

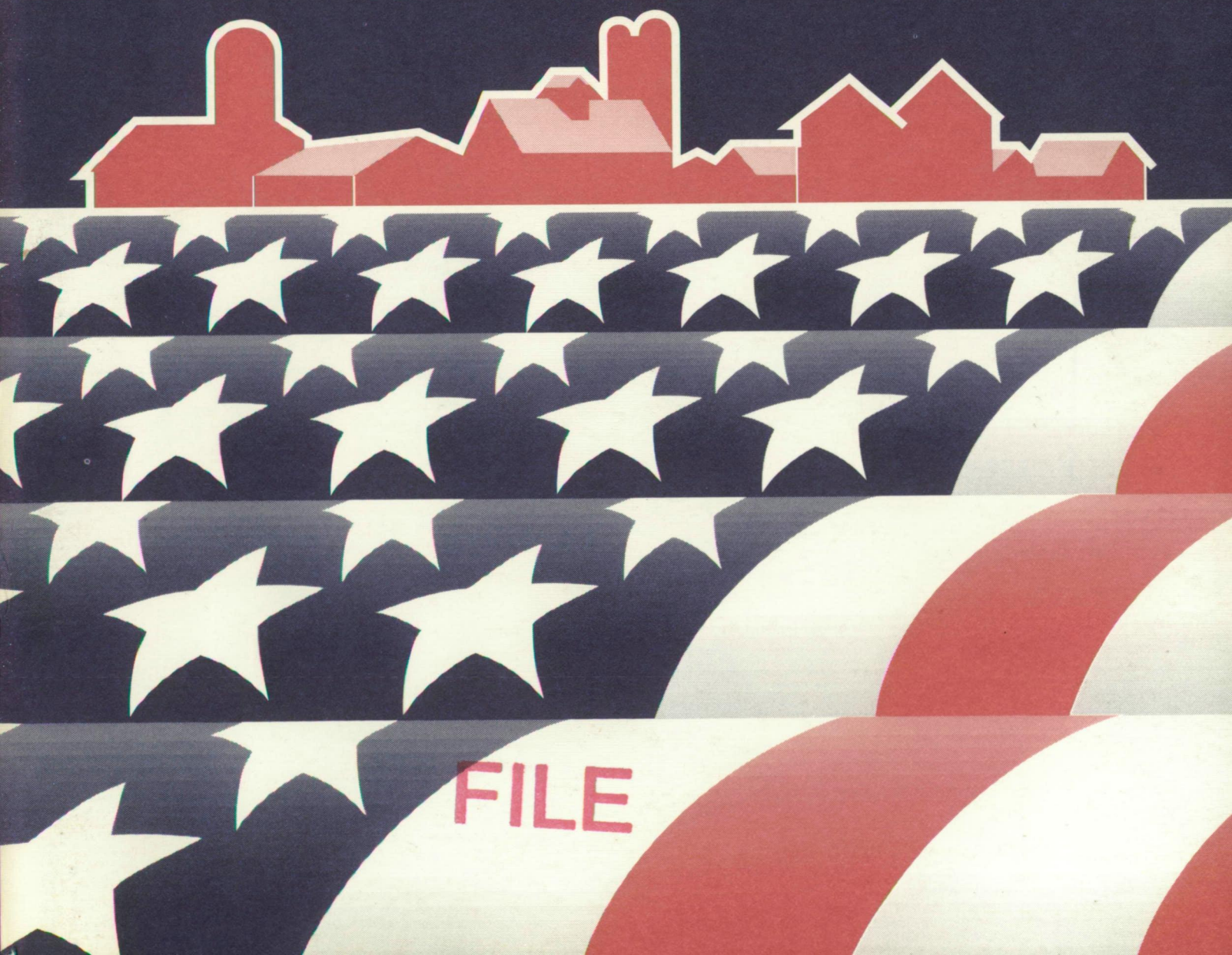
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Farm Commodity Programs and Their Effects



Contents

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Farm Commodity Programs and Their Effects



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The Government's Role in Agriculture

For the last half-century, U.S. agriculture has been among the most productive in the world. Not only has it made possible a high-quality and low-cost diet for a growing population at home, but it has, from its abundant exports, fed millions abroad. Although U.S. agriculture has been immensely successful, American farmers have not always prospered to the same degree. The reason for this disparity lies in agriculture's unique characteristics:

- Agricultural commodities are homogeneous products. For example, wheat of the same type and grade—whether it is produced in Kansas or Texas—is used to make flour. Manufacturers regard price as the main determinant of their wheat purchases.
- Commodities are produced on a large number of farms, each accounting for a small part of total output. No individual farmer can influence prices by limiting supplies to the market.
- Most of the time, the productive capacity of U.S. agriculture exceeds the demands of domestic and foreign markets by a wide margin.

Because of these characteristics, individual producers cannot influence market forces. Prices can be low and quite variable, depending on the level of output. Higher production usually translates into lower prices for most commodities. At such times, incomes of most farmers are bolstered by commodity programs designed to even out the large swings in prices. Widespread Federal involvement in farm commodity programs began during the Great Depression. After the stock market crash in October 1929, farm prices dropped even further from their depressed levels of the 1920's. In 1933, farm income per person was less than a quarter of nonfarm income. Congress responded to the crisis, at the behest of President Franklin Roosevelt, by passing the Agricultural Adjustment Act of 1933. The goals of the 1933 Act were to raise farm prices, thus improving income, and bring supply in line with demand. Only the Government had the power to do this.

At times, prices have been high enough to bring sufficient return to farmers with little Federal assistance. The early 1970's was such a period. Growing world demand caused an explosion in agricultural exports, dramatically reducing the importance of commodity programs to farmers' incomes. Economic conditions, however, changed in the early 1980's. World demand stagnated, production soared, and prices for major commodities plunged. A rising dollar and highly competitive world markets cut the U.S. share of exports for many agricultural commodities. Agricultural surpluses mounted, despite efforts to reduce them. Many producers experienced financial stress.

The Food Security Act of 1985—the latest major farm legislation—addressed many of these problems. The goals of Government involvement in agriculture remain the same. According to a 1985 report by the Senate Committee on Agriculture, Nutrition, and Forestry: "The essential purpose of successful farm policy is to provide for a measure of stability in the agricultural sector, thereby increasing the opportunity for farmers to derive fair and reasonable profits in the marketplace. The aim of Federal farm policy is to induce elements of predictability into the inherently unpredictable business of farming."

Congress is now considering legislation to replace the soon-to-expire Food Security Act of 1985. This issue of *National Food Review* is designed to help the public understand farm commodity programs. The articles—covering all program commodities—discuss the history of the programs, current provisions, and their effects.

For further reading: A history of commodity programs can be found in *History of Agricultural Price Support and Adjustment Programs, 1933-84*, AIB-485, by Douglas E. Bowers, et al., ERS, USDA, December 1984. A Congressional perspective on farm commodity programs can be found in *Food Security Act of 1985, Report of the Committee on Agriculture to Accompany H.R. 2100*, House Report 99-271, Part 1, U.S. Congress, September 13, 1985; and *Agriculture, Food, Trade, and Conservation Act of 1985, Report of the Committee on Agriculture, Nutrition, and Forestry to Accompany S. 1714*, Senate Report 99-145, U.S. Congress, September 30, 1985. The *Agricultural-Food Policy Review: U.S. Agricultural Policies in a Changing World*, AER-620, ERS, USDA, November 1989, contains a wide-ranging economic discussion of commodity programs.

Government Wheat Programs

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Wheat is used in bakery products, noodles, pasta, and feed for livestock. Even though this "staff of life" is a basic food commodity, few consumers understand the intricacies behind its production and marketing. The Federal Government's wheat program plays a big role in determining how much wheat farmers grow and the income they receive. The current program has its roots in the Agricultural Adjustment Act of 1938, which was the first comprehensive price support legislation with nonrecourse loans. The Food Security Act of 1985 is the most recent piece of major farm legislation. An update is expected in 1990.

Two major objectives of the 1985 Act were to make the United States more competitive in world agricultural markets and to continue supporting farm income. Two facets of the Act, lower loan rates and export promotion programs, have increased U.S. competitiveness in the international wheat market. Target prices and deficiency payments, which cushion the impact of falling wheat prices during the transition to a more competitive environment, have helped support wheat producers' incomes.

The 1985 Act continues Federal provisions for nonrecourse loans, target price protection, and acreage reduction. The law came at a time of falling wheat exports, large stock buildups, and declining farm incomes. Provisions designed to make U.S. prices more responsive to world market conditions include: a more market-responsive loan rate, generic certificates, and various export promotion programs. The law gives the Secretary of Agriculture greater flexibility in setting loan rates to meet foreign competition.

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National Association of Wheat Growers

Producer loans continue as a part of the wheat program. These loans are nonrecourse since a farmer may pay off the loan with interest or forfeit the grain to the Commodity Credit Corporation (CCC). The "basic" loan rate for crop years 1987 through 1990—running from June 1 to May 31—is set between 75 and 85 percent of a 5-year moving average farm price, dropping the high and low values. However, this rate cannot be reduced by more than 5 percent from the previous year. The Secretary has authority to reduce the basic loan rate an additional 20 percent to encourage exports and prevent stock buildups. The announced loan rate declined from \$3.30 per bushel for the 1985 crop to \$2.06 for the 1989 crop.

The 1985 Act also continues target prices. For wheat, they were frozen at \$4.38 per bushel for crop years 1986 and 1987 and then declined slightly to \$4.23 in 1988 and \$4.10 this year.

Participating producers are eligible to receive deficiency payments at a rate

equal to the difference between the target price and the higher of the loan rate or the national average farm price during the first 5 months of the marketing year (June through October). A producer's deficiency payment is determined by multiplying the payment rate—target price minus loan rate or market price—times the eligible quantity. The amount of wheat eligible for deficiency payments is calculated by multiplying the program yield and the permitted acreage. (*Program terms are defined in the Glossary.*) Payments can be made in cash or generic certificates (*see box*).

The 1985 Act changed the way program yields are determined. In the past, farmers were able to use an average of actual yields to determine their program yields. Under the 1985 Act, however, program yields are calculated as the average program yield on the farm during crop years 1981-85, excluding the years with the highest and lowest yields. As a result, program yields have been effectively frozen.

In order to receive deficiency payments, producers must cut back on the acreage they plant if supplies are expected to be excessive. Under the 1985 Act, USDA has announced an acreage reduction program (ARP) for wheat each year. For crop years 1987-90, if projected stocks of wheat for the beginning of a crop year are 1 billion bushels or less, the ARP cannot exceed 20 percent of the crop acreage base. If beginning stocks are projected to exceed 1 billion bushels, the ARP must be at least 20 percent. The ARP for wheat was 22.5 percent in crop year 1986 and 27.5 in 1987 and 1988. The Secretary lowered the ARP to 10 percent for the 1989 crop

because beginning stocks were expected to be below 1 billion bushels.

If supplies are projected to be excessive even with an ARP in effect, the Secretary can also offer producers a paid land diversion. Farmers can voluntarily take more land out of production—10 percent of their crop acreage base, for example—and receive a payment in return. Winter wheat farmers were offered \$2 per bushel in 1986 to reduce their acreage an additional 5 or 10 percent. Another program that takes land out of production is the Conservation Reserve. New with the 1985 Act, the program is designed to help farmers save their highly erodible cropland. (*See Federal Corn and Sorghum Programs for a full description of the Reserve.*)

of which was financed by CCC credit guarantees.

The CCC also operates two export credit guarantee programs, GSM-102 and GSM-103. Under the Short-Term Export Credit Program (GSM-102), the CCC guarantees repayment of the private credit extended to importers in specified countries for the purchase of designated U.S. agricultural commodities. GSM-102 covers credit extended for up to 3 years. The Intermediate Export Credit Guarantee Program, or GSM-103, is similar except it covers private credit extended for 3 to 10 years. These programs work in conjunction with EEP and allow importers in some countries to receive help in purchasing commodities through commercial channels.

Since passage of the 1985 Act, U.S. wheat exports expanded from 915 million bushels in the 1985/86 marketing year to a high of 1.6 billion in 1987/88 (*table 1*). (Like the crop year for wheat, the marketing year runs from June 1 to May 31.) The U.S. share of the world wheat market likewise grew from 27 percent in 1985/86 to 42 percent in 1988/89. Before crop year 1986, U.S. export prices were propped up by the loan rate regardless of world market conditions. The lower loan rate and EEP allow U.S. exporters to be competitive.

The use of generic certificates and wheat auctions also significantly contributed to the export expansion. Prior to passage of the 1985 Act, the CCC could not sell stocks in domestic commercial markets unless farm prices reached a specified CCC release price. During 1986-88, however, generic certificates and wheat auctions were used to release CCC stocks onto the market to meet strong export demand, despite farm prices well below the CCC release price. Beginning November 6, 1987, certificate holders could exchange their certificates at an accepted bid price for CCC-owned

Generic Certificates

Generic certificates are a new feature of the 1985 Food Security Act. They are used in lieu of cash to pay farmers for participating in numerous Government programs including acreage reduction, paid land diversion, the Conservation Reserve, disaster, and emergency feed programs. Generic certificates have a fixed dollar face value and an 8-month life, beginning at the end of the month they were issued. They are called generic because they can be exchanged for a variety of commodities from the Commodity Credit Corporation.

The 1985 Act allows producers to sell or transfer certificates to others. Producers benefited when certificates sold for more than their face value. That was the case between the spring of 1986, when certificates were first issued, and the spring of 1988. Certificates then sold at a discount or near par until July 1989. Between July and September 1989, they again sold for more than face value.

Programs Affecting Wheat Exports

A number of export programs were implemented or continued under the Food Security Act. Among them, the Export Enhancement Program, CCC credit guarantees, and food aid programs have substantially contributed to U.S. wheat export volume. These export programs have been important because the U.S. dollar has not depreciated significantly in some important overseas markets and because some countries continue their export subsidies while other importing nations erect trade barriers. These export programs have helped U.S. wheat exporters compete.

The Export Enhancement Program (EEP), announced in May 1985, helps U.S. exporters compete in specific markets with other countries' subsidized exports, particularly those from the European Community (*see box*). Through July 14, 1989, about 61 million metric tons of wheat were sold under this program. That represents approximately 50 percent of U.S. wheat exports in fiscal 1986 and over 60 percent in 1987, much

The Export Enhancement Program

Under the Export Enhancement Program (EEP), the Commodity Credit Corporation (CCC) provides bonuses to U.S. exporters to enable them to meet prevailing world prices for commodities to destinations targeted by the CCC.

EEP employs a two-step, competitive bid process that helps American exporters compete, while minimizing bonuses awarded from CCC stocks. Initially, the CCC targets a country for a specific quantity of a commodity. U.S. exporters then compete for the sale, knowing they might have the opportunity to obtain a CCC bonus. The exporters make a sale contingent on receiving a CCC bonus and then bid against each other for the bonus. The CCC evaluates sale prices and bids to see if they fall within an acceptable

range, and then awards the bonuses. Exporters who receive a bonus in the form of a generic certificate may then sell the certificate or exchange it for CCC stocks.

In the program's first year, North African and Middle Eastern countries were the primary wheat purchasers. Those regions now account for one-third of all EEP wheat sales. After the first year, the program expanded to other countries, such as the Soviet Union and China.

Almost half of all EEP wheat sales have been directed to the USSR and China. In 1987/88, the United States sold 8.8 million tons to the Soviet Union and 4.9 million tons to China. EEP sales to China increased in 1988/89, but relatively lower feed grain prices encouraged Soviet importers to purchase more corn and sorghum—without EEP bonuses—than wheat under EEP.

wheat. Exchanges were heaviest during the initial months of the auctions, but dropped sharply after April 1988 because that year's drought greatly reduced stocks. A monthly average of 64 million bushels was sold between November 1987 and March 1988. Between April 1988 and February 15, 1989, monthly sales averaged 0.5 million bushels.

Program Impacts on Wheat Producers

The Food Security Act of 1985 provides income protection to participating wheat producers through deficiency payments. Participation in the program grew from 60 percent of the national wheat acreage base in crop year 1984 to a high of 87.5 percent in 1987. Several factors prompted this rise. For one, those who participated earned more than those who did not. Large surplus stocks and a drop in the loan rate caused nonparticipant returns to fall dramatically. Returns to farmers participating in the program were cushioned by rising deficiency payments, despite stringent acreage reduction requirements, since target prices were frozen at 1985 levels in 1986 and 1987.

Generic commodity certificates also contributed to greater participation. Normally, when prices are below the loan rate, farmers put their grain under loan for 9 months and pay storage costs. With certificates, however, they can put grain under loan, redeem those loans immediately with commodity certificates, and market the grain, thus avoiding storage costs. Generic certificates provide a mechanism for moving wheat stocks into commercial channels. This increased the price risk to nonparticipants, since the loan rate no longer set an effective price floor in the domestic market. Certificates increased loan placements and effectively prevented producers from forfeiting wheat to the CCC, thereby reducing CCC stock buildups.

Table 1. Wheat Exports Rose to 1.6 Billion Bushels in 1987/88

Item	Marketing year ¹				
	1984/85	1985/86	1986/87	1987/88	1988/89 ²
<i>Million bushels</i>					
Supply	4,003	3,866	4,018	3,945	3,095
Beginning stocks	1,399	1,425	1,905	1,821	1,261
Production	2,595	2,425	2,092	2,107	1,811
Imports	9	16	21	16	23
Utilization	2,578	1,961	2,197	2,684	2,397
Domestic	1,154	1,046	1,193	1,092	973
Food	651	674	698	726	727
Seed and industrial	98	93	84	85	103
Feed and residual	405	279	411	281	143
Exports	1,424	915	1,004	1,592	1,424
Ending stocks	1,425	1,905	1,821	1,261	698
Commercial	390	707	359	511	221
Farmer-owned reserve ³	657	596	632	467	287
CCC inventory	378	602	830	283	190

¹The crop and marketing year for wheat runs from June 1 to May 31. ²Estimated. ³Includes quantities in the special producer storage loan program.

Also influencing participation is the way the 1985 Act changed the definition of a farm's crop acreage base. Under the Agriculture and Food Act of 1981, a farm's wheat base equaled the number of acres planted and "considered" planted (idled under Government programs) during the previous year. A farm's wheat acreage base is now calculated as a 5-year moving average of planted and "considered" planted acres. In other words, under the 1985 Act, producers who do not participate for a year can only increase their crop acreage base by 20 percent of the additional acres they planted that year.

Government payments rose dramatically under the 1985 Act, but have declined in recent years as U.S. agriculture moved toward greater competition and less burdensome stocks. The market value of production fell 32 percent between marketing years 1985/86 and 1986/87 due to the drastic reduction in loan rates that allowed market prices to fall to \$2.42 per bushel from \$3.08 in 1985/86. Deficiency payments, however, increased from \$1.5 billion in 1985/86 to \$3.5 billion in 1986/87 because of lower farm prices, a frozen target price, and higher participation in the wheat program (table 2). The income support provided by deficiency payments and other program benefits prevented a substantial decline in wheat producers' net farm income in 1986/87 and again in 1987/88.

Government payments as a percentage of gross farm income increased from 24 percent in 1985/86 to 43 percent in 1986/87, declining slightly to 40 percent in 1987/88. However, the percentage is expected to drop to near 20 percent in 1988/89. This is due to lower deficiency payments, which are projected to fall over 60 percent between 1987/88 and 1988/89 because of smaller world stocks, stronger world demand, and the 1988

Table 2. Wheat Program Participation Increased in 1987/88

Item	Marketing year ¹				
	1984/85	1985/86	1986/87	1987/88	1988/89 ²
<i>Million acres</i>					
Acreage					
National base	94.0	94.0	92.2	91.8	91.7
Acreage reduction	9.1	11.9	15.8	20.2	19.2
Paid land diversion	5.6	6.9	3.9	—	—
Conservation reserve	—	—	0.6	4.2	6.9
Total planted	79.2	75.6	72.1	65.8	65.5
Harvested	66.9	64.7	60.7	56.0	53.2
<i>Bushels per acre</i>					
Yield	38.8	37.5	34.4	37.7	34.1
<i>Dollars per bushel</i>					
Prices					
Target price	4.38	4.38	4.38	4.38	4.23
Loan rate	3.30	3.30	2.40	2.28	2.21
Average farm price	3.39	3.08	2.42	2.57	3.72
Deficiency payment rate	1.00	1.08	1.98	1.81	0.69
<i>Million dollars</i>					
Income	10,860	9,720	8,900	9,029	8,768
Market value of production	9,129	7,374	5,044	5,415	6,739
Government payments	1,731	2,346	3,856	3,614	2,029
Deficiency	1,050	1,540	3,457	3,292	1,305
Diversion	507	648	227	—	—
Conservation reserve	—	—	0	210	391
Other ³	174	158	172	112	333

— = not applicable. ¹The crop and marketing year for wheat runs from June 1 to May 31. ²Estimated. ³Includes Farmer-owned reserve storage payments and disaster payments.

drought, all of which pushed world wheat prices up.

