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The 2002 Farm Act
Provisions and Implications for Commodity Markets

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Abstract

The Farm Security and Rural Investment Act of 2002 (2002 Farm Act), which governs agricultural programs through 2007, was signed into law in May 2002. This report presents an initial evaluation of the new legislation's effects on agricultural commodity markets, based on sectorwide model simulations under alternative policy assumptions. The analysis shows that loan rate changes under the marketing assistance loan program of the 2002 Farm Act initially result in an increase in total planted acreage of eight major program crops. This increase in plantings, however, is relatively small (less than 1 percent), partly due to the inelasticity of acreage response in the sector. In the longer run, the simulations indicate that overall plantings of the eight program crops studied are lower under the 2002 Farm Act than under a continuation of the 1996 Farm Act. This result mostly reflects larger enrollment in the Conservation Reserve Program and increased plantings of dry peas and lentils, although planted acreage for the eight program crops is reduced by less than 0.6 percent. The effects of the 2002 Farm Act on the livestock sector and retail food prices are relatively small. Farm income is increased, mostly due to higher government payments to the sector under the new law.

Keywords: Farm legislation, 2002 Farm Act, agricultural programs, commodity programs, marketing loans, counter-cyclical payments, direct payments, planting flexibility, base acres, payment yields, farm income, risk management, FAPSIM.

Acknowledgments

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Summary

The Farm Security and Rural Investment Act of 2002 (2002 Farm Act) was signed into law on May 13, 2002. The new legislation governs agricultural programs through 2007, covering a wide range of programs for commodities, conservation, trade, rural development, nutrition, credit, forestry, and energy.

While the 2002 Farm Act introduces some new policies to the array of agricultural commodity programs, in many ways, it extends provisions of the 1996 Farm Act and the ad hoc emergency spending bills of 1998-2001. For example, the 2002 Act continues marketing assistance loans, which existed under previous U.S. farm law; direct payments replace production flexibility contract payments of the 1996 Farm Act; and counter-cyclical payments are intended to institutionalize the market loss assistance payments of the past several years.

This report provides an initial evaluation of the effects of the 2002 Farm Act on agricultural commodity markets, based on sectorwide model simulations under alternative policy assumptions: continuation of the 1996 Farm Act and introduction of the 2002 Farm Act. The scenarios use the USDA-ERS Food and Agricultural Policy Simulator (FAPSIM), supplemented with analyses by USDA interagency commodity committees for selected commodities. The model simulations cover 10 years and reflect USDA long-term projections at the time the new legislation was enacted. These projections include a backdrop of strengthening global trade and U.S. agricultural exports, resulting in rising market prices in the sector over the next decade.

The 2002 Farm Act affects the crop sector primarily through acreage and production changes. Thus, much of the crop sector focus in this report covers the effects of the new legislation on economic incentives underlying farmers' planting decisions and the resulting effect on acreage. Additional effects on these commodity markets reflect changes in equilibrium levels of prices and demand in response to the acreage and production changes.

Results indicate that changes in loan rates under the marketing assistance loan program of the 2002 Farm Act affect production choices most in the initial years when projected prices are low enough that marketing loan benefits exist. Overall plantings of the eight major program crops studied are higher initially under the 2002 Farm Act than under a 1996 Farm Act scenario that assumes market-price-based formula determination of loan rates. However, the largest increase in acreage is relatively small (about 2 million acres, or less than 1 percent) partly due to the inelasticity of acreage response in the sector where plantings change proportionately less than the economic incentives provided by prices and net returns. Some switching in the cropping mix from soybeans to competing crops, particularly corn, also occurs in the model simulations, reflecting relative changes in loan rates.

An alternative 1996 Farm Act scenario that leaves loan rates at the maximum levels allowed under that legislation results in smaller overall acreage increases (less than 1 million acres) under the 2002 Act in the initial years covered in the analysis.

In the longer run, as projected market prices in the simulations rise above ranges where there are marketing loan benefits for most crops, overall plantings of the eight major program crops are lower under the 2002 Farm Act due to higher enrollment in the Conservation Reserve Program and increased plantings of dry peas and lentils. Still, these acreage reductions are relatively small, generally ranging from 1.0 to 1.5 million acres in 2006-11.

Under the 2002 Farm Act, program changes for dry peas, lentils, dairy, and peanuts could result in some production increases of these agricultural commodities. The effects on the livestock sector are relatively small, reflecting moderate effects on production and prices of feed grain and protein meal crops. Retail food prices are not expected to change appreciably. Farm income is increased, mostly due to higher government payments to the sector under the new law.

Additional market effects may result from counter-cyclical payments, direct payments, and provisions of the 2002 Farm Act that permit the updating of base acreage and payment yields. Even though benefits of these provisions are not linked to current production of farmers, they may, nonetheless, provide indirect incentives that influence production decisions and overall agricultural output.

Counter-cyclical payments may influence production choices because of their link to market prices, which can lower risks to producers by reducing the variability of revenues in some price ranges for program crops. Although expected net returns would likely remain a dominant consideration in cropping choices for most situations, revenue risk reduction provided by counter-cyclical payments could affect production choices for risk-averse producers. For a risk-averse farmer, the production mix chosen, as well as the use of risk management strategies, would be based on the joint consideration of profit maximization and revenue risk reduction concerns, and would reflect the degree of risk aversion of the farmer.

Direct payments are more decoupled than marketing loans and counter-cyclical payments, but may influence production through wealth and investment effects. Provisions for updating base acreage and program yields may also influence current production choices if farmers expect future legislation to provide opportunities to update these items for their farms.

The potential influence of counter-cyclical payments, direct payments, and base acreage and payment yield updating provisions on agricultural production is not included in the estimated effects of the new legislation in this report because no research is available that provides quantitative measures of those effects. While those effects are likely to be relatively small, particularly compared with price- and production-linked coupled programs such as marketing loans, the magnitude of these effects is an empirical issue and a topic for further research.

Additional analysis of the possible effects of these types of programs is needed to more fully understand the scope of the effects of farm policies. Research issues needing further study include the role of risk in the agricultural sector, including the degree to which revenue risk reduction aspects of counter-cyclical payments may influence production choices; how farmers use government payments, particularly how increased cash flow and liquidity provided by direct payments (as well as by other payments) affect production, borrowing activity, and agricultural investment relative to nonagricultural uses; and how expectations of future program benefits influence current cropping choices through the potential for building program crop base acreage, and how such influences may differ depending on whether market prices are relatively low or relatively high.

Introduction

The Farm Security and Rural Investment Act of 2002 (2002 Farm Act), which governs Federal farm programs through 2007, was signed into law on May 13, 2002. The act includes a wide range of agricultural programs, covering commodities, conservation, trade, rural development, nutrition, credit, forestry, and energy.

While this new farm law introduces some new policies to the array of agricultural commodity programs, in many ways, the 2002 Farm Act extends provisions of the 1996 Farm Act and the ad hoc emergency spending bills of 1998-2001. For example, marketing assistance loans existed under previous U.S. farm law, direct payments replace production flexibility contract payments of the 1996 Farm Act, and counter-cyclical payments are intended to institutionalize the market loss assistance payments of the past several years.

This report discusses major programs of title I (Commodity Programs) plus selected provisions in title II (Conservation) and title III (Trade) of the new Farm Act, and provides an initial evaluation of impacts on agricultural commodity markets.

Background for Development of the 2002 Farm Act

Since before the founding of the United States, farmers have received support through a series of markedly different policy approaches (Effland). Agricultural policy has at different times focused on distribution of the Nation's vast land resources, on increasing the productivity and standard of living of American farmers, and on assisting farmers in marketing their products. From the 1930s, U.S. farm commodity policy has focused on price and income supports. Through much of this period until 1996, farm policy relied partly on supply management in the form of acreage limits and commodity storage programs.

Agricultural policy also has broadened its scope considerably to include agricultural trade issues, food safety, food assistance, and conservation and environmental concerns, in addition to the more traditional commodity-focused policies. Concern with liberalizing world trade and competing in world markets led to efforts to reduce the influence of government programs in farm-level decisionmaking, thereby increasing the flexibility for farmers to make production and marketing decisions based on supply and demand conditions.

Beginning with the 1985 Farm Act and continuing with farm legislation in 1990, a series of important changes in commodity programs and other agricultural policies began to move the sector toward greater market orientation and reduced government involvement. Commodity loan rates and target prices were lowered in the 1985 Farm Act. The 1990 Farm Act introduced partial planting flexibility through 15 percent "normal flex acres" and 10 percent "optional flex acres." It also changed rules for grain removal from the farmer-owned reserve, providing more discretion to producers in the marketing of crops.

The 1996 Farm Act

Two themes dominated the policy setting in 1995-96. First, controlling farm program costs was part of an overriding concern for reducing the Federal budget deficit. Second, farmers were calling for less government intervention to free them from regulations and allow them to produce to meet the demands of the marketplace.

The 1995/96 market setting also contributed to the reform effort, as high commodity prices weakened the case for price and income-support programs. Additionally, during the 1996 Farm Bill debate, generally favorable global economic growth was projected, which, combined with liberalized trade associated with the Uruguay Round Agreement on Agriculture, supported expectations of strong growth in global agricultural trade and U.S. agricultural exports. However, World Trade Organization (WTO) concerns did not play a large role in the 1996 farm policy debate (Orden, Paarlberg, and Roe).

In this market setting, the 1996 Farm Act responded to these issues by furthering the trend toward market orientation in the agricultural sector (Young and Westcott, 1996). Passage of the 1996 Farm Act was viewed by many as a milestone in the evolution of U.S. agricultural policy because it fundamentally redesigned income support for major crops with the termination of target-price-based deficiency payments, the introduction of decoupled production flexibility contract payments, and almost total planting flexibility. Producers would be able to respond to market signals rather than government commodity programs, making the sector more economically efficient and putting U.S. farmers in a favorable position for competing in the global marketplace.

With this increased emphasis on market orientation and reduced government involvement in commodity markets under the 1996 Farm Act, management of risk was seen as being increasingly important for farmers. Farmers in general were expected to face greater risk of income volatility with the ending of supply management programs (such as acreage reduction programs and the Farmer-Owned Reserve program) and the termination of deficiency payments. There were some concerns expressed at the time of the enactment of the 1996 Farm Act that the reduced role for the Government in agricultural commodity policy was too extreme and represented a "dissolution of the safety net that protects farmers and rural America during lean times" (Secretary of Agriculture Glickman).

Emergency Legislation in the Intervening Years

Following the high commodity prices of the mid-1990s, prices weakened considerably beginning in 1998 in response to increased global supplies and weaker demand. High prices of the mid-1990s combined with planting flexibility provided by 1996 Farm Act led to expansion of U.S. crop production. High prices also encouraged expansion in foreign markets, and as acreage expanded, production reached record levels. In addition, the 1997-99 economic and financial crisis in Asia slowed economic growth and weakened global demand for agricultural products (Langley).

As a result of these factors, U.S. net farm income was projected to decline from $49.8 billion in 1997 to $42 billion in 1998 (Strickland). As the projected decline in farm income became apparent, Congress enacted the first of five supplemental emergency assistance packages in October 1998. Market loss assistance (MLA) payments totaling $2.857 billion were provided for 1998 crops. Additional MLA payments for dairy producers and disaster assistance for crop and livestock producers were also provided. Further direct payments totaling more than $24 billion in 1999-2001 were provided in subsequent assistance packages (fig. 1).

Shaping the New Farm Act

Many factors led to the final provisions of the 2002 Farm Act. Farm bill discussions covered a number of broad issues regarding how to address the needs of farmers and other stakeholders, including assuring an income safety net for producers, enhancing risk management options, supporting conservation and environmentally beneficial practices, improving agricultural trade opportunities, and assisting small and limited-resource farms.

Most proposals for commodity programs supported a continuation of planting flexibility to allow farmers to respond to market signals in their production choices. Decoupled production flexibility contract payments of the 1996 Farm Act were also favored in most proposals. Many called for automatic counter-cyclical payments to replace the ad hoc market loss assistance payments. Some proposals wanted higher commodity loan rates and the opportunity to update base acres and payment yields. A few favored a return to supply controls, while others favored continued movement to more market-oriented policies. Additionally, WTO concerns added a new dimension to the domestic farm commodity policy debate as U.S. commitments to the WTO played a more important and visible role (Effland and Young; Young and Effland).

Further, on May 10, 2001, the U.S. Congress passed its annual budget resolution for fiscal year 2002, which also provided a multi-year budgetary framework for the new farm legislation. The resolution earmarked a total of $73.5 billion in additional funding for agriculture beyond baseline-projected levels for fiscal years 2002 through 2011.

The House of Representatives passed a version of the farm bill in October 2001. The Senate passed its version in February 2002. A House-Senate conference to craft the final bill took place in March-April 2002. The conference version of the farm bill was passed by both the House and the Senate in early May, with the legislation then sent to the President for signature.

Figure 1
Emergency assistance payments

$ billion

Calendar year
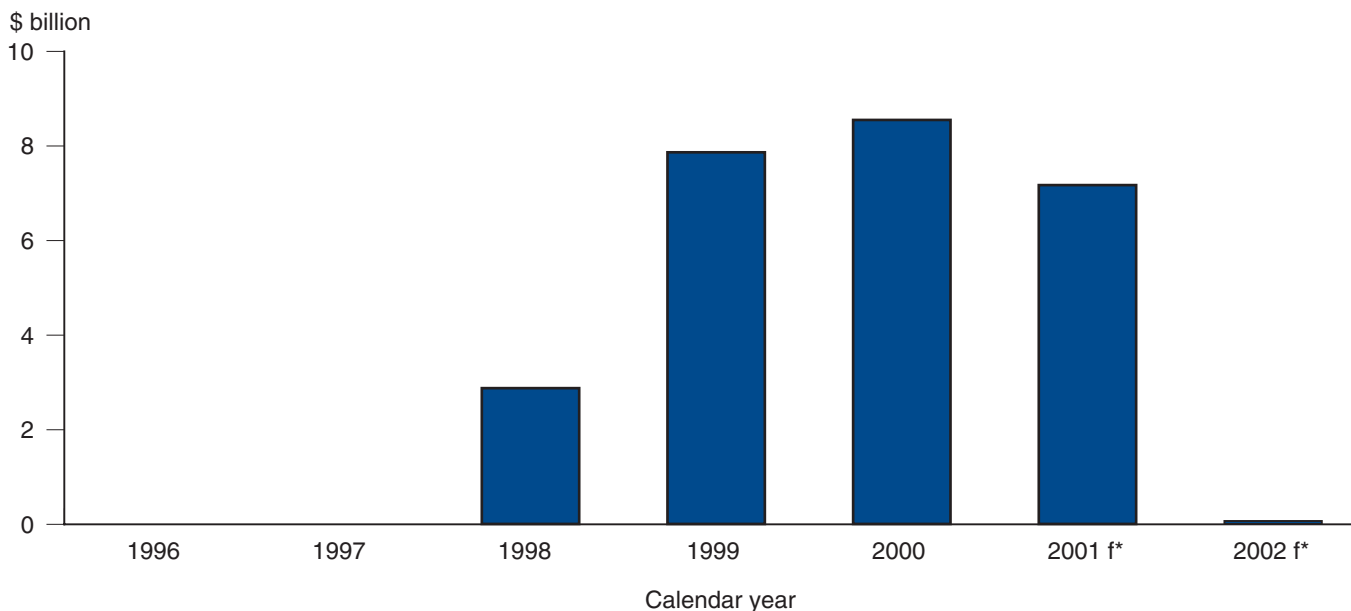
f* = June 2002 forecast.
Source: Economic Research Service. USDA.

Major Commodity-Related Provisions of the 2002 Farm Act

The Farm Security and Rural Investment Act of 2002 was signed into law by the President on May 13, 2002. Although the budget framework for the legislation extends over 10 years through 2011, the new law covers 6 years, governing Federal farm programs through 2007. Commodity market impacts attributable to the act will derive primarily from the commodity provisions and indirectly from changes in the conservation provisions.

The 2002 Farm Act provides income support for wheat, feed grains, upland cotton, rice, and oilseeds through three programs: direct payments, counter-cyclical payments, and marketing loans.

Support for peanuts is changed from a price support program with marketing quotas to a program with marketing loans, counter-cyclical payments, direct payments, as well as quota loss compensation payments. To the extent possible, the sugar program is to operate at no cost to the Federal Government. A new dairy counter-cyclical payment is introduced.

Important changes in the conservation provisions include expansion of land retirement programs by raising the maximum acreage permitted in the Conservation Reserve Program and placing more emphasis on wetlands. The legislation increases the emphasis of conservation on working lands by raising funding for the Environmental Quality Incentives Program and establishing a new Conservation Security Program, which pays producers to adopt or maintain specified conservation practices. Additional conservation provisions raise funding for farmland protection and create a new Grassland Reserve.

The 2002 Farm Act modifies some agricultural export programs designed to develop and expand commercial outlets for U.S. commodities in world markets and to provide international food assistance. The new law also requires that, to the maximum extent practicable, the Secretary adjust expenditures to avoid exceeding WTO domestic support commitments (aggregate measurement of support (AMS) levels), if the Secretary determines that the AMS ceiling would otherwise be exceeded.

Direct Payments

Direct payments under the 2002 Farm Act are similar to production flexibility contract (PFC) payments of the 1996 Farm Act (sometimes referred to as AMTA payments). The payment rate for direct payments is fixed for each crop and is not affected by current production or by current market prices. Direct payments to farmers are based on historical acreage and on historical yields. Commodity coverage is expanded to include soybeans, other oilseeds, and peanuts.

Direct payments differ from PFC payments in that the 2002 Farm Act sets fixed payment rates on a per unit basis for the entire life of the act (table 1). In contrast, the 1996 Farm Act fixed total expenditure levels for each fiscal year. Payment levels were allocated among contract commodities according to percentages specified in the 1996 Act. PFC payment rates for individual commodities were then derived, based on the commodity-specific budget allocations, the contract acreage enrolled, and the program yields for that commodity. Although direct payment rates are higher than PFC payment rates for 2001 and 2002, direct payment rates are lower than the average PFC rates under the 1996 Farm Act.

Under the direct payment program, eligible producers receive annual payments.[1] The payment is equal to the product of the national payment rate of the applicable crop, the producer's payment acres (85 percent of base acres) for that crop, and the producer's payment yield for the crop. For example, the direct payment for an individual corn producer is:

$$DP_{corn} = (\text{Direct payment rate})_{corn} \\ \times (\text{Payment yield})_{corn} \times [(\text{Base acres})_{corn} \times 0.85]$$

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[1] The term "producer" is defined in the commodity title of the 2002 Farm Act to mean "an owner, operator, landlord, tenant, or sharecropper that shares in the risk of producing a crop and is entitled to share in the crop available for marketing from the farm, or would have shared had the crop been produced."

Table 1—Direct payment rates under the 2002 Farm Act compared with production flexibility contract payment rates under the 1996 Farm Act

| Commodity | Unit | PFC payment rates | | Direct payment rates, 2002-07 |
		1996-2002 average	2002	
		Dollars per unit		
Wheat	Bu	0.62	0.46	0.52
Corn	Bu	.33	.26	.28
Grain sorghum	Bu	.40	.31	.35
Barley	Bu	.26	.20	.24
Oats	Bu	.028	.022	.024
Upland cotton	Lb	.0737	.0572	.0667
Rice	Cwt	2.57	2.05	2.35
Soybeans	Bu	n.a.	n.a.	.44
Other oilseeds	Lb	n.a.	n.a.	.008
Peanuts	Ton	n.a.	n.a.	36

n.a. = Not applicable.

To receive payments on crops covered by the program, a producer enters into annual agreements for crop years 2002-07.

Counter-Cyclical Payments

Under the 2002 Farm Act, a new program of counter-cyclical payments (CCP) provides price-dependent benefits for covered commodities whenever the effective price for the commodity is less than its target price.[2] This program was developed to replace most ad hoc market loss assistance payments that were provided to producers during 1998-2001. Payments are based on historical area and yields and are not tied to current production of the covered commodity.

The new legislation establishes a target price for each covered crop. When the higher of the loan rate or the season average price plus the direct payment rate is below the target price, a CCP is made, at a rate equal to that difference. Equivalently, CCPs are made when the higher of the loan rate or the season average price is below the target price minus the direct payment rate. The payment rate for corn CCPs would be:

$$\text{(CCP payment rate)}_{corn} = \text{(Target price)}_{corn}$$
$$- \text{(Direct payment rate)}_{corn}$$
$$- \text{(Higher of commodity price or loan rate)}_{corn}$$

For example, the corn target price for 2002 is $2.60 a bushel, the direct payment rate is $0.28 a bushel, and the loan rate is $1.98 a bushel. If the season average corn price is $2.20 a bushel (above the loan rate), the $2.60 target price minus $2.48 ($2.20 price plus $0.28 direct payment rate) gives a payment rate for CCPs of $0.12. This payment rate can be alternatively expressed as $2.32 (the $2.60 target price minus the $0.28 direct payment rate) minus the $2.20 season average price. This alternative expression also indicates that the price cutoff where the CCP rate becomes zero is at $2.32, not the $2.60 target price. Thus, when the season average price is above $2.32 (the target price minus the fixed direct payment rate), no CCP is made. When the season average price is below the target price minus the fixed direct payment rate, a counter-cyclical payment is made, with the CCP rate increasing as prices fall. The maximum CCP rate of $0.34 a bushel in this example is attained when prices are at or below the loan rate.

