybean meal are projected at 29.0 million and 8.6 million tons, respectively, in 2008.  The U.S. soybean market share is projected to cycle higher to 65 percent by 2001 as domestic supplies grow relative to foreign supplies.  But once weak prices eventually cut domestic soybean returns and production, the U.S. share drops back to 61 percent in 2003, with a gradual upturn through 2008.   Similarly, the U.S. market share of soybean meal trade also edges up to 22 percent by 2000 but contracts to 19 percent again by 2008.  These projected U.S. shares contrast with significantly higher shares for soybeans (73 percent) and soybean meal (24 percent) achieved in the 1980s, when U.S. production was a higher proportion of the world total.  Increasing U.S. livestock numbers, especially poultry, raise domestic demand for soybeans and meal, eventually constraining U.S. exportable supplies.  Rising meat exports also keep more feed supplies within U.S. borders than in the past.

Foreign soybean production is projected to climb to 97.9 million tons in 2008.  Foreign supply growth is expected to be sharply slower than during the 1970s and 1980s.  Currently, only Brazil has the capacity to add large amounts of land to soybean production.  Foreign soybean yields are forecast to rise at a modest 1.3 percent annually.  In the near term, low prices and tight credit will constrain area expansion and application of inputs in these countries.  A stronger price situation by 2001 will raise returns and production by foreign producers.  Argentina's small consumption base and rapidly expanding crush capacity assure long-term growth in exports of soybean meal.

Gains in world soybean meal consumption are projected to be smaller than in the 1980s and early 1990s.  Mexican soybean imports remain robust.  Protein meal consumption in China and Southeast Asia should recover in the next 2 years, but EU imports of soybeans and soybean meal are expected to slip as the cost of feeding grains declines.  Eventually, improved economic

growth in developing nations is projected to rebound and support global consumption growth at about 2.2 percent annually.

*Soybean Oil*

Foreign soybean oil production is projected to rise 2.6 percent annually and reach 18.8 million tons by 2008. Growth in soybean processing in Mexico, Brazil, Argentina, India, and China accounts for most of the projected gains in foreign soybean oil output. World use of soybean oil is projected to expand at a rate of 2.2 percent annually in the baseline, about the same as in the 1980s, but well below the strong 5.3-percent rate of growth achieved during 1992-97. Projected consumption gains are concentrated in the developing nations of Asia and Latin America, with less growth anticipated in Western Europe, the former Soviet Union, Japan, and the United States.

Slower growth in soybean oil trade is projected in the baseline compared with about 9 percent in the early 1990s, when trade responded to U.S. and EU subsidies and sharp import gains in developing countries. Future growth in soybean oil trade will be curbed by reduced U.S. export subsidies and higher relative prices that shift demand toward competing oils. In the near term, the 1997-98 drought in Southeast Asia will continue to check global palm oil output and trade. The long term outlook, however, is that palm oil producers will reemerge as strong challengers to exporters of soybean oil.

The U.S. share of global trade soybean oil is projected to rise to 25 percent through 2004, with exports peaking at 1.9 million tons. Slower growth in domestic soybean oil production, greater South American competition, and global output gains for other vegetable oils will pare the U.S. market share back to 21-22 percent. Projected U.S. soybean oil exports would slip back to 1.8 million tons by 2008.

**Beef**

World beef production and consumption are projected to increase by 20 percent between 1998 and 2008. The largest increase in beef consumption is expected to be in China, and will likely be satisfied with increased domestic production. Production is expected to increase significantly in the FSU after the economic situation improves in that region, boosting (mainly intra-FSU) exports from recent low levels back to those that prevailed in the early 1990s. FSU net beef imports are likely to increase in the longer term in response to economic recovery. Besides China and FSU, the only other major beef-producing countries where production growth is projected to exceed 1 percent are Mexico, Canada, and Brazil. U.S. beef production is projected to be relatively stable in the baseline, with an increasingly larger share being higher quality hotel-restaurant-export beef. Production and consumption in the EU are expected to continue gradually declining, with trade remaining constant and stocks high.

Global per capita beef consumption is projected to increase gradually as meat demand increases in response to income growth, mainly in lower income countries. Nearly 50 percent of projected growth in world beef consumption is expected to occur in Asia. Although the current economic crisis in that region will affect beef consumption in the short run, growth is expected to return to

its trend over the baseline period. However, there may be limited potential for growth in demand for beef in some Asian markets such as Japan, where rapid growth has already occurred. Other countries with significant potential for growth in beef consumption, such as China, are expected to satisfy demand with domestic stock. Nevertheless, considerable growth in demand may occur in a number of smaller Asian markets.

With the exception of China, much of the projected growth in beef and veal consumption in Asia is likely to be satisfied by imports. While the projected increases in consumption will be driven by growth in income and population, a fixed and relatively small land and forage base will limit growth in domestic production and, coupled with lower trade barriers, will allow increased imports. Fundamental economic conditions favor significant growth in Asian incomes, beef demand, and beef imports in the longer term.

Other regions where significant increases in consumption are projected to occur include Brazil and Mexico, which may consume an additional 1 million tons and 0.5 million tons of beef, respectively, by 2008. Less significant increases in consumption are likely to occur in the countries of Central and Eastern Europe, and will depend upon the pace of economic liberalization and growth. While beef demand in Russia is likely to rise above the current low levels associated with the economic crisis in that country, strong competition from relatively cheap pork and poultry will limit increases in beef consumption. Beef consumption in the United States generally declines in favor of relatively cheaper poultry and pork, particularly over the next few years as beef supplies decline with herd rebuilding.

All of the major exporters except the EU are expected to increase production for export. EU beef exports will decline as subsidized exports are reduced to meet Uruguay Round commitments. Australian exports are expected to remain steady at around 1.1 million tons, while the United States is projected to emerge as the world's largest exporter of beef as Pacific rim import demand recovers. Mexico is expected to emerge as a major market for U.S. beef exports. However, competition may come from Argentina in a number of markets. Exports from New Zealand are not expected to increase significantly.

**Pork**

World pork production is projected to increase at a slower rate than in previous decades, as a consequence of lower prices brought about by slowed growth in consumer income, binding environmental constraints, and competitively priced meats that substitute for pork. World pork production is expected to increase at an annual rate of 2.2 percent during 1999-2008. China is expected to be the primary growth area for pork production, with more modest increases projected in the United States, Canada, and the EU-15.

Pork consumption is projected to moderate in developed economies, including the United States, Canada, the EU-15, and Japan, due to modest income gains and competitively priced pork substitutes. Slower demand growth in developed countries is expected to be partially offset by demand growth in Asia and Latin America. Consumption growth in China is expected to average 2.8 percent annually. Pork demand is also expected to grow significantly in developing

countries, such as Mexico, Brazil, and the Philippines, because of economic growth, lower inflation, and higher disposable incomes.

World pork trade is projected to continue to expand, induced by rising demand in Mexico, Hong Kong, and developing Asian countries. Declining domestic production will drive imports in both Japan and Hong Kong. The United States is projected to continue an expanded export role over the next decade, increasing exports by almost 5 percent per year between 1999 and 2008. Factors contributing to robust U.S. growth include a competitive, and increasingly export-oriented, pork production industry. The five largest exporters (the United States, Canada, China, the EU-15, Central and Eastern Europe) account for 87 percent of world pork exports.

**Poultry**

Poultry meat consumption is expected to continue to grow on a worldwide basis during 1999-2008. Higher consumption will be based on poultry's continued cost advantage relative to pork and beef. Increasing incomes and changing food demand patterns are expected to increase the demand for relatively low-cost protein products. Adding to the demand for poultry is the fact that pork is not a desired product in a number of areas where meat consumption is expected to rise. As the world's largest exporter of poultry parts, the United States is expected to benefit from any growth in global demand and trade.