Program Impacts on Flour Millers

By lowering average farm prices in 1986 and 1987, the Food Security Act reduced the price millers pay for wheat. Over the short run, lower prices likely enhanced the profitability of milling operations. However, because flour milling is an extremely competitive business, profits were probably short lived. Bakers often change their flour suppliers

from year to year. Often the lowest-price, highest-volume operation gets the business.

The 1985 Act's expansion of flour exports also affected millers, even though such shipments typically account for less than 10 percent of the total U.S. flour supply. Flour exports help millers maintain a level of profitability that would otherwise be difficult.

While millers have benefited from the Act, the greatest asset to these processors in the 1980's has been the growing con-

sumer demand for flour-based products. Per capita consumption of flour in the United States was 128 pounds in 1988, the highest mark since the early 1950's and 11 pounds over the 1980 level. The growing health-consciousness of consumers, an increase in consumption of flour-based frozen meals like lasagna, the jump in sales from in-store bakeries and restaurants, and the greater variety of flour-based products all helped raise consumer demand.

Effects on Consumers

The lower wheat prices enjoyed by millers in 1986 and 1987 had little effect on retail prices for wheat-based foods. The amount of wheat needed to produce a loaf of bread usually costs less than 10 percent of the retail price. Processing, packaging, and distributing account for most of the cost of cereal and bakery products.

Increases in retail prices for wheat-based foods since passage of the 1985 Act appear to be demand driven. Overall, retail prices of baked goods have been relatively stable, even though the prices of popular items have risen substantially. For instance, the retail price of white bread rose 18 percent between 1980 and 1988, although it fell between 1986 and 1987. The prices of two other popular items—french and whole wheat bread—increased substantially between 1980 and 1988, 40 and 29 percent, respectively. ■



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Government Programs for Rice

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The economic environment for rice has been changing as U.S. producers, processors, and consumers adjust to the market-oriented policies of the Food Security Act of 1985. The rice provisions went into effect on April 15, 1986, and will continue to influence the industry through the marketing of the 1990 crop.

The Food Security Act amended the Agricultural Act of 1949 to require marketing loans for the 1985-90 rice crops. It also provides that nonrecourse loans, target prices, and deficiency payments be offered to producers who participate in the rice program. Loan rates and target prices are being lowered over time. An acreage reduction program can be implemented in years when rice supplies are excessive. (*Program terms are defined in the Glossary.*)

The 1985 farm legislation continues the price support program under which producers can pledge their rice as collateral and obtain nonrecourse loans from the Commodity Credit Corporation (CCC). Loans are available only to producers who participate in the program and who agree to comply with other program provisions. The loan rate was set at \$7.20 per hundredweight (cwt) for the 1986 rice crop, \$6.84 per cwt for 1987, and \$6.63 per cwt for 1988 (*table 1*). The rate has been set at \$6.50 in crop years 1989-90, the minimum level allowed under the 1985 Act.

The concept of a target price was introduced into Federal commodity programs in the 1970's to guarantee a specific level of return—per bushel, pound, or in the case of rice, hundredweight—to participating producers. Congress establishes a target price for individual com-

Table 1. Rice Program Payments Have Become an Important Part of Farm Income

Item	Marketing year ¹				
	1984/85	1985/86	1986/87	1987/88	1988/89 ²
<i>Million acres</i>					
Acreage					
National base	4.2	4.2	4.2	4.2	4.2
Acreage reduction	0.8	0.7	1.3	1.3	1.0
Paid land diversion	—	0.6	—	—	—
Total planted	2.8	2.5	2.4	2.4	2.9
Harvested	2.8	2.5	2.4	2.3	2.9
<i>Hundredweight per acre</i>					
Yield	49.5	54.1	56.5	55.6	55.1
<i>Dollars per hundredweight</i>					
Prices					
Target price	11.90	11.90	11.90	11.66	11.15
Loan rate	8.00	8.00	7.20	6.84	6.63
Average farm price	8.04	6.53	3.75	7.2	6.83
Deficiency payment rate	3.76	3.90	4.70	4.82	4.31
<i>Million dollars</i>					
Income	1,496	1,671	1,421	1,583	1,667
Market value of production	1,116	881	500	942	1,077
Government payments	380	790	921	641	590
Deficiency	380	375	495	545	540
Marketing loans	—	322	407	96	50
Marketing certificates	—	0	19	0	0
Diversion	—	93	—	—	—

— = not applicable. ¹The crop and marketing year for rice runs from August 1 to July 31. ²Estimated.

modities (wheat, corn, sorghum, barley, oats, upland cotton, extra-long-staple cotton, and rice). Eligible rice producers in the program receive deficiency payments from the CCC at a rate equal to the difference between the rice target price and either the loan rate or the 5-month-average market price (August through December). If the 5-month average is below the loan rate, producers receive the full difference between the target price and the loan rate. If the average is above the loan rate, they receive only the

amount by which the target price exceeds that average market price. Under this scheme, the payment rate falls to zero if the average market price reaches or exceeds the target price.

Target prices are an important determinant of the income of participating producers. In the 1987/88 marketing year, deficiency payments to program participants were based on a payment rate of \$4.82 per cwt and totaled \$545 million. These payments are estimated to total \$540 million in 1988/89. Market prices,

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however, are expected to be higher in 1989/90, so deficiency payments will decline.

Marketing loans—which began when the rice provisions of the 1985 Act went into effect on April 15, 1986—represent a new concept in commodity programs. When the world price of rice falls below the loan rate, the marketing loan provisions allow producers to repay their loans at a reduced rate. This allows farmers to receive the total loan value. It also helps exporters to purchase rice at or near its world-market value. Repayment rates for 1986- and 1987-crop marketing loans were set at the world price or 50 percent of the loan rate, whichever was higher. Repayment rates for 1988-crop marketing loans equaled the higher of the world price or 60 percent of the loan rate. For redemption purposes, the current world market price for rice is announced by USDA on a weekly basis.

The marketing loan has generally made U.S. rice more competitive in domestic and international markets. It has reduced the domestic market price, and thereby increased consumption and raised the volume of rice processed by U.S. millers. Marketing loans have been popular in all sectors of the rice industry. However, they have increased Government costs in years when world prices were below the loan rate. Thus, U.S. consumers have benefited from lower prices, but they have paid more as taxpayers as a result of higher program costs incurred by the CCC.

Producers in the rice program must comply with an acreage reduction program (ARP) if one is established by the Secretary of Agriculture for that crop year. The 1986 and 1987 ARPs were set at 35 percent. Because of increased



demand for rice and reduced CCC stocks, the ARP level for the 1988 and 1989 crops dropped to 25 percent. This means that a producer with 100 acres of eligible cropland in 1988 could plant just 25 acres of rice and would have to take 25 acres out of production to receive loans and deficiency payments. The idled land could only be planted in a cover crop—to protect the land from wind and water erosion—unless the Secretary designates otherwise.

Programs Affecting Rice Exports

While marketing loans have bolstered the competitiveness of U.S. rice worldwide, other USDA programs have also expanded the volume of our rice exports. The most important one for the industry was introduced following enactment of the Agricultural Trade Development and Assistance Act of 1954. This legislation, commonly known as Public Law (P.L.) 480, became a major vehicle for exporting farm products. Under this Act, surplus farm products may be shipped overseas for emergency relief, sold for foreign currency, or bartered for strategic materials. The 1985 Act continues the P.L. 480 program and its market development and humanitarian objectives.

The CCC operates a number of commercial export promotion programs in addition to P.L. 480. The most important one for rice is the Export Credit Guarantee Program (GSM-102). Under this program, the CCC guarantees repayment of private credit extended to importers in specified countries for the purchase of designated U.S. agricultural commodities, such as rice. Credit can be extended for up to 3 years.

P.L. 480 shipments and GSM credit exports have accounted for as much as

50 percent of rice exports in recent years. Although these arrangements have proven to be very successful in developing and sustaining our overseas markets in the past, efforts to cut Federal program costs may lead to reduced P.L. 480 assistance.

The 1985 Act also established the Export Enhancement Program (EEP) to help U.S. exporters compete with subsidized exporters. (*See Government Wheat Programs for a full description of EEP.*) The program has not been used extensively for U.S. rice because the marketing loan has already made it competitive in world markets, and most other countries do not subsidize rice exports.

Another export promotion program that has benefited rice is the Targeted Export Assistance (TEA) Program. This program helps U.S. exporters counter unfair trade practices by foreign competitors and importers by helping to promote various commodities overseas. The thrust of the program for rice has been to promote U.S. rice in countries that have the potential to develop into commercial markets.

Impact on U.S. Rice Producers

The U.S. rice program raises producer incomes. It also tends to lower their costs of production, increase the value of their land, and complicate the production-planning process. In addition, producers benefit from Government-assisted export programs that reduce surplus stocks and increase market prices.

The 1985 Act resulted in increased program participation by rice producers, and the lower market prices precipitated by marketing loans have virtually eliminated rice production by nonparticipating farmers. Since implementation of the 1985 Act, participation in the program

has ranged from 94 to 96 percent of the national rice acreage base. The income enhancement provided by deficiency payments has become a vital component of producers' annual incomes.

In addition to the marketing loan provisions, marketing certificates are issued when the world price goes below the minimum loan repayment rate. Consequently, the total return to participating producers will not decline even if the world price drops below the minimum repayment rate.

How Rice Millers Are Affected

The 1985 Act greatly expanded the volume of rice processed by U.S. millers. Total use expanded from 124.5 million cwt in 1985/86 to 161.9 million cwt in 1986/87, a 30-percent rise (*table 2*). Much of this increase reflected greater export demand. Shipments abroad totaled 84.2 million cwt in 1986/87, up 42 percent from the previous year. Com-

mercial exports increased about 20 million cwt, although about 50 percent of the volume exported in 1986/87 moved overseas under Government export programs. Shipments were lower in 1987/88 as a result of higher market prices, but total exports rebounded to 86 million cwt in 1988/89.

The expansion in domestic use and exports that occurred under the current rice program has permitted the milling industry to improve efficiency by expanding its output. However, the surge in 1986/87 did not involve the construction of new mills because the industry already had a significant amount of excess capacity due to a drop in rice use during the early 1980's. When the 1985 program began, many of the major rice milling firms returned to full operating capacity.

Lower prices for rough rice during the first year marketing loans were in effect greatly enhanced the profitability of milling operations. Millers used this opportu-

Table 2. Rice Exports Reached Nearly 85 Million Hundredweight in 1986/87

Item	Marketing year ¹				
	1984/85	1985/86	1986/87	1987/88	1988/89 ²
	Million hundredweight				
Supply	187	202	213	184	195
Beginning stocks	47	65	77	51	31
Production	139	135	133	130	160
Imports	2	2	3	3	4
Utilization	123	125	162	153	168
Domestic	53	62	71	74	76
Food	36	46	53	55	58
Seed and industrial	3	3	3	3	3
Brewers use	14	14	15	15	15
Exports	62	59	84	72	86
Residual	8	4	7	7	6
Ending stocks	65	77	51	31	27
Commercial	20	34	43	31	27
CCC inventory	44	44	9	0	0

¹The crop and marketing year for rice runs from August 1 to July 31. ²Estimated.

nity to put additional resources into product development and to advertise and promote existing, as well as new, products. Aggressive marketing by millers and rice industry organizations has promoted rice as a healthy, versatile food that can be used in many dishes. Lower prices for milled rice encouraged processors to develop and market new food products using rice, including a large variety of flavored rice blends. These products are easy to prepare, and their availability has encouraged rice consumption.

The growth in export demand reflects a number of factors that ultimately benefit millers by increasing volume. First, with marketing loans improving the competitiveness of U.S. rice in world markets, the industry can promote rice abroad on the basis of its quality. Second, the favorable credit terms offered by the CCC under the GSM-102 Credit Guarantee Program, in conjunction with promotional and market development efforts by the Rice Council, provide a means to expand our export markets. Promoting the quality image of U.S. rice will continue to be essential in developing and maintaining markets for our rice.

Program Impacts on Consumers

Lower market prices for rice have also spurred growth in domestic consumption. Per capita consumption, excluding use in beer, has climbed from 9.3 pounds in 1985 to 14.3 in 1988. Large users—like restaurants,

foodservice institutions, and firms marketing frozen food entrees, cereals, soups, and snack foods such as rice cakes—have benefited not only from lower prices but also from an increase in consumer preference for rice.

However, individual consumers have not seen a large enough price decline to encourage them to substitute rice for other products. During the year following adoption of marketing loans, the U.S. average retail price of white, long-grain, uncooked rice declined from 45 to 39 cents per pound, or about 13 percent. Statistical analysis indicates that a 10-percent drop in retail rice prices yields less than a 1-percent rise in consumer use. Retail prices have since rebounded to 48 cents per pound.

Yet other nonprice factors have helped make rice an increasingly popular menu item. American consumers appear to be changing their preferences from animal-based products to more grain-based foods. Many health groups have encouraged Americans to increase their consumption of the complex carbohydrates found in grain products like rice. These factors, combined with new, easy-to-prepare products, have expanded consumers' options and encouraged more frequent use of rice products.

Increases in the Asian and Hispanic segments of the U.S. population have also contributed to greater rice consumption, as has the growing popularity of rice among consumers of traditional American cuisine. Since the 1984/85

marketing year, per capita rice consumption has jumped more than 50 percent. The amount of rice used in making beer continues to grow steadily, adding another 4.6 pounds to per capita consumption in 1988. ■

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Federal Corn and Sorghum Programs

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The United States is the world's largest corn producer and by far its largest consumer. In 1988, per capita domestic use of corn was more than 21 bushels, or about 1,198 pounds, of which nearly 80 percent went into livestock feed. We are also the world's leading corn exporter, maintaining a market share of 60 percent or more for most of this decade. Exports accounted for over one-third of U.S. corn production in 1988 (*table 1*).

As consumers, we mostly use corn indirectly, primarily by consuming meat and using corn by-products, such as cornstarch, corn oil, and gasohol. Consumption of sweet corn, which is determined separately and not covered by Federal commodity programs, was 10.5 pounds per capita in 1987.

Grain sorghum, or milo, is second in value to corn among feed grains. However, its value of production equals only about 10 percent of that for corn. Very little sorghum is used for direct human consumption. Its most important use is in livestock feed, which has accounted for about 65 percent of total use in recent years (*table 2*). Sorghum provides about 90 percent as much energy as corn when fed to cattle and 100 percent when fed to poultry.

About 33 percent of U.S. sorghum production is exported. Our largest market is Japan, followed by Mexico and Argentina. Mexico uses U.S. sorghum to feed cattle because much of its domestically produced corn is consumed by humans. Domestic U.S. use—food,

Table 1. Corn Exports Accounted for 42 Percent of Production in 1988/89

Corn	Marketing year ¹				
	1984/85	1985/86	1986/87	1987/88	1988/89 ²
	<i>Million bushels</i>				
Supply	8,684	10,536	12,291	11,958	9,185
Beginning stocks	1,006	1,648	4,040	4,882	4,259
Production	7,674	8,877	8,250	7,072	4,921
Imports	4	11	2	4	5
Utilization	7,036	6,496	7,410	7,699	7,255
Domestic	5,170	5,255	5,906	5,967	5,195
Food, seed, and industrial	1,091	1,160	1,192	1,229	1,245
Feed and residual	4,079	4,095	4,714	4,738	3,950
Exports	1,865	1,241	1,504	1,732	2,060
Ending stocks	1,648	4,040	4,882	4,259	1,930
Commercial	1,039	2,930	2,118	2,297	842
Farmer-owned reserve	384	564	1,321	1,127	725
CCC inventory	225	546	1,443	835	363

¹The crop and marketing year for corn is September 1 to August 31. ²Estimated.

Table 2. Most Grain Sorghum Is Fed to Livestock

Grain sorghum	Marketing year ¹				
	1984/85	1985/86	1986/87	1987/88	1988/89 ²
	<i>Million bushels</i>				
Supply	1,154	1,421	1,489	1,483	1,240
Beginning stocks	287	300	551	743	663
Production	866	1,120	938	739	578
Utilization	854	870	746	820	802
Domestic	557	692	548	589	492
Food, seed, and industrial	17	28	13	25	22
Feed and residual	539	664	535	564	470
Exports	297	178	198	231	310
Ending stocks	300	551	743	663	438
Commercial	59	292	241	129	69
Farmer-owned reserve	129	52	93	70	28
CCC inventory	112	207	409	464	341

¹The crop and marketing year for sorghum is September 1 to August 31. ²Estimated.

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seed, and industrial processing—accounts for only about 2 percent of our sorghum, with distilled spirits accounting for most of the food use.

U.S. corn and sorghum producers benefit from Federal commodity programs designed to ensure adequate supplies of these grains at reasonable prices. The programs are also formulated to stabilize and support farm prices and protect producer incomes. To achieve these objectives, it is sometimes necessary to limit the number of acres planted to avoid large surpluses. A more recent goal has been to maintain domestic prices around world levels and thus encourage exports. However, this combination of objectives has made the programs quite costly during the 1980's.

Currently, the programs for sorghum, barley, and oats are tied to the one for corn. However, sorghum farmers have not always been as fully supported as producers of other program crops. In the early years of modern agricultural policy, the corn program indirectly affected not only sorghum production but also its importance as a feed grain. Since 1961, sorghum program provisions have been virtually the same as those for corn.

A Little History

Government support for corn producers in the United States dates back to the Agricultural Adjustment Act of 1933, which provided payments to farmers who agreed to reduce their production of surplus commodities. Nonrecourse loans based on parity prices were mandated by the Agricultural Adjustment Act of 1938 for producers of cotton, wheat, corn, tobacco, and rice. (*Program terms are explained in the Glossary.*) Corn pro-

grams during the early 1940's encouraged production through price controls to meet increased wartime needs. Support at 90 percent of parity was restored in 1948 and continued until 1954 because of market disruptions caused by the Korean War.

The loan rate for corn declined from a high of \$1.62 a bushel in 1954 to \$1.06 a bushel in 1960. The rest of the program remained relatively unchanged between 1948 and 1961, except for the imposition of acreage allotments in "commercial corn areas" in 1950 and 1954-58. Allotments are defined as cropland historically allocated to a specific crop, such as corn, within a region, like the Corn Belt, that is dominated by production of that

crop. Planting within allotments was not mandatory, but price supports were unavailable to producers farming non-allotment land. Corn allotments were dropped after farmers voted them down in a 1958 referendum.

While corn was one of the basic commodities eligible for price support under the 1933 Act, sorghum was added as a basic commodity in a 1934 amendment. Under the 1938 Act, sorghum became eligible for price support at the discretion of the Secretary of Agriculture, but this authority was not exercised. During the 1930's and 1940's, sorghum producers indirectly benefited from other commodity programs because corn, wheat, and sorghum could easily substitute for one



another in livestock rations. As a result, programs designed to support corn and wheat prices also indirectly raised the price of sorghum. Between 1955 and 1960, sorghum production and Government stocks rose rapidly, partly due to the acreage restrictions imposed on corn and wheat. Farmers switched to sorghum and other nonprogram crops to make full use of their land.

The Agricultural Act of 1958 required price support for sorghum beginning in 1959—at a level “determined to be fair and reasonable in relation to the support made available for corn.” The relationship is based on their relative feeding values. The loan rate for sorghum has been set at 95 percent of the corn loan rate since the early 1960’s.

The broad framework of the current corn and sorghum programs emerged in the early 1960’s. The Agricultural Act of 1961 established programs for corn and sorghum that offered nonrecourse loans and acreage diversion payments to producers who agreed to participate. In 1970, public concern over the amount of money paid to the largest farmers led to a payment limit of \$50,000 per person.

The Agriculture and Consumer Protection Act of 1973 more closely linked program payments to the operation of the market by substituting target prices and deficiency payments for support prices based on parity. Deficiency payments were made as the differential between an annually established target price and the higher of the loan rate or a 5-month average market price. Target prices were calculated using an aggregate index of input prices.