The payment amount for CCPs is equal to the product of the national CCP payment rate for the covered commodity, the producer's payment acres (85 percent of base acres) for the crop, and the producer's CCP payment yield for that crop. For example, the payment for an individual corn producer is determined as:

$$\text{CCP}_{corn} = \text{(CCP payment rate)}_{corn}$$
$$\text{x (CCP payment yield)}_{corn} \text{ x [(Base acres)}_{corn} \text{ x 0.85]}$$

For example, a farmer with 100 acres of corn base and a CCP payment yield of 120 bushels an acre would receive a CCP of $1,224 if the CCP payment rate is $0.12 per bushel.

Target prices are fixed in the 2002 Farm Act at initial levels for 2002-03 and then increased slightly for 2004-07 for many commodities (table 2).

To receive payments on crops covered by the program, producers enter into annual agreements for crop years 2002-07 at the same time that they enroll for direct payments.

Marketing Assistance Loan Program

The 2002 Farm Act continues the commodity loan program with marketing loan provisions. Commodity loan rates are fixed under the act. Rates are set for 2002-03 and then reduced slightly for 2004-07 for many commodities (table 3). Under the 1996 Farm Act, the Secretary had discretion to set loan rates within ranges determined by formula subject to minimum and maximum levels specified in the law.[3]

Commodity loan programs with marketing loan provisions are available for wheat, rice, corn, grain sorghum, barley, oats, upland cotton, soybeans, and other oilseeds

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[3]The rice loan rate was fixed at $6.50 per hundredweight.

Table 2—Target prices under the 2002 Farm Act

Commodity	Unit	2002-03	2004-07
		Dollars per unit	
Wheat	Bu	3.86	3.92
Corn	Bu	2.60	2.63
Grain sorghum	Bu	2.54	2.57
Barley	Bu	2.21	2.24
Oats	Bu	1.40	1.44
Upland cotton	Lb	.724	.724
Rice	Cwt	10.50	10.50
Soybeans	Bu	5.80	5.80
Other oilseeds	Lb	.098	.101
Peanuts	Ton	495	495

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[2]CCPs do not provide protection against reduced yields and higher prices, as has occurred in the 2002 market situation for many crops. This illustrates the importance of crop insurance to protect against yield losses.

under the 2002 Farm Act. Marketing loan provisions are extended to peanuts, mohair, wool, honey, small chickpeas, lentils, and dry peas. Nonrecourse loans are available for extra-long staple cotton, but the repayment rate is set at the loan rate plus interest.

Marketing loans provide loan deficiency payments and marketing loan gains to farmers of loan commodities when market prices are low. Marketing loans also reduce revenue risk associated with price variability. Commodity loan programs allow producers of designated crops to receive a loan from the Government at a commodity-specific loan rate per unit of production by pledging production as loan collateral. After harvest, a farmer may obtain a loan for all or part of the new commodity production.

Commodity loans may be settled in three ways:

• Repaying the loan at the loan rate plus interest costs (Commodity Credit Corporation (CCC) interest cost of borrowing from the U.S. Treasury plus 1 percentage point),

• Repaying the loan at a lower loan repayment rate, if applicable, or

• Forfeiting the crop pledged as loan collateral to the CCC at loan maturity.

Table 3—Marketing assistance loan rates, 2002 Farm Act compared with 2001 loan rates under 1996 Farm Act

Commodity	Unit	2001	2002-03	2004-07
			Dollars per unit	
Wheat	Bu	2.58	2.80	2.75
Corn	Bu	1.89	1.98	1.95
Grain sorghum	Bu	1.71	1.98	1.95
Barley	Bu	1.65	1.88	1.85
Oats	Bu	1.21	1.35	1.33
Upland cotton	Lb	.5192	.52	.52
ELS cotton	Lb	.7965	.7977	.7977
Rice	Cwt	6.50	6.50	6.50
Soybeans	Bu	5.26	5.00	5.00
Other oilseeds	Lb	.093	.096	.093
Peanuts[1]	Ton	610/132	355	355
Graded wool	Lb	n.a.	1.00	1.00
Nongraded wool	Lb	n.a.	.40	.40
Mohair	Lb	n.a.	4.20	4.20
Honey	Lb	n.a.	.60	.60
Small chickpeas	Cwt	n.a.	7.56	7.43
Lentils	Cwt	n.a.	11.94	11.72
Dry peas	Cwt	n.a.	6.33	6.22

n.a. = Not applicable.
[1]First number shown for peanuts in 2001 is quota loan rate; second number is additional loan rate.

When market prices are below the loan rate, farmers are allowed to repay commodity loans at a loan repayment rate that is lower than the loan rate (except for extra-long staple cotton). Marketing loan repayment rates are based on local, posted county prices for wheat, feed grains, and oilseeds, on prevailing world market prices for rice and upland cotton, and on weekly prices for pulses and peanuts. Each day, other than weekends and holidays, the Federal Government calculates and posts loan repayment rates, except for other oilseeds, rice, upland cotton, pulses, and peanuts, which are calculated weekly. When a farmer repays the loan at a lower repayment rate, the difference between the loan rate and the repayment rate represents a program benefit to producers and is called a marketing loan gain. In addition, any accrued interest on the loan is waived. When a marketing loan gain is received on a given collateralized quantity, that quantity is not eligible for further loan benefits.

Alternatively, loan program benefits can be taken directly as loan deficiency payments. Farmers may choose to receive marketing loan benefits (except for extra-long staple cotton) through direct loan deficiency payments (LDPs) when market prices are lower than commodity loan rates. The LDP option allows the producer to receive the benefits of the marketing loan program without having to take out and subsequently repay a commodity loan. The LDP rate is the amount by which the loan rate exceeds the loan repayment rate and thus is equivalent to the marketing loan gain that could alternatively be obtained for crops under loan. When an LDP is paid on a portion of the crop, that portion cannot subsequently be used as collateral for another marketing loan or LDP (Westcott and Price).[4]

Commodity certificates continue to be available for use in conjunction with the commodity loan program. Certificates can be purchased at the loan repayment rate for loan commodities. The certificates are available for producers to immediately exchange for crop collateral pledged to the CCC for a commodity loan.

Updating Base Acres and Payment Yields

The 2002 Farm Act permits the updating of base acres used for determining direct and counter-cyclical payments. For those who update their base acres, various options are provided in the legislation for updating payment yields used to compute counter-cyclical payments.

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[4]Most marketing loan benefits for feed grains, wheat, and soybeans have been taken as LDPs, while most for upland cotton and rice have been marketing loan gains.

To receive payments on crops covered by the program, a producer enters into annual agreements for crop years 2002-07. Before enrolling in the program, owners of farms must establish base acres and program yields for all covered commodities. There are five options for designating base acres, which apply to all covered commodities for both direct payments and counter-cyclical payments:

- Choose base acres equal to the contract acreage that would otherwise have been used for 2002 production flexibility contract payments,

- Choose one of three options to add oilseeds to PFC acres, based on plantings in crop years 1998-2001, or

- Update all base acres to reflect the 4-year average of acreage planted during crop years 1998-2001, plus acreage prevented from planting during those years due to drought, flood, other natural disaster, or other conditions beyond the control of the producer.

An owner who does not make an election is considered to have selected the 2002 PFC acreage, plus eligible oilseeds, if applicable. Base acres for peanuts may be determined separately so long as total base acres do not exceed available cropland. Payment acres equal 85 percent of base acres.

Program payment yields for direct payments are unchanged for those crops previously covered under the PFC program. These payment yields are also used for counter-cyclical payments on farms where one of the first four options for establishing base acres is chosen. However, owners who select the last alternative for establishing base acres have three options for determining program payment yields for each individual crop for use in determining counter-cyclical payments:

- Use current program yields,

- Update yield by adding 70 percent of the difference between current program yields and the farm's average yields per planted acre for the period 1998-2001 to current program yields, or

- Update yield to 93.5 percent of 1998-2001 average yields per planted acre.

For soybeans and other oilseeds, which were added to the program, payment yields are the farm's average yields for 1998-2001, multiplied by the national average yield for 1981-85, divided by national average yield for 1998-2001 (a 0.78 adjustment factor for soy-

beans, for example). Peanut payment yields are based on the farm's average yields for 1998-2001.[5]

Planting Flexibility

Farmers are given almost complete flexibility in deciding which crops to plant under the 2002 Farm Act, continuing provisions of the 1996 Act. Participating producers are permitted to plant all cropland acreage on the farm to any crop, except for some limitations on planting fruits, vegetables, and wild rice on base acres.[6] The land must be kept in an agricultural or conserving use (as determined by the Secretary), and farmers must comply with certain conservation and wetland provisions. With these planting flexibility provisions, farmers may receive direct payments and counter-cyclical payments corresponding to one program crop while producing another crop.

Payment Limitations

Payment limitations put ceilings on payments to farm operations as a means of targeting benefits and reducing commodity program costs. The payment limitation on direct payments is $40,000 per person per crop year. The payment limitation on counter-cyclical payments is $65,000 per person per crop year. Separate $40,000 and $65,000 limitations apply for direct and counter-cyclical payments for peanuts. The payment limitation on marketing loan gains and loan deficiency payments is $75,000 per person per crop year. A separate $75,000 payment limitation applies for marketing loan gains and loan deficiency payments for peanuts, wool, mohair, and honey.

The three-entity rule is retained. Under this rule, an individual can receive a full payment directly and up to a half payment from two additional entities. Thus,

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[5]Peanut yields in the 1998-2001 period are comparable to yields in the 1981-85 period.

[6]Planting for harvest of fruits, vegetables (other than lentils, mung beans, and dry peas), and wild rice is prohibited on base acres, except in the following situations. (1) Harvesting double-cropped fruits, vegetables, and wild rice on base acres is permitted, without loss of payments, in any region that has a history of double-cropping covered commodities with the otherwise prohibited crops. An individual farm need not have a double-cropping history, only the region. (2) Harvesting of any fruits, vegetables, or wild rice on base acres is permitted, with an acre-for-acre loss of direct and counter-cyclical payments for each base acre planted to the otherwise prohibited crop, if the Secretary determines that there is a history of planting those crops on the farm. (3) Harvesting a specific fruit, vegetable, or wild rice on base acres is permitted, with an acre-for-acre loss of direct and counter-cyclical payments for each base acre planted to the specific crop, if the Secretary determines that the producer has an established planting history of the specific crop. In such a case, the quantity harvested cannot exceed the producer's average annual planting history of the crop during the 1991-95 or 1998-2001 crop years, excluding any crop year with no acres planted to that crop.

the maximum payment that an individual can receive is $360,000 per year. Producers with adjusted gross income (on their Federal income tax returns) of over $2.5 million, averaged over the 3 preceding tax years, are not eligible for payments unless more than 75 percent of the adjusted gross income is from agriculture. There are no limits on the use of commodity certificates in conjunction with the commodity loan program other than the size of the farmer's loan eligible production.

Peanuts

The 2002 Farm Act substantially revamped the peanut program. Under previous legislation, the peanut program was a two-tier price support program based on marketing quotas and nonrecourse loans. Production for domestic edible consumption was constrained by an annually established marketing quota, which was eligible for the quota loan rate ($610 per short ton in 2001). Marketings of nonquota (additional) peanut production were permitted only for export or domestic crush; nonquota production was eligible for a lower loan rate ($132 per short ton in 2001).

Under the 2002 Farm Act, the peanut marketing quota system is eliminated. Peanuts are treated similarly to other program crops, such as grains and cotton, with direct payments and counter-cyclical payments. Producers with a history of peanut production during 1998-2001 are eligible for these programs. Also, a single marketing assistance loan program for all peanut production replaces the two-tier price support program. Farmers no longer have to own or rent peanut quota rights to produce for domestic edible consumption.

Owners of peanut quota under prior legislation will receive compensation payments for the loss of quota asset value. Payments may be made in five annual installments of $0.11 per pound ($220 per short ton) during fiscal years 2002-06, or the quota owner may opt to take the outstanding payment due in a lump sum. These payments are based on the quota owner's 2001 quota, regardless of temporary leases or transfers of quota, so long as the person owned a farm eligible for the peanut quota. Continued eligibility for peanut quota compensation payments remains with the established quota owner regardless of future interest in the farm or whether the person produces peanuts.

Sugar

The two main elements of U.S. sugar policy are the tariff-rate quota (TRQ) import system and the price

support loan program. The TRQ system works in conjunction with the loan program to control imports and thus total domestic supply in order to maintain prices of sugar.

The loan program for sugar processors supports the U.S. price of sugar. Unlike most other commodity programs, sugar loans are made to processors and not directly to producers because sugarcane and sugar beets are bulky and very perishable and must be processed into sugar before they can be traded and stored. To qualify for loans, processors must agree to provide part of the loan payment to producers, in proportion to the amount of the loan value accounted for by the sugar beets and sugarcane the producers deliver.

The 2002 Farm Act continues the loan rate to processors of domestically grown sugarcane at $0.18 per pound and the loan rate to processors of domestically grown sugar beets at $0.229 per pound for refined sugar. Under the 1996 Farm Act, cane processors paid a penalty of $0.01 on each pound of sugar forfeited to the Government under the loan program; beet processors paid a penalty of $0.0107 per pound. The 2002 Farm Act terminates these loan forfeiture penalties.

The 2002 Farm Act requires USDA, to the maximum extent possible, to operate the sugar program at no cost to the Federal Government. This provision means that USDA must operate the loan program in order to avoid the forfeiture of sugar to the CCC. The 2002 Farm Act gives USDA the authority to accept bids from sugarcane and sugar beet processors (acting in conjunction with producers) to obtain raw cane sugar or refined beet sugar in CCC inventory in exchange for the reduction of the production of raw cane sugar or refined beet sugar. The 2002 Act also provides USDA authority to implement flexible marketing allotments, allocated to processors and shared by producers, to assure no forfeitures of sugar to the CCC under the loan program. USDA's authority to operate sugar marketing allotments is suspended if USDA estimates that sugar imports for domestic human consumption will exceed 1.532 million short tons, raw value.[7] Marketing allotments would remain suspended until imports have been restricted, eliminated, or otherwise reduced to or below 1.532 million short tons, raw value.

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[7]This amount equals the U.S. sugar minimum access commitment under the WTO, plus the maximum annual duty-free access provided to Mexico in fiscal years 2001-07 under the North American Free Trade Agreement.

Dairy

The 2002 Farm Act extends the milk price support program and the dairy export incentive program, leaves the milk marketing order system unchanged, and adds a new counter-cyclical payment. Under the provisions of the 1996 Farm Act, the dairy price support program was scheduled to end on December 31, 1999. However, subsequent legislation extended the program. The 1996 Act also called for several changes in the milk marketing order system, including consolidation of the then-existing 31 orders. There are currently 11 Federal milk marketing orders. The 2002 Farm Act sets the framework for new national dairy market loss payments.

Under the new law, the milk support purchase program is continued through 2007. The milk support price equals $9.90 per hundredweight. The CCC will buy, at announced prices, any butter, cheddar cheese, or non-fat dry milk that is offered to it and meets specifications. Announced purchase prices are set to allow plants of average efficiency to pay producers, on average, at least the support price of $9.90 per hundredweight for milk. The Secretary has authority to adjust the relative product purchase prices for butter and non-fat dry milk twice a year if deemed necessary.

The dairy export incentive program pays cash bonuses that allow dairy product exporters to buy U.S. products and sell them abroad. Quantities and dollar amounts under this program are subject to WTO restrictions on export subsidies.

Federal milk marketing orders are intended to help establish and maintain orderly marketing conditions for both milk producers and dairy product consumers. A classified pricing system and pooling are the two key elements of milk marketing orders. Milk marketing orders define the relationship between prices of fluid milk and manufactured dairy products and a geographic price structure, sometimes called the price surface. The 2002 Farm Act did not change milk marketing orders.

The 2002 Farm Act calls for national dairy market loss payments, which will be administered as the Milk Income Loss Contract (MILC) program, to provide a safety net for dairy producers from December 2001 through September 2005. A monthly direct payment is to be made to dairy farm operators if the monthly Class I price in Boston (Federal Order 1) is less than $16.94 per hundredweight. Payments are to be made on up to 2.4 million pounds of milk per fiscal year per operation, which corresponds to the production from about 135

cows. Overall, based on analysis of data from the National Agricultural Statistics Service (USDA, NASS (a) and (b)), about 55 percent of milk production is estimated to initially be eligible for these payments, falling to about 45 percent by 2005. However, initially only about 35 percent of total production is on smaller operations that produce less than the 2.4-million-pound limit, declining to about 25 percent in 2005.

Conservation Provisions

Conservation and environmental programs play an important role in the agricultural sector. These programs provide cost-share, rental, and/or other direct payments to producers in return for using specified environmentally beneficial farming practices or for setting aside land in conserving uses. The 2002 Farm Act continues and in most cases expands almost every existing agri-environmental program. While continuing and expanding the programs that retire environmentally sensitive land from crop production, the act puts more emphasis on programs that support conservation on land in production and environmentally friendly farming practices on livestock operations (fig. 2). New programs, including the Conservation Security Program (CSP) and the Grassland Reserve Program, further expand the objectives and role of agri-environmental policy.

Under the voluntary Conservation Reserve Program (CRP), farmland owners submit bids to retire highly erodible and other environmentally sensitive cropland from production for 10-15 years. Farmers receive a cost-share payment to establish a permanent cover crop and annual rental payments for retiring land and maintaining specified conservation practices. The maximum CRP area is increased to 39.2 million acres under the 2002 Farm Act, up from 36.4 million acres under the 1996 Act. CRP enrollment is designed to enhance environmental quality and improve wildlife habitat. The expansion of the CRP under the 2002 Farm Act will reduce land available for crop production somewhat.

The 2002 Farm Act expands the Environmental Quality Incentives Program (EQIP), which provides technical assistance, cost sharing, and incentive payments to assist livestock and crop producers with conservation and environmental improvements on working lands. Cost sharing (up to 75 percent) or incentive payments can be provided for a wide range of practices, including nutrient management, livestock waste handling, conservation tillage, terraces, and filter strips. EQIP is not expected to significantly affect crop and livestock output.

The newly created Conservation Security Program (CSP) will focus on land-based practices and specifically excludes livestock waste-handling facilities. Under the CSP, which is legislated to begin in fiscal year 2003, producers develop and submit conservation plans to USDA that include conservation practices that fall within one of three tiers or levels of participation. Higher tiers offer larger payments, but require greater conservation measures. Producers enter into conservation security contracts that provide a base payment for conducting the practices designated in the conservation plan. The base payment rate is based on rental rates for the use of similar land during the 2001 crop year, as determined by USDA. Cost share payments for adoption and maintenance of the practice also are provided. Additionally, producers may be eligible for enhancement payments for implementing or maintaining conservation measures that meet other criteria. Effects of the CSP on agricultural production will depend on how the program is implemented.

Trade-Related Provisions

The 2002 Farm Act continues and modifies agricultural export programs designed to develop and expand commercial outlets for U.S. commodities and food products in world markets and to provide international food assistance. The act orients export programs toward greater market development, with increased emphasis on high-value and value-added products. The 2002 Farm Act reauthorizes the Export Enhancement Program (EEP), although only limited use of this program has been made in recent years. While the 2002 Farm Act streamlines, improves, and clarifies trade programs, changes in the trade-related provisions are not expected to greatly alter trade flows for agricultural commodities.

The 2002 Farm Act also requires the Secretary, "to the maximum extent practicable, to adjust domestic commodity program expenditures to avoid exceeding allowable" WTO domestic support ceilings. The Uruguay Round Agreement on Agriculture put a maximum allowable level on trade-distorting domestic support programs, as measured by the aggregate measurement of support (AMS). The ceiling on the U.S. AMS fell from $23.1 billion in 1995 to $19.1 billion in 2000 and will continue at this level until a new WTO agreement is reached. Under the 1996 Farm Act, U.S. support remained under the AMS ceiling (fig. 3).