Per capita poultry meat consumption is expected to continue to expand, but at rates less than occurred in the recent past. Much of the projected growth will be in areas such as China, Mexico, and Eastern Europe, where current consumption levels are relatively low. Growth in many developed country markets is expected to be relatively modest, but consumption in the United States is expected to continue to climb at the expense of beef and pork. In the FSU and CEE, poultry consumption is expected to increase slowly in the longer term, as economic conditions gradually improve and poultry remains the cheapest meat protein for consumers in those countries.

Global trade in poultry meat is projected to trend upward to about 8.5 million tons by 2008, but growth is slower than in the past. Much of the slowdown in trade growth for poultry is associated with the impacts of the economic crises in Russia and in Asia. Presently, world poultry trade is a mixture of whole birds, parts, and processed products, with some exporters strong competitors in some segments of the market, but not in others. If consumption patterns in developing countries follow the western example, it is likely to mean rising imports of poultry parts, a pattern that would favor greater exports by the United States.

Overall, trade in poultry products is expected to become less restrictive over the baseline period due to the influence of multinational trade accords. While the overall trend is expected to be towards freer, less restrictive trade, many governments will continue to be under some pressure to protect their domestic industries. What this foretells is a continued future need for negotiations to try to remove or reduce any sanitary or phytosanitary barriers that may be enacted without the backing of strong scientific evidence for their need.

Table 36. Coarse grains trade baseline projections

| | 1997/98 | 1998/99 | 1999/2000 | 2000/01 | 2001/02 | 2002/03 | 2003/04 | 2004/05 | 2005/06 | 2006/07 | 2007/08 | 2008/09 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | *Million metric tons* | | | | | | |
| Importers | | | | | | | | | | | | |
| Former Soviet Union 1/ | 1.8 | 2.5 | 2.3 | 2.2 | 2.1 | 2.2 | 2.4 | 2.6 | 2.8 | 2.9 | 3.0 | 3.0 |
| Eastern Europe | 1.1 | 0.8 | 1.7 | 1.7 | 1.8 | 1.9 | 2.1 | 2.4 | 2.5 | 2.5 | 2.3 | 2.3 |
| Japan | 21.0 | 20.1 | 20.4 | 20.6 | 20.8 | 20.7 | 20.6 | 20.5 | 20.4 | 20.3 | 20.2 | 20.0 |
| South Korea | 7.7 | 7.2 | 7.7 | 8.5 | 8.7 | 8.8 | 8.9 | 8.9 | 9.0 | 9.1 | 9.1 | 9.1 |
| Taiwan | 4.8 | 4.7 | 5.0 | 5.1 | 5.2 | 5.4 | 5.5 | 5.7 | 5.8 | 6.0 | 6.1 | 6.2 |
| China | 1.8 | 2.5 | 3.2 | 3.9 | 4.3 | 4.7 | 5.3 | 5.9 | 6.6 | 7.5 | 8.4 | 9.5 |
| Mexico | 8.0 | 7.2 | 8.1 | 9.0 | 9.3 | 9.6 | 9.8 | 10.2 | 10.7 | 11.3 | 12.0 | 12.6 |
| European Union 2/ | 3.4 | 3.1 | 2.8 | 2.8 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 |
| Latin America 3/ | 9.6 | 9.0 | 9.8 | 10.3 | 10.4 | 10.6 | 10.9 | 11.2 | 11.5 | 11.8 | 12.0 | 12.3 |
| N. Africa & Middle East | 16.0 | 18.9 | 20.7 | 21.1 | 21.8 | 22.5 | 23.3 | 24.0 | 24.7 | 25.4 | 26.1 | 26.8 |
| Other Asia & Oceania | 3.6 | 3.4 | 4.2 | 5.0 | 5.3 | 5.8 | 6.5 | 7.2 | 7.7 | 8.3 | 8.9 | 9.5 |
| Sub-Saharan Africa 4/ | 2.3 | 2.0 | 2.6 | 2.4 | 2.4 | 2.4 | 2.5 | 2.5 | 2.4 | 2.5 | 2.6 | 2.6 |
| Other foreign 5/ | 5.7 | 4.0 | 5.0 | 4.9 | 5.0 | 5.1 | 5.2 | 5.2 | 5.3 | 5.4 | 5.4 | 5.5 |
| United States | 2.9 | 2.6 | 2.9 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 |
| Total Trade | 89.7 | 88.0 | 96.5 | 100.8 | 103.3 | 105.8 | 109.2 | 112.4 | 115.5 | 118.9 | 122.1 | 125.6 |
| Exporters | | | | | | | | | | | | |
| European Union 2/ | 6.1 | 9.9 | 9.5 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 |
| China | 6.2 | 4.1 | 4.1 | 4.0 | 3.8 | 3.6 | 3.4 | 3.3 | 3.1 | 2.9 | 2.8 | 2.6 |
| Argentina | 15.3 | 11.2 | 14.3 | 15.4 | 16.2 | 17.5 | 17.9 | 18.9 | 19.6 | 20.5 | 21.8 | 22.6 |
| Australia | 3.1 | 3.1 | 2.5 | 2.5 | 2.7 | 3.0 | 3.3 | 3.4 | 3.7 | 4.0 | 4.2 | 4.5 |
| Canada | 3.7 | 3.6 | 2.9 | 3.3 | 3.4 | 3.6 | 3.6 | 3.8 | 4.0 | 4.1 | 4.3 | 4.5 |
| Rep. of South Africa | 1.3 | 1.7 | 1.3 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.1 | 1.1 | 1.1 | 1.1 |
| Eastern Europe | 3.1 | 2.3 | 2.2 | 1.3 | 1.0 | 1.0 | 0.7 | 0.6 | 0.6 | 0.5 | 0.6 | 0.9 |
| Former Soviet Union 1/ | 3.1 | 1.3 | 5.0 | 5.5 | 5.5 | 5.0 | 5.2 | 5.3 | 5.4 | 5.4 | 5.4 | 5.4 |
| Other foreign | 2.5 | 2.5 | 2.3 | 2.2 | 2.1 | 2.1 | 2.2 | 2.2 | 2.3 | 2.3 | 2.4 | 2.5 |
| United States | 45.3 | 48.3 | 52.3 | 56.4 | 58.4 | 60.0 | 62.6 | 64.7 | 66.8 | 69.0 | 70.5 | 72.7 |
| | | | | | | *Percent* | | | | | | |
| U.S. trade share | 50.5 | 54.9 | 54.3 | 56.0 | 56.6 | 56.7 | 57.4 | 57.5 | 57.8 | 58.0 | 57.8 | 57.8 |

1/ Includes intra-FSU trade.
2/ Excludes intra-EU trade, covers EU-15.
3/ Excludes Mexico.
4/ Includes South Africa.
5/ Includes unaccounted.
The projections were completed in November 1998 based on policy decisions and other information known at that time.