To adjust the program for increases in productivity and rising production costs, the Food and Agriculture Act of 1977

changed the basis for calculating target prices from the aggregate index to changes in corn production costs per bushel. The target price for sorghum was still established at a level that was “fair and reasonable” in relation to the corn target price, but “fair and reasonable” was reinterpreted to mean that target prices for sorghum, as well as for barley and oats, would be based on the same cost of production components used for corn.

Under the new interpretation, the 1978 target price for sorghum was set at \$2.28, compared with \$2.10 for corn. (The old feeding value relationship would have resulted in a sorghum target price of \$2.00 per bushel.) Although target prices were more production oriented, loan rates for feed grains were still set by law to roughly maintain the traditional feeding value relationships, though subject to change if market conditions demanded it.

The formula for determining a farm’s crop acreage base, used in calculating deficiency payments, was updated in 1977. Current plantings replaced acreage allotments. However, market prices exceeded target prices in 1979, and no acreage diversion was required for program participants in 1980 and 1981.

The 1977 Act also created the Farmer-Owned Reserve (FOR) to permit farmers who participate in the feed grain programs to place their grain in reserve for 3 to 5 years and hold it until the contract expires or market prices exceed a specified release price. Farmers receive storage payments and have interest waived on the loans after the first year of the contract. The reserve allows farmers to reap the benefits of rising prices during times of short supplies and reduces Government-owned grain stocks.

The Agriculture and Food Act of 1981 only slightly altered the framework for the programs. Crop-specific acreage bases were established in order to operate acreage reduction programs (ARPs) and make deficiency payments. In response to dissatisfaction with the cost-of-production formula for setting target prices, the 1981 Act mandated minimum loan rates and target prices for the 1982-85 corn crops. Sorghum target prices and loan rates were again determined using relative feeding values. Target and loan levels were set to rise at an annual rate of 6 percent due to the belief that U.S. export markets would continue to expand and that the inflation of the early 1980’s would continue. Instead, demand weakened and crop prices dropped in 1982.

Current Programs

The Food Security Act of 1985, the most recent piece of major farm legislation, continues many provisions that were already in place, although the Secretary has more discretion in implementing various programs. Farm sector concerns about high commodity stocks, low net farm income, and declining export market shares were balanced against the high cost of the programs.

Nonrecourse loans are still available to those who participate in corn and sorghum programs. For crop years 1987-90, the basic loan rate for corn is set between 75 and 85 percent of the average farm price for the preceding 5 years, dropping the high and low. (The crop and marketing year for corn and sorghum runs from September 1 to August 31.) This basic level, however, cannot drop more than 5 percent from the previous year. The Secretary is permitted to reduce the loan rate an additional 20 per-

cent to encourage exports. The loan rate for corn was set at \$1.92 per bushel in 1986, dropping to \$1.65 by the 1989 crop. Loan rates for sorghum continue to be set using its feed value relative to corn. The rate for sorghum was \$1.82 per bushel in 1986 and is \$1.57 in 1989 (95 percent of the corn loan rate).

Target prices are mandated to decline over time. Participating producers continue to receive deficiency payments if average market prices are below the target price. The payment rate is the difference between the target price and the national average farm price for the first 5 months of the marketing year or the basic loan rate, whichever is higher. A farmer's deficiency payment is calculated by multiplying the payment rate by the farm's program yield and permitted acreage for the crop. Payments can be made in cash or generic certificates. (*See Government Wheat Programs for an explanation of generic certificates.*)

To receive deficiency payments, producers must comply with any acreage reduction programs in effect. The 1985 Act specified that if carryover corn stocks are greater than 2 billion bushels, USDA must announce an ARP of at least 12.5 percent, but not more than 20 percent. If stocks are 2 billion bushels or less, USDA can set the ARP between 0 and 12.5 percent. In the last several years, ARPs for corn and sorghum have ranged between 10 and 20 percent.

To further limit production in the face of excess stocks, the Secretary can authorize producers to idle additional land. Under this paid land diversion (PLD) pro-

gram, farmers who voluntarily take more base acreage out of production receive payment in return. PLDs offered in 1987 and 1988 equaled 15 percent and 10 percent, respectively. Another program that takes corn and sorghum acreage out of production is the Conservation Reserve (*see box*).

The Conservation Reserve

The 1985 Food Security Act initiated the Conservation Reserve to help owners and operators save highly erodible cropland by conserving and improving the soil and water resources of their farms or ranches. To accomplish this goal, USDA contracts with farmers to idle highly erodible cropland for 10 years. Farmland that had been in production for 2 of the 5 years between 1981 and 1985 is eligible to enter the reserve. Congress set a goal of retiring 40 to 45 million acres by 1990.

Producers can submit bids to USDA for the annual compensation they would accept, and those bids are accepted or rejected on the basis of the land's erodibility and inherent productivity. If a bid is accepted, a contract is signed and the land must be planted in grass, trees, or other vegetative cover and may not be hayed or grazed except in emergencies as determined by the Secretary. Annual rental payments, which may be cash or generic certificates, are made on the basis of accepted bids but cannot exceed \$50,000 per producer.

The 1985 Act also changed the Farmer-Owned Reserve. The FOR loan period was changed from 5 to 3 years, and its release price was set at 140 percent of the crop's announced loan rate or the target price, whichever is higher.

Program Impacts

The Food Security Act of 1985 was designed to provide crop and livestock producers with a farm income safety net, supply adequate food and fiber to consumers at reasonable prices, and lower U.S. commodity prices to near world levels to encourage exports. Federal feed grain programs tend to raise gross farm income, but also increase variable costs of production, push up land values, and complicate planting decisions.

Significantly more corn and grain sorghum farmers participated in the commodity programs under the 1985 Act than in previous years. Corn program enrollment jumped from 21 percent of the national acreage base in 1979 to 91 percent in 1987. Sorghum participation followed a similar pattern, rising from 56 percent of the national base to 86 percent during the same period. The income enhancement provided by deficiency payments, and to a lesser extent paid land diversions, has become a crucial portion of participating producers' annual incomes. In a year with low production because of bad weather, such as 1988, higher prices are expected to at least partially offset losses due to lower yields. Last year, the Disaster Assistance Act further compensated farmers for their poor yields.

The program benefits to producers in terms of dollars and proportion of farm income are quite substantial. Since 1983, program payments for corn and sorghum have ranged between \$2 billion and \$8 billion. Between 1983 and 1987, program payments averaged about 32 percent of the market value of both crops and almost 72 percent of the returns above cash expenses. However defined, commodity programs for these crops have essentially sustained producers' financial positions, despite declining exports and falling land values during the early to mid-1980's.

Because Federal commodity programs support farm-level prices, livestock producers have had to pay more for their feed grains. These costs have been passed on to consumers through higher prices for beef, pork, and poultry. A 6-percent increase in the farm price caused by the programs can force retail meat prices up by 1 to 2 percent, depending on prevailing farm-to-retail price spreads, feed costs as a percentage of total expenses, and farm-level demand. The flip side is that retail prices are more stable as a result of the commodity programs. With passage of the 1985 Act, loan rates fell to levels at or near world prices, causing feed costs to drop somewhat and creating an incentive for grain farmers who also raise livestock to participate in the feed grain programs.

Table 3. In Recent Years, Corn Program Payments Have Accounted for Over One-Third of Farm Income

Corn	Marketing year ¹				
	1984/85	1985/86	1986/87	1987/88	1988/89 ²
<i>Million acres</i>					
Acreage					
National base	80.8	84.2	82.4	83.3	83.4
Acreage reduction	3.9	5.4	11.9	14.7	14.4
Paid land diversion	—	—	1.8	7.0	3.2
Conservation reserve	—	—	0.2	2.3	2.8
Total planted	80.5	83.4	76.7	65.7	67.6
Harvested	71.9	75.2	69.2	59.2	58.2
<i>Bushels per acre</i>					
Yield	106.7	118.0	119.3	119.4	84.6
<i>Dollars per bushel</i>					
Prices					
Target price	3.03	3.03	3.03	3.03	2.93
Loan rate	2.55	2.55	1.92	1.82	1.77
Average farm price	2.63	2.23	1.50	1.94	2.54
Deficiency payment rate	0.43	0.48	1.11	1.09	0.33
<i>Million dollars</i>					
Income	21,803	22,002	18,771	21,502	16,485
Market value of production	20,149	19,522	12,541	13,985	12,549
Government payments	1,654	2,480	6,230	7,517	3,936
Deficiency	1,654	2,480	6,080	5,865	3,209 ³
Diversion	—	—	133	1,456	560
Conservation reserve	—	—	17	196	167

— = not applicable. ¹The crop and marketing year for corn is September 1 to August 31. ²Estimated. ³Includes \$909 million in disaster payments.

Other groups are also affected by U.S. commodity programs. If loan rates exceed world prices, importers turn to other sources for grain, as was often the case in the early 1980's. Foreign producers, however, are helped because the programs place a floor under not only U.S. domestic grain prices but also world prices when stocks are large. U.S. taxpayers bear the bulk of the cost of corn and sorghum programs because they involve direct payments from the U.S. Treasury.

While one objective of the feed grain programs, namely income support, has been realized, the cost of meeting program provisions has increased in recent years. The deficiency payment rates for corn and sorghum reached \$1.09 and \$1.14 per bushel, respectively, in 1987, with payments making up over one-third of producers' incomes derived from agriculture since 1985 (*tables 3 and 4*).

Although program costs have historically been passed on to consumers through higher retail prices for meat, poultry, and dairy products, Americans have more stable food prices and supplies as a result. The Food Security Act lowered grain prices and thus stabilized consumer food expenditures at even lower levels. ■

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Table 4. Government Sorghum Payments Have Become an Important Source of Income for Participating Farmers

Grain sorghum	Marketing year ¹				
	1984/85	1985/86	1986/87	1987/88	1988/89 ²
<i>Million acres</i>					
Acreage					
National base	18.4	19.3	19.0	17.4	17.0
Acreage reduction	0.6	0.9	2.1	2.4	2.2
Paid land diversion	—	—	0.4	1.2	0.6
Conservation reserve	—	—	0.2	1.2	1.9
Total planted	17.3	18.3	15.3	11.8	10.4
Harvested	15.4	16.8	13.9	10.6	9.1
<i>Bushels per acre</i>					
Yield	56.4	66.8	67.7	69.7	63.8
<i>Dollars per bushel</i>					
Prices					
Target price	2.88	2.88	2.88	2.88	2.78
Loan rate	2.42	2.42	1.82	1.74	1.68
Average farm price	2.32	1.93	1.37	1.70	2.30
Deficiency payment rate	0.46	0.46	1.06	1.14	0.48
<i>Million dollars</i>					
Income	2,208	2,470	1,923	2,017	1,783
Market value of production	2,050	2,243	1,322	1,193	1,328
Government payments	158	227	601	824	455
Deficiency	158	227	548	574	275
Diversion	—	—	16	152	58
Conservation reserve	—	—	37	98	122

— = not applicable. ¹The crop and marketing year for sorghum is September 1 to August 31. ²Estimated.

U.S. Programs for Barley

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In the United States, almost 60 percent of the domestic barley crop is fed to livestock, usually to dairy and beef cattle in the Corn Belt, Lake States, and Great Plains. Another one-third provides malt for the food and brewing industries. Beer makers in California, Texas, Wisconsin, and many other States use large amounts of malt.

Exports, mainly for feed, made up 16 percent of total use in 1988, recovering from 4 percent in 1985 (*table 1*). Imports have been small, accounting for less than 3 percent of domestic use in most years.

The 1987 barley crop was the fourth largest ever, 530 million bushels harvested from 10 million acres. At \$935 million, barley ranked ninth among U.S. crops in production value. Production in 1988 was down 45 percent from 1987 because of high temperatures and drought in the major barley-growing States of the Northern Plains. Lower yields pushed feed barley prices up 20 percent in 1988, while malting barley prices about doubled.

U.S. barley production is affected by more than climatic conditions and demand factors. Government policy, through Federal commodity programs aimed at stabilizing and protecting farm income, influences production. The most recent legislation governing such farm programs is the Food Security Act of 1985, which established programs for corn, sorghum, barley, and oats through crop year 1990. Because these feed

grains may be substitutes for each other, their programs are very similar.

The barley program supports crop prices and grain farmers' incomes through price supports and direct income payments. Yet like the other feed grain programs, it increases feed costs for the livestock sector. American consumers pay for the program through their income taxes and at the supermarket when they buy livestock products and malt-barley foods and beverages.

Barley Program History

Government programs have provided the U.S. farm sector with price supports since passage of the Agricultural Adjustment Act of 1933, which was enacted in

response to the Great Depression. Adequate food supplies, price stability, soil conservation, and national security have been among the goals of farm legislation ever since.

The 1933 Act established price support programs administered by the Commodity Credit Corporation (CCC). Support levels were designated for the "basic commodities," then defined as wheat, cotton, corn, hogs, rice, tobacco, and milk. In April 1934, the Jones-Connally Act included barley in the list of basic commodities. However, these programs were relatively ineffective in supporting prices because acreage diverted from one crop could be planted to others, and price support was offered without production controls. The Agricultural

Table 1. Most U.S. Barley Is Fed to Livestock

Item	Marketing year ¹				
	1984/85	1985/86	1986/87	1987/88	1988/89 ²
<i>Million bushels</i>					
Supply	799	849	944	879	627
Beginning stocks	189	247	325	336	321
Production	599	591	611	530	294
Imports	10	9	9	14	12
Utilization	551	523	608	558	430
Domestic	475	501	472	432	345
Food and alcohol	149	147	156	158	166
Seed	21	21	18	16	15
Feed	304	333	298	258	166
Exports	77	22	137	126	85
Ending stocks	247	325	336	321	197
Commercial	135	223	138	162	125
Farmer-owned reserve	97	45	122	109	42
CCC inventory	15	57	76	50	30

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¹The crop and marketing year for barley runs from June 1 to May 31. ²Estimated.

Adjustment Act of 1938 required farmers to hold acreage out of production as a condition for receiving nonrecourse loans. (*Program terms are explained in the Glossary.*)

The Agricultural Act of 1958 made barley price supports mandatory by requiring a loan level tied to the corn loan rate. Until that time, nonrecourse loans for barley were offered at the discretion of the Secretary of Agriculture. During the 1960's, farm prices for barley were supported at no less than 65 percent of parity.

By the end of the 1960's, farmers were concerned about program restrictions in relation to their desired production patterns. Acreage that was idled from wheat production shifted to barley and created excessive forfeitures of CCC barley loans. There was also general concern about the cost of the programs. The Agricultural Act of 1970 addressed these issues by introducing a set-aside concept. To qualify for price support, farmers were required to divert a specific percentage of cropland from production to conservation uses, but were permitted to grow whatever they desired on the remaining acreage.

In the early 1970's, the dollar's devaluation and crop shortages around the world led to high demand for U.S. farm products. The Agriculture and Consumer Protection Act of 1973 added income support to the feed grain programs because prices at the time exceeded loan rates. To increase grain supplies and protect farmers' incomes from lower prices due to bumper crops or weaker export demand, the 1973 Act introduced target prices based on production costs. Direct payments to farmers, called deficiency payments, were made based on the difference between a crop's target price and the market price or the



loan rate, whichever was higher. Deficiency payments were intended to guarantee that farmers' costs of production were covered, while loan forfeitures would be minimized by a loan rate near market-clearing levels.

Under the Food and Agriculture Act of 1977, a current planting concept replaced the longstanding acreage allotment provisions. Deficiency payments were calculated using the production

from current plantings instead of allotments, which were based on past years' crops. Congress also established the Farmer-Owned Reserve (FOR) to reduce price instability and control the cost of holding CCC inventories. The FOR keeps barley stocks under farmers' control and allows them to sell the grain when prices rise.

The Agriculture and Food Act of 1981 responded to the problems of using

production costs to set and adjust target prices. Changing yield trends also caused instability in the target price formula, and set-asides did not effectively reduce specific crop acreages. To address these problems, the 1981 Act mandated specific loan and target price minimums for the 1982 through 1985 corn crops. Loan rates for sorghum, barley, and oats were set relative to those of corn. Target prices for the 1982-85 barley crops were set at \$2.60 per bushel.

The 1981 Act introduced acreage reduction programs (ARPs), which required a portion of the crop-specific acreage base be taken out of production if supplies were projected to be excessive. Farmers participating in the 1984 barley program, for example, had to put 10 percent of their barley acreage base in conserving uses—a cover crop to protect the land from wind and water erosion—to qualify for deficiency payments.

The 1985 Act

The Food Security Act of 1985 was signed into law at a time when most U.S. farm commodities had lost their competitiveness in world markets, grain stocks were high, many farms faced financial distress, and Federal budget deficits were large. The Act, which covers crop years 1986-90, was aimed at expanding exports, protecting farm income, and eventually reducing outlays for farm programs and Government intervention in agriculture. Feed grain programs continue to offer participants price support through nonrecourse loans and income support through target prices and deficiency payments.

As with the other feed grains, loan levels for barley have declined—from \$2.08 per bushel in 1985 to \$1.34 in 1989. High loan rates set by the 1981 Act were partially credited for the loss of export markets. Barley loan rates are based on

the grain's feed value relative to corn. That means the rates for barley are 81 percent of those for corn.

The Food Security Act set the target prices for barley at \$2.60 per bushel for crop years 1986 and 1987, and permitted them to decline annually by 3 percent through 1989. Changes made by the Budget Reconciliation Act of 1987 lowered target prices to \$2.51 and \$2.43, respectively, for the 1988 and 1989 crops. Farmers participating in the barley program receive deficiency payments whenever the national average market price for the first 5 months of the crop year is below the target price. (The crop and marketing year for barley runs from June 1 to May 31.)

The acreage reduction programs for crop years 1986-90 are the same for corn, sorghum, and barley. If carryover corn stocks are projected to be greater than 2 billion bushels, USDA must announce an ARP of at least 12.5 percent, but not more than 20 percent. If projected stocks are 2 billion bushels or less, USDA can set the ARP between 0 and 12.5 percent. The ARP for 1990 is set at 10 percent.

If supplies are still expected to be excessive, the Secretary may offer a paid land diversion program to farmers who voluntarily take more of their acreage base out of production. For example, in 1988, farmers idling an additional 10 percent of their barley acreage received a payment of \$1.40 per bushel for what would have been produced on the diverted land. No paid diversion is offered for 1990, as current supplies are not excessive.

The Food Security Act continues the Farmer-Owned Reserve and created a long-term Conservation Reserve, in which producers contract to retire highly erodible cropland into conserving uses, such as grassland or trees, for a mini-

mum of 10 years. (*See Federal Corn and Sorghum Programs for a detailed description of current program provisions as they apply to feed grains.*)

Another new provision of the 1985 Act was the Export Enhancement Program (EEP), a program aimed at fostering development and expansion of export markets for U.S. agricultural products. The U.S. share of world barley exports had fallen to record lows by the early 1980's. Much more of the trade had gone to European Community barley producers, who were assisted by high domestic support levels and export subsidies. (*For a full explanation of EEP, see Government Wheat Programs.*)

EEP sales of barley through the 1988/89 marketing year have totaled 6.5 million metric tons. These shipments accounted for almost all barley exports in 1986/87 and 1987/88 and raised the U.S. share of the world barley trade. In fact, barley is the dominant feed grain sold under EEP. Saudi Arabia, Algeria, Israel, Poland, and Tunisia have been major purchasers of feed barley under the program. However, sales are forecast to decline.

Impacts of the Program

Producers. Commodity programs are designed to maintain farm income and compensate farmers for the low grain prices they sometimes receive from the market. However, by supporting farm incomes the Government creates incentives for surplus production.

With ARPs, farmers typically idle their least productive cropland to meet program requirements. Some farmers apply more inputs—such as fertilizer—to maximize production on their permitted acreage. As a result, crop yields increase, partly offsetting the decline in acreage. Also, because the feed grain programs effectively set a price floor in

the world market, nonparticipating U.S. farmers and some foreign producers receive the same price support as program participants, and they are free to expand their plantings. Consequently, the goal of limiting crop acreage and production is less effective and becomes progressively more expensive for the Government. Commodity programs also raise the market value of production assets, with land being the major component, which increases the total cost of production.

Barley producers participate in the Government program when they expect program payments, less the foregone revenue from idled acreage, to exceed the receipts they would obtain solely from selling the grain on the market. The decision to participate depends on their land's productivity, fixed and variable production costs, the target price, the percentage of acreage idled, expected market returns, and each farmer's attitude toward risk and accepting direct Government payments.