Figure 2
Conservation emphasis shifts from land retirement to working land

$ billion
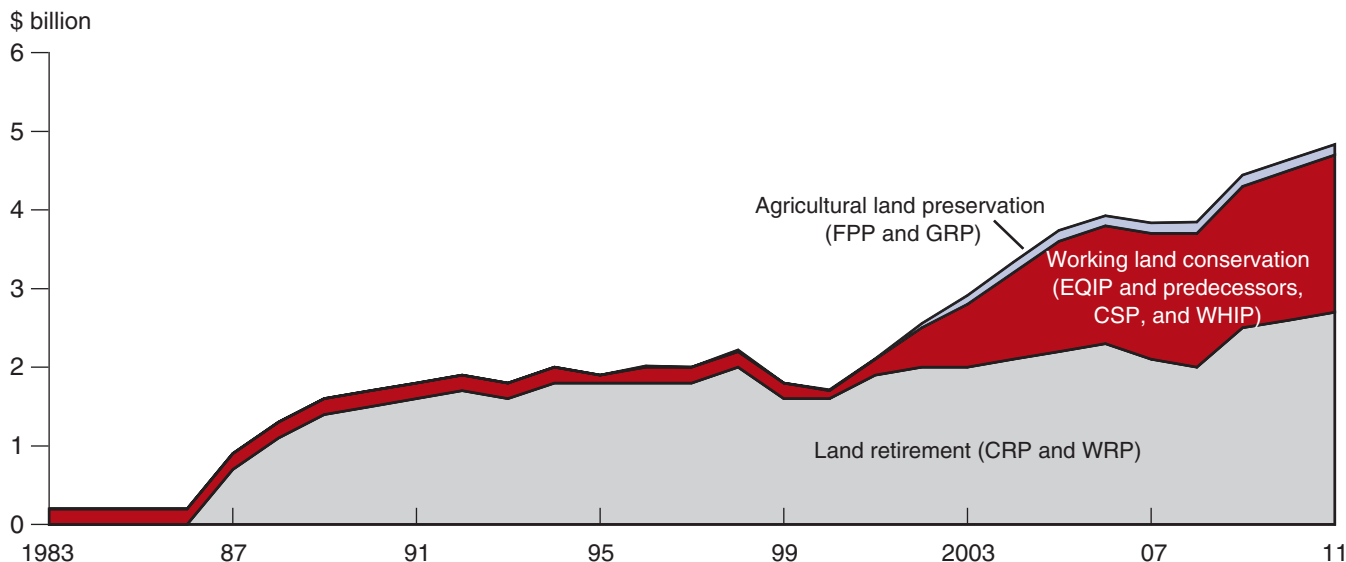
FPP = Farmland Protection Program; GRP = Grassland Reserve Program; EQIP = Environmental Quality Incentives Program; CSP = Conservation Security Program; WHIP = Wildlife Habitat Incentive Program; CRP = Conservation Reserve Program; WRP = Wetlands Reserve Program.
Source: Claassen.

Figure 3

U.S. aggregate measure of support (AMS) remained below WTO ceiling

$ billion
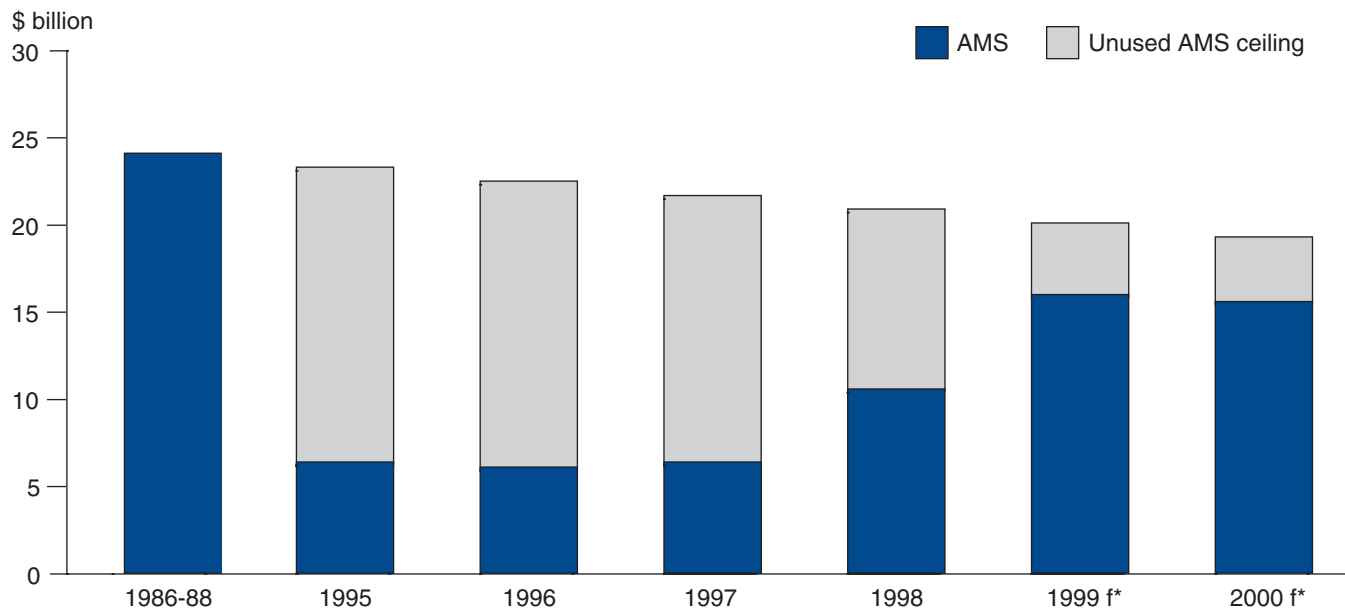
f* = Forecast.
Source: USDA, *Food and Agricultural Policy: Taking Stock for the New Century.*

Effects of the 2002 Farm Act on U.S. Agriculture

The 2002 Farm Act introduced a number of new commodity program provisions in addition to continuing many programs that existed under prior legislation. Assessing the impacts of the new legislation on agricultural commodity markets involves the interaction of various types of programs that may have direct and indirect influences on production. Marketing loans, for example, which existed under the 1996 Farm Act, are based on current production and market prices and directly affect production decisions of farmers, particularly when prices are relatively low.

On the other hand, less direct market impacts may result from other commodity programs. Some of the challenges in assessing impacts of the new legislation relate to whether various types of income-support programs that provide program benefits that are decoupled from producers' current levels of production may, nonetheless, provide indirect incentives that influence production decisions and overall output. In particular, qualitative arguments suggest that counter-cyclical payments, direct payments, and acreage base and payment yield updating provisions of the 2002 Farm Act could have some influence on production. These impacts are likely to be relatively small, although further research is needed to provide measures of those effects.

This section provides a discussion of an initial assessment of the effects of the 2002 Farm Act on agricultural commodity markets. The discussion is presented in three parts. First, we analyze the income-support mechanisms of the new law through an illustration of revenue sources for a program crop on a farm to show the roles of the different provisions. Second, we present a qualitative discussion of potential sources of effects of counter-cyclical payments, direct payments, and base acreage and yield updating provisions of the 2002 Farm Act. Third, we discuss results of a quantitative, sectorwide analysis of effects of the 2002 Farm Act, based on model simulations of key provisions of the new law compared with a continuation of the 1996 Farm Act.

Illustration of Income-Support Provisions

To illustrate some of the properties of income-support provisions of the new legislation, we analyze an example of corn market revenues and program payments for 2002 program provisions (figs. 4 and 5). Revenue calculations are for a farm with 100 acres of corn, 100 acres of corn base, and corn yields of 135 bushels an acre, with a program-payment yield of 103 bushels an acre used for direct payments and an updated payment yield for CCPs of 120 bushels an acre. In this example, it is assumed that the farmer has chosen to plant the same crop as the acreage base on the 100 acres.

Figure 4

Corn revenues under the 2002 Farm Act
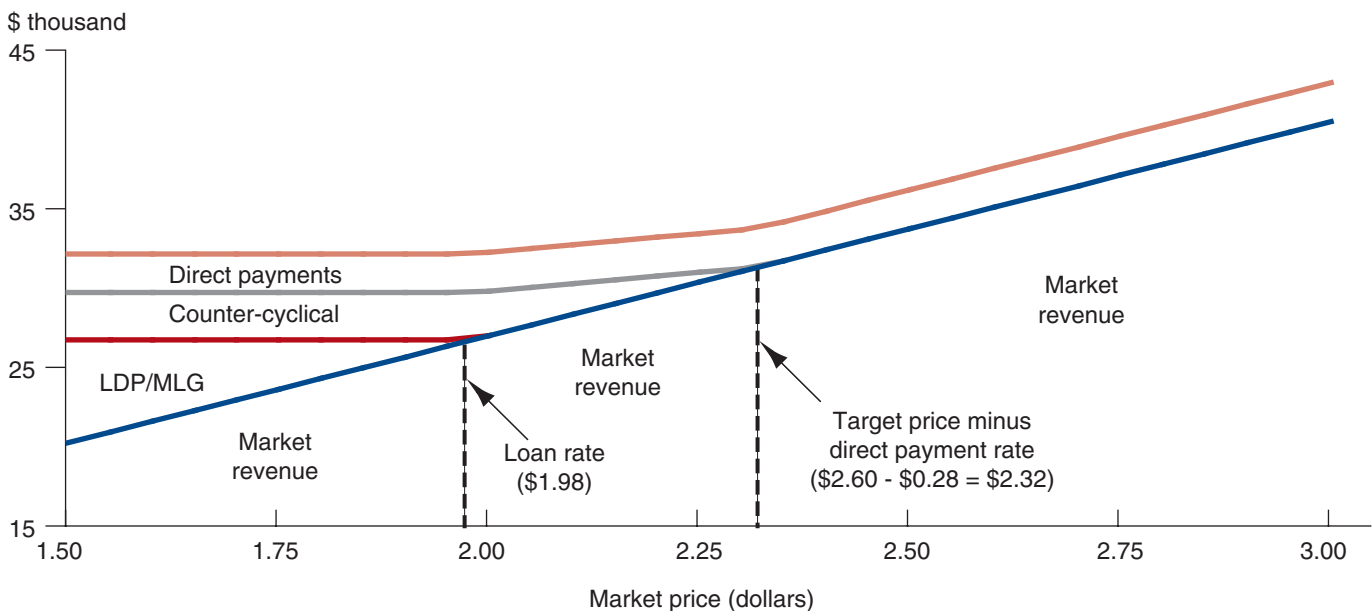
Note: Assumes 100 acres of corn, 100 acres of corn base, 135 bushels/acre yield, 103 bushels/acre direct payment yield, and 120 bushels/acre counter-cyclical payment yield.

Basic Case

The portions of figure 4 labeled "Market revenue" represent receipts from the marketplace, which increase as market prices rise.

The triangle labeled "LDP/MLG" represents marketing loan benefits in the form of loan deficiency payments (LDPs) and/or marketing loan gains (MLGs) that supplement market revenues at market prices below the loan rate ($1.98 for corn). As prices fall below the loan rate, marketing loan benefits rise and fully offset declines in market revenues since these program benefits are available for all production of loan eligible commodities.

The area of figure 4 labeled "Counter-cyclical" represents the counter-cyclical payments under the 2002 Farm Act. Counter-cyclical payments are linked to market prices, with payments provided when prices are below the target price minus the direct payment rate ($2.60 minus $0.28, or $2.32, for corn). Payments increase as prices decline below $2.32 until they reach the loan rate ($1.98 for corn). For prices below the loan rate, counter-cyclical payments are at their maximum and do not change. Counter-cyclical payments do not fully offset reductions in market revenues as prices fall from $2.32 to $1.98 because payments are made on 85 percent of the fixed acreage base and are paid on

CCP payment yields rather than actual yields, and thus do not change with the farm's production.

The area of figure 4 labeled "Direct payments" are fixed payments of $0.28 a bushel for corn, paid on 85 percent of the acreage base and a payment yield. These payments do not change with market prices or the farm's production.

Marketing Loan Benefits and Counter-Cyclical Payments

Figure 5 extends the analysis of figure 4 to illustrate that counter-cyclical payments are likely to overlap with counter-cyclical aspects of marketing loan benefits in certain price ranges. In figure 4, marketing loan benefits are assumed only for season average prices below the loan rate. However, marketing loans have enabled farmers to attain per unit revenues that, on average, exceed commodity loan rates when prices are relatively low. Many farmers use a two-step marketing procedure in which they receive program benefits when prices are seasonally low (and marketing loan benefits high) and then sell the crop later in the marketing year when prices have risen (Westcott and Price).

Figure 5 includes a representative level of $0.20 a bushel for corn for the expected above-loan-rate revenue facilitated by marketing loans when prices

Figure 5

Corn revenues under the 2002 Farm Act, with above-loan-rate marketing loan benefit
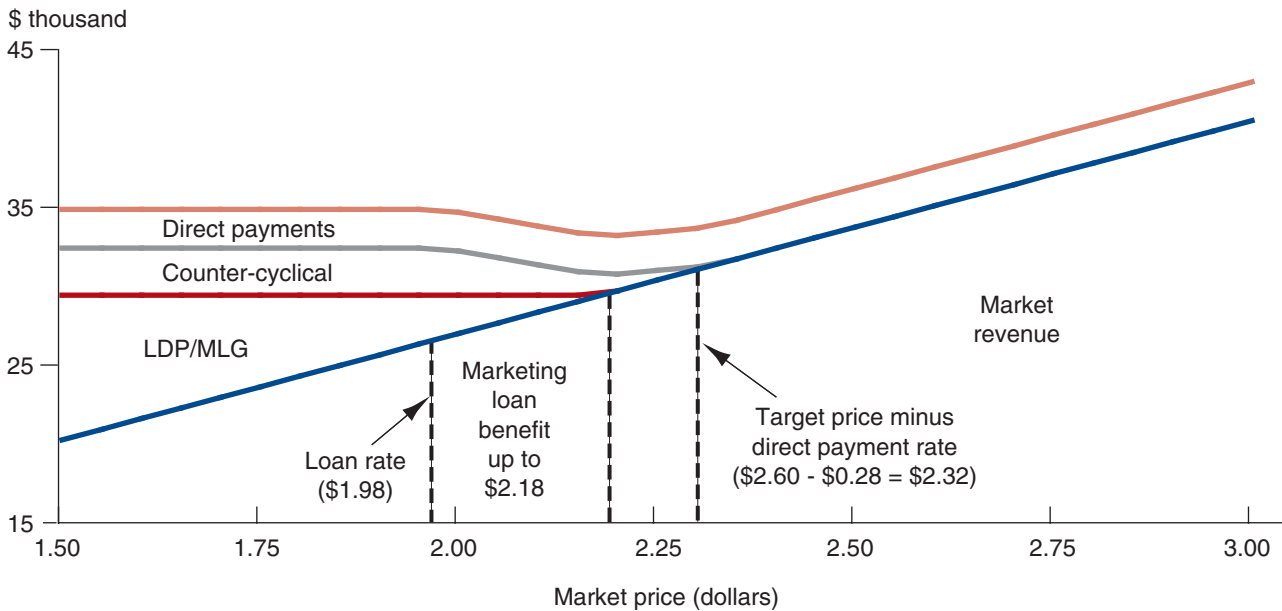
Note: Assumes 100 acres of corn, 100 acres of corn base, 135 bushels/acre yield, 103 bushels/acre direct payment yield, and 120 bushels/acre counter-cyclical payment yield. Assumes per unit revenue facilitated by marketing loans exceeds loan rate by an average of 20 cents/bushel.

are low, based on the experience of recent years.[8] With this expectation, average per unit market receipts and marketing loan benefits are kept from falling below $2.18. As a result, expected counter-cyclical payments overlap with counter-cyclical aspects of marketing loan benefits in the price range from $1.98 to $2.18, in effect providing two counter-cyclical benefits to farmers. As season average prices fall in this price range, both counter-cyclical payments and marketing loan benefits rise, causing total revenues to increase.

Producer Incentive Prices for Planting Decisions

In the corn farm examples presented in figures 4 and 5, the farmer is assumed to plant the same crop as the acreage base for illustration purposes. Of the different government payments, marketing loans have the greatest direct effect on production decisions of farmers because these program benefits are fully coupled to farmers' current production. When prices are relatively low, marketing loan benefits supplement returns from the marketplace for all units of production, thus raising the producer incentive price underlying planting decisions.

In contrast, direct payments and counter-cyclical payments for corn, in this example, are essentially decoupled from current production because they are paid to the farmer regardless of whether corn (the base acreage crop) is planted. When the farmer is making planting decisions, the marginal revenue of additional production is not affected by these program benefits because those payments are paid on a portion of historical acreage and historically based program yields. Thus, the producer incentive price for output at the margin is unaffected by these payments, equaling the market price (if prices are higher than levels where marketing loan benefits exist) or the market price augmented by the marketing loan benefit when prices are relatively low.

Nonetheless, although counter-cyclical payments and direct payments do not directly alter producer incentive prices, less direct impacts on commodity markets may result from these programs, as discussed in the next section.

Counter-Cyclical Payments, Direct Payments, and Base Acreage and Payment Yield Updating Provisions

Counter-cyclical payments, direct payments, and provisions of the 2002 Farm Act that permit the updating of base acreage and payment yields may affect the agricultural sector, even though benefits of these provisions are not linked to current production of farmers. This section provides a qualitative discussion of some of these potential influences. There is no available research that provides quantitative measures of the potential impacts so these effects are not included in the estimated impacts of the new legislation later in this report. However, these influences are likely to be relatively small, particularly compared with price- and production-linked coupled programs such as marketing loans.

Counter-Cyclical Payments

Counter-cyclical payments do not affect producer net returns at the margin but may influence production decisions because their link to market prices may reduce revenue variability and risk.[9]

Counter-Cyclical Payments Do Not Affect Marginal Revenues. Counter-cyclical payments under the 2002 Farm Act are essentially decoupled from an individual farmer's planting decisions since they are paid on a constant, pre-determined quantity for the farm (equal to 85 percent of a fixed acreage base times a fixed CCP payment yield) and they are not affected by a farmer's current production. The expected marginal revenue of a farmer's additional output is the expected market price (augmented by marketing loan benefits when prices are relatively low), so counter-cyclical payments do not affect production directly through expected net returns. Thus, production decisions at the margin are based on market price signals and are not directly influenced by the counter-cyclical payments.

Revenue Risk Reduction Effects of Counter-Cyclical Payments May Affect Supply Response. However, because counter-cyclical payments are linked to market prices, they may influence production decisions indirectly by reducing total and per unit revenue risk associated with price variability in some situations. In the price range from the loan rate up to the target price minus the direct payment rate, changes in producer revenues due to changes in market prices are partly

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[8]Realized, average per unit revenue (market revenue plus the average marketing loan benefit per bushel) for corn was $0.22 above the loan rate for the 2000 crop and an estimated $0.20 a bushel above the corn loan rate for the 2001 crop.

[9]Counter-cyclical payments may also affect agricultural production through wealth and investment effects, as discussed for direct payments in the following section.

Figure 6

Supply curve and price (per unit revenue) risk under the 1996 Farm Act (without counter-cyclical payments)
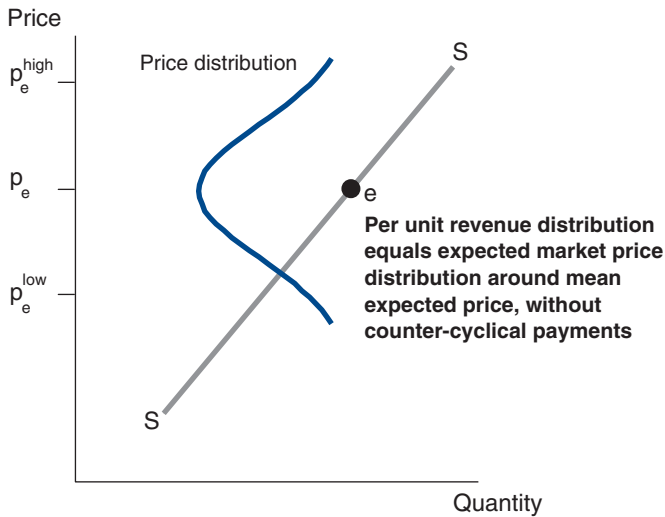
Note: Price distribution shown is hypothetical.

Figure 7

Supply curve and reduced per unit revenue risk under the 2002 Farm Act (with counter-cyclical payments)

Note: Price and per unit revenue distributions shown are hypothetical. They are used here to illustrate concepts related to counter-cyclical payments in the price range where these payments vary.

offset by the counter-cyclical payments if the base acreage crop is planted (or a crop with highly correlated prices with the base acreage crop), thereby reducing total revenue risk associated with price variability.[10]

Analytical Frameworks for Counter-Cyclical Payments.
A simplified representation of this revenue risk reduction aspect of counter-cyclical payments is shown in figures 6 and 7. In these depictions, the farmer is assumed to plant the same crop as the base acreage crop on the farm and prices are assumed to be in the range where CCPs vary (from the loan rate up to the target price minus the direct payment rate). Also, the price and per unit revenue distributions shown in the figures are hypothetical, used only to illustrate concepts related to counter-cyclical payments.