Table 37. Corn trade baseline projections

| | 1997/98 | 1998/99 | 1999/2000 | 2000/01 | 2001/02 | 2002/03 | 2003/04 | 2004/05 | 2005/06 | 2006/07 | 2007/08 | 2008/09 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | *Million metric tons* | | | | | | |
| **Importers** | | | | | | | | | | | | |
| Former Soviet Union 1/ | 0.6 | 1.1 | 0.6 | 0.6 | 0.6 | 0.7 | 1.0 | 1.1 | 1.3 | 1.4 | 1.4 | 1.5 |
| Japan | 16.4 | 15.5 | 15.8 | 16.0 | 16.2 | 16.1 | 16.1 | 16.0 | 15.9 | 15.8 | 15.7 | 15.6 |
| South Korea | 7.5 | 6.5 | 7.5 | 8.4 | 8.5 | 8.6 | 8.7 | 8.8 | 8.8 | 8.9 | 8.9 | 9.0 |
| Taiwan | 4.5 | 4.5 | 4.8 | 4.9 | 5.0 | 5.2 | 5.3 | 5.5 | 5.6 | 5.7 | 5.9 | 6.0 |
| China | 0.3 | 0.3 | 1.0 | 1.6 | 1.8 | 2.2 | 2.6 | 3.1 | 3.7 | 4.5 | 5.4 | 6.4 |
| Mexico | 4.5 | 4.3 | 4.9 | 5.6 | 5.8 | 5.8 | 6.0 | 6.2 | 6.5 | 6.8 | 7.2 | 7.5 |
| European Union 2/ | 2.2 | 2.7 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 |
| Latin America 3/ | 8.9 | 8.4 | 9.0 | 9.5 | 9.6 | 9.9 | 10.2 | 10.4 | 10.7 | 11.0 | 11.2 | 11.5 |
| North Africa & Middle East | 9.3 | 10.5 | 11.2 | 11.6 | 12.1 | 12.5 | 12.9 | 13.2 | 13.6 | 13.9 | 14.3 | 14.7 |
| Other Asia & Oceania | 5.8 | 4.8 | 5.7 | 6.1 | 6.4 | 6.9 | 7.6 | 8.3 | 8.9 | 9.4 | 10.0 | 10.6 |
| Sub-Saharan Africa 4/ | 2.1 | 1.8 | 2.2 | 2.1 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.2 | 2.2 | 2.3 |
| Other 5/ | 2.2 | 1.6 | 2.3 | 2.5 | 2.7 | 2.8 | 3.0 | 3.4 | 3.5 | 3.6 | 3.5 | 3.5 |
| | | | | | | | | | | | | |
| United States | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| | | | | | | | | | | | | |
| Total trade | 64.5 | 62.2 | 67.6 | 71.4 | 73.5 | 75.5 | 78.1 | 80.7 | 83.1 | 85.8 | 88.2 | 91.0 |
| | | | | | | | | | | | | |
| **Exporters** | | | | | | | | | | | | |
| European Union 2/ | 0.7 | 0.7 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| China | 6.2 | 4.0 | 4.0 | 3.9 | 3.8 | 3.5 | 3.4 | 3.2 | 3.0 | 2.9 | 2.7 | 2.6 |
| Argentina | 13.5 | 10.0 | 13.3 | 14.3 | 15.1 | 16.4 | 16.9 | 17.8 | 18.5 | 19.5 | 20.7 | 21.4 |
| Republic of South Africa | 1.3 | 1.7 | 1.3 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.1 | 1.1 | 1.1 | 1.1 |
| Eastern Europe | 2.5 | 1.8 | 1.3 | 0.6 | 0.4 | 0.3 | 0.2 | 0.1 | 0.0 | 0.0 | 0.1 | 0.3 |
| Former Soviet Union 1/ | 0.5 | 0.4 | 0.9 | 1.0 | 0.9 | 0.8 | 0.7 | 0.8 | 0.8 | 0.8 | 0.9 | 0.9 |
| Other foreign | 1.7 | 1.0 | 1.4 | 1.2 | 1.1 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 |
| | | | | | | | | | | | | |
| United States | 38.2 | 42.5 | 45.1 | 48.9 | 50.8 | 52.1 | 54.6 | 56.5 | 58.4 | 60.3 | 61.6 | 63.5 |
| | | | | | | *Percent* | | | | | | |
| U.S. trade share | 59.2 | 68.4 | 66.7 | 68.4 | 69.1 | 69.0 | 69.9 | 70.0 | 70.3 | 70.3 | 69.8 | 69.8 |

1/ Includes intra-FSU trade.
2/ Excludes intra-EU trade, covers EU-15.
3/ Excludes Mexico.
4/ Includes South Africa.
5/ Includes unaccounted.
The projections were completed in November 1998 based on policy decisions and other information known at that time.


Table 38. Sorghum trade baseline projections

| | 1997/98 | 1998/99 | 1999/2000 | 2000/01 | 2001/02 | 2002/03 | 2003/04 | 2004/05 | 2005/06 | 2006/07 | 2007/08 | 2008/09 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | *Million metric tons* | | | | | | |
| **Importers** | | | | | | | | | | | | |
| Japan | 2.8 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 |
| Mexico | 3.3 | 2.7 | 3.1 | 3.2 | 3.4 | 3.6 | 3.7 | 3.8 | 4.0 | 4.3 | 4.6 | 4.9 |
| Other N. Africa & M. East | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| Other S. America | 0.1 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| Saudi Arabia | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 |
| South Korea | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| Sub-Saharan Africa | 0.1 | 0.0 | 0.1 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| Taiwan | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| Other 1/ | 1.1 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.7 | 0.7 |
| | | | | | | | | | | | | |
| Total trade | 7.4 | 6.6 | 7.1 | 7.2 | 7.3 | 7.6 | 7.6 | 7.8 | 8.0 | 8.3 | 8.5 | 8.8 |
| | | | | | | | | | | | | |
| **Exporters** | | | | | | | | | | | | |
| Argentina | 1.5 | 1.0 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.8 | 0.8 | 0.8 | 0.9 |
| Australia | 0.3 | 0.3 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Sub-Saharan Africa | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Other foreign | 0.2 | 0.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| | | | | | | | | | | | | |
| United States | 5.4 | 5.0 | 5.7 | 6.0 | 6.1 | 6.4 | 6.5 | 6.6 | 6.8 | 7.1 | 7.4 | 7.6 |
| | | | | | | *Percent* | | | | | | |
| U.S. trade share | 72.6 | 74.6 | 80.9 | 82.5 | 83.0 | 84.1 | 84.6 | 84.8 | 85.4 | 85.9 | 86.5 | 86.5 |

1/ Includes unaccounted.
The projections were completed in November 1998 based on policy decisions and other information known at that time.

Table 39.  Barley trade baseline projections

| | 1997/98 | 1998/99 | 1999/2000 | 2000/01 | 2001/02 | 2002/03 | 2003/04 | 2004/05 | 2005/06 | 2006/07 | 2007/08 | 2008/09 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | *Million metric tons* | | | | | | |
| Importers | | | | | | | | | | | | |
| Former Soviet Union 1/ | 1.0 | 1.1 | 1.3 | 1.3 | 1.3 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.1 | 1.1 |
| Japan | 1.4 | 1.4 | 1.3 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.3 | 1.3 | 1.3 |
| South Korea | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| Taiwan | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| China | 1.4 | 2.0 | 2.1 | 2.2 | 2.3 | 2.4 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 |
| European Union 2/ | 0.9 | 0.1 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| Latin America 3/ | 0.5 | 0.5 | 0.6 | 0.5 | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 |
| Algeria | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.4 |
| Saudi Arabia | 3.3 | 5.0 | 5.4 | 5.4 | 5.5 | 5.7 | 5.8 | 6.0 | 6.2 | 6.4 | 6.6 | 6.8 |
| Morocco | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 |
| Tunisia | 0.3 | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 |
| Iran | 0.7 | 0.6 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| Iraq | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 |
| Turkey | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.2 | 0.2 | 0.3 | 0.4 | 0.4 | 0.4 | 0.5 |
| Other N. Africa/M. East | 2.0 | 1.8 | 2.2 | 2.2 | 2.3 | 2.3 | 2.3 | 2.4 | 2.4 | 2.4 | 2.4 | 2.5 |
| Other foreign 4/ | 1.8 | 0.9 | 1.5 | 1.6 | 1.7 | 1.7 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 |
| United States | 0.9 | 0.7 | 0.9 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 |
| Total trade | 14.9 | 15.1 | 17.5 | 18.0 | 18.5 | 18.8 | 19.5 | 19.9 | 20.3 | 20.7 | 21.1 | 21.5 |
| Exporters | | | | | | | | | | | | |
| European Union 2/ | 4.3 | 7.3 | 7.7 | 7.3 | 7.4 | 7.4 | 7.4 | 7.4 | 7.4 | 7.4 | 7.4 | 7.4 |
| Australia | 2.7 | 2.8 | 2.3 | 2.4 | 2.6 | 2.8 | 3.1 | 3.2 | 3.4 | 3.6 | 3.8 | 4.0 |
| Canada | 2.2 | 1.6 | 1.2 | 1.5 | 1.5 | 1.6 | 1.6 | 1.7 | 1.9 | 2.0 | 2.2 | 2.3 |
| Former Soviet Union 1/ | 2.5 | 0.8 | 2.9 | 3.5 | 3.6 | 3.4 | 3.8 | 4.0 | 4.1 | 4.0 | 4.0 | 4.0 |
| Eastern Europe | 0.5 | 0.4 | 0.8 | 0.6 | 0.6 | 0.6 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| Turkey | 0.6 | 1.2 | 0.7 | 0.8 | 0.8 | 0.9 | 1.0 | 1.0 | 1.1 | 1.1 | 1.2 | 1.2 |
| Other foreign | 0.4 | 0.3 | 0.4 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| United States | 1.6 | 0.8 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 |
| | | | | | | *Percent* | | | | | | |
| U.S. trade share | 10.9 | 5.1 | 8.7 | 8.5 | 8.2 | 8.1 | 7.8 | 7.7 | 7.5 | 7.4 | 7.2 | 7.1 |