Higher deficiency and land diversion payments and lower market prices over the last several years have increased participation in the barley program. The amount of participating base acreage has risen from 44 percent in the 1984/85 marketing year to 84 percent in 1987/88. Idled acreage climbed from 0.5 million to 3.0 million during the same period. With greater enrollment, Government payments for barley rose from \$75 million in 1984/85 to \$454 million in 1987/88 (table 2). Government payments accounted for as much as one-fourth of barley producers' farm income. Since deficiency and diversion payments are made on a per-bushel basis, most bar-

Table 2. Higher Deficiency Payments Increased Participation in the Barley Program

Item	Marketing year ¹				
	1984/85	1985/86	1986/87	1987/88	1988/89 ²
<i>Million acres</i>					
Acreage					
National base	11.6	13.3	12.4	12.5	12.5
Acreage reduction	0.5	0.7	1.6	2.2	1.9
Paid land diversion	—	—	0.2	0.5	0.3
Conservation reserve	—	—	0.1	1.1	1.9
Total planted	12.0	13.2	13.1	11.0	9.9
Harvested	11.2	11.6	12.0	10.1	7.7
<i>Bushels per acre</i>					
Yield	53.4	51.0	50.8	52.7	38.2
<i>Dollars per bushel</i>					
Prices					
Target price	2.60	2.60	2.60	2.60	2.51
Loan rate	2.08	2.08	1.56	1.49	1.44
Average farm price	2.29	1.98	1.61	1.81	2.79
Deficiency payment rate	0.26	0.52	0.99	0.79	0
<i>Million dollars</i>					
Income	1,435	1,322	1,393	1,412	1,154
Market value of production	1,360	1,133	994	958	819
Government payments	75	189	399	454	335
Deficiency	50	159	342	302	24
Diversion	—	—	6	33	22
Conservation reserve	—	—	8	97	139
Other ³	25	30	43	22	150

— = not applicable. ¹The crop and marketing year for barley runs from June 1 to May 31. ²Estimated. ³Includes Farmer-owned reserve storage payments and disaster payments.

ley program benefits go to the farms with the most production.

Livestock feeders. A decline in loan rates for barley and other feed grains has meant lower feed prices for livestock producers during the mid-1980's. The effects of those lower prices, however,

have varied, depending on the type of livestock.

In the short run, all livestock feeders benefited because net returns increased as feed grain prices dropped. Poultry producers were able to expand their production relatively quickly. This growth

in supply lowered poultry prices. However, beef, dairy, and hog producers could not increase herd size as fast because their animals have longer biological cycles. Consequently, meat and dairy prices dropped subsequent to those for poultry. Ultimately, expansion of overall livestock production will reduce all producer returns, fully offsetting any benefits realized because of lower feed grain prices.

Processors. The barley program has generally contributed to an adequate supply of the grain for processors, such as makers of malt and commercial animal feeds. Stocks-to-use ratios (a relative measure of supply conditions) have ranged from 30 to 50 percent for many years. If supplies become tight (a low ratio), as in crop years 1952, 1974, and 1981, prices rise and processors pay more. However, if supplies are high, such as in 1968, 1969, and 1985 through 1987, prices fall and processors benefit from the greater volume.

The 1985 Act cut barley loan rates and permitted producers to redeem their nonrecourse loans with generic certificates. This benefited processors in two ways. First, farmers used the certificates to move barley from Government stocks into commercial channels, increasing the volume of grain on the market and allowing grain elevators, shippers, and grain exporting companies to profit from higher volumes. Second, lower loan rates and larger supplies reduced the price processors paid for barley. Retailers also benefited from lower commodity prices as they were able to sell more grain-based foods.

Input suppliers. Policies to reduce barley acreage affect a wide spectrum of farm input suppliers. Fewer acres

planted means less seed, fertilizer, chemicals, and fuel are needed. To limit the economic impact of acreage reduction on farm communities, the 1985 Act specifies that no more than 50 percent of the base acreage in any county may be taken out of production and no more than 25 percent placed in the Conservation Reserve.

Consumers. Consumers are better off under the lower barley price supports of the 1985 Act because retailers are able to keep price increases down for foods like meats, dairy products, and malt beverages. The savings, however, depend on the degree to which barley accounts for the total cost of a food product. For example, barley malt is a primary ingredient in beer, but when all other manufacturing and marketing costs are considered, the cost of barley has only a minor impact on the retail price of beer.

After the reduction in feed grain loan rates, retail meat prices rose. This happened because farmers were enlarging their beef and hog breeding herds by holding back animals they would normally have marketed. Retail poultry and egg prices dropped more quickly because of the shorter time it takes to raise chicken and turkey. Dairy producers also benefited from lower feed costs and higher returns, but because of the Government price support program for milk, retail prices for dairy products are unlikely to be affected. Nevertheless, consumers are expected to pay higher prices for beef and pork in 1989 because the 1988 drought reversed the price trend for feed grains.

Taxpayers. Deficiency and land diversion payments to barley producers grew from \$50 million in the 1984/85 marketing year to a high of \$348 million in 1986/87, or \$1.42 per American. Tax-

payer costs in the future will depend on the size of subsequent barley crops and market demand, both of which may be affected by weather conditions and the effectiveness of policies to control acreage and stocks. Costs to taxpayers of these income supports are expected to drop from their 1986/87 high as the gap between the target price and the loan rate begins to decline. In 1988/89, drought-reduced supplies raised market prices above the target price, which eliminated deficiency payments for the 1988 crop. However, some of the savings were returned to farmers in the form of Federal disaster assistance.

Net expenditures for the CCC nonrecourse loan program for barley were \$394.3 million in fiscal 1987. This expense includes payments to federally licensed commercial warehouses of \$36.7 million for storage and handling costs and \$42.6 million to farmers in FOR storage payments.

Taxpayers also bear the cost of EEP and the Conservation Reserve. EEP sales totaled 6.5 million metric tons from April 1986 through May 1989. The average bonus over the same period was \$36.08 per metric ton, or 79 cents per bushel of barley sold under EEP. Rental payments for the Conservation Reserve are distributed over a 10-year period. Through July 1988, farmers had signed up 1.9 million acres of barley acreage base in the reserve. ■

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Farm Program Effects on the U.S. Oats Industry

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The United States is the world's second largest producer of oats, behind the Soviet Union. Although today the United States claims roughly 13 percent of the world crop harvested as grain, this share has steadily declined from 35 percent in the early 1950's. U.S. production for grain declined from 1.5 billion bushels in crop year 1955 to 219 million in 1988. Oats harvested as grain was the third most valuable crop in 1950, but dropped to fifteenth by 1988. (The crop and marketing year for oats runs from June 1 to May 31.)

Oats have historically been a multipurpose crop planted for numerous reasons other than as a cash grain crop. Acreage harvested as grain averaged only 42 percent of total acres planted during 1986-88. Producers plant oats for such onfarm uses as straw, pasture, forage, conservation, and as a companion crop to help establish a legume crop, such as alfalfa.

In marketing year 1988/89, about 67 percent of all oats consumed as grain in the United States, both on and off farm, was livestock feed (*table 1*). Food and seed uses claimed most of the remainder, about 22 percent and 11 percent, respectively. Exports were insignificant.

The importance of imports has been growing. Between 1950/51 and 1986/87, they were a small percentage of supply, ranging from 1 to 5 percent. However, the 46 million bushels imported in 1987 accounted for 8 percent of supply. The estimated 68 million bushels imported in 1988 equaled 17 percent of supply.

One reason for the decline in production is that oats have become less profitable compared with other crops, such as corn, soybeans, wheat, and recently, barley. Government farm programs have allegedly provided some of the disincentive for producing oats.

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Table 1. Most Oats Are Used for Feed

Item	Marketing year ¹				
	1984/85	1985/86	1986/87	1987/88	1988/89 ²
<i>Million bushels</i>					
Supply	689	728	603	553	399
Beginning stocks	181	180	184	133	112
Production	474	521	386	374	219
Imports	34	28	33	46	68
Utilization	509	545	471	441	301
Domestic	508	542	468	440	300
Food and industrial	41	44	45	45	70
Seed	35	38	31	34	30
Feed	432	460	392	361	200
Exports	1	2	3	1	1
Ending stocks	180	184	133	112	98
Commercial	176	181	125	106	96
Farmer-owned reserve	3	1	4	4	0
CCC inventory	1	2	4	2	2

¹The crop and marketing year for oats runs from June 1 to May 31. ²Estimated.

Programs for oats have ranged from indirect price supports determined by those for corn, a supported commodity since the 1930's, to the current direct price and income supports. Government outlays for oats, however, remain minor compared with the other feed grains, wheat, and soybeans. Participation in the oats program has been relatively small, because much of what is grown is used on the farm and because of the lack of economic incentives to produce oats commercially. Of the oats harvested as grain, onfarm use accounts for over half, with most of it going for livestock feed.

History of the Oats Program

U.S. agriculture has received price and income support from Government farm programs since passage of the Agricultural Adjustment Act of 1933. While oats were not designated as a basic commodity, and thus were ineligible for direct support, prices were influenced

indirectly through price supports for corn. Oats were first directly supported in 1945 by nonrecourse loans. During 1947-53, nonrecourse loans were offered at the discretion of the Secretary of Agriculture. Such support for oats became mandatory with the Agricultural Act of 1956. (*Program terms are explained in the Glossary.*)

Emergency feed grain legislation enacted in 1961 provided higher support levels to farmers who voluntarily reduced corn and sorghum acreage by 20 percent or more. While voluntary diversion programs of the 1960's focused on wheat, cotton, corn, sorghum, and sometimes barley, oats were not included. Direct payments were also made to corn and sorghum farmers but not to oats producers.

The Food and Agriculture Act of 1965 permitted farmers with a history of growing oats or rye to qualify for an oats-rye acreage base (*see box*). Farmers who

The Price Support Program for Rye

Rye is a relatively minor crop in the United States. Returns from rye are significantly below those of other field crops, and this has limited its production. Another disadvantage of growing rye is that it shatters readily—rye seeds fall from the heads before and during harvest—and thus reseeds itself year after year. If wheat is planted on land that produced rye the previous year, the rye seeds will sprout and grow with the wheat. When the crop matures, the wheat and the rye are harvested together. This results in lower quality wheat, which pushes down the price a farmer can receive.

Rye plantings ranged between 2.3 and 3 million acres during crop years 1981-88. Plantings are concentrated in the North Central States. The harvested area is only about one-third of planted acreage since the remainder is used as a cover crop, weed killer, or forage.

Rye does have a Government price support program. First offered in 1939, the program provides nonrecourse loans to producers.

Most rye is consumed domestically, primarily as livestock feed. Because it is less palatable than other feed grains, rye is mixed with other grains when fed to livestock. Food demand focuses on rye flour for use in dark breads.

Ending stocks for rye rose from 3 million bushels in marketing year 1981/82 to a high of 22 million in 1985/86, but since then have declined to an estimated 10 million bushels in 1988/89. Most of this

increase was an accumulation of Commodity Credit Corporation (CCC) stocks, which grew from zero in 1981/82 to 16 million bushels in 1985/86 as the farm price dropped 14 cents a bushel below the loan rate. CCC inventory is estimated to drop to 8 million bushels in 1988/89, since the farm price was above the loan rate.

Rye Is a Relatively Minor Crop

Item	Marketing year ¹		
	1981/82	1985/86	1988/89 ²
<i>Thousand acres</i>			
Acreage			
Total planted	2,566	2,563	2,424
Harvested	685	717	607
<i>Bushels per acre</i>			
Yield	26.6	28.8	24.8
<i>Dollars per bushel</i>			
Prices			
Loan rate	2.04	2.17	1.50
Average farm price	3.00	2.03	2.49
<i>Million bushels</i>			
Supply	22.6	42.6	34.2
Beginning stocks	4.0	19.8	18.9
Production	18.2	20.6	15.0
Imports	0.4	2.2	0.2
Utilization	19.6	20.8	23.9
Domestic	18.1	20.6	20.5
Food	3.5	3.5	3.5
Industrial	2.2	2.1	2.0
Feed	8.1	11.2	11.8
Seed	4.3	3.8	3.2
Exports	1.5	0.2	3.4
Ending stocks	3.0	21.9	10.3
Commercial	3.0	5.9	2.1
CCC inventory	0	16.0	8.2

¹The crop and marketing year for rye runs from June 1 to May 31. ²Estimated.

participated in both the wheat and feed grain programs could plant wheat on the oats-rye acreage after devoting a certain percentage of the base to conserving uses. This program, which covered marketing years 1966/67-1970/71, provided some farmers with an opportunity to increase wheat acreage from land that had been planted in oats or rye during the 1950's.

The Agricultural Act of 1970 introduced set-aside programs, which restrict farmers' use of their total cropland acreage. This eliminated the need for the oats-rye base since wheat acreage was no longer constrained by an acreage allotment. The twofold system of support with minimum loan levels and additional price support payments continued under the 1970 Act. Rye and oats farmers were eligible for nonrecourse loans but not for price support payments.

The Agriculture and Consumer Protection Act of 1973, effective for the 1974-77 crops, introduced target prices and deficiency payments that replaced price support payments. Feed grain target prices covered corn and sorghum and, if designated by the Secretary, barley. Oats producers were only offered nonrecourse loans.

While the Food and Agriculture Act of 1977 mandated target price protection for corn and sorghum, such protection was optional for oats and barley. Oats were eligible for the Farmer-Owned Reserve (FOR) that provided 3- to 5-year loans and reserve storage payments to farmers. A set-aside program was authorized if the Secretary determined that supplies were apt to be excessive.

The Agriculture and Food Act of 1981 authorized target prices, nonrecourse loans, and crop-specific acreage controls, called acreage reduction programs (ARPs), for oats. Oats and barley were given a common acreage base at the Secretary's discretion. Conse-

quently, oats producers could plant all their oats-barley permitted acreage—the acreage base less any ARP—in either oats, barley, or some combination.

Current Oats Program

The Food Security Act of 1985 was written at a time when most U.S. farm commodities had lost their competitiveness in world markets. Aimed at expanding exports, protecting farm income, and eventually reducing farm program outlays and Government intervention in agriculture, the Act retains many of the policy parameters of the 1981 Act. Now, however, the Secretary has more discretionary authority.

Under the 1985 Act, loan rates for oats are based on the grain's feed value compared with corn. The loan rate for the 1989 oats crop is 85 cents per bushel, 51 percent of \$1.65, the 1989 rate for corn. Target prices for oats are set slightly higher—at 53 percent of those for corn. For 1989, they equal \$1.50 per bushel for oats and \$2.84 for corn.

The Secretary retains discretionary power over ARPs, but they become mandatory if corn carryover stocks reach 2 billion bushels. The FOR continues with some changes; reserve minimums and maximums are specified as a percentage of total domestic and export use. In addition, the 1985 Act establishes a Conservation Reserve, which is scheduled to contain 40 to 45 million acres of highly erodible cropland by crop year 1990. *(See Federal Corn and Sorghum Programs for more information on current program provisions as they apply to feed grains.)*

Recently, acreage has shifted from oats to barley and corn because of higher net returns caused, in part, by Government programs. To counteract this shift, gradual changes have been made in the oats program over the past 3 years. For example, the 1987-89 oats crops were exempt from the limited cross-compli-



ance in effect for other grains and cotton. This provision requires producers, if they participate in one commodity program, to plant no more than the acreage base of any other program crop grown on their farms. In addition, the ARP for the 1988 oats crop was set at 5 percent, compared with 20 percent for the other feed grains. For the 1989 and 1990 crops, producers may plant any part of their farm acreage base to oats—except for that acreage designated to soybeans—if the ARPs for corn, sorghum, and barley are 12.5 percent or less.

Effects on Producers

Nonrecourse loans provide an orderly marketing mechanism that strengthens market prices and reduces the risk of falling prices for program participants. Farmers can pay back their loans plus interest or they can forfeit the oats. In times of tight cash flow, large surpluses, or strict credit qualifications by lending institutions, these loans can help farmers. Nonparticipants benefit indirectly from supported market prices. However, because farm prices for oats were higher

than loan rates during marketing years 1972/73-1984/85, the loans had little effect on farm prices (*figure 1*). Because ARPs limit supply, they also strengthen prices, despite nonparticipation and idling of less productive land by participants.

Oats target prices and deficiency payments were first authorized by the Agriculture and Food Act of 1981. High market prices precluded deficiency payments for the 1982 crop. However, payments were made for the 1983 crop at 11 cents a bushel for a total of \$5 million. Deficiency payments were also distributed in crop years 1985-87.

Impact on Processors

Until recently, processors have been able to find adequate sources of oats. Supply and demand for oats were generally balanced during marketing years 1950/51-1987/88. Stocks-to-use ratios ranged from 25 to 42 percent (stocks equaled about 3 to 5 months of domestic use) except for the few times when supplies were tight, such as the early 1950's and late 1980's when ratios declined to a low of 23 to 25 percent. Supplies were excessive in 1965/66, 1968/69-1972/73, and 1977/78-1978/79 when stocks-to-use ratios equaled or exceeded 43 percent, peaking at 70 percent in 1971/72 (stocks equaled 5 to 8.5 months of domestic use).

However, Government programs have put oats at a competitive disadvantage for most of the 1980's. For example, beginning with the 1982 crop, USDA has assigned a common acreage base to oats and barley. More barley than oats was planted because barley had a better net return per acre, based on a higher target price and potentially larger deficiency payments. Producers usually plant the crops with the large deficiency payments—such as corn, wheat, and barley—rather than oats. Finally, the Conservation Reserve could reduce oats

production. The highly erodible cropland that is eligible for the reserve has often been planted in oats.

As production has declined, imports of oats have begun to rise. Nevertheless, food and feed processors must still compete for available supplies. Consequently, oats prices are rising above the grain's feed value.

Effects on Consumers

Although feed grain programs benefit grain producers by supporting the price of their commodities, they usually increase costs for firms or individuals buying feed grains. Higher oats prices cause livestock producers and oats processors to pay more, which in turn means higher prices for consumers of livestock and oats products. Although the Food Security Act reduced loan rates, market prices remain significantly above the loan level (*table 2*).

The quantity of oats used as livestock feed fluctuates more from a change in price than oats used by the pleasure horse and racehorse industry or for human consumption. The livestock and poultry industries are more likely to adjust feed rations based on what grains are most economical to use. Unlike the horse industry or retail consumers, the livestock sector has a wider range of competing feed grains to choose from.

Food use of oats has about doubled in the past 35 years, ranging from 32.8 million bushels in 1953/54 to about 85 million bushels in 1988/89. Food's share of total use has risen in the past several years to an estimated 22 percent in 1988/89, up from 2.4 percent in 1955/56. Per capita consumption of oats has begun to rise in the last few years due to health attributes, but still is much less than wheat's 115-120 pounds per year. Food consumption of oats depends more on

Figure 1. Loan Rates for Oats Had Little Effect on Farm Prices During 1972-84

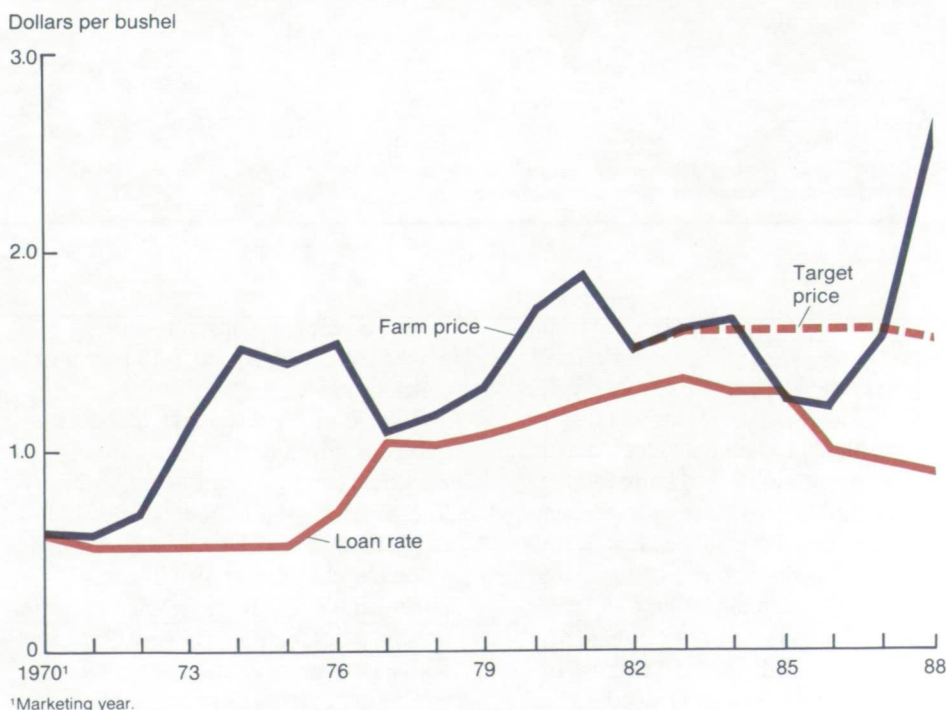


Table 2. The Food Security Act Reduced the Loan Rate for Oats Beginning in 1986/87

Item	Marketing year ¹				
	1984/85	1985/86	1986/87	1987/88	1988/89 ²
<i>Million acres</i>					
Acreage					
National base	9.8	9.4	9.2	8.4	7.9
Acreage reduction	0.1	0.1	0.4	0.6	0.3
Paid land diversion	—	—	0.1	0.2	—
Conservation reserve	—	—	0.1	0.5	0.9
Total planted	12.4	13.3	14.7	18.0	13.9
Harvested	8.2	8.2	6.9	6.9	5.6
<i>Bushels per acre</i>					
Yield	58.0	63.7	56.0	54.0	39.2
<i>Dollars per bushel</i>					
Prices					
Target price	1.60	1.60	1.60	1.60	1.55
Loan rate	1.31	1.31	0.99	0.94	0.90
Average farm price	1.67	1.23	1.21	1.56	2.61
Deficiency payment rate	0	0.29	0.39	0.20	0
<i>Million dollars</i>					
Income	799	654	512	675	677
Market value of production	799	645	471	606	571
Government payments	0	9	41	69	106
Deficiency	0	8	30	19	2
Diversion	—	—	2	8	—
Conservation reserve	—	—	8	41	66
Other ³	0	1	1	1	38

— = not applicable. ¹The crop and marketing year for oats runs from June 1 to May 31. ²Estimated. ³Includes Farmer-owned reserve storage payments and disaster payments.

pears to be increasing, as Americans shift from fatty, animal-based foods to cereal-based foods.