Figure 6 represents the situation with no counter-cyclical payments, such as under the 1996 Farm Act. The supply curve is SS and the expected price of p_e gives a supply response at point e on SS. Implicitly associated with any point on the supply curve is a distribution of price outcomes around the mean expected price. This is represented by the "Price distribution" curve in figure 6, showing price expectations within some level of probability ranging from a low of p_e^{low} to a high of p_e^{high}.

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[10]The extent of the offset depends on how much of the acreage base is planted, as well as the relationship between the producer's expected selling price for the crop and expected season average price.

With no counter-cyclical payments in figure 6, there is a direct correspondence between changes in market prices and changes in revenues if prices are in the assumed range where the new CCPs vary. As a result, market price variability represented by the price distribution curve in figure 6 also represents per unit revenue variability. For example, if the production decision for a corn producer is based on a price expectation of $2.15 a bushel, but the actual price turns out to be $2.10 a bushel, the reduction in realized revenues from the initial mean expected revenue reflects the full 5-cent-per-bushel market price decline. Similarly, if the actual price is $2.20, revenues reflect the full 5-cent gain in prices.

The situation with counter-cyclical payments of the 2002 Farm Act is depicted in figure 7, with the expected price again at p_e and supply response at point e on SS. With counter-cyclical payments, however, price changes do not directly change per unit revenues by a like amount. For example, for farmers who plant their corn base acreage to corn, about three-fourths of any change in revenues from expected levels due to a change in the price from the initial expected price would be offset by a change in the counter-cyclical payment, which is paid on 85 percent of base acreage and on a payment yield that would be lower than expected actual yields.

While the distribution of expected market prices is the same as in figure 6, the distribution of the farmer's expected per unit revenues is much narrower in figure 7, as represented by the "Per unit revenue distribution" curve. Per unit revenue expectations covering the same level of probability as is used for the price distribution range from a low of r_e^{low} to a high of r_e^{high}. This narrower distribution represents the reduced per unit revenue risk because of the counter-cyclical payments. Using the example above where the expected corn price at planting time is $2.15 a bushel but the actual price is $2.10, the reduction in realized market revenues from the initial expected revenue is now partly offset by an increase in counter-cyclical payments, so the reduction in total revenues (market receipts plus counter-cyclical payments) reflects, on average, only part of the 5-cent-per-bushel market price decline. Alternatively, if the actual price is $2.20, only part of the 5-cent increase is reflected in total revenues.

Beyond the simplified framework of figures 6 and 7, additional changes in per unit revenue distributions occur near the end points of the price range within which the CCPs vary. For expected prices near the loan rate, marketing loan benefits provide downside revenue risk protection that is fully coupled to current production, so downside price risk is reduced further than with counter-cyclical payments. Alternatively, at prices near the target price minus the direct payment

rate, counter-cyclical payments continue to offset downside price outcomes, but there is no further offset to revenue-increasing effects of higher price outcomes after CCPs equal zero.

Another framework for analyzing potential effects of CCPs is to consider that the farmer receives direct payments and, depending on the market price, counter-cyclical payments even if no crop is produced (fig. 8). In the price range from the loan rate up to the target price minus the direct payment rate, the farmer's program revenue is the most variable, reflecting the negative relationship of counter-cyclical payments to market price movements. One consideration when deciding what crop to produce would be that market revenues would offset some of this program-related revenue variability in that price range if the farmer produces the base acreage crop (or a highly price-correlated alternative).

CCP Implications for Production and Risk Management. If there is value to the farmer in reducing the variability of expected revenues (such as for a risk-averse producer or their risk-averse lender), then the negative correlation between the expected counter-cyclical payments for the program crop and the expected market revenues for the same crop (or for a highly price-correlated alternative crop) may have some influence on production choices. That is, although the reduction in per unit revenue risk provided by counter-cyclical payments offsets both

Figure 8
Counter-cyclical and direct payments for corn under the 2002 Farm Act
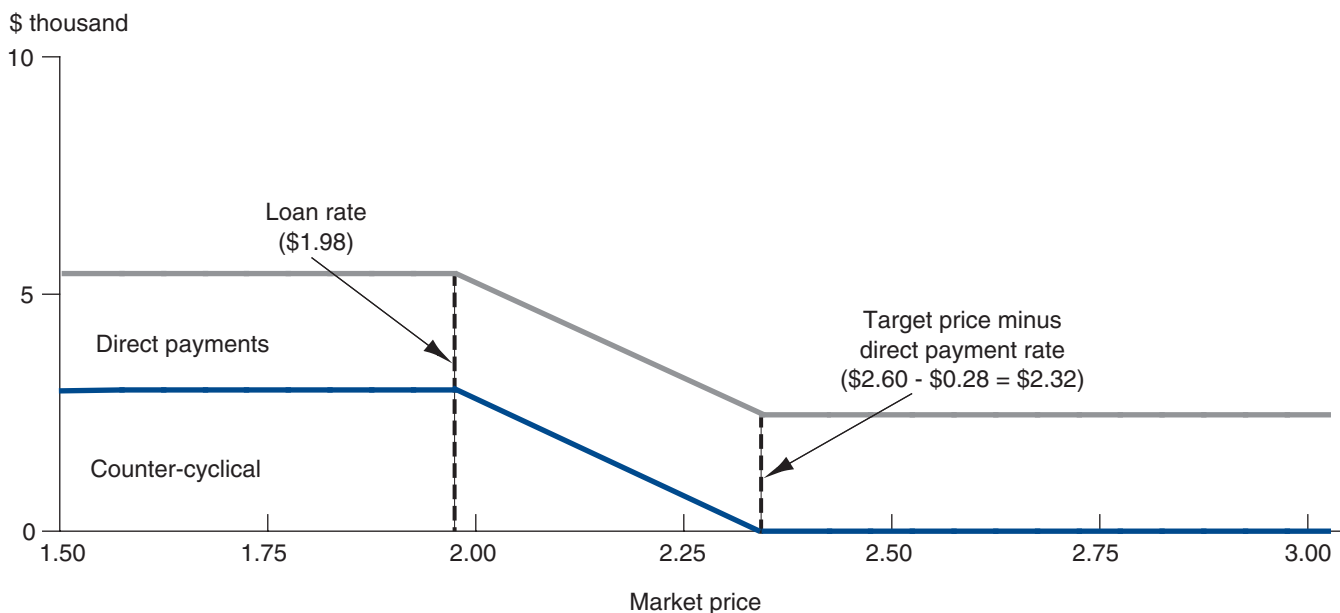
$ thousand

Note: Assumes 100 acres of corn, 100 acres of corn base, 135 bushels/acre yield, 103 bushels/acre direct payment yield, and 120 bushels/acre counter-cyclical payment yield.

reductions and gains in prices, the revenue risk reduction could affect production if the penalty associated with downside revenue outcomes is viewed as greater than the benefits of revenue increases.

This revenue stabilization consideration would supplement the typical profit maximization incentive underlying planting decisions. For risk-averse producers, planting decisions would partly reflect the amount of revenue risk the producer is willing to carry. The cropping mix and acreage allocation chosen would be determined on the basis of the tradeoff between expected net returns and the value of revenue risk reduction, subject to the producer's degree of risk aversion. The resulting equilibrium level of production by the risk-averse farmer would reflect the joint consideration of profit maximization and revenue stabilization concerns.

As suggested in the CCP analytical frameworks, for risk-averse farmers, the revenue risk reduction provided by counter-cyclical payments may, in some cases, encourage farmers to plant the program crop for which they have base acreage (or a crop for which prices are highly correlated to those of the program crop). If the base acreage crop is planted, the season average market price of the crop produced would be the same price used to determine the counter-cyclical payment. In this situation, the reduction in variability of total revenues due to CCPs is most direct. Any expansion would distribute the revenue risk reduction of the CCPs (paid on a fixed payment quantity) over more actual production, with the amount of per unit revenue risk reduction falling as production increases. The CCPs would then protect per unit revenues against a smaller portion of the price variability, with the production level chosen partly reflecting the amount of per unit revenue risk the producer is willing to carry. Nonetheless, whatever the level of production chosen in this situation, some amount of per unit revenue risk reduction for the program crop is provided relative to the case of no CCPs.

Alternatively, because CCPs reduce overall revenue risk, a risk-averse farmer may switch some land to riskier crops that provide higher mean expected returns but also higher variability of those returns. Again, the production mix chosen would be based on the jointly considered factors of profit maximization and revenue risk reduction, and would reflect the degree of risk aversion of the farmer.

Additionally, the farmer may also change the mix of risk management strategies used. Since CCPs provide a new revenue risk reduction instrument, the adjustments may reduce the use of alternative risk management strategies by risk-averse farmers.

While these CCP analytical frameworks and discussion provide qualitative arguments for counter-cyclical payments to have some influences on agricultural production, the magnitude of these effects is an empirical issue and a topic for further research. Although expected net returns would likely remain a dominant consideration in cropping choices for most situations, revenue risk reduction provided by counter-cyclical payments would be likely to have the greatest potential to affect production choices for risk-averse producers.

Direct Payments

Direct payments are largely decoupled since program benefits do not depend on the farmer's production or market conditions, and the payments do not affect per unit returns. However, direct payments are tied to acreage, so these benefits will be capitalized into farmland values, thereby increasing aggregate producer wealth. Mechanisms for direct payments to potentially affect production decisions are through wealth and investment effects (Westcott and Young, 2002).[11],[12] Three such avenues for these effects are (1) a direct wealth effect through risk aversion reduction, (2) a wealth-facilitated increased investment effect partly reflecting reduced credit constraints, and (3) a secondary wealth effect resulting from the increase in investment.

Direct payments increase farmers' wealth, reflecting gains in farm sector equity that result from the capitalization of expected future farm program benefits into the value of farmland. These payments may change production somewhat if the changes in wealth influence farmers' perception of, attitudes toward, and responses to potential financial risks associated with production alternatives. If payments raise producers' wealth and lower their risk aversion, they may take on more risk in their production choices. This may entail a choice to increase overall production and may also change the mix of production, perhaps switching to riskier crops with higher mean (but more variable) expected returns. Chavas and Holt found evidence of declining absolute risk aversion with higher wealth, implied by positive wealth effects on the plantings of corn and soybeans.

Higher cash flow provided by direct payments and higher net worth resulting from these benefits can also

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[11]Counter-cyclical payments and other more coupled payments may also influence production through these mechanisms.

[12]An OECD report provides a good discussion of effects of agricultural policies across different degrees of decoupled programs.

facilitate additional agricultural production through increases in agricultural investment if farmers otherwise face credit constraints or limited liquidity. Some of the payments are likely to go to consumption, savings, and nonagricultural investments, with the largest share typically going to consumption. However, agricultural investment can also rise for farmers who were credit constrained, as lenders may be more willing to make loans to farmers with higher guaranteed incomes, higher farm equity, and lower risk of default. Greater loan availability facilitates additional agricultural production by allowing these farmers to more easily invest in profitable opportunities on their farm operations. Additionally, the reduced risk of default could lead to lower interest rates on loans to farmers, also facilitating an increase in investment in farm operations.

For some farmers, increased liquidity provided by the payments also may reduce the need for obtaining loans for short-term operating costs or for longer term farm-related investments. While there would be opportunity costs associated with self-financing and using these funds in the farm operation, those opportunity costs would be lower than commercial loan expenses. This lower cost of capital could lead to an increase in the overall size of the current operation and could raise the level of investment in the farm, both of which would increase farm output.

Increased investment facilitated by direct payments raises farm sector equity and wealth, thereby providing an additional, secondary avenue to wealth effects on production.

To the extent that direct payments influence production through these wealth and investment mechanisms, they would do so similarly to the decoupled production flexibility contract payments under the 1996 Farm Act. Since the overall average annual magnitudes of direct payments and production flexibility contract payments are comparable at about $5 billion, no new effects are anticipated under the 2002 Farm Act.

Updating Base Acreage and Payment Yields

The 2002 Farm Act permits the updating of base acreage used for determining direct and counter-cyclical payments. Additionally, for those who update their base acreage, the legislation provides various options for updating yields for use in determining counter-cyclical payments.

Research Issues—Effects of Decoupled Programs on Commodity Markets

Analysis of commodity programs of the 2002 Farm Act raises an important set of research issues related to the potential commodity market effects of "decoupled" programs, the benefits of which are not linked to current farm production decisions of producers. Each of the provisions of the new legislation discussed in this section—counter-cyclical payments, direct payments, and base acreage and program yield updates—are largely decoupled. Nonetheless, as discussed qualitatively, each of these provisions may have some influence on production decisions of farmers through various indirect mechanisms.

Further analysis of the possible impacts of programs such as these is needed to more fully understand the scope of effects of farm policies. Quantifying these influences would be particularly useful but is also challenging due to data limitations regarding farm-level decisionmaking for program participants.

Research issues needing further study include the role of risk in the agricultural sector, including the degree to which revenue risk reduction aspects of counter-cyclical payments may influence production choices; how farmers use government payments, particularly how increased cash flow and liquidity provided by direct payments (as well as by other payments) affect production, borrowing activity, and agricultural investment relative to nonagricultural uses; and how expectations of future program benefits influence current cropping choices through the potential for building program crop base acreage, and how such influences may differ depending on whether market prices are relatively low or relatively high.

As part of an ongoing research effort on agricultural policy topics, a forthcoming ERS report (Burfisher and Hopkins) uses Agricultural Resource Management Survey data (USDA, ERS) to examine effects of decoupled production flexibility contract payments. This report will provide some empirical perspectives on research issues related to decoupled programs.

These base acreage and payment yield updates may influence current production choices if farmers expect that future legislation will again allow them to update these program parameters for their farms. For example, farmers may not fully use planting flexibility to move from historically planted and supported crops if they expect future farm programs to permit an updating of their base acreage. Instead, farmers would have incentives to build and maintain a planting history for program crops to use for possible future base acreage updating, thereby constraining their response to market signals. Similarly, use of nonland inputs that affect current yields may be influenced if farmers expect that future farm legislation will permit an updating of payment yields. Such updates may also reduce incentives to grow lower yielding varieties of program crops that have other marketable characteristics.

Allowing acreage bases and payment yields to be updated could reduce economic efficiency in production if farmers do not fully respond to signals from the marketplace, but instead respond to market signals augmented by expected benefits of future programs and program changes. Such influences would depend on market prices, which would affect the expected value of future farm program benefits. In a low market price setting, future farm program benefits would be expected to be relatively high, so building base acreage would be of value. However, in a higher price setting (including higher prices for crops that compete with program crops), future farm program benefits would not be expected to be as high, the associated program-related value of base acreage would be smaller, and farmers may be more inclined to plant other crops rather than program crops.

Model Simulated Effects of the 2002 Farm Act

A sectorwide model simulation analysis of the impacts of the 2002 Farm Act was conducted for key features of the new law that affect commodity markets. Thus, the main focus of the analysis is on the commodity title of the new legislation and CRP provisions of the conservation title. The analysis does not include impacts of other conservation programs or impacts of changes in provisions of other titles, such as trade, credit, energy, rural development, and nutrition.

The primary features of the new law included in the commodity market analysis are:

- Changes in loan rates for marketing assistance loans,

- Acreage adjustments to reflect the larger maximum enrollment established for the CRP, and

- Acreage adjustments to reflect expected expansion of plantings of dry peas and lentils, crops which now are eligible for marketing loans.[13]

Direct payments and counter-cyclical payments were assumed in this model simulation analysis to have no impact on production. These payments are largely decoupled from production decisions of individual farmers as benefits are paid on historically based acreage and yields and do not depend on the current production choices of the farmer. As discussed earlier, production could be affected as a result of increased wealth and investment facilitated by the payments and revenue risk reduction provided by counter-cyclical payments. However, no available research provides quantitative measures of these potential indirect effects, although the influence of these programs is likely to be relatively small compared with price- and production-linked coupled payments.

The analysis used a multi-commodity simulation model covering most program commodities and livestock. Results were supplemented with single-commodity analyses from USDA interagency commodity committees for dairy, sugar, peanuts, pulses, minor oilseeds, wool, mohair, and honey. Impacts on farm income were based on the commodity market impacts and estimates of new government payments under the 2002 Farm Act.

The Simulation Model—FAPSIM

Model simulations from the USDA-ERS Food and Agricultural Policy Simulator (FAPSIM) were used to depict impacts of the 2002 Farm Act for major field crops. FAPSIM is an annual econometric model of the U.S. agricultural sector. Commodities included in FAPSIM are corn, sorghum, barley, oats, wheat, rice, upland cotton, soybeans, cattle, hogs, broilers, turkeys, eggs, and dairy. Each commodity submodel contains equations to estimate production, prices, and various demand components. The submodels are then linked together through common variables that are important to the different commodities. The model solution computes the market prices that equilibrate supply and demand in all of the commodity markets simultaneously.

FAPSIM contains three broad types of relationships: definitional, institutional, and behavioral. Definitional equations include identities that reflect mathematical

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[13]Small chickpeas are also eligible for marketing loans under the new legislation, but little change is expected in their acreage because they are not designated as a permitted alternative vegetable under planting flexibility provisions.

relationships that must hold among the data in the model. For example, total demand must equal total supply for a commodity at any point in time. The model constrains solutions to satisfy all identities of this type.

Institutional equations involve relationships between variables that reflect certain institutional arrangements in the sector. This would include counter-cyclical payment rates, for example, that will be determined annually under the 2002 Farm Act based on fixed formulas established in the legislation.

Definitional and institutional equations reflect known relationships that necessarily hold among the variables in the model. Behavioral equations differ because the exact relationship among variables is not known and must be estimated. Economic theory determines the types of variables to include in behavioral equations, but theory does not indicate the precise relationship between the variables. Examples of behavior relationships in FAPSIM are the acreage equations for different field crops. Economic theory indicates that production should be positively related to the price received for the commodity and negatively related to prices of inputs required in the production process. Producer net returns are used in the FAPSIM acreage equations to capture these economic effects. The net returns measures also include effects of major features of U.S. agricultural policy that can influence planting choices, such as economic incentives provided by marketing loan benefits (Westcott and Price). Additionally, the acreage equations include net returns for other crops that compete with each other for land use.

The ability of the FAPSIM model to simulate different policies lends itself to analysis of the 2002 Farm Act, allowing appropriate dynamic supply and demand responses associated with the different policy provisions. Commodity market impacts on production and prices from FAPSIM also have implications for government payments and farm income.

Simulation Assumptions

A 1996 Farm Act scenario was developed using the FAPSIM model, which was used as the reference scenario in this analysis. A 2002 Farm Act scenario was also developed, with comparisons to the 1996 Farm Act reference scenario becoming the basis for describing impacts of the 2002 Farm Act. The analysis covers 10 years, from 2002 through 2011, and assumes continuation of the provisions of the two farm acts. The simulations reflect a backdrop of improving domestic and international economic growth, particularly in developing countries, which provides a foundation for gains in global trade and U.S. agricultural exports, resulting in rising market prices in the sector over the next decade.

The simulations were conducted based on projected market conditions at the time the new legislation was enacted in May 2002, including trend yield assumptions for 2002 crops. Changes since then lowered 2002 production and raised prices for many crops, resulting in minimal marketing loan benefits and no anticipated counter-cyclical payments for 2002 crops of wheat, corn, sorghum, barley, oats, soybeans, and other oilseeds.

1996 Farm Act Scenario. The 1996 Farm Act model simulation assumed that loan rates for corn, wheat, soybeans, and upland cotton were set using the market-price-based formula determination, as permitted under that law, subject to legislated minimums and maximums (figs. 9-12 and appendix table A-1). Loan rates for minor feed grains were assumed to be set based on the current year's corn loan rate and past relationships between their market prices and corn prices. The loan rate for rice was assumed to remain unchanged at $6.50 per hundredweight. These loan rate determination assumptions are consistent with those used in USDA's long-term baseline projections under the 1996 Farm Act (USDA, OCE). (Impacts of the 2002 Farm Act compared with an alternative reference scenario that assumes capped loan rates under the 1996 Farm Act are summarized in the box on page 24.)

The CRP was assumed to build to its maximum permitted acreage under the 1996 Farm Act of 36.4 million acres by 2005. This scenario assumes no further emergency government assistance to the sector after 2001.

2002 Farm Act Scenario. The 2002 Farm Act scenario included key commodity provisions of the new legislation. Loan rates for marketing assistance loans were changed to the levels specified in the new law, rather than being responsive to historical price movements (figs. 9-12 and appendix table A-1). For each crop, other than rice, this policy change results in higher loan rates than in the 1996 Farm Act scenario with formula-determined loan rates. The rice loan rate remained at $6.50 per hundredweight.