1/ Includes intra-FSU trade.
2/ Excludes intra-EU trade, covers EU-15.
3/ Includes Mexico.
4/ Includes unaccounted.
The projections were completed in November 1998 based on policy decisions and other information known at that time.


Table 40.  Wheat trade baseline projections

| | 1997/98 | 1998/99 | 1999/2000 | 2000/01 | 2001/02 | 2002/03 | 2003/04 | 2004/05 | 2005/06 | 2006/07 | 2007/08 | 2008/09 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | *Million metric tons* | | | | | | |
| Importers | | | | | | | | | | | | |
| Former Soviet Union 1/ | 6.3 | 6.8 | 6.7 | 6.4 | 6.4 | 7.0 | 7.0 | 7.0 | 6.9 | 6.8 | 6.9 | 6.8 |
| China | 1.9 | 2.0 | 3.0 | 3.5 | 3.9 | 4.0 | 4.0 | 4.2 | 4.5 | 4.7 | 5.1 | 5.3 |
| Egypt | 7.2 | 7.2 | 7.2 | 7.1 | 7.2 | 7.4 | 7.6 | 7.9 | 8.2 | 8.5 | 8.8 | 9.1 |
| Other North Africa | 20.4 | 18.4 | 19.1 | 20.0 | 20.6 | 21.2 | 21.8 | 22.5 | 23.2 | 23.9 | 24.7 | 25.5 |
| Sub-Saharan Africa 2/ | 5.9 | 6.1 | 5.7 | 5.5 | 5.6 | 5.7 | 5.8 | 6.0 | 6.1 | 6.3 | 6.5 | 6.6 |
| Japan | 6.2 | 6.2 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 5.9 | 5.9 |
| South Korea | 3.9 | 4.2 | 4.0 | 4.0 | 4.1 | 4.1 | 4.2 | 4.2 | 4.3 | 4.3 | 4.3 | 4.3 |
| Iran | 5.2 | 3.5 | 4.2 | 4.8 | 4.9 | 5.0 | 5.0 | 5.0 | 5.0 | 5.1 | 5.1 | 5.1 |
| Brazil | 5.7 | 6.1 | 6.3 | 6.2 | 6.3 | 6.3 | 6.5 | 6.6 | 6.8 | 6.9 | 7.1 | 7.3 |
| Indonesia | 3.8 | 2.5 | 2.5 | 2.7 | 3.0 | 3.1 | 3.4 | 3.6 | 3.9 | 4.1 | 4.4 | 4.7 |
| Pakistan | 4.1 | 2.0 | 2.9 | 2.8 | 3.2 | 3.4 | 3.8 | 4.0 | 4.1 | 4.3 | 4.4 | 4.5 |
| Mexico | 2.2 | 2.4 | 2.0 | 2.0 | 2.1 | 2.1 | 2.2 | 2.3 | 2.3 | 2.4 | 2.5 | 2.6 |
| Other | 27.6 | 28.9 | 29.0 | 28.9 | 29.4 | 29.6 | 29.8 | 30.2 | 30.7 | 31.3 | 32.1 | 32.8 |
| Total trade | 100.4 | 96.3 | 98.4 | 99.9 | 102.7 | 105.2 | 107.1 | 109.5 | 112.0 | 114.6 | 117.7 | 120.6 |
| Exporters | | | | | | | | | | | | |
| European Union 3/ | 15.7 | 17.1 | 17.8 | 16.6 | 16.6 | 17.2 | 18.1 | 18.7 | 19.4 | 20.3 | 21.5 | 22.5 |
| Canada | 20.2 | 15.0 | 16.4 | 16.4 | 16.9 | 16.9 | 17.0 | 17.1 | 17.2 | 17.3 | 17.4 | 17.4 |
| Australia | 15.5 | 14.6 | 13.1 | 12.2 | 12.9 | 13.2 | 13.6 | 14.2 | 14.5 | 14.7 | 14.8 | 14.8 |
| Argentina | 10.0 | 6.0 | 7.2 | 7.5 | 8.4 | 8.7 | 9.1 | 9.7 | 10.1 | 10.5 | 10.9 | 11.3 |
| Former Soviet Union 1/ | 3.8 | 3.8 | 5.8 | 6.6 | 7.0 | 7.0 | 6.2 | 6.1 | 6.1 | 6.4 | 6.5 | 6.7 |
| Eastern Europe | 2.8 | 2.6 | 2.1 | 2.3 | 2.7 | 2.7 | 2.9 | 3.1 | 3.4 | 3.5 | 3.5 | 3.5 |
| Other foreign | 4.1 | 6.0 | 4.1 | 4.2 | 4.2 | 4.1 | 4.1 | 4.0 | 3.9 | 3.8 | 3.7 | 3.7 |
| United States | 28.3 | 31.3 | 32.0 | 34.0 | 34.0 | 35.4 | 36.1 | 36.7 | 37.4 | 38.1 | 39.5 | 40.8 |
| | | | | | | *Percent* | | | | | | |
| U.S. trade share | 28.2 | 32.5 | 32.5 | 34.0 | 33.1 | 33.6 | 33.7 | 33.5 | 33.4 | 33.2 | 33.5 | 33.8 |

1/ Includes intra-FSU trade.
2/ Includes South Africa.
3/ Excludes intra-EU trade, covers EU-15.
The projections were completed in November 1998 based on policy decisions and other information known at that time.