Program Costs

The oats program has varied not only in content but also in cost. Government stocks swelled in marketing years 1970/71-1972/73 when farm prices dropped below or were slightly above the loan rate, and many farmers forfeited their crops. The surge in export demand during the mid-1970's reduced loan activity, as farmers redeemed their loans and sold their oats in the market. During the 1980's, the amount of oats harvested as grain and put under loan has been less than 2 percent.

Price and income support activities for oats cost the Government \$103.7 million in fiscal 1970, \$1.5 million in 1985, and \$26.2 million in 1986. Government expenditures for oats during 1982-86 were consistently below those for corn, sorghum, barley, wheat, and soybeans. In fiscal 1986, the \$26.2 million spent on oats was minor compared with \$10.5 billion spent on corn. The oats program is less expensive primarily because of lower program participation and a much smaller crop. Participation has ranged from 14 to 45 percent during the past 5 years, compared with 54 to 90 percent for corn and 60 to 87 percent for wheat. ■

population, tastes, and preferences than on price.

Food products containing oats include oatmeal, oat bran, oat flour, natural cereals, meat product extenders, cookies and breads, granolas, and baby food. Oat flour is used in breads, cereals, certain cosmetics, and as an antioxidant in food products. However, oats are consumed principally as a breakfast food or snack product. Industry sources estimate that in the past several years, 50 percent of the oats used for food is in standard oat-

meal, 35 percent in instant oatmeal, 5-10 percent in oat flour, and 5-10 percent in snack products.

Recent medical research has shown that consumption of certain fibrous plant materials can lower serum cholesterol. These water-soluble fibers can be found in oat bran but not wheat bran. Water-soluble dietary fibers also lower postmeal blood glucose levels in insulin-dependent diabetics. Thus, oat bran and whole oats are beginning to play a larger role in our diets. Oats consumption ap-

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U.S. Cotton Programs

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Cotton is the single most important textile fiber in the world, accounting for about 50 percent of total fiber production. In recent years, the United States has produced about 20 percent of the world's cotton supply and consumed 10 percent. Americans used about 67 pounds of fibers per capita in 1988, which includes U.S. mill products and the raw fiber content of imported textiles. Cotton accounted for about 21 pounds, compared with 42 pounds of manmade fibers, 3 pounds of silk and flax, and 1 pound of wool.

Cotton is produced in 17 States from Virginia to California. Most of it is grown in the delta area of Mississippi, Arkansas, and Louisiana; the Texas plains; central Arizona; and California's San Joaquin Valley. Upland cotton, the type most commonly grown throughout the world, accounts for about 98 percent of the U.S. crop. Extra long staple (ELS) cotton, also known as American Pima, is grown mostly in limited areas of southwest Texas, New Mexico, Arizona, and California.

Since the turn of the century, U.S. cotton producers have frequently experienced excess production, high stocks, and low prices. The health of the U.S. cotton industry is highly dependent on the world economy. To maintain current levels of production, almost 50 percent of our output must be exported to foreign mills.

The forces affecting world cotton trade are complex. It can be traded as raw cotton, yarn, fabric, or finished apparel. The United States is usually a competitive exporter of raw cotton. But other countries, many of them also cotton producers, are more competitive as exporters of finished products. The demand for U.S. cotton exports depends

heavily on foreign cotton production, the U.S. cotton price in relation to the prices of competing exporters, the price of cotton in relation to other natural and synthetic fibers, and economic growth in importing nations. For example, a 1-percent increase in real income of foreign importing countries is associated with about a 120,000-bale increase in U.S. cotton exports. If our major competitors raise their production by 1 million bales, U.S. exports might drop by about 600,000 bales.

As a result of these dynamic forces, U.S. cotton exports have varied greatly, causing supply and price instability in our domestic market (*table 1*). Government programs have provided an income "safety net" since the early 1930's for producers of upland cotton and since the early 1940's for growers of ELS cotton.

Early Upland Cotton Programs

U.S. cotton programs have attempted to support prices and adjust acreage and production to market needs. During

1933-65, upland cotton programs frequently included price supports based on parity, marketing quotas, and acreage allotments. (*Program terms are explained in the Glossary.*)

Production control was the primary objective of the Agricultural Adjustment Act of 1933 and subsequent early legislation. The 1933 Act authorized benefit payments to farmers removing land from cotton production. The Act also established nonrecourse loans, which remain a key component of Government cotton programs. Up until the mid-1960's, the minimum support price for cotton was based on parity. This concept failed to reflect changing market conditions and technologies for cotton and was abandoned.

In 1934, marketing quotas were legislated to enhance participation in acreage control programs. The quotas restricted the quantity of cotton each producer could sell without paying a penalty. Used with acreage allotments, they were longstanding provisions of subsequent

Table 1. Upland Cotton Exports Have Varied Greatly During the Last 5 Years

Upland cotton	Marketing year ¹				
	1984/85	1985/86	1986/87	1987/88	1988/89
	<i>Thousand bales²</i>				
Supply	15,566	17,334	18,817	19,419	20,800
Beginning stocks	2,693	4,024	9,289	4,942	5,718
Production	12,852	13,277	9,525	14,475	15,077
Imports	21	33	3	2	5
Utilization	11,616	8,193	13,955	13,910	13,603
Domestic mill use	5,491	6,338	7,385	7,565	7,721
Exports	6,125	1,855	6,570	6,345	5,882
Ending stocks	4,024	9,289	4,942	5,718	7,027
Commercial	2,353	2,557	1,955	2,551	2,858
Outstanding loans ³	1,548	5,965	2,914	3,164	4,119
CCC inventory	123	767	73	3	50

¹The crop and marketing year for cotton runs from August 1 to July 31. ²One bale equals 480 pounds. ³Cotton used as collateral for price support loans.

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cotton programs aimed at keeping production in balance with market needs.

During the first 30 years of farm programs, acreage and production controls and high support prices were prominent features. In this period, relatively high parity-based support prices effectively established both U.S. farm and world market prices. Thus, while these programs provided price and income stability, they also furnished incentives for increased foreign cotton production and a loss of markets to manmade fibers. Support prices that exceeded market-clearing levels also encouraged overproduction in the United States, and excess stocks led to production controls.

The Food and Agriculture Act of 1965 was more market oriented, with cotton price supports set at levels below world market prices. Producers' incomes were maintained through payments based on participation in acreage reduction programs. Diversion payments were made to producers who placed cotton acreage into approved conservation uses. By the end of the 1970/71 marketing year, the acreage reduction programs met the objective of lowering or eliminating surpluses, and the high Government cotton surplus was gone. However, the reduction in stocks was accomplished at a substantial cost. Direct payments to cotton producers averaged \$847 million annually during crop years 1966-70, about 40 percent of the total income from cotton. (The crop and marketing year for cotton runs from August 1 to July 31.)

Legislation in the early 1970's reflected a far different setting than previous farm acts. World demand for American farm products was high due to world crop shortages, devaluation of the dollar, and generally favorable world economic growth. Many agricultural interests felt

the Government could minimize its role in providing price and income supports.

The target price concept, still in use today, was a major feature of the Agriculture and Consumer Protection Act of 1973. In recognition that agriculture can face extreme weather and market conditions, which at times result in low incomes, target prices provide producers with income support. Target prices were also designed so that this income protection should not affect market prices. Deficiency payments are made only when average market prices fall below target price levels. Loan rates were set to reflect the average price of American cotton in world markets. Target prices were based on the cost of production.

Despite cotton acreage increasing significantly in the late 1970's, stocks during the period were relatively low. Strong domestic mill use and export markets compensated for the expansion in production. The Food and Agriculture Act of 1977 changed the way a farmer's eligible crop acreage was determined. Producer benefits were based on current plantings rather than historically established acreage allotments. This change facilitated a shift in cotton production to the lower cost regions of the West and Southwest.

The cost-of-production adjustment formula for 1978-81 target prices was based on a historical moving average of per-acre costs and actual yields. Formula adjustments during this period of rising inflation failed to keep up with actual conditions. Therefore, in the Agriculture and Food Act of 1981, Congress mandated specific target price minimums for the 1982-85 crops. Target prices rose from 58.4 cents per pound in 1980 to 81 cents by 1984, despite increasing carryover stocks.

The 1981 Act continued to set cotton loan rates with a formula, using either

domestic or world prices, whichever was lower. However, the minimum loan level was raised from 48 cents to 55 cents a pound. During the 1985/86 marketing year, world prices dropped below the U.S. loan rate. As a result, U.S. cotton exports declined to their lowest level in four decades and carryover stocks surged to a year's supply.

Current Upland Cotton Program

Current farm legislation was developed while the cotton market was characterized by falling cotton use by U.S. mills, lower export expectations, rising stocks, growing textile imports, and low farm prices. Contributing to the sluggish market for U.S. cotton was the record 1984/85 world crop of nearly 88 million bales. That crop exceeded use by about 18 million bales. World stocks reached a record 42 million bales, resulting in a sharp drop in world prices.

The Food Security Act of 1985 established farm policy for crop years 1986-90. Some major features for cotton contained in past farm acts—including target prices, nonrecourse loans, deficiency payments, and acreage reduction programs—were retained. However, the 1985 Act provides greater market orientation and more flexibility to improve market competitiveness.

The Act also specifies declining target price minimums through 1990. Cotton loan rates are tied to an average of past market prices. But new provisions allow nonrecourse loans to be repaid at levels below the loan rate if the formula-determined rate inhibits market competitiveness.

If the world price of cotton is below the loan rate, a loan repayment plan—popularly referred to as marketing loans—must be implemented. The Secretary of Agriculture can choose one of



two alternative "market enhancement" plans for repayment of loans. Under Plan A, the Secretary can lower the repayment rate by 20 percent from the announced loan level. If world prices are below the repayment rate, certificates redeemable for CCC cotton are issued to cotton buyers to make up the difference, allowing producers to redeem their crops and sell them at competitive prices. Under Plan B, repayment rates vary during the year to keep pace with world markets. Plan A was implemented for the 1986 crop, with a loan repayment rate equal to 80 percent of the loan rate for each quality of cotton. Plan B was selected for the 1987-89 crops.

The 1985 Act also specifies that, to the extent practical, the Secretary should

implement acreage reduction programs for the 1986-90 crops if necessary to ensure that carryover stocks equal 4 million bales of upland cotton. To participate in the cotton program and be eligible for nonrecourse loans and deficiency payments, producers had to reduce the acreage of upland cotton they planted for harvest by at least 25 percent from their acreage base in crop years 1986 and 1987, and 12.5 percent in 1988. In 1989, a 25-percent acreage reduction program is in effect.

Impact on Producers

Farmers have benefited from participation in the upland cotton program directly through price supports and direct payments, and indirectly through higher

market prices triggered by acreage reduction or other supply control measures. Nonparticipating producers have also benefited from the higher prices.

However, provisions in the Food Security Act have eliminated most cotton production outside the program. Prior to the advent of marketing loans, the nonrecourse loan rate effectively set a price floor in the domestic market. Therefore, producers not participating in the program could expect market prices to hover around the support rate. Marketing loans, however, let market prices fall to world levels. This greatly increased the risk of not enrolling in the cotton program. Participating producers receive deficiency payments and get to keep any gain realized from repaying a marketing loan at a level below the announced loan rate. Consequently, the total return to participants does not fall even if cotton prices drop to very low levels. Nonparticipants have to take their chances with world prices.

Deficiency payments have become a significant part of producers' income (table 2). Substantial deficiency payments have been made since 1981, as target prices have exceeded average market prices. Total deficiency payments have ranged from a low of \$431 million in 1983 to a high of \$1.7 billion in 1986. Direct payments to participating producers averaged 22 percent of total cotton income during the 1987 and 1988 crop years.

Another benefit accruing to producers who own their own land is that the program has tended to support, if not enhance, land values. In addition, cotton producers have been able to increase their crop acreage base since 1986 by not participating in the program and planting more acreage. While this can be done only by producing outside the program (nonparticipation), the existence of both

Table 2. Deficiency Payments Have Become a Significant Part of Producers' Incomes

Upland cotton	Marketing year ¹				
	1984/85	1985/86	1986/87	1987/88	1988/89 ²
<i>Million acres</i>					
Acreage					
National base	15.6	15.8	15.5	14.5	14.5
Acreage reduction	2.5	3.6	3.4	3.3	1.6
Paid land diversion	—	1.3	—	—	—
Conservation reserve	—	—	²	0.7	1.0
Total planted	11.1	10.6	9.9	10.3	12.3
Harvested	10.3	10.1	8.4	9.9	11.8
<i>Pounds per harvested acre</i>					
Yield	529	628	547	702	616
<i>Cents per pound</i>					
Prices					
Target price	81.0	81.0	81.0	79.4	75.9
Loan rate	55.0	57.3	55.0	52.25	51.8
Average farm price	57.5	56.1	51.5	63.7	55.6
Deficiency payment rate	18.6	23.7	26.0	17.3	19.4
<i>Million dollars</i>					
Income	4,712	4,962	4,048	5,843	5,805
Market value of production	4,058	3,908	2,664	4,888	4,635
Government payments	654	1,054	1,384	955	1,170
Deficiency	654	858	1,384	955	1,170
Diversion	—	196	—	—	—

— = not applicable. ¹The crop and marketing year for cotton runs from August 1 to July 31. ²50,000 acres.

new producers and some expanded operations suggests that farmers recognize the benefits of the program.

Effect on Consumers

Upland cotton programs have probably had little effect on retail prices of cotton textile products because of the wide farm-to-retail price spread—the difference between farm and retail prices—and the small amount of cotton used. In 1988, consumers used 21.4 pounds of cotton each. The farm value of this per capita quantity was only about \$11.90. Furthermore, because the cotton programs of recent years have featured

direct payments to support farm incomes, most of the program costs have been borne by taxpayers rather than by cotton consumers.

Price increases at the farm level may not be reflected as higher retail values because of the highly competitive nature of the cotton textile industry. The impact of raw cotton prices—the costs of cotton to mills—on retail values depends partly on the quantity of cotton contained in the finished product and the type and amount of processing required. For example, about three-fourths of a pound of raw cotton is required to produce a typical business shirt or a bath towel, compared with

about 2 pounds in denim jeans. The cost of raw cotton as a share of the estimated 1987 retail value was only about 4 percent for a shirt, 8 percent for a bath towel, and about 10 percent for a pair of denim jeans. Thus, a 10-percent rise in the farm price could increase the retail price of a shirt by less than 1 percent and the price of bath towels and jeans about 1 percent.

Extra Long Staple Cotton

Extra long staple cotton has enjoyed a metamorphosis among American cotton producers in recent years, its status elevated from that of a “fall-back” crop to a much-in-demand star of U.S. agricultural exports. Distinguishable from upland cotton by its namesake attribute of a longer fiber length, this species of cotton is used for fine, strong yarns that impart a luster and a feel to ELS cotton products not as apparent in upland cotton items.

Enhanced ELS production is due largely to strong demand for the fiber's high-value uses, such as sewing thread and expensive apparel items, and the tight supply of the world's exportable stocks. In 1988, the United States accounted for about 7 percent of world production and 22 percent of world exports, with exports rising about 12 percent from a year earlier. At 265,000 bales, U.S. exports in 1988 were equivalent to 80 percent of that year's production. The strong export demand for ELS cotton has led to higher farm prices, averaging \$1.15 per pound in 1988. It has also minimized the role of nonmarket forces in producers' production and marketing decisions. Larger production and exports are expected in 1989.

The history of ELS cotton production in the United States, dating from its 1912 introduction in the Salt River Valley of Arizona and the Imperial Valley of California, is relatively brief compared to that of upland cotton. The history of

Government programs affecting ELS cotton is likewise comparatively short.

In 1942, ELS cotton became a "basic" crop eligible for Government loans and price support, which had previously been extended only to upland varieties. Early on, ELS acreage was often related to upland cotton programs as producers planted ELS cotton as the next best crop on land taken out of production by upland cotton acreage allotments. From 1942 to 1950, ELS acreage varied directly with upland acreage allotments.

Legislation in 1952 provided for mandatory ELS acreage allotments, marketing quotas, and price supports. The price support level was initially based on 90 percent of parity, but by 1960, had dropped to 65 percent of parity. In 1968, the law was amended to provide for a combination of price support loans and direct payments. The ELS loan rate was tied to the upland cotton loan level, with direct payments to producers making up the difference between the loan rate and 65 percent of parity. From 1968 to 1976, direct payments ranged from a low of \$453,000 in crop year 1976 to a high of \$5 million in 1973.

In 1979, the ELS total support level was dropped to 55 percent of parity and loan rates were increased. The Agriculture and Food Act of 1981 eliminated direct payments and the tie to parity, and dropped loan levels slightly. Marketing quotas and acreage allotments were in effect through crop year 1983.

Current ELS Program

Current ELS provisions can be traced back to the Extra Long Staple Cotton Act of 1983. This Act, effective for the 1984 and subsequent crops:

- Eliminated marketing quotas and acreage allotments.
- Established a minimum loan level at 150 percent of the loan rate for the base

quality, Strict Low Middling 1-1/16-inch upland cotton.

- Set target prices equal to 120 percent of the ELS loan rate.
- Provided for deficiency payments to ELS producers whenever the average price received by farmers during the first 8 months of the marketing year fell below the target price.
- Established a crop acreage base for each ELS producer.
- Authorized an acreage reduction program for any ELS crop for which USDA estimated the supply would be excessive.

The 1985 Food Security Act eliminated the connection between ELS and upland loan rates. Instead, ELS loan levels must equal 85 percent of the average price received by ELS producers during 3 years of the 5-year period ending July 31 of the year the loan level is announced. The years with the highest and lowest prices are excluded.

In 1988, the ELS program offered producers a loan rate of 80.92 cents per pound and a target price of 95.7 cents. To participate in the program, farmers had to reduce their ELS acreage by at least 10 percent. During the 1988/89 marketing year, the average market price received by farmers exceeded the target price, therefore no deficiency payments were required for the 1988 crop. (The crop and marketing year for ELS cotton is the same as that for upland cotton.)

Effects on Producers and Consumers

Since 1986, strong world demand and tight exportable stocks of ELS cotton have buoyed market prices to levels in excess of Government support prices. Planted acreage of ELS cotton has soared and producer participation in the ELS program has declined. For instance, in 1988, only about 10 percent of the ELS base acreage was enrolled, compared with about 45 percent in 1986. Indeed, during the last 10 crop years, market

prices for ELS cotton have generally exceeded support levels, resulting in no Government payments in 7 of those years and only nominal outlays in the remaining 3 years. With market prices for ELS cotton well above Government support levels, market forces are the principal impetus behind ELS farmers' production and marketing decisions.