Effects of adding marketing loan provisions for dry peas and lentils were included in the model by assuming that the expansion of plantings for those crops came from wheat acreage.[14]

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[14]While the initial gross impact was subtracted from wheat plantings, relative net returns among competing crops determine the final acreage allocations and the net acreage impacts.

Figure 9
Commodity loan rates, wheat

$ per bushel
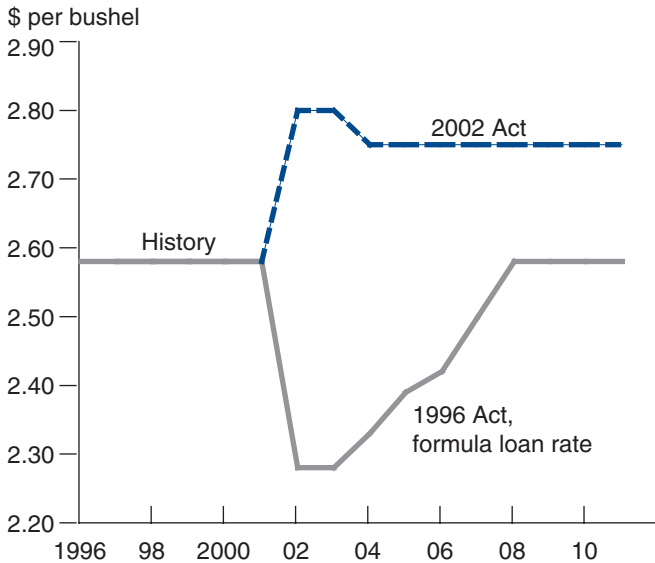
Figure 10
Commodity loan rates, corn

$ per bushel
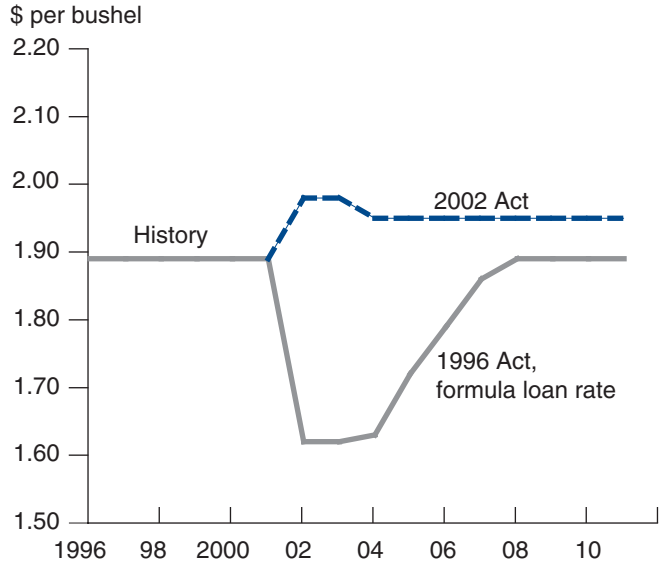
Figure 11
Commodity loan rates, sorghum

$ per bushel
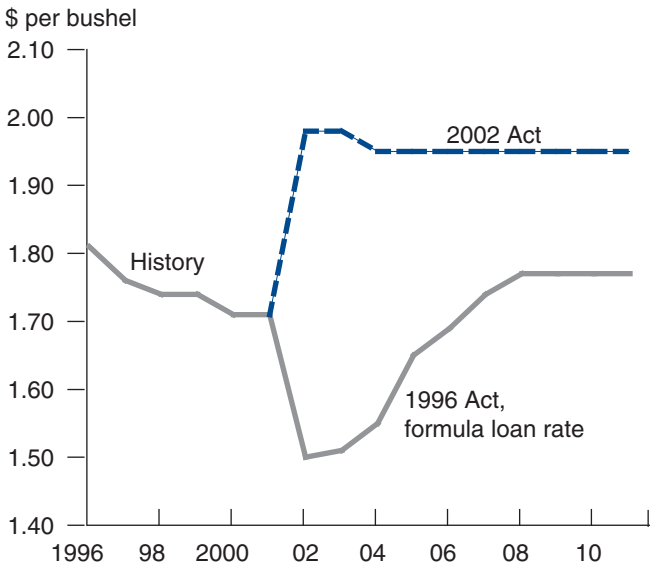
Figure 12
Commodity loan rates, soybeans

$ per bushel
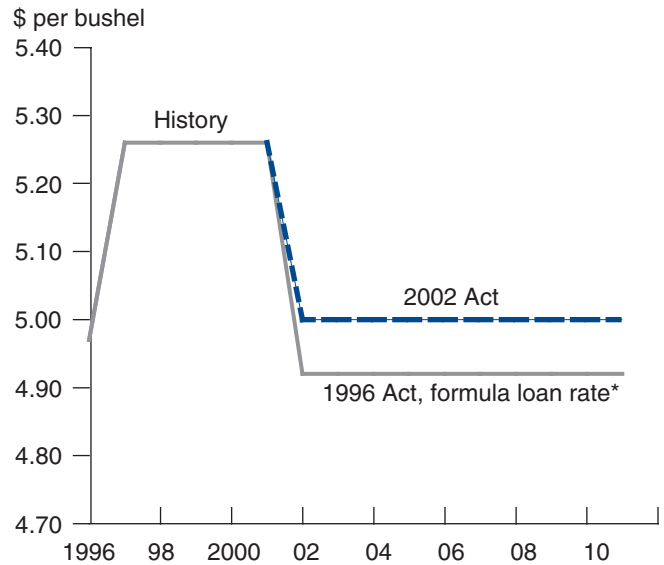
*Soybean loan rate at its 1996 Act legislative minimum of $4.92 a bushel.

A larger CRP is permitted under the 2002 Farm Act. The scenario allows the CRP to grow to its maximum acreage of 39.2 million acres by 2006 (fig. 13). Two-thirds of the acreage change in CRP enrollment was assumed to affect crop plantings, allocated to individual crops based on assumed crop-specific enrollments that reflect 2001 plantings.[15]

Because of the timing of the enactment of the 2002 Farm Act in May 2002, many plantings choices for spring planted crops had largely been determined. However, because some of the new law's provisions were generally anticipated (although not specifically known), some planting decisions may have reflected that general information. Thus, half of the model-implied changes in 2002 plantings was assumed to occur, with no impact allowed for 2002 winter wheat acreage.

[15]Again, gross acreage impacts are assumed in the model simulations, with net acreage impacts determined in the model based on relative net returns among competing crops.

Impacts on Major Field Crops

The primary impacts on commodities of the 2002 Farm Act are through acreage and production changes. Additional market impacts reflect changes in equilibrium levels of prices and demand in response to the acreage and production changes. Impacts on crops discussed in this section, therefore, focus on acreage and prices, which are also shown in Appendix A (tables A-2 and A-3). Further details of the simulation results for individual field crops are presented in Appendix B.

Results in the initial years reflect changes in absolute and relative loan rates, as well as the timing of when prices rise to levels above those where there are marketing loan benefits. In the longer run, the larger CRP and the effects of expanded plantings of dry peas and lentils dominate the field crop impacts.

Most impacts on commodity markets for major field crops initially come from marketing loans, which are fully coupled to production. With higher loan rates for most commodities, total plantings for major crops are up in 2002-04, years when prices are in the range where marketing loan benefits are highest. Acreage for eight major field crops increases the most in 2003, up 2 million acres (fig. 14 and appendix table A-2). This relatively small impact of less than 1 percent partly reflects an inelastic aggregate acreage response in the sector where plantings change proportionately less than the economic incentives provided by prices and net returns. Despite an increase in own-price and cross-price responsiveness facilitated in recent years under nearly full planting flexibility (Lin et al.),

individual responses remain inelastic and tend to have partly offsetting effects on aggregate acreage responsiveness.

Plantings in the initial years change the most for wheat, corn, sorghum, and soybeans (figs. 15-18 and appendix table A-2). Acreage is up for wheat, corn, and sorghum reflecting the loan rate increases for those crops. However, soybean plantings decline in 2002 and 2003 because its loan rate increase is small relative to those of competing crops, so acreage is switched to other crops, particularly corn. Part of the reason that the increase in the soybean loan rate is relatively small is that it was at its legislated floor of $4.92 a bushel in the 1996 Farm Act scenario, thus constrained from fully reflecting past market prices, unlike the loan rate for corn. Acreage changes for barley, oats, upland cotton, and rice are minimal. (See box on page 24 for discussion of impacts relative to a capped loan rate scenario under the 1996 Farm Act.)

Starting in 2005, total plantings are lower under the 2002 Farm Act because marketing loan impacts are diminished (as prices for most commodities are above ranges where there are marketing loan benefits), more acreage is enrolled to the CRP, and some land is switched to dry peas and lentils (fig. 14 and appendix table A-2). From 2006 through 2011, planted acreage for eight major field crops is reduced by 1.0-1.5 million acres a year (less than 0.6 percent). Plantings for wheat, corn, and soybeans decrease the most, with only small changes for other crops (figs. 15-18 and appendix table A-2).

Figure 13
Conservation Reserve Program

Million acres
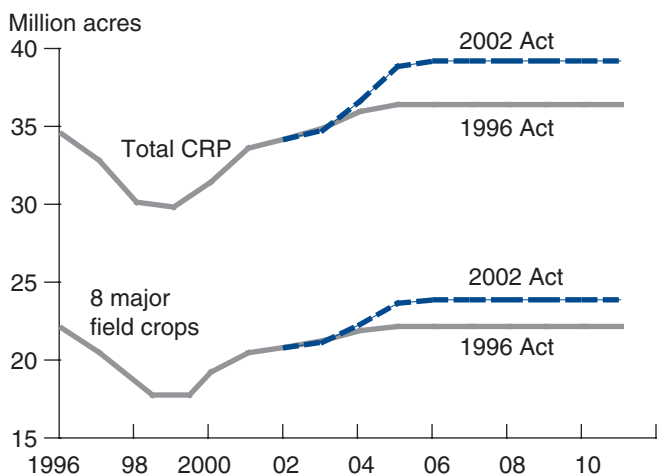
Notes: The eight major field crops are corn, sorghum, barley, oats, wheat, rice, upland cotton, and soybeans. Allocations of CRP enrollment to specific crops reflect plantings through 2001.

Figure 14
Planted area, eight major crops

Million acres
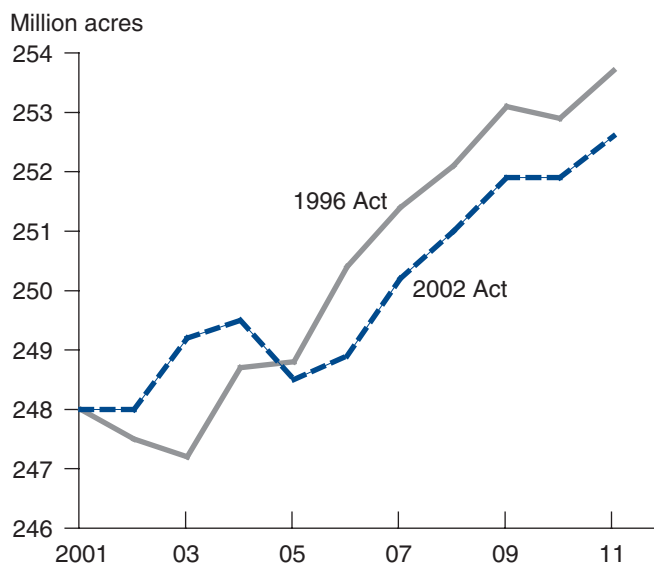
Price impacts reflect the changes in plantings (appendix table A-3). Prices for wheat, corn, and sorghum are reduced initially, while prices for soybeans and soybean products are higher. The largest price impacts are in 2003 when the acreage shifts are highest. Only minor price impacts result for upland cotton and rice, reflecting small changes in acreage for these crops under the 2002 Farm Act. In the longer run, with planted acreage lower, prices are generally higher. Long-run price impacts are small, however, with wheat prices up 6 cents a bushel (1.7-1.8 percent) and smaller impacts for other crops.

Impacts on Livestock

Livestock sector effects (appendix table A-4) reflect changes in response to feed costs.[16] Most price changes for livestock feed are small, so production impacts for livestock are also small. Nonetheless, prices for corn and other feed grains initially decline, while prices for soybean meal initially rise. Overall, feed costs for meat production decrease initially, although costs for

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[16]The analysis does not include any potential effects of country-of-origin labeling requirements for meats covered by those provisions.

Figure 15
Planted area, wheat

Million acres
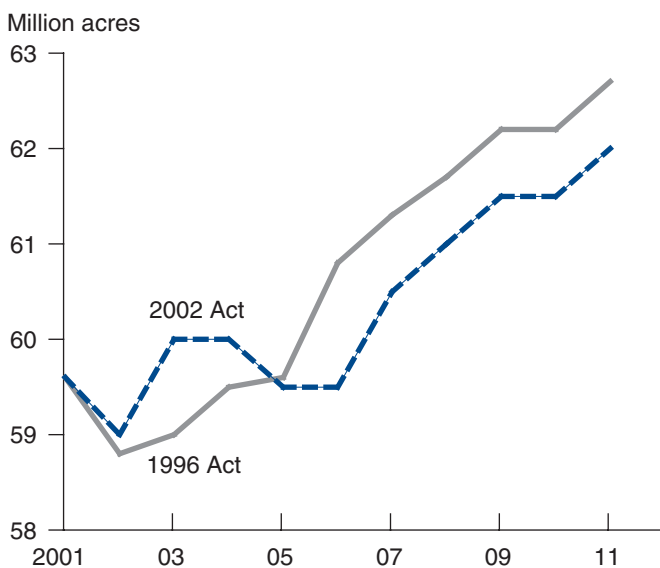
Figure 16
Planted area, corn

Million acres
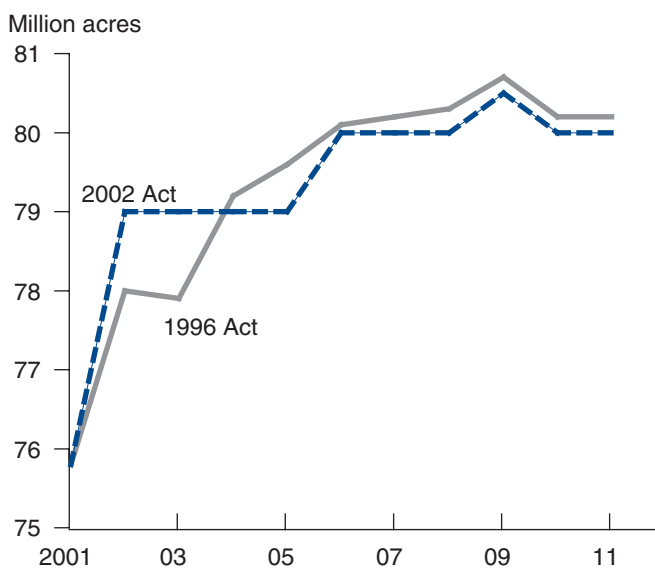
Figure 17
Planted area, sorghum

Million acres
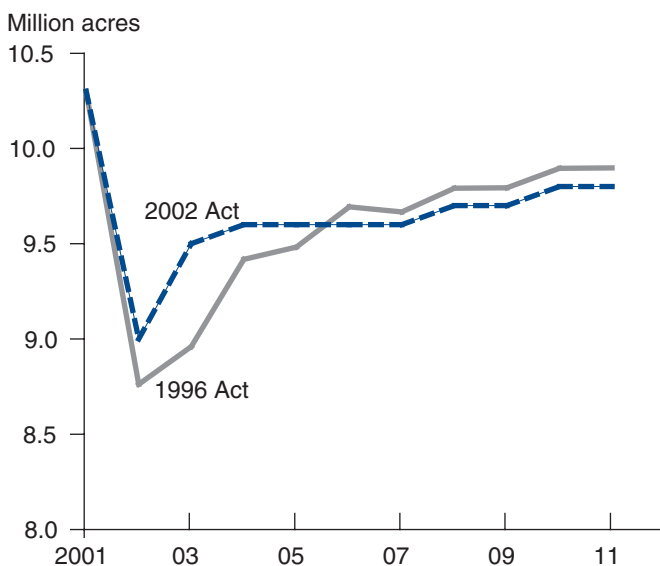
Figure 18
Planted area, soybeans

Million acres
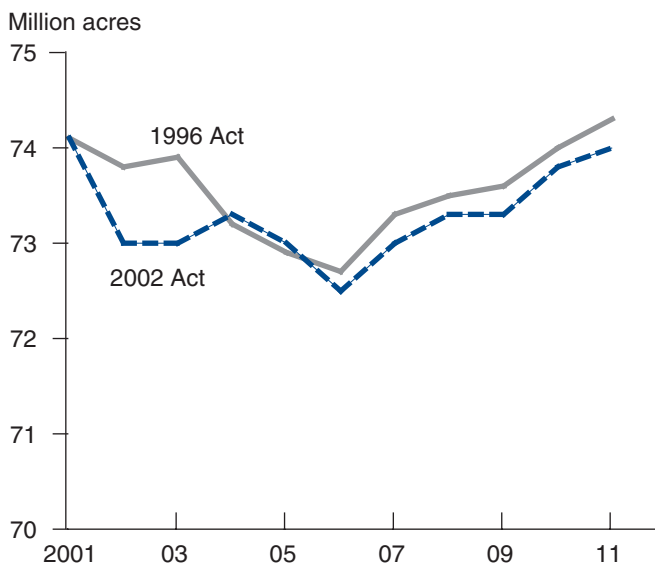
poultry feed, which use relatively more protein meal, fall relatively the least. Thus, while beef and pork production increase slightly in the initial years, broiler production is down marginally as a reduction in broiler prices (due to higher total meat production) offsets the broiler feed cost reduction. Livestock production impacts are small in these initial years, with the largest change being only 0.4 percent for beef in 2004.

In the later years, with crop plantings reduced and feed prices slightly higher, meat production is down marginally, although production impacts for individual meats are no greater than 0.3 percent.

Price impacts for livestock are likewise small. Initially, livestock prices are lower, reflecting the increase in total meat production, but prices are higher in the later years as meat production declines. The largest livestock price changes are less than 1.5 percent, with most price changes less than 1 percent.

Impacts on Other Commodities

Impacts of the 2002 Farm Act on other commodities reflect analyses conducted by various interagency commodity committees in USDA. Selected results are discussed here.

2002 Farm Act Scenario Versus a Capped Loan Rate Scenario Under the 1996 Farm Act

An alternative scenario under the 1996 Farm Act for comparison purposes in measuring impacts of the 2002 Farm Act assumes that commodity loan rates were kept at their maximum levels permitted under the 1996 Act (their 2001 levels), rather than being allowed to decline based on the formulas contained in that legislation. This scenario holds the loan rate for corn at $1.89 a bushel; wheat, $2.58 a bushel; soybeans, $5.26 a bushel; and upland cotton, $0.5192 a pound. With higher loan rates under this 1996 Farm Act scenario, the loan rate changes to the 2002 Farm Act loan rates were generally smaller. Thus, overall acreage impacts in the initial years due to loan rate changes are not as large as with a formula loan rate scenario for the 1996 Farm Act (see figure, eight-crop plantings). Again, the largest acreage increase is in 2003, but it is less than 1 million acres and represents only about 0.3 percent of total plantings for these crops.

However, because the 2002 Farm Act lowered the loan rate for soybeans ($5.00 per bushel) relative to its maximum permitted under the 1996 Farm Act ($5.26 per bushel), there are some important crop allocation differences in the impacts. In particular, soybean plantings are higher in the capped loan rate scenario under the 1996 Act, with part of that additional land coming from corn. Thus, the impacts of the 2002 Farm Act have a more pronounced switch from soybeans over a longer period when compared with a capped loan rate scenario under the 1996 Farm Act (see figure, soybean plantings).