Table 41.  Rice trade baseline projections

| | 1997/98 | 1998/99 | 1999/2000 | 2000/01 | 2001/02 | 2002/03 | 2003/04 | 2004/05 | 2005/06 | 2006/07 | 2007/08 | 2008/09 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | *Million metric tons* | | | | | | |
| **Importers** | | | | | | | | | | | | |
| Canada | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| Mexico | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.4 | 0.4 |
| Central America/Caribbean | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| Brazil | 1.2 | 1.0 | 1.1 | 1.2 | 1.2 | 1.2 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.4 |
| Other South America | 0.6 | 0.6 | 0.7 | 0.7 | 0.7 | 0.8 | 0.8 | 0.8 | 0.8 | 0.9 | 0.9 | 0.9 |
| European Union 1/ | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| Former Soviet Union 2/ | 0.3 | 0.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 |
| Other Europe 3/ | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| China | 0.3 | 0.5 | 0.3 | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.7 |
| Japan | 0.6 | 0.7 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| South Korea | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| Indonesia | 5.9 | 2.0 | 1.8 | 1.9 | 2.1 | 2.2 | 2.4 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 |
| Malaysia | 0.6 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.8 | 0.8 | 0.8 |
| Philippines | 1.2 | 1.5 | 1.3 | 1.4 | 1.5 | 1.5 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.7 |
| Other Asia & Oceania | 2.7 | 2.6 | 2.5 | 2.5 | 2.6 | 2.7 | 2.7 | 2.8 | 2.8 | 2.9 | 3.0 | 3.0 |
| Iraq | 0.6 | 0.7 | 0.6 | 0.6 | 0.7 | 0.7 | 0.7 | 0.7 | 0.8 | 0.8 | 0.8 | 0.8 |
| Iran | 0.5 | 0.7 | 1.1 | 1.2 | 1.2 | 1.2 | 1.3 | 1.3 | 1.4 | 1.4 | 1.5 | 1.5 |
| Saudia Arabia | 0.7 | 0.7 | 0.7 | 0.8 | 0.8 | 0.8 | 0.8 | 0.9 | 0.9 | 0.9 | 1.0 | 1.0 |
| Turkey | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 |
| Other N. Africa & M. East | 0.8 | 0.9 | 0.9 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.1 | 1.1 | 1.2 | 1.2 |
| Sub-Saharan Africa | 3.4 | 3.4 | 3.4 | 3.5 | 3.5 | 3.6 | 3.7 | 3.8 | 3.9 | 4.0 | 4.1 | 4.3 |
| Republic of South Africa | 0.6 | 0.5 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.8 | 0.8 |
| Unaccounted | 2.3 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 |
| United States | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | 0.5 | 0.6 |
| World | 25.1 | 21.3 | 21.3 | 22.0 | 22.8 | 23.5 | 24.1 | 24.8 | 25.4 | 26.1 | 26.7 | 27.4 |
| | | | | | | | | | | | | |
| **Exporters** | | | | | | | | | | | | |
| Australia | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| Argentina | 0.5 | 0.6 | 0.6 | 0.6 | 0.7 | 0.7 | 0.8 | 0.9 | 0.9 | 1.0 | 1.1 | 1.2 |
| Other South America | 1.0 | 1.2 | 1.2 | 1.2 | 1.2 | 1.3 | 1.3 | 1.3 | 1.3 | 1.4 | 1.4 | 1.4 |
| European Union 1/ | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.4 | 0.4 |
| China | 3.3 | 1.3 | 1.0 | 0.8 | 0.9 | 0.9 | 1.0 | 1.1 | 1.1 | 1.2 | 1.3 | 1.3 |
| India | 3.5 | 2.0 | 2.1 | 2.5 | 2.8 | 3.1 | 3.2 | 3.4 | 3.6 | 3.7 | 3.8 | 4.0 |
| Pakistan | 1.9 | 2.0 | 2.1 | 2.2 | 2.3 | 2.3 | 2.4 | 2.4 | 2.5 | 2.6 | 2.7 | 2.7 |
| Burma | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 |
| Thailand | 6.1 | 5.8 | 6.3 | 6.7 | 6.8 | 7.0 | 7.1 | 7.3 | 7.4 | 7.6 | 7.7 | 7.9 |
| Vietnam | 3.6 | 3.5 | 4.0 | 4.0 | 4.2 | 4.3 | 4.4 | 4.4 | 4.5 | 4.6 | 4.7 | 4.8 |
| Other foreign | 1.4 | 1.2 | 0.8 | 0.6 | 0.6 | 0.5 | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 |
| Total foreign | 22.3 | 18.5 | 19.1 | 19.7 | 20.6 | 21.2 | 21.9 | 22.5 | 23.1 | 23.7 | 24.3 | 25.0 |
| United States | 2.8 | 2.8 | 2.2 | 2.3 | 2.2 | 2.3 | 2.3 | 2.3 | 2.3 | 2.4 | 2.4 | 2.4 |
| World | 25.1 | 21.3 | 21.3 | 22.0 | 22.8 | 23.5 | 24.1 | 24.8 | 25.4 | 26.1 | 26.7 | 27.4 |
| | | | | | | *Percent* | | | | | | |
| U.S. trade share | 11.1 | 13.0 | 10.3 | 10.4 | 9.8 | 9.7 | 9.4 | 9.4 | 9.2 | 9.1 | 8.9 | 8.8 |

1/ Excludes intra-EU trade, covers EU-15.
2/ Includes intra-FSU trade.
3/ Other Western Europe and Central and Eastern Europe.
The projections were completed in November 1998 based on policy decisions and other information known at that time.

Table 42. All Cotton trade baseline projections

|  | 1997/98 | 1998/99 | 1999/2000 | 2000/01 | 2001/02 | 2002/03 | 2003/04 | 2004/05 | 2005/06 | 2006/07 | 2007/08 | 2008/09 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | | | | | | *Million bales* | | | | | | |
| Importers | | | | | | | | | | | | |
| European Union 1/ | 4.8 | 4.8 | 4.6 | 4.4 | 4.4 | 4.3 | 4.3 | 4.2 | 4.2 | 4.2 | 4.2 | 4.1 |
| Former Soviet Union 2/ | 1.9 | 1.6 | 1.9 | 2.2 | 2.5 | 2.7 | 2.8 | 3.1 | 3.2 | 3.3 | 3.5 | 3.6 |
| Indonesia | 1.9 | 1.9 | 1.9 | 1.9 | 2.0 | 2.1 | 2.1 | 2.2 | 2.3 | 2.4 | 2.4 | 2.5 |
| Thailand | 1.2 | 1.3 | 1.3 | 1.3 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 |
| Brazil | 1.9 | 1.4 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.1 | 2.2 | 2.3 | 2.4 | 2.5 |
| Eastern Europe | 1.3 | 1.3 | 1.4 | 1.4 | 1.5 | 1.5 | 1.6 | 1.7 | 1.7 | 1.8 | 1.9 | 1.9 |
| Other Asia & Oceania | 4.1 | 4.0 | 4.2 | 4.3 | 4.4 | 4.4 | 4.4 | 4.5 | 4.6 | 4.7 | 4.8 | 4.9 |
| Japan | 1.3 | 1.3 | 1.3 | 1.2 | 1.2 | 1.1 | 1.1 | 1.0 | 1.0 | 0.9 | 0.9 | 0.9 |
| South Korea | 1.3 | 1.3 | 1.2 | 1.2 | 1.1 | 1.1 | 1.0 | 1.0 | 0.9 | 0.9 | 0.8 | 0.8 |
| China | 1.8 | 0.8 | 0.9 | 0.9 | 1.0 | 1.1 | 1.2 | 1.2 | 1.3 | 1.3 | 1.4 | 1.4 |
| Mexico | 1.6 | 1.4 | 1.6 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.4 | 2.5 |
| Other foreign | 4.0 | 3.8 | 4.3 | 4.6 | 5.2 | 5.7 | 5.9 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 |
| United States | 0.0 | 0.3 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total imports | 27.1 | 25.2 | 26.4 | 26.8 | 28.1 | 29.1 | 29.6 | 29.8 | 30.3 | 30.7 | 31.2 | 31.7 |
| Exporters | | | | | | | | | | | | |
| Former Soviet Union 2/ | 5.9 | 5.7 | 5.8 | 5.7 | 5.7 | 5.7 | 5.7 | 5.7 | 5.7 | 5.7 | 5.7 | 5.8 |
| West Africa 10 | 3.7 | 3.8 | 3.9 | 3.8 | 4.1 | 4.3 | 4.4 | 4.5 | 4.6 | 4.6 | 4.7 | 4.7 |
| Australia | 2.7 | 2.9 | 2.7 | 2.7 | 2.9 | 2.9 | 3.0 | 3.0 | 3.1 | 3.1 | 3.2 | 3.3 |
| Argentina | 0.9 | 0.9 | 0.9 | 0.9 | 1.1 | 1.2 | 1.3 | 1.3 | 1.4 | 1.4 | 1.4 | 1.5 |
| Pakistan | 0.3 | 0.2 | 0.3 | 0.3 | 0.4 | 0.4 | 0.5 | 0.6 | 0.6 | 0.7 | 0.7 | 0.7 |
| India | 0.2 | 0.2 | 0.5 | 0.5 | 0.7 | 0.9 | 1.0 | 1.1 | 1.2 | 1.3 | 1.3 | 1.4 |
| China | 0.0 | 1.8 | 1.0 | 0.9 | 0.9 | 0.9 | 0.8 | 0.8 | 0.8 | 0.8 | 0.7 | 0.7 |
| Turkey | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| Egypt | 0.3 | 0.5 | 0.3 | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 |
| Other Latin America | 0.7 | 0.6 | 0.7 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 |
| Other Sub-Saharan Africa 3/ | 1.0 | 0.9 | 1.2 | 1.1 | 1.2 | 1.2 | 1.2 | 1.2 | 1.3 | 1.3 | 1.3 | 1.4 |
| Other foreign | 2.9 | 2.9 | 3.1 | 2.6 | 3.0 | 3.3 | 3.2 | 2.8 | 2.9 | 2.9 | 3.0 | 3.0 |
| United States | 7.5 | 4.5 | 5.6 | 7.0 | 6.8 | 7.0 | 7.2 | 7.3 | 7.4 | 7.5 | 7.6 | 7.7 |
| Total exports | 26.3 | 25.0 | 26.1 | 26.5 | 27.8 | 28.8 | 29.3 | 29.5 | 30.0 | 30.4 | 30.9 | 31.4 |
|  | | | | | | *Percent* | | | | | | |
| U.S. trade share | 28.5 | 18.0 | 21.4 | 26.2 | 24.3 | 24.2 | 24.5 | 24.7 | 24.6 | 24.6 | 24.6 | 24.5 |