Since 1985, use of ELS cotton by U.S. mills, as a percentage of domestic ELS production, has declined to about 25 percent. Thus, there are ample supplies of ELS cotton for domestic uses. In terms of total cotton consumption by U.S. mills, ELS cotton's share is less than 1 percent. Therefore, even if there were significant program impacts on ELS production, marketing, or utilization, the total impact on consumers would be negligible.

In short, Government programs for ELS cotton are most notable for what they do not do—they do not significantly limit production, interfere with market forces, or cost taxpayers large amounts of money in the form of program outlays. ■

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Government Programs for Soybeans

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Soybeans have many uses. About 95 percent of U.S. soybean meal goes into poultry and livestock feed, with the remainder used largely for soy-based foods. Soybean oil accounts for roughly three-quarters of the fats and oils used in U.S. edible oil products.

Soybeans and their derivative products are used in a wide range of processed foods, among them cooking and salad oils, margarine, shortening, bakery goods, candies, desserts, beer, and Asian foods, such as tofu and miso (a high-protein food paste made from soybeans and grain). Industrial uses for soybean meal and oil include construction products (like wallboard and plywood), pharmaceuticals, yeast, soap, pesticides, and plasticizers that add flexibility to rubber agents.

The United States is the world's largest producer of these high-protein beans. The farm value of the U.S. crop equaled about \$11.4 billion in marketing year 1988/89, second only to corn. (The crop and marketing year for soybeans runs from September 1 to August 31.) Domestic production increased more than sixfold between 1950 and 1980 but has declined since soybean acreage and production peaked in 1979 (*figure 1*).

Rapid growth in U.S. soybean production and processing occurred largely because of rising world demand for the beans and their primary products—vegetable oil and protein meal. Soybeans are still our largest export crop, accounting for nearly \$4.6 billion in 1987/88 from soybeans and an additional \$1.8 billion from meal and oil.

In a typical year, between one-half and two-thirds of the U.S. soybean crop

is crushed domestically—the process used to extract meal and oil (*table 1*). One-third or more of domestic soybean production is exported. Some whole beans are also used for feed and seed. Of the domestic crush, approximately three-quarters of the meal is sold in the United States. The remainder is exported. On the oil side, 80 to 90 percent is used domestically.

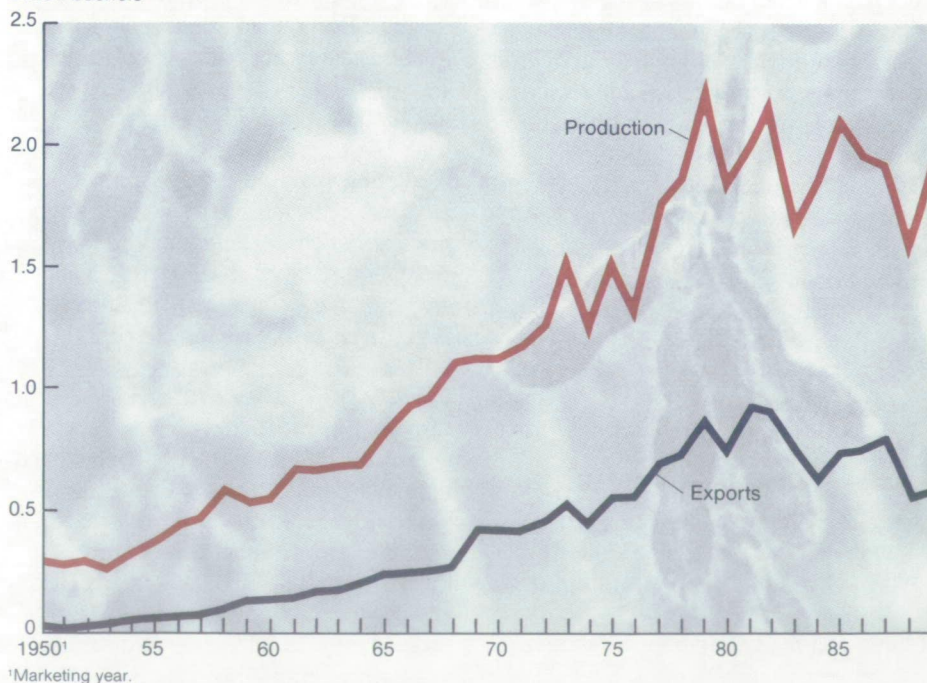
A number of structural and economic factors, both domestic and foreign, have affected the growth of U.S. soybean production. In recent years, world markets for oilseeds and oilseed products have grown significantly, spurred by rising real incomes and population growth in both industrial and developing nations. However, soybeans, oil, and meal have

all lost some of their market share in the world oilseed trade to rapeseed, cottonseed, and peanuts. This has translated into reduced U.S. exports of soybeans and soybean oil and fluctuating meal exports during the 1980's, despite falling U.S. prices prior to 1987 and the 1988 drought. For example, the nominal value of U.S. exports of soybeans, meal, and oil together fell from a peak of \$8.8 billion in 1980/81 to \$6.4 billion in 1987/88.

An important influence on our domestic soybean industry is U.S. Government policy. Federal programs affect industry structure, output, price, and trade, both directly and indirectly. The Federal soybean program supports prices received by farmers. By setting a floor for domestic prices of soybeans and competing

Figure 1. U.S. Soybean Production Peaked in 1979

Billion bushels



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Table 1. Between One-Half and Two-Thirds of the U.S. Soybean Crop Is Crushed

Item	Marketing year ¹				
	1984/85	1985/86	1986/87	1987/88	1988/89 ²
<i>Million acres</i>					
Acreage					
Total planted	67.8	63.1	60.4	58.0	58.9
Harvested	66.1	60.4	58.3	57.0	57.5
<i>Bushels per acre</i>					
Yield	28.1	34.1	33.3	33.7	26.9
<i>Dollars per bushel</i>					
Prices					
Loan rate	5.02	5.02	4.77	4.77	4.77
Average farm price	5.84	5.05	4.78	5.88	7.35
<i>Million bushels</i>					
Supply	2,037	2,415	2,476	2,359	1,850
Beginning stocks	176	316	536	436	302
Production	1,861	2,099	1,940	1,923	1,548
Utilization	1,721	1,879	2,040	2,057	1,668
Domestic	1,123	1,139	1,283	1,255	1,141
Crush	1,030	1,053	1,179	1,174	1,058
Seed, feed, and residual	93	86	104	81	83
Exports	598	740	757	802	527
Ending stocks	316	536	436	302	182
Commercial	312	405	187	295	182
CCC inventory	4	131	249	7	0

¹The crop and marketing year for soybeans runs from September 1 to August 31. ²Estimated.

crops, U.S. price support programs raise raw material costs for soybean processors and hence consumer prices.

History of Soybean Program

Soybean price supports have been in effect since 1941, with the exception of 1975. This support is provided in the form of nonrecourse loans made by USDA's Commodity Credit Corporation (CCC), with all soybean farmers eligible. Farmers can place their beans under loan when they harvest them. The loan lasts

for 9 months with the crop serving as collateral. Farmers can repay their loans at any time with interest, which is generally somewhat lower than commercial lending rates. After the 9 months, producers must repay their loans or forfeit the crop.

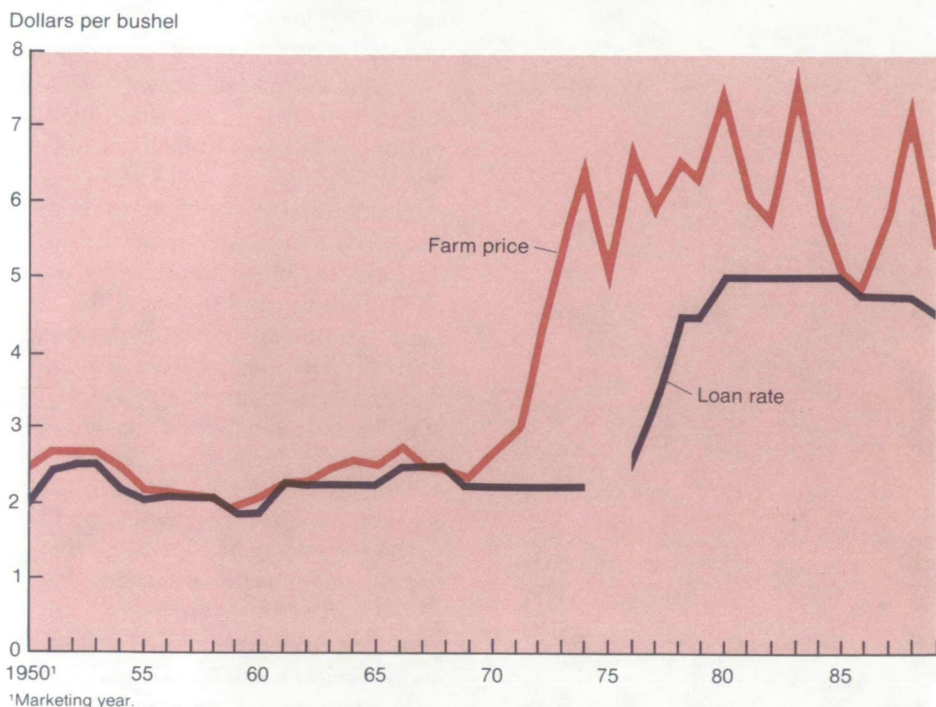
The loan program allows farmers to be more flexible in planning a marketing strategy. They can take the loan money at harvest and store the crop for marketing at any time during the loan's duration, instead of immediately selling their soybeans. By doing this, farmers have

the cash they need for production inputs. Taking out a loan also provides producers with a price floor under their crop to protect against unforeseen price declines.

During the last four decades, the season-average price of soybeans has met or exceeded the loan rate in all but a few years (*figure 2*). Years of high production and low prices have occasionally led farmers to place substantial quantities of soybeans under loan. CCC acquisitions of soybeans (from farmers forfeiting their crops) have generally been small, but a marked increase occurred in marketing years 1985/86 and 1986/87 when domestic market prices declined sharply.

Acreage restrictions and marketing quotas have never been used to control soybean production. However, supply control programs for wheat, feed grains, cotton, and rice have often prohibited producers from planting soybeans on acreage allocated to these crops. While such provisions may have restricted soybean acreage, the biggest influences on bean production have come from changes in program provisions for soybeans and competing crops. For example, to encourage soybean production, the feed grain programs were revised in 1966 to include price supports for program participants who voluntarily planted soybeans on feed grain acreage and an extended signup period in soybean producing areas. At the same time, the soybean loan rate was raised from \$2.25 to \$2.50 a bushel.

The Agricultural Act of 1970 and Agriculture and Consumer Protection Act of 1973 allowed farmers to plant soybeans on acreage normally planted to wheat, feed grains, cotton, and rice while still maintaining their crop acreage bases for those commodities. Coupled with rapidly rising domestic and foreign oilseed demand and sharply higher market

Figure 2. Soybean Prices Have Usually Been Above the Loan Rate

prices, this led to significantly greater soybean production. Because of high prices and continued expected strong demand for oilseeds, price support loans for soybeans were not provided in 1975. Loans, however, were reinstated in 1976.

The soybean price support program was legislatively mandated for the first time under the Food and Agriculture Act of 1977, and the loan rate for the 1978-81 crops was raised to \$5.02 per bushel. The Agriculture and Food Act of 1981 continued the \$5.02 loan rate for crop years 1982-85.

The Food Security Act of 1985

Congress passed the Food Security Act of 1985 to revise Government programs for soybeans and other commodities that affect soybean acreage, including upland cotton, feed grains, and wheat. The Act covers crop years

1986-90. The legislation set the initial loan rates for the 1986 and 1987 soybean crops at \$5.02 per bushel. Loan rates in crop years 1988-90 are based on 75 percent of the average price received by producers in the preceding 5 marketing years, excluding the high and the low. Declines are limited to 5 percent per year, and a minimum support price is set at \$4.50 per bushel.

The 1985 Act granted the Secretary of Agriculture discretionary authority to reduce the loan rate by up to 5 percent per year to maintain U.S. soybeans' competitiveness in the world market. However, the minimum loan rate still applies. Using this discretionary authority, the Secretary announced a 1986 loan rate of \$4.77 per bushel. The effective loan rate was later reduced to \$4.56 by the Balanced Budget and Emergency Deficit Control Act of 1985 (also known as Gramm-Rudman-Hollings). The

Secretary again set the loan rate at \$4.77 in 1987 and 1988. The rate for 1989 was lowered by 5 percent to \$4.53 per bushel. In the last couple of years, the 1988 drought and significantly lower soybean supplies pushed domestic and world prices above those seen during most of the 1980's.

Indirect effects of the Food Security Act on soybeans flow from programs for other crops that are planting alternatives for soybean growers. Deficiency payments can be made to farmers participating in the wheat, rice, feed grain, and cotton programs. (*Program terms are explained in the Glossary.*) Soybean producers do not face acreage reduction requirements like those farmers, but the acreage controls affect soybeans because they cannot be planted on acres idled by the other programs.

Another effect of the 1985 Act has been the continuation of high target prices relative to loan rates for grains and cotton, thereby guaranteeing that returns to program participants are substantially greater than those of nonparticipants. By doing this during a period of relatively low market prices, the Government provided a strong incentive for program participation by farmers growing grains and cotton. Since these target prices were attractive relative to soybean market prices, farmers planted fewer soybeans.

The Conservation Reserve is another important program set up under provisions of the 1985 Act. Farmers agree to take highly erodible cropland out of production for 10 years in return for annual rental payments. (*See Federal Corn and Sorghum Programs for a full description of the Reserve.*) This and other provisions that increase prices of competing commodities and remove available cropland from production reduce potential soybean acreage and help maintain higher soybean prices.

The Disaster Assistance Act of 1988, brought about by the 1988 drought, gave

the Secretary discretionary authority to allow producers to plant soybeans and sunflowers on 10 to 25 percent of their 1989 wheat, feed grain, cotton, and rice permitted acreage. Farmers requested permission to plant over 3.5 million acres of soybeans under this provision in 1989. To maintain an average market price of \$5.49 per bushel, the Secretary announced that 80 percent of the requested acreage could be planted. However, less than half of this acreage was likely planted in soybeans. The provision may be extended to the 1990 crop if there is an insufficient supply of soybeans.

The Food Security Act also gives the Secretary discretionary authority to offer soybean marketing loans. If implemented, marketing loans would allow soybean producers to repay their nonrecourse loans at the world market price, when world prices are below the loan rate. This would encourage producers to redeem soybeans pledged as loan collateral and market them at prices near or below the loan rate rather than forfeit them to the CCC.

The Secretary did not implement the soybean marketing loan for the 1986-89 crops. A 1987 study conducted by ERS indicated that a soybean marketing loan would have had only a minimal impact on the 1987 soybean crop. The 1988 Disaster Assistance Act requires the Secretary to submit a statement to Congress giving the reasons for implementing, or not implementing, the soybean marketing loan for the 1989 and 1990 crops. The studies for these crops concluded that a marketing loan would likely have no effect because market prices were expected to substantially exceed loan rates. Program provisions for the 1990 crop, including the official decision on a marketing loan, will be announced by the beginning of the 1990/91 marketing year.

Effects on Soybean Farmers

U.S. farm programs raise commodity prices and producers' incomes, and the

soybean program is no exception. Soybean farmers also grow corn, cotton, wheat, and other field crops that are affected by Government price supports, acreage reduction requirements, and export programs. Along with soybean loan rates, these programs prop up prices for substitute and complementary crops and therefore soybeans. Price supports and acreage reductions for other program crops also limit the acreage available for soybeans, thereby reducing supply and increasing prices.

Marketing loans for soybeans could result in more participation in the soybean program on the chance that producers could repay their nonrecourse loans at a lower world market price. The net results of the 1985 Act for soybean farmers are smaller crop returns relative to other program commodities and less land available for soybean production.

Government Programs and Soybean Processors

Soybean processors buy and market soybeans and their products for domestic and export customers. Government policies affect the supply and demand of raw soybeans, oil, and meal, with the objective of equating supply and demand in soybean markets. However, natural phenomena, such as drought, can curb yields and supplies and result in higher prices and lower demand. Processors pay more for soybeans in years when plantings or yields fall short of what is expected. Processors either absorb these costs and narrow their profit margins or pass some or all of the additional cost on to consumers.

In recent years, U.S. programs have raised market prices for soybeans and other oilseeds relative to those for feed grains. High target prices for feed grains have expanded U.S. output and led to depressed grain market prices. This has encouraged soybean production among our chief export competitors, most notably Brazil and Argentina. Marketing loans could help processors and export-

ers purchase soybeans at or near world market prices if U.S. loan rates exceed world prices, increasing their profit margins and allowing them to better compete in export markets.

Programs Affecting Soybean Exports

The Government influences the export of soybeans as well. USDA's export programs broaden the world market for soybean products. The Agricultural Trade Development and Assistance Act, commonly known as Public Law (P.L.) 480, is the most significant of these programs. P.L. 480 provides concessional sales and donations of oilseed products to enhance food supplies in developing countries. Soybean oil exports have been especially enhanced. In 1987/88 and 1988/89, over 85 percent of all U.S. soybean oil exports were shipped using either P.L. 480, the Export Enhancement Program, or export credit assistance.

However, Government policies that support soybean and other commodity prices above world market levels have negative effects on export competitiveness. Nevertheless, U.S. export and import restrictions on oilseeds are minimal. The only quantitative restrictions protecting domestic oilseed producers are those on imported butter, butter oil, cream, and peanuts. Soybean oil has an import tariff. Palm and coconut oil, which account for more than two-thirds of all oilseed product imports, enter the United States duty free.

Effects of Government Programs on Consumers

The soybean program and programs that support competing crops, such as peanuts and cotton (the source of cottonseed), raise the price consumers pay at retail for oilseed products. However, the effects of Government programs on soybeans are small compared with those of other crops. As a low-cost protein



source, soybeans have contributed to the expansion of the poultry industry during the 1970's and 1980's.

Marketing loans have the potential to reduce the costs consumers pay for soybean products. If marketing loans are implemented in the future and loan rates exceed market prices, soybeans would be marketed at the world price rather than going into CCC stocks. This would mean lower soybean prices for domestic processors and lower prices of soybeans, meats, poultry, and other foods. Of course, taxpayers will make up the difference between the nonrecourse loan rate and the marketing loan repayment level. Thus, there is no net savings but rather an income transfer from taxpayers to soybean producers and consumers. ■

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The Peanut Program and Its Effects

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The United States is the world's third largest producer of peanuts, and Americans eat a lot of them, about 9 pounds per person annually. Peanut butter is a national favorite, accounting for nearly 50 percent of the peanuts we eat (figure 1). Peanuts are also an important ingredient in America's three most popular candies, which are Snickers, Reese's Peanut Butter Cups, and Peanut M&M's, according to *Candy Marketer* magazine. As consumers, we are accustomed to a steady, wholesome supply of peanuts and peanut products at reasonable prices. Yet, most of us are probably unaware that the supply and price of peanuts have been affected by Government programs for more than 50 years.

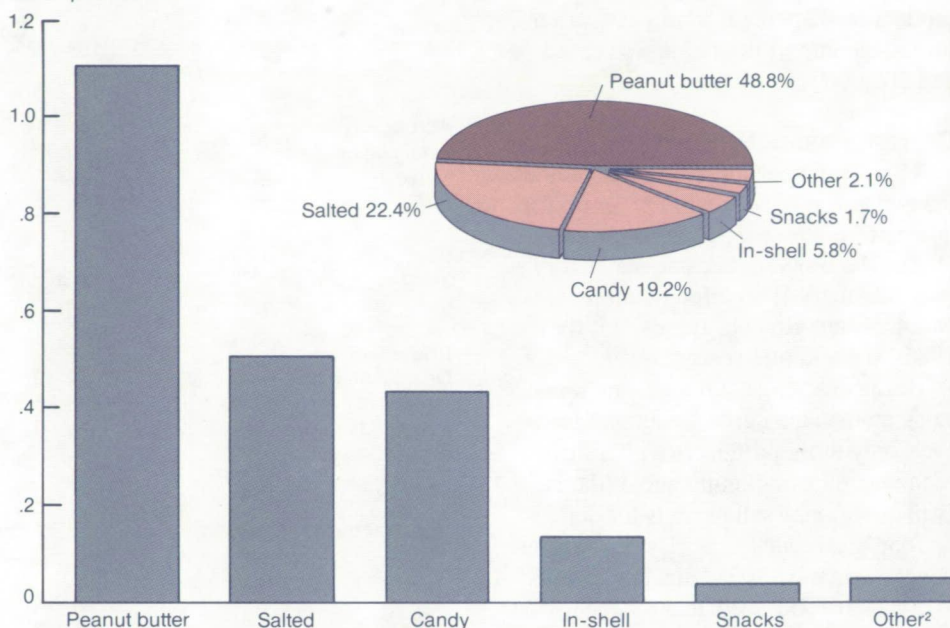
The Federal peanut program supports the price received by farmers and raises the costs of peanuts and peanut products for consumers. The program operates without large Government outlays, using quotas and two-tiered pricing instead.