Planted area, eight major crops, under alternative loan rates

Million acres
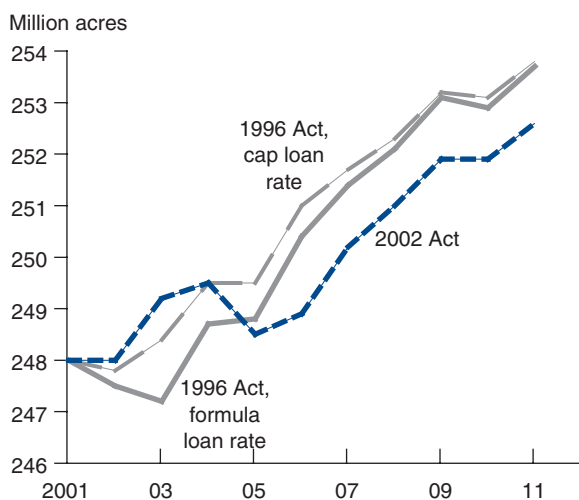
Planted area, soybeans, under alternative loan rates

Million acres
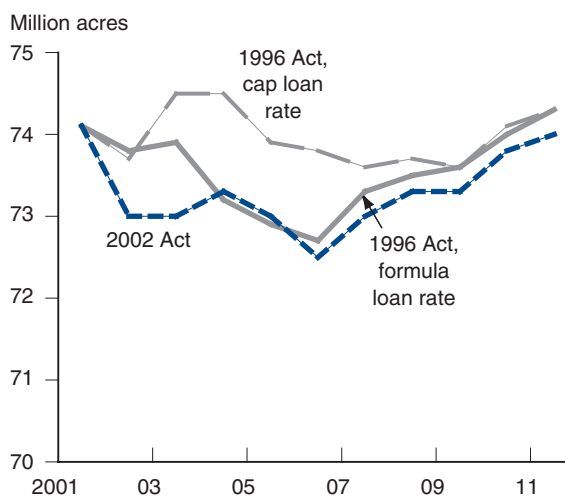
Dairy. Milk production is slightly higher in the initial years under the 2002 Farm Act, reflecting increased economic incentives provided by the national dairy market loss payments through September 2005. These payments help to stabilize and enhance producer revenue. The expansion in output is expected to be among the smaller farms because there is a limit (2.4 million pounds) on the quantity of milk for which payments are available. Payments to larger producers have little or no impact on milk output because production beyond the limit will only receive the market price. Milk prices are slightly lower due to the overall increase in milk production.

Peanuts. The removal of peanut quotas and the two-tier price support program is expected to lead to an increase in peanut production. Production by farmers who were receiving the quota loan rate at the margin may decline. However, production is likely to rise for farmers who were producing for the peanut additional market or who were not producing because of the barriers of the quota system as these farmers can now receive the market price for domestic edible peanuts for their output. With the elimination of the quota loan rate and with higher production, average prices for peanuts are expected to be lower under the 2002 Farm Act. Marketing loan provisions for peanuts may create incentives to maintain production at higher levels than would occur in the absence of the program if prices fall below the peanut loan rate.

Sugar. Termination of loan forfeiture penalties in the sugar provisions of the 2002 Farm Act provides an economic incentive for some increase in production. However, to operate the program at no cost to the Federal Government, other provisions of the law, such as marketing allotments and CCC inventory disposition, would likely be used to manage sugar supplies and reduce overall sugar output.

Pulses. Acreage planted to dry peas and lentils is expected to be larger because of the addition of marketing loan provisions for these crops under the 2002 Farm Act. Most of this increase in plantings is assumed to be in areas where wheat is or has been a predominant crop. Prices for dry peas and lentils will be lower under the 2002 Farm Act. Little change is expected in plantings and production of small chickpeas. Even though small chickpeas are eligible for marketing loans under the new legislation, they are not designated as a permitted alternative vegetable under planting flexibility provisions.

Impacts on Farm Income

Farm income impacts (appendix table A-5) were derived by using FAPSIM model results for major program crops and livestock (except dairy), supplemented by interagency commodity analyses for dairy, sugar, peanuts, pulses, minor oilseeds, wool, mohair, and honey, as well as by estimates for new government payments.

Price and production impacts under the 2002 Farm Act are not big enough to generate large changes in cash receipts. Reductions in cash receipts are small in the initial years, with the largest change at about $1.1 billion in 2003, mostly reflecting lower prices for dairy and peanuts. In the later years of the analysis (2008-11), cash receipts are up an average of about $500 million. These increases are largely due to higher livestock cash receipts, reflecting lower production and higher prices for livestock. Production for major field crops is reduced in these later years, increasing prices and cash receipts for those crops. However, lower cash receipts for peanuts under the 2002 Farm Act keep total cash receipts for crops marginally reduced.

Production expenses rise by as much as $2.2 billion (in 2003) and are up about $900 million in the later years of the analysis. Much of the increase in production expenses is for higher net rent to nonoperator landlords, reflecting the pass-through of higher government payments. Higher manufactured input costs in the initial years, when total field crop acreage is increased, and higher livestock feed costs in later years, when feed grain and soybean meal prices rise, also contribute to increases in total production expenses.

Government payments to farmers represent the largest source of change in farm income under the 2002 Farm Act (fig. 19 and appendix table A-5). Over 2002-04, an average of nearly $10 billion annually of additional government payments is provided to the farm sector, mostly reflecting the new counter-cyclical payments, increased marketing loan benefits, and higher direct payments. Marketing loan benefits are higher as the changes in loan rates affect three factors that influence program costs: (1) loan rates are increased for most crops, which raise program costs; (2) higher loan rates encourage increased production, raising program costs; and (3) higher production lowers prices, further raising program costs. Direct payments are larger than the 2002 level of production flexibility contract payments of the 1996 Farm Act. Counter-cyclical payments provide a new source of government payments and farm income. CRP payments are higher under the 2002 Farm Act due to the increase in land enrolled in this program.

Smaller increases in government payments are seen for subsequent years, as market prices for most program crops are higher, reducing both marketing loan benefits and counter-cyclical payments. Nonetheless, government payments average $3 billion higher a year in 2008-11 than under the 1996 Farm Act, mostly accounted for by counter-cyclical payments and higher direct payments.

Thus, primarily reflecting the increase in government payments, net farm income is higher under the 2002 Farm Act, particularly in the early years when market-ing loan impacts and counter-cyclical payments are the largest (fig. 20 and appendix table A-5). Farm

income averages more than $7 billion higher annually in 2002-04, with smaller impacts in later years of the analysis, averaging $2.6 billion higher in 2008-11.

Impacts on Retail Food Prices

Retail food prices are not expected to be appreciably affected, because prices for most program commodi-ties are expected to change only marginally. Grain-based food product prices will be unchanged, with small changes likely for retail prices for dairy prod-ucts, peanuts, and sugar. Livestock production and prices do not change enough to result in significant impacts on retail meat prices.

Figure 19
Direct government payments

$ billion
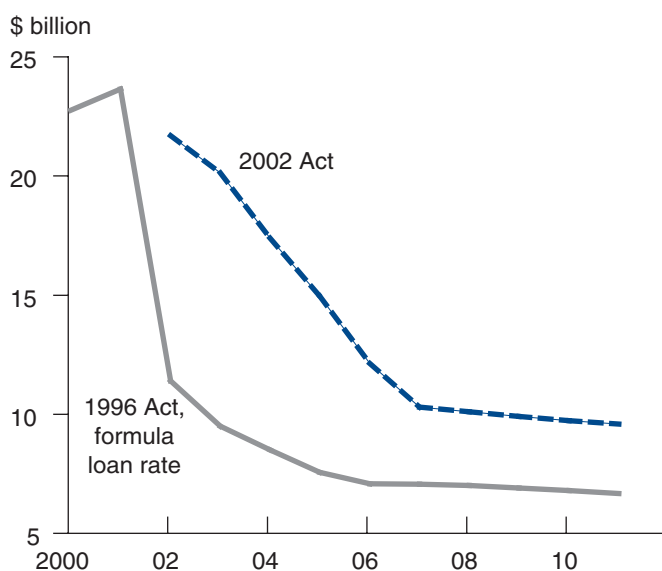
Figure 20
Net farm income

$ billion
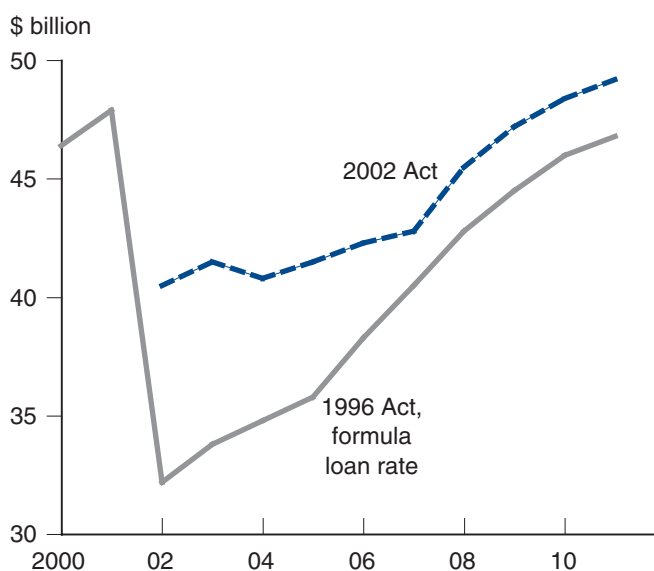
Conclusions

The 2002 Farm Act governs agricultural programs through 2007, covering a wide range of programs for commodities, conservation, trade, rural development, nutrition, credit, forestry, and energy. While this new farm law introduces some new policies to the array of agricultural commodity programs, in many ways, the 2002 Farm Act extends provisions of the 1996 Farm Act and the ad hoc emergency spending bills of 1998-2001.

Commodity policy changes of the 2002 Farm Act include changing marketing assistance loan rates, adding counter-cyclical payments, and replacing production flexibility contract payments with direct payments. Also, the commodity coverage under these programs is expanded in the new legislation.

Analysis of FAPSIM model scenarios under alternative policy assumptions is used to assess impacts of the 2002 Farm Act on markets for most program commodities and livestock. These results are supplemented with USDA interagency commodity committee analyses for selected commodities. The model simulations cover 10 years and reflect USDA long-term projections at the time the new legislation was enacted. These projections include a backdrop of improving domestic and international economic growth, particularly in developing countries, which provides a foundation for gains in global trade and U.S. agricultural exports, resulting in rising market prices in the sector over the next decade.

The primary crop sector impacts of the 2002 Farm Act are through acreage and production changes. Thus, much of the crop sector focus in this report covers the effects of the new legislation on economic incentives underlying planting decisions of farmers and the resulting acreage impacts. Additional market effects for crops reflect changes in equilibrium levels of prices and demand in response to the acreage and production changes.

Analysis of impacts of the 2002 Farm Act on commodity markets indicates that loan rate changes under the marketing assistance loan program have the largest effect on production choices in the initial years of the analysis when prices are low enough that marketing loan benefits exist. Overall plantings of the eight major program crops studied are initially higher under the 2002 Act than plantings under a 1996 Farm Act scenario that assumes market-price-based formula determination of loan rates. However, the largest increase in plantings of about 2 million acres is relatively small (less than 1 percent) partly due to the inelasticity of acreage response in the sector where plantings change proportionately less than the economic incentives provided by prices and net returns. Some switching in the cropping mix from soybeans to competing crops, particularly corn, also occurs, reflecting relative changes in loan rates.

Increases in total plantings in the initial years of the analysis of the 2002 Farm Act are smaller (less than 1 million acres) compared with an alternative 1996 Farm Act scenario that leaves loan rates at the maximum levels allowed under that legislation. However, compared with this alternative loan rate scenario, the switch away from soybeans under the 2002 Act is larger and extends over more years, reflecting a reduction of the soybean loan rate from its capped level under the 1996 Act.

Other features of the 2002 Farm Act that affect plantings include the expansion of the Conservation Reserve Program and the addition of marketing loans for dry peas and lentils, both of which reduce somewhat the land available for production of the eight major program crops. In the longer run, as projected market prices for most commodities rise above ranges where there are marketing loan benefits, overall plantings of the eight major program crops are lower under the 2002 Farm Act, reflecting larger enrollment in the CRP and increased plantings of dry peas and lentils. Still, these acreage reductions are relatively small, generally ranging from 1.0-1.5 million acres in 2006-11.

Program changes for dry peas, lentils, dairy, and peanuts suggest some increases in production of these agricultural commodities. With small impacts on production and prices of feed grain and protein meal crops, livestock sector impacts are relatively small. Retail food prices are not expected to change appreciably. Farm income under the 2002 Farm Act is higher than under a continuation of the 1996 Farm Act, mostly due to an increase in government payments to the sector under the new law.

Additional market effects may result from counter-cyclical payments, direct payments, and provisions of the 2002 Farm Act that permit the updating of base acreage and payment yields. Even though benefits of these provisions are not linked to current production of farmers, they may, nonetheless, provide indirect incentives that influence production decisions and overall agricultural output.

Counter-cyclical payments may influence production choices because of their link to market prices, which can lower risks to producers by reducing the variability of revenues in some price ranges for program crops. Although expected net returns would likely remain a dominant consideration in cropping choices for most situations, revenue risk reduction provided by counter-cyclical payments could affect production choices for risk-averse producers. For a risk-averse farmer, the production mix chosen, as well as the use of risk management strategies, would be based on the joint consideration of profit maximization and revenue risk reduction concerns and would reflect the degree of risk aversion of the farmer.

Direct payments are the least coupled of these programs but may influence production through wealth and investment effects. Provisions for updating base acreage and program yields may also have some influence on current production choices if farmers expect future legislation will again allow them to update these items for their farms.

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Appendix A

Summary Tables Comparing Projections Under the 2002 Farm Act and the 1996 Farm Act

Contents

Appendix table A-1
Marketing assistance loan rate assumptions 1/

	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Marketing assistance loan rates, 1996 Farm Act, formula loan rates										
Corn	1.62	1.62	1.63	1.72	1.79	1.86	1.89	1.89	1.89	1.89
Sorghum	1.50	1.51	1.55	1.65	1.69	1.74	1.77	1.77	1.77	1.77
Barley	1.41	1.42	1.46	1.52	1.56	1.60	1.61	1.61	1.60	1.61
Oats	1.05	1.01	1.03	1.08	1.12	1.09	1.12	1.13	1.12	1.11
Wheat	2.28	2.28	2.33	2.39	2.42	2.50	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
Upland cotton	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Soybeans	4.92	4.92	4.92	4.92	4.92	4.92	4.92	4.92	4.92	4.92
Marketing assistance loan rates, 2002 Farm Act										
Corn	1.98	1.98	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95
Sorghum	1.98	1.98	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95
Barley	1.88	1.88	1.85	1.85	1.85	1.85	1.85	1.85	1.85	1.85
Oats	1.35	1.35	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33
Wheat	2.80	2.80	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75
Rice	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50
Upland cotton	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52
Soybeans	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Marketing assistance loan rates, change from 1996 Farm Act formula loan rates to 2002 Farm Act loan rates										
Corn	0.36	0.36	0.32	0.23	0.16	0.09	0.06	0.06	0.06	0.06
Sorghum	0.48	0.47	0.40	0.30	0.26	0.21	0.18	0.18	0.18	0.18
Barley	0.47	0.46	0.39	0.33	0.29	0.25	0.24	0.24	0.25	0.24
Oats	0.30	0.34	0.30	0.25	0.21	0.24	0.21	0.20	0.21	0.22
Wheat	0.52	0.52	0.42	0.36	0.33	0.25	0.17	0.17	0.17	0.17
Rice	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upland cotton	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Soybeans	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08

1/ Dollars per bushel except for rice (per hundredweight) and upland cotton (per pound).

Appendix table A-2
Planted acreage for major field crops, 1996 Farm Act scenario and 2002 Farm Act scenario 1/

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
					Million acres					
1996 Farm Act scenario										
Corn	78.0	77.9	79.2	79.6	80.1	80.2	80.3	80.7	80.2	80.2
Sorghum	8.8	9.0	9.4	9.5	9.7	9.7	9.8	9.8	9.9	9.9
Barley	5.0	5.1	5.1	5.1	5.1	5.1	5.2	5.2	5.1	5.2
Oats	5.2	4.2	4.3	4.2	4.3	4.2	4.2	4.3	4.2	4.2
Wheat	58.8	59.0	59.5	59.6	60.8	61.3	61.7	62.2	62.2	62.7
Rice	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
Upland cotton	14.6	14.9	14.6	14.5	14.4	14.2	14.1	14.0	13.9	13.9
Soybeans	73.8	73.9	73.2	72.9	72.7	73.3	73.5	73.6	74.0	74.3
Total	247.5	247.2	248.7	248.8	250.4	251.4	252.1	253.1	252.9	253.7
2002 Farm Act scenario										
Corn	79.0	79.0	79.0	79.0	80.0	80.0	80.0	80.5	80.0	80.0
Sorghum	9.0	9.5	9.6	9.6	9.6	9.6	9.7	9.7	9.8	9.8
Barley	5.1	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2
Oats	5.1	4.4	4.4	4.3	4.3	4.3	4.3	4.3	4.3	4.3
Wheat	59.0	60.0	60.0	59.5	59.5	60.5	61.0	61.5	61.5	62.0
Rice	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
Upland cotton	14.5	14.8	14.7	14.6	14.5	14.3	14.2	14.1	14.0	14.0
Soybeans	73.0	73.0	73.3	73.0	72.5	73.0	73.3	73.3	73.8	74.0
Total	248.0	249.2	249.5	248.5	248.9	250.2	251.0	251.9	251.9	252.6
Change from 1996 Farm Act to 2002 Farm Act										
Corn	1.0	1.1	-0.2	-0.6	-0.1	-0.2	-0.3	-0.2	-0.2	-0.2
Sorghum	0.2	0.5	0.2	0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Barley	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.0
Oats	-0.1	0.2	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.1
Wheat	0.2	1.0	0.5	-0.1	-1.3	-0.8	-0.7	-0.7	-0.7	-0.7
Rice	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0
Upland cotton	-0.1	-0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Soybeans	-0.8	-0.9	0.1	0.1	-0.2	-0.3	-0.2	-0.3	-0.2	-0.3
Total	0.6	2.0	0.9	-0.3	-1.5	-1.2	-1.1	-1.2	-1.0	-1.1

1/ 1996 Farm Act scenario assumes formula loan rates; 2002 Farm Act scenario assumes a larger CRP and an impact of increased plantings of dry peas & lentils. Also, impacts on 2002 plantings were assumed to be limited because of the date of enactment of the new law.

Appendix table A-3
Prices for major field crops, 1996 Farm Act scenario and 2002 Farm Act scenario 1/ 2/ 3/

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
1996 Farm Act scenario										
Corn	2.01	2.14	2.16	2.27	2.28	2.33	2.38	2.33	2.33	2.33
Sorghum	1.86	2.01	2.04	2.14	2.12	2.18	2.23	2.18	2.18	2.18
Barley	2.19	2.36	2.34	2.35	2.35	2.40	2.44	2.38	2.40	2.40
Oats	1.10	1.24	1.29	1.38	1.36	1.36	1.41	1.35	1.36	1.36
Wheat	2.81	2.85	2.90	3.07	3.20	3.34	3.39	3.39	3.39	3.44
Rice	4.19	4.31	4.45	4.61	4.80	5.02	5.21	5.39	5.59	5.84
Soybeans	4.32	4.49	4.81	5.02	5.32	5.40	5.46	5.50	5.46	5.45
Soybean oil	0.160	0.184	0.210	0.227	0.240	0.241	0.244	0.246	0.249	0.249
Soybean meal	157.50	151.60	150.50	152.50	158.10	159.70	160.80	161.60	158.80	158.70
2002 Farm Act scenario										
Corn	1.95	2.05	2.15	2.30	2.30	2.35	2.40	2.35	2.35	2.35
Sorghum	1.80	1.90	2.00	2.15	2.15	2.20	2.25	2.20	2.20	2.20
Barley	2.15	2.25	2.30	2.35	2.35	2.40	2.45	2.40	2.40	2.40
Oats	1.10	1.20	1.25	1.35	1.35	1.35	1.40	1.35	1.35	1.35
Wheat	2.80	2.80	2.85	3.05	3.25	3.40	3.45	3.45	3.45	3.50
Rice	4.20	4.32	4.46	4.62	4.81	5.02	5.22	5.40	5.60	5.85
Soybeans	4.45	4.65	4.80	5.00	5.35	5.45	5.50	5.55	5.50	5.50
Soybean oil	0.165	0.190	0.210	0.225	0.240	0.243	0.245	0.248	0.250	0.250
Soybean meal	160.00	155.00	151.00	152.50	159.00	161.00	162.00	163.00	160.00	160.00
Change from 1996 Farm Act to 2002 Farm Act										
Corn	-0.06	-0.09	-0.01	0.03	0.02	0.02	0.02	0.02	0.02	0.02
Sorghum	-0.06	-0.11	-0.04	0.01	0.03	0.02	0.02	0.02	0.02	0.02
Barley	-0.04	-0.11	-0.04	0.00	0.00	0.00	0.01	0.02	0.00	0.00
Oats	0.00	-0.04	-0.04	-0.03	-0.01	-0.01	-0.01	0.00	-0.01	-0.01
Wheat	-0.01	-0.05	-0.05	-0.02	0.05	0.06	0.06	0.06	0.06	0.06
Rice	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01
Soybeans	0.13	0.16	-0.01	-0.02	0.03	0.05	0.04	0.05	0.04	0.05
Soybean oil	0.005	0.006	0.000	-0.002	0.000	0.002	0.001	0.002	0.001	0.001
Soybean meal	2.50	3.40	0.50	0.00	0.90	1.30	1.20	1.40	1.20	1.30

1/ 1996 Farm Act scenario assumes formula loan rates; 2002 Farm Act scenario assumes a larger CRP and an impact of increased plantings of dry peas & lentils. Also, impacts on 2002 plantings were assumed to be limited because of the date of enactment of the new law.
2/ Dollars per bushel except for soybean oil (per pound), rice (per hundredweight), and soybean meal (per ton).
3/ USDA is prohibited from publishing cotton price projections.