1/ Includes intra-EU trade, covers EU-15.
2/ Includes intra-FSU trade.
3/ Includes Republic of South Africa.
Note: Imports exceed exports by 300,000 bales each year due to statistical differences across countries' reported trade.  The projections were completed in November 1998 based on policy decisions and other information  known at that time.

Table 43.  Soybean trade baseline projections

|  | 1997/98 | 1998/99 | 1999/2000 | 2000/01 | 2001/02 | 2002/03 | 2003/04 | 2004/05 | 2005/06 | 2006/07 | 2007/08 | 2008/09 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | | | | | | *Million metric tons* | | | | | | |
| Importers | | | | | | | | | | | | |
| European Union 1/ | 15.6 | 15.5 | 16.4 | 15.9 | 15.9 | 15.6 | 15.7 | 15.5 | 15.5 | 15.4 | 15.4 | 15.3 |
| Japan | 5.0 | 4.7 | 4.7 | 4.7 | 4.7 | 4.7 | 4.7 | 4.8 | 4.8 | 4.8 | 4.8 | 4.9 |
| South Korea | 1.4 | 1.4 | 1.4 | 1.4 | 1.5 | 1.4 | 1.5 | 1.5 | 1.5 | 1.5 | 1.6 | 1.6 |
| Taiwan | 2.4 | 2.5 | 2.5 | 2.5 | 2.6 | 2.7 | 2.7 | 2.8 | 2.8 | 2.9 | 2.9 | 3.0 |
| Mexico | 3.2 | 3.4 | 3.6 | 3.7 | 3.8 | 3.9 | 4.0 | 4.2 | 4.3 | 4.4 | 4.6 | 4.7 |
| Former Soviet Union 2/ | 0.3 | 0.5 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| Eastern Europe | 0.3 | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | 0.4 |
| China | 3.0 | 3.6 | 3.8 | 4.0 | 4.2 | 4.3 | 4.8 | 5.0 | 5.3 | 5.5 | 5.8 | 6.0 |
| Malaysia | 0.5 | 0.5 | 0.6 | 0.6 | 0.7 | 0.7 | 0.8 | 0.8 | 0.9 | 0.9 | 1.0 | 1.1 |
| Indonesia | 0.8 | 0.7 | 0.7 | 0.7 | 0.7 | 0.8 | 0.8 | 0.9 | 0.9 | 0.9 | 1.0 | 1.0 |
| Other | 8.0 | 5.4 | 6.4 | 6.5 | 6.7 | 6.9 | 7.1 | 7.2 | 7.4 | 7.6 | 7.8 | 8.0 |
| Total imports | 40.3 | 38.4 | 40.7 | 40.7 | 41.3 | 41.7 | 42.8 | 43.3 | 44.1 | 44.8 | 45.4 | 46.2 |
| Exporters | | | | | | | | | | | | |
| Argentina | 3.1 | 2.8 | 2.4 | 1.7 | 1.9 | 2.1 | 2.2 | 2.2 | 2.2 | 2.3 | 2.4 | 2.5 |
| Brazil | 9.3 | 8.3 | 8.4 | 8.7 | 9.0 | 9.5 | 10.5 | 10.6 | 10.5 | 10.5 | 10.1 | 10.0 |
| China | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| Other foreign | 4.1 | 4.2 | 4.3 | 3.8 | 3.9 | 3.9 | 3.9 | 4.0 | 4.2 | 4.2 | 4.4 | 4.5 |
| United States | 23.7 | 22.9 | 25.3 | 26.3 | 26.3 | 26.0 | 26.0 | 26.3 | 26.9 | 27.6 | 28.3 | 29.0 |
| Total exports | 40.3 | 38.4 | 40.7 | 40.7 | 41.3 | 41.7 | 42.8 | 43.3 | 44.1 | 44.8 | 45.4 | 46.2 |
|  | | | | | | *Percent* | | | | | | |
| U.S. trade share | 58.7 | 59.6 | 62.3 | 64.5 | 63.6 | 62.4 | 60.8 | 60.6 | 61.2 | 61.6 | 62.3 | 62.8 |

1/ Includes intra-EU trade, covers EU-15.
2/ Includes intra-FSU trade.
The projections were completed in November 1998 based on policy decisions and other information known at that time.