History of the Peanut Program

Peanuts have been under voluntary or mandatory programs since April 1934. A variety of programs operated in the 1930's and 1940's. During this time, the basic components of the post-World War II peanut programs appeared. For instance, in 1934 Congress designated peanuts, along with several other crops, as basic commodities requiring price support. (Current law designates corn, cotton, peanuts, rice, tobacco, and wheat as basic commodities.) Regional growers' associations were organized in 1937 to serve as agents for the Commodity Credit Corporation (CCC). In 1941, three important program provisions were

Figure 1. Peanut Butter Is an American Favorite¹

Billion pounds used



¹Peanut use in primary products, 1988/89 marketing year (August 1-July 31), in-shell basis. ²Includes grated or granulated peanuts and peanut flour.

established. Price supports were tied to parity. Marketing quotas—which limit the quantity producers may sell—were implemented, and a referendum was established to allow growers to periodically vote on the program's continuation. (Program terms are explained in the Glossary.)

From 1949 to 1977, the peanut program consisted of mandatory acreage allotments—which limit the acres that may be planted to peanuts—and marketing quotas, with the minimum price support set at 75 percent of parity and ranging as high as 90 percent.

In the Food and Agriculture Act of 1977, the parity concept was dropped, and a two-tiered price support system

was established. The new system, which remains in use, distinguishes between "quota peanuts" and "additional peanuts." Quota peanuts are marketed under a national quota and used for domestic food products and seed. Sales of additional peanuts are restricted to exports or crushing for oil and meal. Higher price support loan rates are offered to producers for quota peanuts, while additional peanuts receive a lower loan rate.

The Agriculture and Food Act of 1981 eliminated acreage allotments and gradually reduced the national marketing quota to 1.1 million tons in 1985.

The domestic peanut price support program has been protected since 1953 by a federally set annual import quota of

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about 1,000 tons, which is quite small compared with the marketing quota. In 1980, when a drought reduced domestic production 42 percent from year-earlier levels, the import limitation was eased and 200,000 tons were imported.

Current Peanut Program

The current peanut program continues the two-tiered price support program for quota and additional peanuts through 1990. The program became mandatory after a January 1986 referendum in which peanut growers approved it for the 1986-90 marketing years.

Because acreage allotments no longer exist, anyone may grow peanuts. However, only those producers with a share of the national marketing quota (their farm quota) may sell peanuts for domestic food and related uses. By law, the national quota must be set at a level equal to domestic food, seed, and related uses, but not less than 1.1 million tons. The national quota has increased in the last few years, from 1.1 million tons in 1985 to 1.4 million in 1988 (*table 1*). The 1989 quota is set at 1.44 million tons.

The Food Security Act of 1985 apportioned the 1986 national quota among States based on their 1985 allocations. Individual farm quotas were then granted to farms that had quotas in 1985. Growers can acquire quotas two other ways. They may buy or lease another owner's quota, or they can establish a history of producing and marketing additional peanuts. When a State's quota is raised, farmers who grew and marketed additional peanuts in 2 of the preceding 3 years are entitled to a share of the increase.

Peanut prices are supported by offering loans to growers through the regional growers' associations. This means that producers receive loans at the price support rates in effect for quota and additional peanuts. To get a loan, a grower

Table 1. The National Quota for Peanuts Has Grown

Item	Marketing year ¹				
	1984/85	1985/86	1986/87	1987/88	1988/89
<i>Thousand acres</i>					
Acreage					
Total planted	1,563	1,490	1,573	1,567	1,657
Harvested	1,531	1,467	1,537	1,547	1,628
<i>Pounds per acre</i>					
Yield	2,878	2,810	2,407	2,339	2,445
<i>Cents per pound</i>					
Prices					
Quota loan rate	27.50	27.95	30.37	30.37	30.76
Additional loan rate	9.25	7.40	7.49	7.49	7.49
Average farm price ²	27.90	24.30	29.20	28.00	26.90
<i>Million tons</i>					
National quota	1.134	1.100	1.356	1.356	1.402
<i>Million pounds</i>					
Supply	5,019	5,549	4,548	4,625	4,816
Beginning stocks	611	1,424	845	1,003	833
Production	4,406	4,123	3,701	3,620	3,981
Imports	2	2	2	2	2
Utilization	3,595	4,704	3,544	3,792	3,986
Domestic	2,735	3,661	2,881	3,174	3,298
Food	1,911	2,023	2,073	2,071	2,254
Crush	625	812	514	560	814
Seed, loss, and residual	199	826	294	543	230
Exports	860	1,043	663	618	688
Ending stocks	1,424	845	1,003	833	830

¹The crop and marketing year for peanuts runs from August 1 to July 31. ²Includes quota and nonquota peanuts.

places peanuts in storage arranged by the regional association. Once this is done, the grower no longer has control of them. Instead, the peanuts are part of a pool controlled by the association and the CCC. Growers who have placed peanuts under loan are eligible for dividend payments if association revenues from selling peanuts in the pool exceed costs of running the loan program. Losses are

absorbed by the Government as a CCC budget expense.

The national loan rate for 1989-crop quota peanuts is \$615.87 per ton (30.79 cents per pound). Support rates for 1987-90 crops are required by law to equal the preceding year's rate adjusted for increases in the estimated costs of production, except those for land, during the previous year. Increases are limited

to 6 percent. The quota support rate was increased for 1989 because the 1988 cost of producing peanuts rose above 1987 levels.

The support rate for 1989-crop additional peanuts is \$149.75 per ton (7.49 cents per pound). This rate is set to ensure no loss to the CCC from the sale or disposal of these peanuts placed in the loan pools. The rate takes into account the demand for peanut oil and meal, the expected prices of other vegetable oils and protein meals, and the demand for peanuts for export.

Additional peanuts become available for domestic food use if they are "bought back" after being put under CCC loan. The price of these buy-backs must cover all Government costs and cannot be less than the quota loan rate. This program provision is valuable because it provides a supplemental source of peanuts should the quota supply be inadequate. Also, these sales generate revenues to offset operating costs of the peanut program.

The peanut program is administered by three regional growers' associations, which serve as agents for the CCC. These associations keep records of quota and additional peanut marketings, arrange warehousing for CCC loan peanuts, and operate the price support loan program.

Each year's quota and quota support rate combination, however, does not necessarily correspond to a quantity and price that domestic peanut buyers desire. If the quota support rate is higher than the price that domestic processors are willing to pay, some quota peanuts will go under loan at CCC's expense, and the quantity of peanuts consumed will be below the quota level. On the other hand, if the selling price for peanuts is above the quota support rate, there will be no incentive for producers to put quota peanuts under loan. Such has been the case in recent years.

Annual net CCC farm-related expenditures for the peanut program averaged \$30 million in the 1960's, \$61 million in the 1970's, and \$10 million during 1982-87. Under the current program, the costs to taxpayers should be minimal because quotas now are set to equal expected domestic food and related demand. Furthermore, the loan rate for additional peanuts is substantially below the market price. It is also below the current crush value. This means that few peanuts should go under loan and that CCC should be able to dispose of acquired peanuts at no loss.

However, the peanut program could cost taxpayers substantially more money if the national marketing quota were much larger than what processors would want to buy at the quota loan rate. Growers would then place large quantities of quota peanuts under loan, and the Government would be obligated to buy the peanuts at the quota loan rate.

How Peanut Program Affects Consumers

In supporting the price farmers receive, the peanut program raises the price consumers pay. In the same vein, by imposing marketing quotas, the program reduces the supply of peanuts available to consumers.

The quota loan rate puts a floor under the price peanuts can be sold for in the domestic market. It is difficult to say what peanut prices would be without the program because the program has existed for so long. We do know that in 1987, when the quota loan rate was \$615 per ton, it cost about \$420 to produce a ton of peanuts. This reflects the break-even, longrun average price necessary for growers to cover all costs of production and thereby continue to grow a crop. Therefore, a free market price would be closer to \$420 per ton than \$615.

However, even this cost estimate may be questioned because farmers have

adjusted their production practices and marketing strategies in response to the constraints and opportunities provided by the peanut program. Furthermore, a free market system would entail shifts in the location of production, which is now determined largely by the quota system.

The program reduces consumer purchases by limiting supply and therefore raising prices. This, in turn, leads to smaller quantities demanded. But the national quota is not an absolute limit. Supply can be augmented through purchases of additional peanuts that have been placed under loan. And in years of extremely tight supply, such as the 1980/81 marketing year, the restrictions on imports may be eased.

Although a lower free market price would increase consumption, the size of the gain would be modest compared with the current level of consumption. This is because consumer demand for peanuts and peanut products, like the demand for many food products, is relatively insensitive to price changes. It has been estimated that a 10-percent decrease in peanut prices would raise total consumption just 2.3 percent. In terms of 1988/89 consumption levels, a 10-percent drop in price would have added about 52 million pounds to the 2.25 billion pounds consumed that year. Yet how consumers respond to price changes varies among peanut products. For example, peanut candy demand appears to be more price sensitive than peanut butter demand.

However, in general, peanut demand is relatively insensitive to changes in prices because peanuts, and especially peanut butter, have few good and comparably priced substitutes. Other nuts, such as almonds and cashews, are more expensive, and none of them make a good substitute for the peanut butter in a peanut butter and jelly sandwich.

Another reason for the limited response to price changes is the fact that



peanuts and peanut products generally account for a relatively small portion of a consumer's budget. That is, spending on peanuts is small compared with spending on many other foods and consumer products. Buyers are less likely to adjust their spending on commodities that are considered small purchases.

How Program Affects Processors

Peanut processors are the middlemen between growers and consumers. Their livelihood depends on a reliable supply of raw peanuts and a predictable demand for processed peanuts and peanut products. Although the domestic marketing quota attempts to match supply and demand, bad weather can lead to short-

ages and higher prices that can curb demand. Bad weather cannot be anticipated when setting the quota, so in years of low yields processors have to pay more than the minimum quota loan rate to obtain peanuts. Processors then have to either absorb these costs, resulting in narrower profit margins, or pass the increased price on to consumers.

Although consumers are relatively insensitive to price changes, they do respond to higher prices by reducing purchases. This is nearly the same situation that other food processors and manufacturers sometimes find themselves in. A difference is that shelling firms and processors who buy additional peanuts for export, but later cannot sell them abroad, are subject to penalties if they sell their product in the domestic market. This is a

risk other industries do not face. Even with normal yields, unanticipated growth in consumer demand may lead to shortages and higher prices.

The Peanut Program and Producers

The Federal peanut program is intended to support the price farmers receive and thus improve their incomes. Farmers strongly support the program even though it restricts their activities by limiting the quantity of peanuts that may be marketed for domestic food, seed, and related uses.

Farmers benefit from the peanut program because prices are higher than they would be without it. The quota support rate is currently higher than the total cost of producing peanuts. Program benefits accrue to quota holders whether or not they produce peanuts, because farm quotas may be rented to other growers. Quota rents vary widely among States, but they average about \$150 per ton in the Southeast.

Most other commodity programs support the price of agricultural products through a system of nonrecourse loans and deficiency payments that are underwritten by U.S. taxpayers. With peanuts, however, very little support is derived from Government outlays. Instead, consumers support the program by paying higher prices. ■

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U.S. Dairy Programs

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The dairy industries of most developed countries are extensively regulated. Many subsidize part or all of their domestic production and frequently their exports. Imports are restricted by practically all major dairy-producing countries. Consequently, only about 5 percent of world milk production enters world trade in the form of cheese and other dairy products.

The U.S. dairy industry, influenced by several Government programs, is no exception. Dairy product imports are curtailed by quotas and have averaged less than 2 percent of U.S. annual milk production (*table 1*), or about 3 percent of our consumption of manufactured dairy products. Most imports are made up of specialty cheeses and casein. Exports of as much as 2 percent of U.S. milk production have historically been concessional sales or food aid donations from Government supplies. However, international dairy markets, especially for nonfat dry milk, changed dramatically in 1988. The primary reason for this new situation—in which prices of milk powders, casein, and cheese rose substantially—was European Community and U.S. efforts to reduce dairy surpluses and stocks.

One reason the United States restricts imports is to prevent other countries' dairy products—which are often subsidized—from directly, or indirectly, increasing dairy product purchases by the Commodity Credit Corporation (CCC) under the Federal dairy price support program. If imports were unlimited, the United States would be supporting the price of dairy products worldwide.

Table 1. Dairy Product Imports Have Averaged Less Than 2 Percent of U.S. Annual Milk Production

Item	Commercial disappearance of milk ¹					
	1975	1980	1985	1986	1987	1988 ²
	<i>Billion pounds</i>					
Supply	120	134	148	148	147	150
Beginning commercial stocks	6	5	5	5	4	5
Marketings ³	112	126	141	141	140	143
Imports	2	2	3	3	3	2
Commercial disappearance	114	119	131	134	136	137
Net Government removals	2	9	13	11	7	9
Ending commercial stocks	4	6	5	4	5	4

¹Milkfat basis. Totals may not add because of rounding. ²Estimated. ³Commercial marketings of milk. Equals production less farm use.

Industry Conditions Affect Marketing

Milk is bulky, highly perishable, and subject to bacterial and other contamination. So, it must be produced and handled under sanitary conditions. It also must be marketed quickly, either for drinking or for manufacturing into storable products, such as cheese, butter, and nonfat dry milk. Prices—even though influenced by Government programs—allocate raw milk supplies among competing demands, such as the fluid milk and processing markets, and give production and marketing signals to dairy farmers, processors, and marketing firms.

The ability of market prices to efficiently coordinate these economic activities depends in part on the inherent characteristics of milk and its products. Most of these characteristics are not unique to milk, but in combination, they

create unique conditions and problems. They include:

- *Extreme perishability of the raw product.* There is a high potential for transmitting diseases in raw milk. It must be transported, refrigerated, and pasteurized quickly.
- *Highly inelastic demand.* This means that changes in quantities purchased are relatively small when prices change.
- *Bulkiness.* At 87 percent water, milk takes up considerable space.
- *Continuous production.* The biological process of milk production requires, among other things, skilled workers daily.
- *Unsynchronized production and demand.* Milk production is highest in the spring, while consumption is strongest in the fall. Retail fluid milk sales are greatest on the weekends in contrast to production, which is even throughout the week.

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● *Biological lags in output.* It takes about 30 months for a newborn calf to become a cow and begin producing milk. Therefore, it takes the industry a while to expand dairy herds in response to increases in demand. In the shorter run, some additional milk output can be obtained by more concentrate feeding, and small increases in cow numbers can be accomplished with slower culling. On the other hand, decreased concentrate feeding and heavier culling can cut milk production relatively quickly.

● *Joint assembly and hauling.* Most dairy farmers find it is more cost effective to combine their milk to market it.

Regulatory Background

Federal dairy price supports and milk marketing orders, import restrictions, domestic and international food aid, and State milk regulations directly affect the industry.

Overall, these programs play an important role in the pricing and marketing of milk and dairy products. Most Federal dairy regulations evolved from legislation enacted in the 1930's and 1940's. For instance, the Agricultural Marketing Agreement Act of 1937, as amended, authorizes Federal milk marketing orders. The Agricultural Act of 1949 established the ongoing dairy price support program.

While there have been significant changes in marketing orders, the basic structure of the dairy price support and import control programs remained nearly the same from 1949 to 1981.

Since 1981, three major departures from traditional dairy price support policy have occurred. First, price supports were removed from parity. Second, voluntary supply management provisions



Middle Atlantic Milk Marketing Association

were added. The Milk Diversion Program, which operated from January 1, 1984, through March 31, 1985, and the Dairy Termination Program, running from April 1, 1986, through September 30, 1987, were authorized by legislation in 1983 and 1985, respectively. Finally, changes in dairy price supports on January 1, 1988, 1989, and 1990, were linked to projected annual Government purchases. If purchases are projected to be under 2.5 billion pounds (milk equivalent), the support rate goes up 50 cents a hundredweight (cwt). Conversely, if purchases are expected to be over 5 billion pounds, the support price goes down 50 cents.

To avoid burdensome supplies in these 3 years, the Secretary of Agriculture has authority to establish another milk diversion or dairy termination program. (*Program terms are explained in the Glossary.*)

Drought relief legislation passed in mid-1988 prohibited any January 1, 1989, reduction in the support price. It also required a 50-cent increase on April 1, 1989, to be followed by a 50-cent reduction on July 1, 1989. The support price dropped another 50 cents on January 1, 1990, to \$10.10 per cwt for milk containing 3.67 percent butterfat.

Many of the legislative changes made during the early and mid-1980's were attempts to reduce the supply of excess

milk and cut Government purchases and costs. In 1983, dairy farmers produced over 10 percent more milk than consumers were willing to buy at supported prices. However, with strengthening international dairy product prices, the United States may become a significant participant in international markets and the persistent excess milk supply problem may decline.

How the Dairy Price Support Program Works

Because milk is a perishable commodity, the Government indirectly supports the price farmers receive for it by buying dairy products. Specifically, the CCC buys surplus butter, nonfat dry milk, and cheddar cheese from processors at specified prices.

The CCC sets purchase prices for butter, nonfat dry milk, and cheese using a formula that combines the support price with margins, or "make allowances," to cover the costs of processing milk into these products. The margins are calculated so that dairy farmers, on average, should receive the support price for Grade B milk (*see box*). (Grade B milk can only be used to make manufactured dairy products.)

The actual prices received by dairy farmers depend on many factors other than the support level. Plant location, the type of product manufactured, the quantity of milk delivered, the butterfat content of the milk, local competition between processors for milk, and plant operating efficiency all play a role. Prices to farmers for Grade B milk are free to move above or below the support level depending on supply and demand conditions.

Another Federal program, milk marketing orders, regulates the prices of

Federal Price Support Purchases

The Federal Government supports milk prices through purchases of butter, nonfat dry milk, and cheddar cheese. The following example illustrates the connection between the prices USDA pays for these dairy products and the price support rate for milk, which is \$10.10 per hundredweight (cwt) beginning January 1, 1990.

Smith and Jones are average dairy farmers living near Plainville, USA. Dairyman Smith sells milk to the local processing plant that makes butter and nonfat dry milk. For each hundredweight (100 pounds) of milk he sells, the plant makes 4.48 pounds of butter and 8.13 pounds of nonfat dry milk. With the CCC prices of butter and nonfat dry milk set at \$1.0925 and 79 cents per pound, respectively, the products made from Smith's 100 pounds of milk are worth \$11.32. However, the

plant's allowance for the cost of manufacturing these products is \$1.22 per cwt, leaving \$10.10 to Smith for his milk.

Jones sells milk to the cheese plant on the other side of town. For every hundredweight of milk purchased, the plant manufactures 10.1 pounds of cheese with some whey solids left over. The CCC pays \$1.11 per pound for the cheese. The fat in the whey solids is worth 27 cents, making the market value of the products made from Jones' milk equal to \$11.47. Since the plant's allowance for manufacturing the cheese is \$1.37 per cwt, Jones receives \$10.10 per cwt for the milk.

The law sets the support price as a target value, but does not require processors to pay this amount. Farmers can receive more or less than the support price, depending on supply and demand conditions and market competitiveness.

Grade A (fluid) milk. However, since most fluid milk prices are based on those paid for Grade B (manufacturing) milk, the price support program undergirds all dairy prices.

How Federal Milk Marketing Orders Work

Milk marketing orders were instituted to assure adequate supplies of good-quality milk to consumers at reasonable prices, improve dairy farmers' incomes, and provide stability and orderliness in fluid milk markets.

Under Federal milk marketing orders, minimum prices are set that processors must pay for different uses of Grade A milk in markets covered by the orders (*figure 1*). The 41 Federal milk marketing orders operating on January 1, 1990, regulate the handling and pricing of about 70 percent of all milk sold to plants and dealers, and about 80 percent of the Grade A milk marketed in the United States. About 90 percent of the Nation's milk supply is Grade A, and about 45 percent of all Grade A milk sold is used for beverage products.