Appendix table A-4
Livestock sector production and prices, 1996 Farm Act scenario and 2002 Farm Act scenario

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
					Million pounds					
Meat production--1996 Farm Act scenario										
Beef	26,456	25,172	24,935	25,183	25,513	25,599	25,704	25,969	26,346	26,729
Pork	19,576	19,820	19,455	19,422	19,477	19,632	19,788	19,936	20,081	20,271
Chicken	31,840	32,650	32,886	33,600	34,363	35,085	35,713	36,324	36,903	37,438
Meat production--2002 Farm Act scenario										
Beef	26,456	25,230	25,034	25,203	25,485	25,570	25,647	25,899	26,293	26,700
Pork	19,576	19,822	19,473	19,464	19,508	19,622	19,760	19,925	20,087	20,274
Chicken	31,840	32,647	32,878	33,591	34,349	35,072	35,710	36,324	36,897	37,428
Meat production--change from 1996 Farm Act scenario to 2002 Farm Act scenario										
Beef	0	58	99	20	-28	-29	-57	-70	-53	-29
Pork	0	2	18	42	31	-10	-28	-11	6	3
Chicken	0	-3	-8	-9	-14	-13	-3	0	-6	-10
					$ per cwt.					
Livestock prices--1996 Farm Act scenario										
Cattle, farm	68.14	74.19	76.59	76.81	78.38	80.20	81.91	83.41	84.62	85.78
Hogs, farm	34.21	34.73	36.92	39.57	40.23	40.38	40.62	40.98	41.34	41.41
Broilers, farm	37.80	39.24	41.48	42.13	42.21	42.76	43.48	43.88	44.06	44.16
Livestock prices--2002 Farm Act scenario										
Cattle, farm	68.14	73.77	75.81	76.48	78.47	80.52	82.54	84.06	85.07	86.07
Hogs, farm	34.21	34.54	36.46	39.12	40.05	40.66	41.18	41.40	41.54	41.58
Broilers, farm	37.80	39.10	41.25	42.08	42.39	43.10	43.86	44.20	44.36	44.47
Livestock prices--change from 1996 Farm Act scenario to 2002 Farm Act scenario										
Cattle, farm	0	-0.42	-0.78	-0.33	0.09	0.32	0.63	0.65	0.45	0.29
Hogs, farm	0	-0.19	-0.46	-0.45	-0.18	0.28	0.56	0.42	0.20	0.17
Broilers, farm	0	-0.14	-0.23	-0.05	0.18	0.34	0.38	0.32	0.30	0.31

Appendix table A-5
Farm income, 1996 Farm Act scenario and 2002 Farm Act scenario 1/

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
					Billion dollars					
1996 Farm Act scenario:										
Cash receipts:										
Crops	95.1	97.6	101.4	105.2	109.1	113.1	116.4	118.9	121.0	123.4
Livestock	99.3	101.7	103.8	105.2	108.5	111.6	114.1	116.6	119.9	122.4
All commodities	194.3	199.3	205.2	210.4	217.6	224.7	230.5	235.5	240.8	245.7
Government payments	11.4	10.2	9.2	8.0	7.4	7.1	7.1	6.9	6.8	6.7
Gross farm income	231.9	236.3	241.2	245.8	252.9	260.1	266.5	272.4	278.1	283.4
Total production expenses	199.7	202.5	206.5	210.0	214.6	219.6	223.8	227.9	232.1	236.6
Net farm income	32.2	33.8	34.8	35.8	38.3	40.5	42.8	44.5	46.0	46.8
2002 Farm Act scenario:										
Cash receipts:										
Crops	94.8	97.3	101.0	104.9	109.0	113.0	116.4	118.9	120.9	123.3
Livestock	99.4	101.3	103.1	105.2	108.5	111.5	114.7	117.3	120.3	122.7
All commodities	194.2	198.5	204.1	210.1	217.5	224.5	231.0	236.2	241.2	246.0
Government payments	21.7	20.8	18.1	15.4	12.4	10.4	10.1	9.9	9.8	9.6
Gross farm income	242.0	246.2	249.0	252.9	257.8	263.1	270.1	276.0	281.4	286.6
Total production expenses	201.5	204.6	208.2	211.3	215.5	220.3	224.6	228.8	232.9	237.4
Net farm income	40.5	41.5	40.8	41.5	42.3	42.8	45.5	47.2	48.4	49.2
Change from 1996 Farm Act scenario to 2002 Farm Act scenario:										
Cash receipts:										
Crops	-0.3	-0.3	-0.4	-0.3	-0.1	-0.1	-0.1	-0.0	-0.1	-0.1
Livestock	0.1	-0.4	-0.7	-0.0	0.0	-0.1	0.6	0.7	0.4	0.4
All commodities	-0.2	-0.7	-1.1	-0.3	-0.1	-0.2	0.5	0.7	0.4	0.3
Government payments	10.3	10.6	8.9	7.4	5.0	3.2	3.1	3.0	2.9	2.9
Gross farm income	10.2	9.9	7.8	7.1	4.9	3.0	3.6	3.7	3.3	3.2
Total production expenses	1.9	2.2	1.8	1.3	0.9	0.7	0.9	0.9	0.9	0.9
Net farm income	8.3	7.7	6.0	5.8	4.0	2.3	2.7	2.8	2.4	2.3

1/ 1996 Farm Act scenario assumes formula loan rates; 2002 Farm Act scenario assumes a larger CRP and an impact of increased plantings of dry peas & lentils. Also, impacts on 2002 plantings were assumed to be limited because of the date of enactment of the new law.

Appendix B

Commodity Projections Under the 2002 Farm Act
and the 1996 Farm Act for Selected Field Crops

Contents

Appendix table B-1. U.S. corn, 1996 Farm Act scenario

Item	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Acreage (million acres):										
Planted acres	78.0	77.9	79.2	79.6	80.1	80.2	80.3	80.7	80.2	80.2
Harvested acres	71.1	71.0	72.2	72.6	73.1	73.2	73.2	73.7	73.2	73.2
Yields (bushels per acre):										
Yield/harvested acre	137.9	139.7	141.4	143.0	144.7	146.4	148.1	149.8	151.5	153.2
Supply and use (million bushels):										
Beginning stocks	1,621	1,509	1,339	1,234	1,116	1,101	1,088	1,061	1,120	1,120
Production	9,806	9,910	10,208	10,376	10,580	10,716	10,844	11,038	11,092	11,215
Imports	15	10	10	10	10	10	10	10	10	10
Supply	11,442	11,429	11,557	11,620	11,706	11,827	11,942	12,109	12,222	12,345
Feed & residual	5,702	5,701	5,774	5,848	5,873	5,896	5,921	5,945	5,973	5,999
Food, seed, & industrial	2,158	2,278	2,355	2,391	2,425	2,460	2,501	2,535	2,570	2,605
Domestic	7,860	7,979	8,129	8,239	8,298	8,356	8,422	8,480	8,543	8,604
Exports	2,073	2,111	2,194	2,265	2,307	2,383	2,459	2,509	2,559	2,608
Total use	9,933	10,090	10,323	10,504	10,605	10,739	10,881	10,989	11,102	11,212
Ending stocks	1,509	1,339	1,234	1,116	1,101	1,088	1,061	1,120	1,120	1,133
Prices (dollars per bushel):										
Farm price	2.01	2.14	2.16	2.27	2.28	2.33	2.38	2.33	2.33	2.33
Loan rate	1.62	1.62	1.63	1.72	1.79	1.86	1.89	1.89	1.89	1.89

Appendix table B-2. U.S. corn, 2002 Farm Act scenario

Item	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Acreage (million acres):										
Planted acres	79.0	79.0	79.0	79.0	80.0	80.0	80.0	80.5	80.0	80.0
Harvested acres	72.0	72.0	72.0	72.0	73.0	73.0	73.0	73.5	73.0	73.0
Yields (bushels per acre):										
Yield/harvested acre	137.9	139.6	141.3	143.0	144.7	146.4	148.1	149.8	151.5	153.2
Supply and use (million bushels):										
Beginning stocks	1,621	1,561	1,416	1,246	1,086	1,086	1,071	1,040	1,100	1,100
Production	9,935	10,050	10,175	10,295	10,565	10,685	10,810	11,010	11,060	11,185
Imports	15	10	10	10	10	10	10	10	10	10
Supply	11,571	11,621	11,601	11,551	11,661	11,781	11,891	12,060	12,170	12,295
Feed & residual	5,750	5,775	5,800	5,825	5,850	5,875	5,900	5,925	5,950	5,975
Food, seed, & industrial	2,160	2,280	2,355	2,390	2,425	2,460	2,501	2,535	2,570	2,605
Domestic	7,910	8,055	8,155	8,215	8,275	8,335	8,401	8,460	8,520	8,580
Exports	2,100	2,150	2,200	2,250	2,300	2,375	2,450	2,500	2,550	2,600
Total use	10,010	10,205	10,355	10,465	10,575	10,710	10,851	10,960	11,070	11,180
Ending stocks	1,561	1,416	1,246	1,086	1,086	1,071	1,040	1,100	1,100	1,115
Prices (dollars per bushel):										
Farm price	1.95	2.05	2.15	2.30	2.30	2.35	2.40	2.35	2.35	2.35
Loan rate	1.98	1.98	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95

Appendix table B-3. U.S. corn, change from 1996 Farm Act scenario to 2002 Farm Act scenario

Item	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Acreage (million acres):										
Planted acres	1.0	1.1	-0.2	-0.6	-0.1	-0.2	-0.3	-0.2	-0.2	-0.2
Harvested acres	0.9	1.0	-0.2	-0.6	-0.1	-0.2	-0.2	-0.2	-0.2	-0.2
Yields (bushels per acre):										
Yield/harvested acre	0.0	-0.1	-0.1	-0.0	0.0	0.0	0.0	0.0	0.0	0.0
Supply and use (million bushels):										
Beginning stocks	0	52	77	12	-30	-15	-17	-21	-20	-20
Production	129	140	-33	-81	-15	-31	-34	-28	-32	-30
Imports	0	0	0	0	0	0	0	0	0	0
Supply	129	192	44	-69	-45	-46	-51	-49	-52	-50
Feed & residual	48	74	26	-23	-23	-21	-21	-20	-23	-24
Food, seed, & industrial	2	2	0	-1	0	0	0	0	0	0
Domestic	50	76	26	-24	-23	-21	-21	-20	-23	-24
Exports	27	39	6	-15	-7	-8	-9	-9	-9	-8
Total use	77	115	32	-39	-30	-29	-30	-29	-32	-32
Ending stocks	52	77	12	-30	-15	-17	-21	-20	-20	-18
Prices (dollars per bushel):										
Farm price	-0.06	-0.09	-0.01	0.03	0.02	0.02	0.02	0.02	0.02	0.02
Loan rate	0.36	0.36	0.32	0.23	0.16	0.09	0.06	0.06	0.06	0.06

Appendix table B-4. U.S. sorghum, 1996 Farm Act scenario

Item	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Acreage (million acres):										
Planted acres	8.8	9.0	9.4	9.5	9.7	9.7	9.8	9.8	9.9	9.9
Harvested acres	7.5	7.8	8.2	8.3	8.5	8.5	8.6	8.6	8.7	8.7
Yields (bushels per acre):										
Yield/harvested acre	69.0	69.6	70.2	70.8	71.4	72.0	72.6	73.2	73.8	74.4
Supply and use (million bushels):										
Beginning stocks	46	43	56	75	91	94	88	83	78	78
Production	517	543	577	587	606	610	622	627	642	647
Imports	0	0	0	0	0	0	0	0	0	0
Supply	563	586	633	662	697	704	710	710	720	725
Feed & residual	219	226	246	254	272	276	277	272	267	263
Food, seed, & industrial	50	55	60	65	70	75	80	85	90	95
Domestic	269	281	306	319	342	351	357	357	357	358
Exports	251	249	252	252	261	265	270	275	285	290
Total use	520	530	558	571	603	616	627	632	642	648
Ending stocks	43	56	75	91	94	88	83	78	78	77
Prices (dollars per bushel):										
Farm price	1.86	2.01	2.04	2.14	2.12	2.18	2.23	2.18	2.18	2.18
Loan rate	1.50	1.51	1.55	1.65	1.69	1.74	1.77	1.77	1.77	1.77

Appendix table B-5. U.S. sorghum, 2002 Farm Act scenario

Item	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Acreage (million acres):										
Planted acres	9.0	9.5	9.6	9.6	9.6	9.6	9.7	9.7	9.8	9.8
Harvested acres	7.7	8.3	8.4	8.4	8.4	8.4	8.5	8.5	8.6	8.6
Yields (bushels per acre):										
Yield/harvested acre	69.0	69.6	70.2	70.8	71.4	72.0	72.6	73.2	73.8	74.4
Supply and use (million bushels):										
Beginning stocks	46	54	79	84	89	89	84	79	74	74
Production	533	580	590	595	600	605	615	620	635	640
Imports	0	0	0	0	0	0	0	0	0	0
Supply	579	634	669	679	689	694	699	699	709	714
Feed & residual	225	250	270	270	270	270	270	265	260	255
Food, seed, & industrial	50	55	60	65	70	75	80	85	90	95
Domestic	275	305	330	335	340	345	350	350	350	350
Exports	250	250	255	255	260	265	270	275	285	290
Total use	525	555	585	590	600	610	620	625	635	640
Ending stocks	54	79	84	89	89	84	79	74	74	74
Prices (dollars per bushel):										
Farm price	1.80	1.90	2.00	2.15	2.15	2.20	2.25	2.20	2.20	2.20
Loan rate	1.98	1.98	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95

Appendix table B-6. U.S. sorghum, change from 1996 Farm Act scenario to 2002 Farm Act scenario

Item	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Acreage (million acres):										
Planted acres	0.2	0.5	0.2	0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Harvested acres	0.2	0.5	0.2	0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Yields (bushels per acre):										
Yield/harvested acre	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Supply and use (million bushels):										
Beginning stocks	0	11	23	9	-2	-5	-4	-4	-4	-4
Production	16	37	13	8	-6	-5	-7	-7	-7	-7
Imports	0	0	0	0	0	0	0	0	0	0
Supply	16	48	36	17	-8	-10	-11	-11	-11	-11
Feed & residual	6	24	24	16	-2	-6	-7	-7	-7	-8
Food, seed, & industrial	0	0	0	0	0	0	0	0	0	0
Domestic	6	24	24	16	-2	-6	-7	-7	-7	-8
Exports	-1	1	3	3	-1	0	0	0	0	0
Total use	5	25	27	19	-3	-6	-7	-7	-7	-8
Ending stocks	11	23	9	-2	-5	-4	-4	-4	-4	-3
Prices (dollars per bushel):										
Farm price	-0.06	-0.11	-0.04	0.01	0.03	0.02	0.02	0.02	0.02	0.02
Loan rate	0.48	0.47	0.40	0.30	0.26	0.21	0.18	0.18	0.18	0.18

Appendix table B-7. U.S. barley, 1996 Farm Act scenario

Item	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Acreage (million acres):										
Planted acres	5.0	5.1	5.1	5.1	5.1	5.1	5.2	5.2	5.1	5.2
Harvested acres	4.4	4.5	4.5	4.5	4.5	4.5	4.6	4.6	4.6	4.6
Yields (bushels per acre):										
Yield/harvested acre	62.1	62.7	63.3	63.9	64.5	65.1	65.7	66.3	66.9	67.5
Supply and use (million bushels):										
Beginning stocks	84	83	94	105	116	119	122	121	120	122
Production	275	282	286	292	290	296	298	304	306	307
Imports	30	35	35	35	35	35	35	35	35	35
Supply	389	400	415	432	441	450	455	460	461	464
Feed & residual	109	105	109	115	121	127	133	139	138	143
Food, seed, & industrial	172	171	171	171	171	171	171	171	171	171
Domestic	281	276	280	286	292	298	304	310	309	314
Exports	25	30	30	30	30	30	30	30	30	30
Total use	306	306	310	316	322	328	334	340	339	344
Ending stocks	83	94	105	116	119	122	121	120	122	120
Prices (dollars per bushel):										
Farm price	2.19	2.36	2.34	2.35	2.35	2.40	2.44	2.38	2.40	2.40
Loan rate	1.41	1.42	1.46	1.52	1.56	1.60	1.61	1.61	1.60	1.61

Appendix table B-8. U.S. barley, 2002 Farm Act scenario

Item	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Acreage (million acres):										
Planted acres	5.1	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2
Harvested acres	4.5	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
Yields (bushels per acre):										
Yield/harvested acre	62.1	62.7	63.3	63.9	64.5	65.1	65.7	66.3	66.9	67.5
Supply and use (million bushels):										
Beginning stocks	84	85	98	106	114	117	120	118	116	119
Production	278	290	290	295	295	300	300	305	310	310
Imports	30	35	35	35	35	35	35	35	35	35
Supply	392	410	423	436	444	452	455	458	461	464
Feed & residual	110	110	115	120	125	130	135	140	140	145
Food, seed, & industrial	172	172	172	172	172	172	172	172	172	172
Domestic	282	282	287	292	297	302	307	312	312	317
Exports	25	30	30	30	30	30	30	30	30	30
Total use	307	312	317	322	327	332	337	342	342	347
Ending stocks	85	98	106	114	117	120	118	116	119	117
Prices (dollars per bushel):										
Farm price	2.15	2.25	2.30	2.35	2.35	2.40	2.45	2.40	2.40	2.40
Loan rate	1.88	1.88	1.85	1.85	1.85	1.85	1.85	1.85	1.85	1.85

Appendix table B-9. U.S. barley, change from 1996 Farm Act scenario to 2002 Farm Act scenario

Item	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Acreage (million acres):										
Planted acres	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.0
Harvested acres	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
Yields (bushels per acre):										
Yield/harvested acre	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Supply and use (million bushels):										
Beginning stocks	0	2	4	1	-2	-2	-2	-3	-4	-3
Production	3	8	4	3	5	4	2	1	4	3
Imports	0	0	0	0	0	0	0	0	0	0
Supply	3	10	8	4	3	2	0	-2	0	0
Feed & residual	1	5	6	5	4	3	2	1	2	2
Food, seed, & industrial	0	1	1	1	1	1	1	1	1	1
Domestic	1	6	7	6	5	4	3	2	3	3
Exports	0	0	0	0	0	0	0	0	0	0
Total use	1	6	7	6	5	4	3	2	3	3
Ending stocks	2	4	1	-2	-2	-2	-3	-4	-3	-3
Prices (dollars per bushel):										
Farm price	-0.04	-0.11	-0.04	0.00	0.00	0.00	0.01	0.02	0.00	0.00
Loan rate	0.47	0.46	0.39	0.33	0.29	0.25	0.24	0.24	0.25	0.24

Appendix table B-10. U.S. oats, 1996 Farm Act scenario

Item	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Acreage (million acres):										
Planted acres	5.2	4.2	4.3	4.2	4.3	4.2	4.2	4.3	4.2	4.2
Harvested acres	2.5	2.0	2.0	1.9	2.0	1.9	1.9	2.0	1.9	1.9
Yields (bushels per acre):										
Yield/harvested acre	61.2	61.6	62.0	62.4	62.8	63.2	63.6	64.0	64.4	64.8
Supply and use (million bushels):										
Beginning stocks	55	61	55	52	56	59	61	60	65	62
Production	157	123	124	121	122	122	121	128	126	126
Imports	100	110	110	115	115	120	120	125	125	130
Supply	312	294	289	288	293	301	302	313	316	318
Feed & residual	177	164	161	155	156	161	162	167	172	172
Food, seed, & industrial	72	73	74	75	76	77	78	79	80	81
Domestic	249	237	235	230	232	238	240	246	252	253
Exports	2	2	2	2	2	2	2	2	2	2
Total use	251	239	237	232	234	240	242	248	254	255
Ending stocks	61	55	52	56	59	61	60	65	62	63
Prices (dollars per bushel):										
Farm price	1.10	1.24	1.29	1.38	1.36	1.36	1.41	1.35	1.36	1.36
Loan rate	1.05	1.01	1.03	1.08	1.12	1.09	1.12	1.13	1.12	1.11