Table 44.  Soybean meal trade baseline projections

|  | 1997/98 | 1998/99 | 1999/2000 | 2000/01 | 2001/02 | 2002/03 | 2003/04 | 2004/05 | 2005/06 | 2006/07 | 2007/08 | 2008/09 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | *Million metric tons* | | | | | | | | | | | |
| Importers | | | | | | | | | | | | |
| European Union 1/ | 16.2 | 16.9 | 17.1 | 16.8 | 16.6 | 16.2 | 15.8 | 15.8 | 15.8 | 15.8 | 16.0 | 15.9 |
| Former Soviet Union 2/ | 0.5 | 0.6 | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.7 | 0.7 | 0.8 | 0.9 | 0.9 |
| Eastern Europe | 2.1 | 2.3 | 2.4 | 2.4 | 2.5 | 2.5 | 2.5 | 2.6 | 2.7 | 2.7 | 2.8 | 2.9 |
| Canada | 0.7 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 |
| Japan | 0.7 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.7 | 0.7 | 0.7 |
| China | 4.0 | 4.4 | 4.5 | 4.9 | 5.2 | 5.5 | 5.9 | 6.2 | 6.5 | 6.8 | 7.1 | 7.4 |
| Southeast Asia | 3.1 | 2.7 | 3.1 | 3.4 | 3.6 | 3.9 | 4.1 | 4.4 | 4.6 | 4.9 | 5.1 | 5.4 |
| Latin America | 3.5 | 3.9 | 4.3 | 4.1 | 4.1 | 4.2 | 4.3 | 4.4 | 4.5 | 4.6 | 4.7 | 4.8 |
| North Africa & Middle East | 3.7 | 4.1 | 4.0 | 4.0 | 4.1 | 4.2 | 4.3 | 4.4 | 4.5 | 4.6 | 4.7 | 4.8 |
| Other | 3.5 | 2.6 | 2.5 | 2.4 | 2.5 | 2.6 | 2.7 | 2.7 | 2.8 | 2.8 | 2.9 | 2.9 |
|  | | | | | | | | | | | | |
| Total imports | 37.9 | 38.9 | 39.8 | 39.8 | 40.5 | 40.9 | 41.5 | 42.4 | 43.5 | 44.4 | 45.4 | 46.2 |
|  | | | | | | | | | | | | |
| Exporters | | | | | | | | | | | | |
| Argentina | 10.5 | 11.2 | 11.2 | 11.3 | 11.4 | 11.6 | 11.6 | 12.0 | 12.4 | 12.9 | 13.3 | 13.6 |
| Brazil | 10.6 | 10.6 | 11.2 | 10.7 | 10.9 | 11.2 | 11.6 | 12.1 | 12.6 | 13.0 | 13.5 | 13.8 |
| India | 2.5 | 3.2 | 3.3 | 3.4 | 3.5 | 3.6 | 3.7 | 3.8 | 3.9 | 4.0 | 4.1 | 4.2 |
| European Union 1/ | 4.4 | 4.3 | 4.3 | 4.3 | 4.3 | 4.3 | 4.3 | 4.3 | 4.3 | 4.3 | 4.3 | 4.3 |
| Other foreign | 1.4 | 1.7 | 1.4 | 1.5 | 1.5 | 1.6 | 1.6 | 1.6 | 1.7 | 1.7 | 1.7 | 1.8 |
|  | | | | | | | | | | | | |
| United States | 8.5 | 7.8 | 8.3 | 8.7 | 8.8 | 8.7 | 8.6 | 8.6 | 8.5 | 8.4 | 8.5 | 8.6 |
|  | | | | | | | | | | | | |
| Total exports | 37.9 | 38.9 | 39.8 | 39.8 | 40.5 | 40.9 | 41.5 | 42.4 | 43.5 | 44.4 | 45.4 | 46.2 |
|  | *Percent* | | | | | | | | | | | |
| U.S. trade share | 22.4 | 20.2 | 21.0 | 21.9 | 21.7 | 21.3 | 20.8 | 20.2 | 19.5 | 19.0 | 18.7 | 18.5 |

1/ Includes intra-EU trade, covers EU-15.
2/ Includes intra-FSU trade.
The projections were completed in November 1998 based on policy decisions and other information known at that time.


Table 45.  Soybean oil trade baseline projections

|  | 1997/98 | 1998/99 | 1999/2000 | 2000/01 | 2001/02 | 2002/03 | 2003/04 | 2004/05 | 2005/06 | 2006/07 | 2007/08 | 2008/09 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | *Million metric tons* | | | | | | | | | | | |
| Importers | | | | | | | | | | | | |
| European Union 1/ | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| China | 1.7 | 1.8 | 1.9 | 2.0 | 2.0 | 2.1 | 2.1 | 2.2 | 2.2 | 2.3 | 2.4 | 2.5 |
| Other Asia | 1.2 | 1.2 | 1.2 | 1.2 | 1.3 | 1.3 | 1.3 | 1.4 | 1.4 | 1.5 | 1.6 | 1.6 |
| Latin America | 1.2 | 1.2 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.4 | 1.4 | 1.4 | 1.4 | 1.5 |
| North Africa & Middle East | 1.5 | 1.3 | 1.3 | 1.3 | 1.4 | 1.4 | 1.5 | 1.5 | 1.6 | 1.6 | 1.6 | 1.7 |
| Former Soviet Union & Eastern Europe 2/ | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 |
| Other | 0.6 | 0.7 | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
|  | | | | | | | | | | | | |
| Total imports | 6.9 | 6.9 | 6.8 | 6.9 | 7.0 | 7.2 | 7.4 | 7.6 | 7.8 | 8.0 | 8.3 | 8.6 |
|  | | | | | | | | | | | | |
| Exporters | | | | | | | | | | | | |
| Argentina | 2.2 | 2.3 | 2.4 | 2.4 | 2.4 | 2.4 | 2.5 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 |
| Brazil | 1.3 | 1.3 | 1.2 | 1.2 | 1.3 | 1.5 | 1.6 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 |
| European Union 1/ | 1.4 | 1.4 | 1.4 | 1.4 | 1.2 | 1.1 | 1.0 | 1.0 | 1.1 | 1.1 | 1.2 | 1.3 |
| Other foreign | 0.5 | 0.6 | 0.5 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.7 | 0.7 | 0.7 | 0.7 |
|  | | | | | | | | | | | | |
| United States | 1.4 | 1.2 | 1.3 | 1.4 | 1.5 | 1.6 | 1.7 | 1.9 | 1.8 | 1.8 | 1.8 | 1.8 |
|  | | | | | | | | | | | | |
| Total exports | 6.9 | 6.9 | 6.8 | 6.9 | 7.0 | 7.2 | 7.4 | 7.6 | 7.8 | 8.0 | 8.3 | 8.6 |
|  | *Percent* | | | | | | | | | | | |
| U.S. trade share | 20.3 | 17.8 | 18.9 | 20.1 | 21.2 | 21.7 | 23.4 | 25.0 | 23.4 | 22.2 | 21.2 | 21.5 |

1/ Includes intra-EU trade, covers EU-15.
2/ Includes intra-FSU trade.
The projections were completed in November 1998 based on policy decisions and other information known at that time.

Table 46.  Beef trade baseline projections

| | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Thousand metric tons, carcass weight* | | | | | | | | | | | |
| **Importers** | | | | | | | | | | | | |
| United States | 1,063 | 1,184 | 1,266 | 1,270 | 1,270 | 1,247 | 1,225 | 1,225 | 1,202 | 1,202 | 1,179 | 1,179 |
| Japan | 924 | 924 | 975 | 977 | 989 | 1,008 | 1,031 | 1,052 | 1,075 | 1,095 | 1,112 | 1,127 |
| South Korea | 195 | 255 | 135 | 239 | 185 | 200 | 216 | 231 | 248 | 265 | 282 | 298 |
| Taiwan | 72 | 68 | 82 | 88 | 93 | 97 | 103 | 109 | 116 | 123 | 131 | 139 |
| European Union 1/ | 349 | 328 | 350 | 350 | 350 | 350 | 350 | 350 | 350 | 350 | 350 | 350 |
| Russia | 650 | 750 | 432 | 305 | 374 | 488 | 542 | 620 | 584 | 596 | 606 | 615 |
| Easten Europe | 58 | 71 | 85 | 112 | 119 | 122 | 118 | 99 | 92 | 77 | 62 | 65 |
| Mexico | 150 | 195 | 216 | 225 | 228 | 227 | 232 | 235 | 250 | 264 | 278 | 293 |
| Canada | 250 | 250 | 218 | 213 | 209 | 205 | 201 | 197 | 193 | 189 | 185 | 181 |
| | | | | | | | | | | | | |
| Major importers | 3,711 | 4,025 | 3,758 | 3,778 | 3,816 | 3,944 | 4,017 | 4,117 | 4,110 | 4,159 | 4,186 | 4,249 |
| | | | | | | | | | | | | |
| **Exporters** | | | | | | | | | | | | |
| United States | 969 | 979 | 1,061 | 975 | 998 | 1,051 | 1,090 | 1,121 | 1,158 | 1,194 | 1,231 | 1,268 |
| Australia | 1,140 | 1,160 | 1,076 | 1,036 | 1,043 | 1,073 | 1,087 | 1,095 | 1,086 | 1,086 | 1,090 | 1,097 |
| New Zealand | 507 | 470 | 481 | 486 | 485 | 482 | 481 | 483 | 486 | 489 | 490 | 489 |
| European Union 1/ | 946 | 943 | 877 | 817 | 817 | 817 | 817 | 817 | 817 | 817 | 817 | 817 |
| Eastern Europe | 91 | 101 | 99 | 102 | 100 | 99 | 100 | 102 | 98 | 95 | 93 | 108 |
| Ukraine | 76 | 70 | 171 | 198 | 209 | 192 | 170 | 170 | 170 | 170 | 170 | 170 |
| Argentina | 430 | 420 | 314 | 331 | 343 | 361 | 376 | 395 | 412 | 429 | 447 | 463 |
| Brazil | 275 | 285 | 274 | 274 | 265 | 275 | 289 | 302 | 316 | 329 | 342 | 356 |
| Canada | 340 | 340 | 311 | 323 | 329 | 348 | 359 | 372 | 371 | 372 | 372 | 372 |
| | | | | | | | | | | | | |
| Major exporters | 4,774 | 4,768 | 4,665 | 4,542 | 4,589 | 4,697 | 4,768 | 4,856 | 4,914 | 4,981 | 5,051 | 5,139 |