Appendix table B-11. U.S. oats, 2002 Farm Act scenario

Item	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Acreage (million acres):										
Planted acres	5.1	4.4	4.4	4.3	4.3	4.3	4.3	4.3	4.3	4.3
Harvested acres	2.5	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Yields (bushels per acre):										
Yield/harvested acre	61.2	61.6	62.0	62.4	62.8	63.2	63.6	64.0	64.4	64.8
Supply and use (million bushels):										
Beginning stocks	55	61	61	60	63	65	66	66	70	68
Production	155	130	130	125	125	125	125	130	130	130
Imports	100	110	110	115	115	120	120	125	125	130
Supply	310	301	301	300	303	310	311	321	325	328
Feed & residual	175	165	165	160	160	165	165	170	175	175
Food, seed, & industrial	72	73	74	75	76	77	78	79	80	81
Domestic	247	238	239	235	236	242	243	249	255	256
Exports	2	2	2	2	2	2	2	2	2	2
Total use	249	240	241	237	238	244	245	251	257	258
Ending stocks	61	61	60	63	65	66	66	70	68	70
Prices (dollars per bushel):										
Farm price	1.10	1.20	1.25	1.35	1.35	1.35	1.40	1.35	1.35	1.35
Loan rate	1.35	1.35	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33

Appendix table B-12. U.S. oats, change from 1996 Farm Act scenario to 2002 Farm Act scenario

Item	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Acreage (million acres):										
Planted acres	-0.1	0.2	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.1
Harvested acres	-0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.1
Yields (bushels per acre):										
Yield/harvested acre	0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0
Supply and use (million bushels):										
Beginning stocks	0	0	6	8	7	6	5	6	5	6
Production	-2	7	6	4	3	3	4	2	4	4
Imports	0	0	0	0	0	0	0	0	0	0
Supply	-2	7	12	12	10	9	9	8	9	10
Feed & residual	-2	1	4	5	4	4	3	3	3	3
Food, seed, & industrial	0	0	0	0	0	0	0	0	0	0
Domestic	-2	1	4	5	4	4	3	3	3	3
Exports	0	0	0	0	0	0	0	0	0	0
Total use	-2	1	4	5	4	4	3	3	3	3
Ending stocks	0	6	8	7	6	5	6	5	6	7
Prices (dollars per bushel):										
Farm price	0.00	-0.04	-0.04	-0.03	-0.01	-0.01	-0.01	0.00	-0.01	-0.01
Loan rate	0.30	0.34	0.30	0.25	0.21	0.24	0.21	0.20	0.21	0.22

Appendix table B-13. U.S. wheat, 1996 Farm Act scenario

Item	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Acreage (million acres):										
Planted acres	58.8	59.0	59.5	59.6	60.8	61.3	61.7	62.2	62.2	62.7
Harvested acres	46.9	50.1	50.6	50.7	51.7	52.1	53.1	53.5	53.5	53.9
Yields (bushels per acre):										
Yield/harvested acre	40.1	41.6	42.0	42.4	42.8	43.2	43.6	44.0	44.4	44.8
Supply and use (million bushels):										
Beginning stocks	738	614	652	646	601	577	553	560	571	571
Production	1,879	2,083	2,121	2,150	2,213	2,251	2,318	2,357	2,378	2,418
Imports	105	105	110	115	115	115	115	115	120	120
Supply	2,722	2,802	2,883	2,911	2,929	2,943	2,986	3,032	3,069	3,109
Food	955	965	975	985	995	1,005	1,015	1,025	1,035	1,045
Seed	81	81	81	83	84	84	85	85	86	86
Feed & residual	199	195	222	223	207	208	207	207	208	208
Domestic	1,235	1,241	1,278	1,291	1,286	1,297	1,307	1,317	1,329	1,339
Exports	873	909	959	1,019	1,066	1,093	1,119	1,144	1,169	1,194
Total use	2,108	2,150	2,237	2,310	2,352	2,390	2,426	2,461	2,498	2,533
Ending stocks	614	652	646	601	577	553	560	571	571	576
Prices (dollars per bushel):										
Farm price	2.81	2.85	2.90	3.07	3.20	3.34	3.39	3.39	3.39	3.44
Loan rate	2.28	2.28	2.33	2.39	2.42	2.50	2.58	2.58	2.58	2.58

Appendix table B-14. U.S. wheat, 2002 Farm Act scenario

Item	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Acreage (million acres):										
Planted acres	59.0	60.0	60.0	59.5	59.5	60.5	61.0	61.5	61.5	62.0
Harvested acres	47.1	51.0	51.0	50.6	50.6	51.4	52.5	52.9	52.9	53.3
Yields (bushels per acre):										
Yield/harvested acre	40.1	41.6	42.0	42.4	42.8	43.2	43.6	44.0	44.4	44.8
Supply and use (million bushels):										
Beginning stocks	738	617	670	664	608	560	532	538	549	549
Production	1,886	2,120	2,140	2,145	2,165	2,220	2,290	2,330	2,350	2,390
Imports	105	105	110	115	115	115	115	115	120	120
Supply	2,729	2,842	2,920	2,924	2,888	2,895	2,937	2,983	3,019	3,059
Food	955	965	975	985	995	1,005	1,015	1,025	1,035	1,045
Seed	82	82	81	81	83	83	84	84	85	85
Feed & residual	200	200	225	225	200	200	200	200	200	200
Domestic	1,237	1,247	1,281	1,291	1,278	1,288	1,299	1,309	1,320	1,330
Exports	875	925	975	1,025	1,050	1,075	1,100	1,125	1,150	1,175
Total use	2,112	2,172	2,256	2,316	2,328	2,363	2,399	2,434	2,470	2,505
Ending stocks	617	670	664	608	560	532	538	549	549	554
Prices (dollars per bushel):										
Farm price	2.80	2.80	2.85	3.05	3.25	3.40	3.45	3.45	3.45	3.50
Loan rate	2.80	2.80	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75

Appendix table B-15. U.S. wheat, change from 1996 Farm Act scenario to 2002 Farm Act scenario

Item	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Acreage (million acres):										
Planted acres	0.2	1.0	0.5	-0.1	-1.3	-0.8	-0.7	-0.7	-0.7	-0.7
Harvested acres	0.2	0.9	0.5	-0.1	-1.1	-0.7	-0.6	-0.6	-0.6	-0.6
Yields (bushels per acre):										
Yield/harvested acre	0.0	0.0	0.0	0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0
Supply and use (million bushels):										
Beginning stocks	0	3	18	18	7	-17	-21	-22	-22	-22
Production	7	37	19	-5	-48	-31	-28	-27	-28	-28
Imports	0	0	0	0	0	0	0	0	0	0
Supply	7	40	37	13	-41	-48	-49	-49	-50	-50
Food	0	0	0	0	0	0	0	0	0	0
Seed	1	1	0	-2	-1	-1	-1	-1	-1	-1
Feed & residual	1	5	3	2	-7	-8	-7	-7	-8	-8
Domestic	2	6	3	0	-8	-9	-8	-8	-9	-9
Exports	2	16	16	6	-16	-18	-19	-19	-19	-19
Total use	4	22	19	6	-24	-27	-27	-27	-28	-28
Ending stocks	3	18	18	7	-17	-21	-22	-22	-22	-22
Prices (dollars per bushel):										
Farm price	-0.01	-0.05	-0.05	-0.02	0.05	0.06	0.06	0.06	0.06	0.06
Loan rate	0.52	0.52	0.42	0.36	0.33	0.25	0.17	0.17	0.17	0.17

Appendix table B-16. U.S. rice, 1996 Farm Act scenario

Item	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Acreage (thousand acres):										
Planted	3,325	3,329	3,329	3,329	3,329	3,317	3,308	3,302	3,298	3,297
Harvested	3,304	3,302	3,302	3,302	3,302	3,290	3,282	3,276	3,272	3,271
Yields (lbs per acre):										
Yield/harvested acre	6,299	6,345	6,392	6,440	6,489	6,538	6,588	6,638	6,689	6,739
Supply and use (million cwt.):										
Beginning stocks	41.4	44.4	46.7	47.2	46.5	44.7	42.5	40.9	40.2	39.4
Production	208.0	209.5	211.1	212.6	214.3	215.1	216.2	217.5	218.9	220.4
Imports	13.3	13.6	13.9	14.3	14.6	15.0	15.4	15.8	16.2	16.6
Total supply	262.7	267.5	271.7	274.1	275.5	274.8	274.1	274.2	275.3	276.4
Domestic use & residual	126.1	128.7	131.4	134.0	136.6	139.2	142.0	144.7	147.6	150.6
Exports	92.1	92.1	93.1	93.6	94.2	93.1	91.2	89.2	88.3	88.3
Total use	218.2	220.9	224.5	227.6	230.8	232.3	233.2	233.9	235.9	238.9
Ending stocks (million cwt.)	44.4	46.7	47.2	46.5	44.7	42.5	40.9	40.2	39.4	37.5
Prices (dollars per cwt.):										
Average market price	4.19	4.31	4.45	4.61	4.80	5.02	5.21	5.39	5.59	5.84
Loan rate	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50

Appendix table B-17. U.S. rice, 2002 Farm Act scenario

Item	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Acreage (thousand acres):										
Planted	3,323	3,325	3,325	3,325	3,325	3,315	3,305	3,300	3,295	3,295
Harvested	3,302	3,298	3,298	3,298	3,298	3,288	3,279	3,274	3,269	3,269
Yields (lbs per acre):										
Yield/harvested acre	6,299	6,345	6,392	6,440	6,489	6,538	6,588	6,638	6,689	6,739
Supply and use (million cwt.):										
Beginning stocks	41.4	44.6	46.9	47.4	46.7	44.9	42.7	41.1	40.3	39.5
Production	208.0	209.3	210.8	212.4	214.0	215.0	216.0	217.3	218.7	220.3
Imports	13.3	13.6	13.9	14.3	14.6	15.0	15.4	15.8	16.2	16.6
Total supply	262.7	267.5	271.6	274.0	275.4	274.9	274.1	274.1	275.2	276.3
Domestic use & residual	126.1	128.6	131.2	133.8	136.5	139.2	142.0	144.8	147.7	150.7
Exports	92.0	92.0	93.0	93.5	94.0	93.0	91.0	89.0	88.0	88.0
Total use	218.1	220.6	224.2	227.3	230.5	232.2	233.0	233.8	235.7	238.7
Ending stocks (million cwt.)	44.6	46.9	47.4	46.7	44.9	42.7	41.1	40.3	39.5	37.6
Prices (dollars per cwt.):										
Average market price	4.20	4.32	4.46	4.62	4.81	5.02	5.22	5.40	5.60	5.85
Loan rate	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50

Appendix table B-18. U.S. rice, change from 1996 Farm Act scenario to 2002 Farm Act scenario

Item	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Acreage (thousand acres):										
Planted	-2	-4	-4	-4	-4	-2	-3	-2	-3	-2
Harvested	-2	-4	-4	-4	-4	-2	-3	-2	-3	-2
Yields (lbs per acre):										
Yield/harvested acre	0	0	0	0	0	0	0	0	0	0
Supply and use (million cwt.):										
Beginning stocks	0.0	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1
Production	0.0	-0.2	-0.3	-0.2	-0.3	-0.1	-0.2	-0.2	-0.2	-0.1
Imports	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total supply	0.0	-0.1	-0.1	-0.0	-0.1	0.1	-0.0	-0.0	-0.1	-0.0
Domestic use & residual	-0.0	-0.1	-0.2	-0.2	-0.1	-0.0	0.0	0.1	0.1	0.1
Exports	-0.1	-0.1	-0.1	-0.1	-0.2	-0.1	-0.2	-0.2	-0.3	-0.3
Total use	-0.1	-0.3	-0.3	-0.3	-0.3	-0.1	-0.2	-0.1	-0.2	-0.2
Ending stocks (million cwt.)	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1
Prices (dollars per cwt.):										
Average market price	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01
Loan rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appendix table B-19. U.S. Upland cotton, 1996 Farm Act scenario

Item	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Acreage (million acres):										
Planted acres	14.6	14.9	14.6	14.5	14.4	14.2	14.1	14.0	13.9	13.9
Harvested acres	13.1	13.6	13.3	13.2	13.1	12.9	12.8	12.7	12.6	12.6
Yields (pounds per acre):										
Yield/harvested acre	629.0	630.9	632.9	635.0	637.1	639.2	641.2	643.199	645.2	647.2
Supply and use (thousand bales):										
Beginning stocks	7,359	6,294	5,756	5,371	5,252	5,210	5,062	4,967	4,823	4,828
Production	17,226	17,816	17,603	17,522	17,327	17,146	17,039	16,936	16,932	16,927
Imports	10	5	5	5	5	5	5	5	5	5
Supply	24,595	24,115	23,364	22,898	22,584	22,361	22,106	21,908	21,760	21,760
Domestic use	7,695	8,025	8,013	7,898	7,773	7,702	7,635	7,572	7,512	7,454
Exports	10,571	10,367	9,975	9,743	9,596	9,592	9,499	9,508	9,415	9,320
Total use	18,266	18,392	17,988	17,641	17,369	17,294	17,134	17,080	16,927	16,774
Ending stocks	6,294	5,756	5,371	5,252	5,210	5,062	4,967	4,823	4,828	4,981
Prices (dollars per pound): 1/										
Loan rate	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50

1/ USDA is prohibited from publishing cotton price projections.

Appendix table B-20. U.S. Upland cotton, 2002 Farm Act scenario

Item	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Acreage (million acres):										
Planted acres	14.5	14.8	14.7	14.6	14.5	14.3	14.2	14.1	14.0	14.0
Harvested acres	13.1	13.5	13.4	13.3	13.2	13.0	12.9	12.8	12.7	12.7
Yields (pounds per acre):										
Yield/harvested acre	629.0	631.0	633.0	635.0	637.0	639.0	641.0	643.0	645.0	647.0
Supply and use (thousand bales):										
Beginning stocks	7,359	6,262	5,700	5,400	5,300	5,300	5,150	5,050	4,900	4,900
Production	17,148	17,700	17,700	17,600	17,500	17,300	17,200	17,100	17,100	17,100
Imports	10	5	5	5	5	5	5	5	5	5
Supply	24,517	23,967	23,405	23,005	22,805	22,605	22,355	22,155	22,005	22,005
Domestic use	7,685	8,000	8,000	7,900	7,800	7,750	7,700	7,650	7,600	7,550
Exports	10,535	10,300	10,000	9,800	9,700	9,700	9,600	9,600	9,500	9,400
Total use	18,220	18,300	18,000	17,700	17,500	17,450	17,300	17,250	17,100	16,950
Ending stocks	6,262	5,700	5,400	5,300	5,300	5,150	5,050	4,900	4,900	5,050
Prices (dollars per pound): 1/										
Loan rate	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52

1/ USDA is prohibited from publishing cotton price projections.

Appendix table B-21. U.S. Upland cotton, change from 1996 Farm Act scenario to 2002 Farm Act scenario

Item	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Acreage (million acres):										
Planted acres	-0.1	-0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Harvested acres	0.0	-0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Yields (pounds per acre):										
Yield/harvested acre	0.0	0.1	0.1	0.0	-0.1	-0.2	-0.2	-0.2	-0.2	-0.2
Supply and use (thousand bales):										
Beginning stocks	0	-32	-56	29	48	90	88	83	77	72
Production	-78	-116	97	78	173	154	161	164	168	173
Imports	0	0	0	0	0	0	0	0	0	0
Supply	-78	-148	41	107	221	244	249	247	245	245
Domestic use	-10	-25	-13	2	27	48	65	78	88	96
Exports	-36	-67	25	57	104	108	101	92	85	80
Total use	-46	-92	12	59	131	156	166	170	173	176
Ending stocks	-32	-56	29	48	90	88	83	77	72	69
Prices (dollars per pound): 1/										
Loan rate	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02

1/ USDA is prohibited from publishing cotton price projections.

Appendix table B-22. U.S. soybeans, 1996 Farm Act scenario

Item	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Acreage (million acres)										
Planted	73.8	73.9	73.2	72.9	72.7	73.3	73.5	73.6	74.0	74.3
Harvested	72.4	72.7	72.1	71.8	71.6	72.2	72.4	72.5	72.9	73.2
Yield/harvested acre (bushels)	39.7	40.1	40.5	41.0	41.4	41.8	42.2	42.6	43.0	43.4
Supply and use (million bushels)										
Beginning stocks	259	261	260	249	242	209	208	214	213	219
Production	2,878	2,914	2,919	2,946	2,963	3,018	3,053	3,088	3,134	3,178
Imports	4	8	8	9	11	8	10	13	10	12
Total supply	3,141	3,183	3,187	3,204	3,216	3,235	3,271	3,315	3,357	3,409
Crush	1,718	1,746	1,761	1,790	1,828	1,859	1,888	1,924	1,954	1,990
Seed and residual	175	173	173	174	176	178	180	183	185	187
Exports	987	1,004	1,004	998	1,003	990	989	995	999	1,009
Total use	2,880	2,923	2,938	2,962	3,008	3,027	3,057	3,102	3,138	3,186
Ending stocks	261	260	249	242	209	208	214	213	219	223
Prices (dollars per bushel)										
Farm price	4.32	4.49	4.81	5.02	5.32	5.40	5.46	5.50	5.46	5.45
Loan rate	4.92	4.92	4.92	4.92	4.92	4.92	4.92	4.92	4.92	4.92
Product market prices										
Soybean oil price ($/lb)	0.160	0.184	0.210	0.227	0.240	0.241	0.244	0.246	0.249	0.249
Soybean meal price ($/ton)	157.50	151.60	150.50	152.50	158.10	159.70	160.80	161.60	158.80	158.70

Appendix table B-23. U.S. soybeans, 2002 Farm Act scenario

Item	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Acreage (million acres)										
Planted	73.0	73.0	73.3	73.0	72.5	73.0	73.3	73.3	73.8	74.0
Harvested	71.7	71.8	72.2	71.9	71.4	71.9	72.2	72.2	72.7	72.9
Yield/harvested acre (bushels)	39.7	40.2	40.6	41.0	41.4	41.8	42.2	42.6	43.0	43.4
Supply and use (million bushels)										
Beginning stocks	260	255	250	250	245	210	205	210	205	210
Production	2,850	2,885	2,930	2,950	2,955	3,005	3,045	3,075	3,125	3,165
Imports	4	8	8	9	11	8	10	13	10	12
Total supply	3,114	3,148	3,188	3,209	3,211	3,223	3,260	3,298	3,340	3,387
Crush	1,710	1,735	1,760	1,790	1,825	1,855	1,885	1,920	1,950	1,985
Seed and residual	174	173	173	174	176	178	180	183	185	187
Exports	975	990	1,005	1,000	1,000	985	985	990	995	1,005
Total use	2,859	2,898	2,938	2,964	3,002	3,018	3,050	3,093	3,130	3,177
Ending stocks	255	250	250	245	210	205	210	205	210	210
Prices (dollars per bushel)										
Farm price	4.45	4.65	4.80	5.00	5.35	5.45	5.50	5.55	5.50	5.50
Loan rate	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Product market prices										
Soybean oil price ($/lb)	0.165	0.190	0.210	0.225	0.240	0.243	0.245	0.248	0.250	0.250
Soybean meal price ($/ton)	160.00	155.00	151.00	152.50	159.00	161.00	162.00	163.00	160.00	160.00

Appendix table B-24. U.S. soybeans, change from 1996 Farm Act scenario to 2002 Farm Act scenario

Item	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Acreage (million acres)										
Planted	-0.8	-0.9	0.1	0.1	-0.2	-0.3	-0.2	-0.3	-0.2	-0.3
Harvested	-0.7	-0.9	0.1	0.1	-0.2	-0.3	-0.2	-0.3	-0.2	-0.3
Yield/harvested acre (bushels)	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Supply and use (million bushels)										
Beginning stocks	1	-6	-10	1	3	1	-3	-4	-8	-9
Production	-28	-29	11	4	-8	-13	-8	-13	-9	-13
Imports	0	0	0	0	0	0	0	0	0	0
Total supply	-27	-35	1	5	-5	-12	-11	-17	-17	-22
Crush	-8	-11	-1	0	-3	-4	-3	-4	-4	-5
Seed and residual	-1	0	0	0	0	0	0	0	0	0
Exports	-12	-14	1	2	-3	-5	-4	-5	-4	-4
Total use	-21	-25	0	2	-6	-9	-7	-9	-8	-9
Ending stocks	-6	-10	1	3	1	-3	-4	-8	-9	-13
Prices (dollars per bushel)										
Farm price	0.13	0.16	-0.01	-0.02	0.03	0.05	0.04	0.05	0.04	0.05
Loan rate	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Product market prices										
Soybean oil price ($/lb)	0.005	0.006	0.000	-0.002	0.000	0.002	0.001	0.002	0.001	0.001
Soybean meal price ($/ton)	2.50	3.40	0.50	0.00	0.90	1.30	1.20	1.40	1.20	1.30