1/ Excludes intra-EU trade, covers EU-15
The projections were completed in November 1998 based on policy decisions and other information known at that time.


Table 47.  Pork trade baseline projections

| | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Thousand metric tons, carcass weight* | | | | | | | | | | | |
| **Importers** | | | | | | | | | | | | |
| United States | 287 | 308 | 318 | 299 | 290 | 288 | 293 | 295 | 295 | 298 | 302 | 304 |
| Japan | 733 | 740 | 785 | 810 | 831 | 853 | 874 | 896 | 917 | 937 | 956 | 974 |
| Hong Kong | 178 | 205 | 257 | 273 | 284 | 295 | 306 | 317 | 328 | 338 | 347 | 356 |
| South Korea | 77 | 60 | 50 | 57 | 58 | 54 | 55 | 57 | 61 | 64 | 67 | 71 |
| Russia | 444 | 488 | 496 | 402 | 389 | 492 | 485 | 479 | 484 | 486 | 485 | 486 |
| Mexico | 41 | 47 | 89 | 100 | 127 | 142 | 139 | 143 | 149 | 159 | 173 | 186 |
| Canada | 54 | 50 | 50 | 50 | 51 | 52 | 52 | 53 | 53 | 54 | 54 | 55 |
| | | | | | | | | | | | | |
| Major importers | 1,814 | 1,898 | 2,043 | 1,991 | 2,029 | 2,175 | 2,205 | 2,240 | 2,286 | 2,335 | 2,383 | 2,431 |
| | | | | | | | | | | | | |
| **Exporters** | | | | | | | | | | | | |
| Canada | 410 | 390 | 396 | 389 | 394 | 414 | 420 | 426 | 424 | 423 | 420 | 417 |
| European Union 1/ | 811 | 861 | 886 | 887 | 885 | 887 | 887 | 886 | 885 | 885 | 884 | 883 |
| Eastern Europe | 417 | 402 | 458 | 452 | 439 | 485 | 491 | 481 | 473 | 460 | 456 | 450 |
| Taiwan | 69 | 50 | 5 | 5 | 5 | 5 | 25 | 50 | 75 | 100 | 125 | 150 |
| China | 150 | 90 | 121 | 114 | 114 | 118 | 118 | 118 | 114 | 111 | 109 | 105 |
| | | | | | | | | | | | | |
| United States | 474 | 559 | 615 | 576 | 590 | 601 | 646 | 692 | 726 | 771 | 817 | 851 |
| | | | | | | | | | | | | |
| Major exporters | 2,331 | 2,352 | 2,481 | 2,423 | 2,426 | 2,509 | 2,587 | 2,653 | 2,698 | 2,749 | 2,810 | 2,856 |

1/ Excludes intra-EU trade, covers EU-15.
The projections were completed in November 1998 based on policy decisions and other information known at that time.

Table 48. Poultry trade baseline projections

| | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | *Thousand metric tons, ready to cook* | | | | | | | |
| **Importers** | | | | | | | | | | | | |
| Russia | 1,206 | 1,311 | 920 | 948 | 948 | 1,047 | 1,107 | 1,178 | 1,180 | 1,195 | 1,212 | 1,231 |
| European Union 1/ | 311 | 328 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 |
| Japan | 501 | 500 | 507 | 575 | 596 | 609 | 631 | 649 | 672 | 692 | 712 | 732 |
| Hong Kong | 856 | 820 | 907 | 953 | 1,000 | 1,050 | 1,101 | 1,154 | 1,208 | 1,264 | 1,322 | 1,384 |
| China | 900 | 850 | 829 | 926 | 974 | 989 | 1,040 | 1,075 | 1,144 | 1,209 | 1,284 | 1,363 |
| South Korea | 39 | 40 | 35 | 31 | 33 | 34 | 36 | 37 | 40 | 42 | 44 | 47 |
| Saudi Arabia | 247 | 245 | 281 | 249 | 251 | 252 | 255 | 255 | 252 | 246 | 241 | 234 |
| Egypt | 4 | 20 | 19 | 20 | 28 | 19 | 27 | 32 | 46 | 55 | 65 | 76 |
| Mexico | 205 | 213 | 222 | 226 | 229 | 232 | 238 | 245 | 253 | 263 | 266 | 270 |
| Canada | 138 | 140 | 146 | 149 | 152 | 155 | 159 | 162 | 165 | 168 | 171 | 174 |
| | | | | | | | | | | | | |
| Major importers | 4,407 | 4,467 | 4,166 | 4,377 | 4,511 | 4,686 | 4,892 | 5,085 | 5,258 | 5,433 | 5,618 | 5,809 |
| | | | | | | | | | | | | |
| **Exporters** | | | | | | | | | | | | |
| Brazil | 664 | 638 | 671 | 682 | 710 | 739 | 755 | 776 | 786 | 801 | 813 | 826 |
| European Union 1/ | 956 | 990 | 936 | 930 | 886 | 893 | 875 | 868 | 848 | 835 | 820 | 806 |
| Hungary | 112 | 114 | 99 | 87 | 74 | 66 | 57 | 52 | 46 | 41 | 34 | 27 |
| China | 435 | 430 | 396 | 399 | 415 | 439 | 457 | 479 | 496 | 514 | 533 | 551 |
| Hong Kong | 569 | 576 | 638 | 673 | 710 | 750 | 791 | 834 | 880 | 929 | 980 | 1,033 |
| Thailand | 197 | 227 | 258 | 279 | 294 | 300 | 310 | 318 | 330 | 340 | 353 | 365 |
| Saudi Arabia | 35 | 35 | 28 | 38 | 40 | 42 | 43 | 45 | 47 | 49 | 51 | 53 |
| | | | | | | | | | | | | |
| United States | 2,561 | 2,410 | 2,344 | 2,431 | 2,572 | 2,758 | 2,921 | 3,073 | 3,202 | 3,332 | 3,461 | 3,590 |
| | | | | | | | | | | | | |
| Major exporters | 5,529 | 5,420 | 5,369 | 5,520 | 5,701 | 5,986 | 6,208 | 6,445 | 6,635 | 6,841 | 7,042 | 7,251 |

1/ Excludes intra-EU trade, covers EU-15.
The projections were completed in November 1998 based on policy decisions and other information known at that time.