Federal milk marketing orders have two major characteristics: classified pricing of milk according to use and pooling or combining all revenue from the sale of milk in the area covered by an order.

These revenue pools provide all producers with a single uniform, or "blend," price for milk that is supplied to plants regulated under an order.

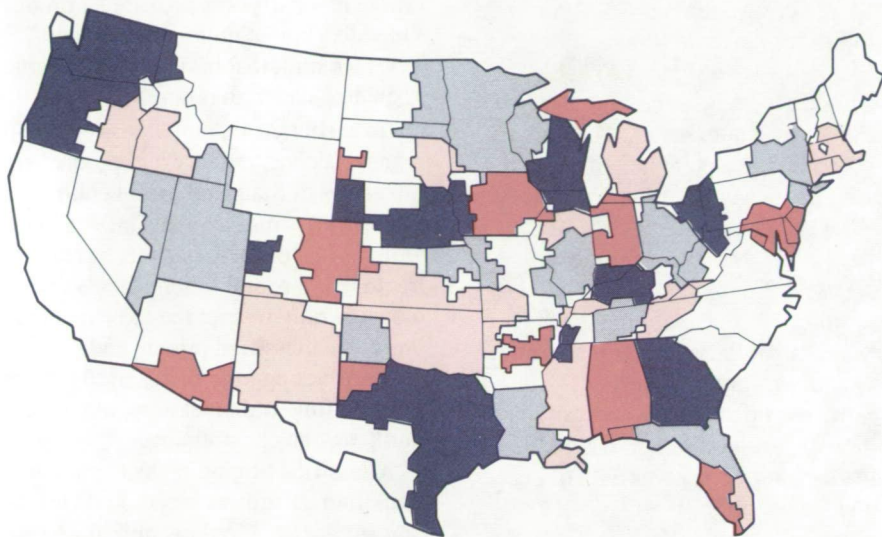
In earlier years, numerous regulations—such as sanitary and product specifications of State and local health authorities—restricted the movement of milk. Most of these barriers have been removed. Federal orders, themselves, do not generally restrict the movement of milk, but classified pricing and provisions affecting ingredients used for reconstituted fluid milk and unregulated raw milk may be constraining.

Classified pricing breaks Grade A milk into categories based on its actual use (*figure 2*). Grade A milk for beverages is designated as Class I. Most orders have two other classes. Class II includes milk used for soft (semiperishable) manufactured products including cream, ice cream, cottage cheese, and yogurt. Class III includes milk used for hard (storable) manufactured products like cheese, butter, and nonfat dry milk.

Minimum class prices for all Federal marketing orders are based on the average price of Grade B milk in Minnesota and Wisconsin, known as the M-W price. With a few minor exceptions, Federal order prices for Grade A milk used in manufactured products are set at or near the M-W price. Minimum prices for Class I milk are higher than the M-W level by fixed differentials unique to each Federal order.

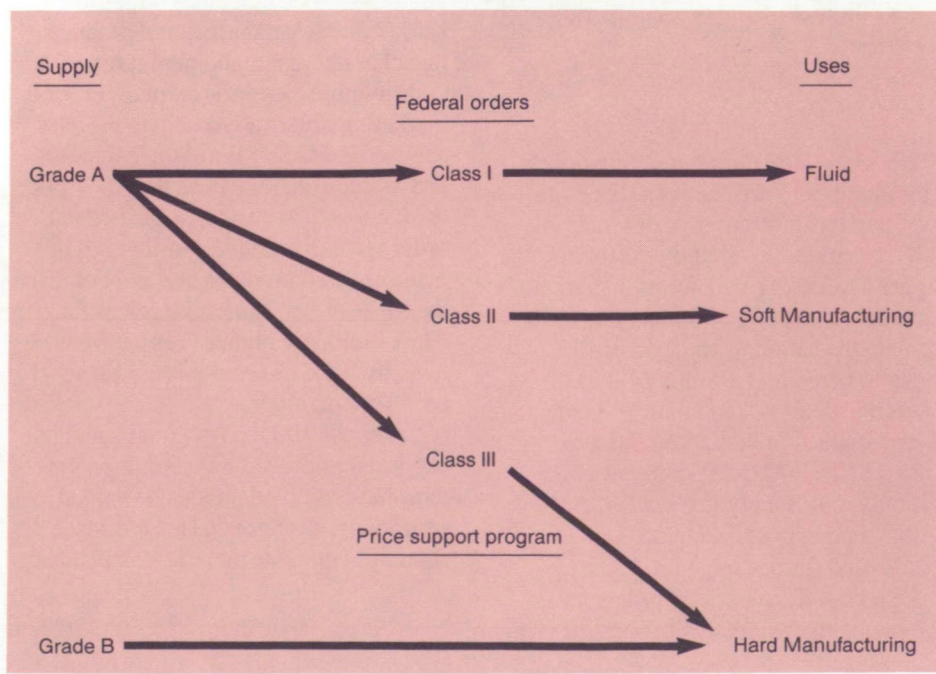
Since the 1950's, new interstate highways and improved transportation systems have allowed milk to be moved over longer distances. This has made fluid milk markets more interdependent

Figure 1. There Were 41 Federal Milk Marketing Orders Operating on January 1, 1990¹



¹Marketing areas covered by Federal milk orders on January 1, 1990. Differences in shading merely differentiate among marketing areas.

Figure 2. Federal Marketing Orders Categorize Milk According to Use



and regional in nature. When Federal order pricing provisions were changed in the late 1960's to reflect this greater mobility, the Upper Midwest had the largest overall reserve supply of Grade A milk. Dairy farmers there produced more milk than could be consumed in the region. Over time, however, other areas of the country—such as southwest Missouri, Kentucky-Tennessee, and the Northeast—began developing Grade A milk supplies in excess of local fluid milk needs. The Federal order pricing system was not adjusted to reflect these changing Grade A supply conditions.

The Food Security Act of 1985 legislated higher minimum Class I differentials in 35 of 44 Federal milk orders that were operating in May 1986—primarily in southern milk-deficit markets east of the Rockies (table 2). Until these changes became effective May 1, 1986, the basic structure of minimum Class I differentials, especially the portion designed to reflect transportation costs between markets, had remained unchanged since 1968.

The other major provision of Federal milk orders is marketwide pooling. Under this system, producers in each marketing order receive a monthly weighted average, or blend, price. Each processor regulated under the order must pay at least the announced minimum marketwide blend price to producers delivering milk to the plant, regardless of how it is used (see box).

Reconstituted Milk

Federal marketing order provisions are applied to milk-derived ingredients that are used in reconstituted milk. This often makes the ingredients, nonfat dry or condensed milk, more costly than without regulation. The pricing and accounting provisions are intended to balance costs among handlers. They also keep unregulated reconstituted milk from

Table 2. The Food Security Act of 1985 Mandated Higher Minimum Class I Differentials for Most Federal Milk Orders¹

Federal order	Mandated increase	Minimum Class I differential	Federal order	Mandated increase	Minimum Class I differential
	Dollars per cwt			Dollars per cwt	
New England	0.24	3.24	Tennessee Valley	0.67	2.77
New York-New Jersey	0.30	3.03	Nashville	0.67	2.52
Middle Atlantic	0.25	3.03	Paducah	0.69	2.39
			Memphis	0.83	2.77
Georgia	0.78	3.08	Fort Smith ²	0.82	2.77
Alabama-West Florida	0.78	3.08			
Upper Florida	0.73	3.58	Central Arkansas	0.83	2.77
Tampa Bay	0.93	3.88	Southwest Plains	0.79	2.77
Southeastern Florida	1.03	4.18	Texas Panhandle	0.24	2.49
			Lubbock	0.07	2.49
Upper Michigan	0	1.35	Texas	0.96	3.28
Southern Michigan	0.15	1.75	Louisiana	0.81	3.28
Eastern Ohio-Western Pennsylvania	0.10	1.95	New Orleans-Mississippi	1.00	3.85
Ohio Valley	0.34	2.04			
Indiana	0.47	2.00	Eastern Colorado	0.43	2.73
Chicago	0.14	1.40	Western Colorado	0	2.00
Central Illinois	0.22	1.61	Southwestern Idaho		
Southern Illinois	0.39	1.92	Eastern Oregon	0	1.50
Louisville-Lexington-Evans	0.41	2.11	Great Basin	0	1.90
			Lake Mead ³	0	1.60
Upper Midwest	0.08	1.20	Central Arizona	0	2.52
Eastern South Dakota	0.10	1.50	Rio Grande Valley	0	2.35
Black Hills	0.10	2.05			
Iowa	0.15	1.55	Puget Sound-Inland ⁴	0	1.85
Nebraska-Western Iowa	0.15	1.75	Oregon-Washington ⁴	0	1.95
Kansas City	0.18	1.92			

¹Changes became effective May 1, 1986. ²Merged with Southwest Plains order, effective May 1, 1987. ³Merged with Great Basin order, effective April 1, 1988. ⁴Merged to form the Pacific Northwest order, effective February 1, 1989.

displacing locally produced Grade A milk in higher valued uses, and thus lowering producer blend prices.

The rules treat milk as a highly perishable product and emphasize using local supplies to minimize the time between production and consumption. They encourage balancing daily and seasonal fluid needs with fresh reserves, even though techniques for prolonging the storage life and quality of processed milk ingredients have been developed. To the

extent these provisions raise marketing costs and discourage longer distance movements, prices of fluid milk products for consumers in milk-deficit areas are increased.

State Marketing Regulations

The States also play an important, albeit declining, role in milk regulation. State regulations cover setting milk prices at the producer, wholesale, or retail levels; licensing milk processors

and distributors; regulating unfair trade practices, product dating, identity standards, and sanitation (*table 3*).

Most producer price regulation occurs in the Federal milk marketing order system, where over 80 percent of the Grade A milk is priced. In January 1986, only 14 States regulated producer prices. The highest volume by far occurred in California, where the State's dairy industry has long been regulated. Price regulation at other than the producer level is a State function, where such regulations exist at all.

How the Programs Interact

Federal milk marketing orders and the Federal price support program are closely interrelated. The reason is that Federal milk marketing order class prices are based on the M-W price. Since the M-W price reflects the market value of unregulated manufacturing grade milk, it tends to represent the supply and demand balance for the entire industry (*figure 3*). When market prices are above the support level, the price support program is inactive. On the other hand, when milk prices fall to, or below, the support level, the CCC's purchases of butter, cheese, and nonfat dry milk tend to prevent further price declines, thus supporting the M-W price and all milk prices. In this situation, changes in the support price have a direct effect on all milk prices.

The M-W price, as the prime mover of class prices in all Federal order markets, provides a coordinating link between milk orders and the price support program. It helps assure that minimum class prices will not rise when large Government purchases might require a reduction in the support price. (Under the 1985 Food Security Act, Congress increased Class I differentials at a time of excess milk supplies in the overall sys-

Understanding Marketing Order Pricing

The pricing mechanisms in Federal milk marketing orders set the minimum prices that processors must pay for milk based on how it is used. However, those minimum prices are not paid directly to producers. Instead, receipts are pooled by a market administrator, and producers receive a weighted-average, or blend, price based on how the milk was used by processors during each month. To understand more clearly how orders work, consider this hypothetical Omaha order.

There were three processing plants in the Omaha area regulated by the order. The cheese plant northwest of the city bought milk from dairyman Clark. Because it was regulated by the Omaha order, the plant had to pay the Class III price of \$11.10 per cwt for milk, the same amount that unregulated processors in Minnesota and Wisconsin paid for Grade B milk (the M-W price).

East of town, another processing plant manufacturing ice cream bought milk from Clark's neighbor, Thompson. Like the cheese plant, the ice cream manufacturer was regulated by the order. Since ice cream is a soft dairy product, the plant paid the Class II price of \$11.30 per cwt for milk. The price was calculated using a product price formula and usually ranges from 5 to 30 cents over the M-W price.

A fluid processor south of the city bought milk from Miller. The marketing order required the plant

to pay the Class I price of \$12.75 per cwt. This was the sum of the Class I differential of \$1.75 and the March M-W price of \$11.00 (there is a 2-month lag in this calculation).

Even though the producers sold to different types of plants, they all received the same price for their milk. The monthly blend price is calculated by multiplying the amounts used in each of the classes by their respective prices. Assume the cheese plant bought 80,000 cwt of milk, the ice cream plant purchased 12,000 cwt, and the fluid milk processor, 48,000 cwt. Thus, the total volume and value of milk purchased during May was:

Class III	\$11.10	x	80,000 cwt	=	\$888,000
Class II	\$11.30	x	12,000 cwt	=	136,000
Class I	\$12.75	x	48,000 cwt	=	612,000
Totals			140,000 cwt		\$1,636,000

To get the blend price, total value is divided by total volume. Therefore, no matter where they sold their milk, Clark, Thompson, and Miller all received \$11.69 per cwt for the milk they sold during May.

In reality, most plants produce multiple products and over the year at least some milk must be used in beverage products or some bulk milk must be sold to fluid processing plants as Class I in order to qualify as a "pool plant" under a Federal order. In any event, this same pooling concept applies to both the costs of processors and the receipts of Grade A dairy farmers. "Pool plant" rules vary by individual Federal orders and months of the year.

tem and deviated from this basic concept.)

Processors in all States can rely on the Federal price support program as a market for surplus milk. Thus, Government expenditures for dairy products are affected not only by Federal price support and marketing order provisions, but also by State programs. Since the Food Security Act linked annual changes in dairy price supports to projected annual Government purchases, there is renewed interest in regional milk production and in the effects of State and Federal programs on the prices received by farmers in different regions.

Current Conditions

Many characteristics of the dairy industry have changed since Federal regulation began in the early 1930's. There is considerable debate among analysts, policymakers, industry leaders, and consumer interest groups as to the extent to which Government involvement is still needed. Some changing characteristics and conditions that influence the types and extent of Federal dairy programs are:

- *Conversion from Grade B to Grade A milk production.* About 90 percent of the total U.S. milk supply is now Grade A, which meets the higher quality standards required for use in fluid products. However, over half of this Grade A supply is used in manufactured products. As a result, the reserve supplies of Grade A milk are substantially larger than they were before milk was so heavily regulated. Furthermore, due to technological advances in production and increasing sanitation standards for Grade B milk, the additional costs of producing Grade A milk are negligible.
- *Fewer but larger, specialized dairy farms.* The industry has become more concentrated over the past three decades. The number of farms with milk cows

Table 3. Twenty-Nine States Had Milk Marketing Regulations in January 1986

State	Minimum prices established at			Trade practice regulations	Producer base ¹
	Producer level	Wholesale level	Retail level		
Alabama		(² ³)	(² ³)		
Arkansas				X	
California	X	(⁴)	(⁴)	X	X
Colorado				X	
Connecticut				X	
Hawaii	X				
Idaho				X	
Iowa				X	
Kansas				X	
Louisiana	(²)			X	
Maine	X	X	X	X	
Massachusetts	X	(²)	(²)	X	
Minnesota				X	
Missouri				X	
Montana	X	X	X	X	X
Nevada	X	(²)	X	X	X
New Jersey	X	(²)	(²)	X	
New York	X			X	
North Carolina	X	(² ³)	(² ³)	X	
North Dakota	X	X ³	X ³	X	
Oklahoma				X	
Oregon	X	(³)			X
Pennsylvania	X	X	X		
South Carolina	(²)	(²)	(²)	X	
Tennessee				X	
Vermont	(²)	(² ³)	(² ³)	X	
Virginia	X	X ⁵	(⁴ ⁵)	X	X
Wisconsin				X	
Puerto Rico	X	(⁵)	(⁵)	X	

¹State administers a base plan which sets farm production levels. ²Authorized but not used. ³Maximum pricing authorized but not used. ⁴Authorized only in the event of price disruption. ⁵Also establishes maximum prices.

Sources: "Recent Changes in State Milk Control Programs," *Dairy Situation and Outlook Yearbook*, DS-406, ERS, USDA, July 1986; and *State Milk Regulation: Extent, Economic Effects, and Legal Status*, AGES860404, ERS, USDA, April 1986.

dropped from 2.8 million in 1955 to about 221,000 in 1988. Commercial dairy farms—defined here as those with 11 or more milk cows—were estimated at around 171,000 in 1988. Milk production rose from 123 million pounds in 1955 to 146 million pounds last year, while production per cow increased from an average of 5,842 pounds to 14,213.

● *Production shifts to the Southwest and West.* Thirty years ago, the upper Mid-

west was the major milk-producing region, but since then the Southwest and West have also emerged as major producing regions. Although population patterns have closely mirrored these shifts, the lower milk production costs on large-scale specialized units and the use of irrigation to produce high-quality forage are probably the driving forces behind these production shifts. Many specialized dairies purchase their feed, especially grains

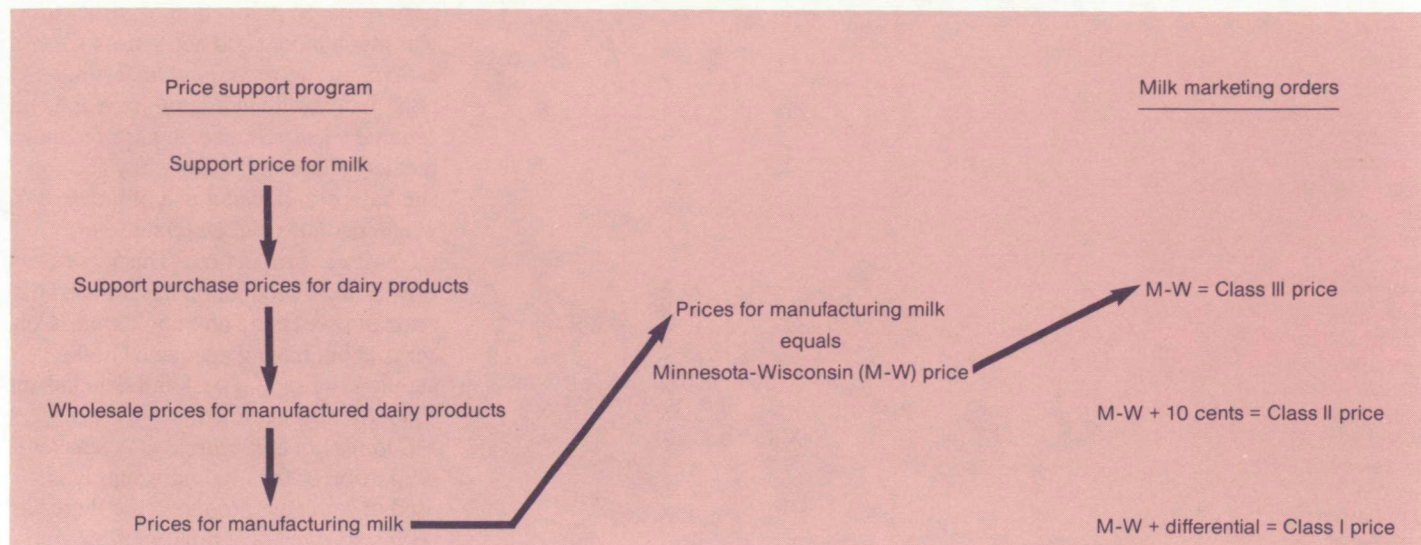
and concentrates that can be economically transported long distances. Specialized production provides more flexibility and timeliness in altering milk supplies to meet fluid market demand. The more pasture-based production of earlier times was much more rigid and seasonal.

● *Reduced seasonality of milk production.* Increased feeding of grain and concentrates, less reliance on pasture, and greater reliance on quality hay and forage have eliminated much of the early-winter declines and early-summer increases in production. This more even flow of milk production has reduced the costs of processing and marketing. Concerns about having adequate Grade A supplies during the peak fall demand season have also declined.

● *Changes in consumption.* A smaller proportion of the total milk supply is used in beverage products, and there has been a shift to consumption of low-fat products. On the other hand, cheese consumption has increased substantially, especially mozzarella for pizza. This has reduced the relative importance of fluid milk in consumers' budgets and the proportion of total producer revenue derived from the perishable fluid market. It also has reduced the relative significance of beverage products under Government programs—particularly the Federal milk order system. Although the percentage of milk used in Class I products has declined over the years, the absolute level of fluid milk sales has grown slightly.

● *Population shifts among regions.* For instance, the U.S. population has been moving from the "Frostbelt" to the "Sunbelt" during the last 20 years. While this may not be a prime factor in the changing location of milk production, it is especially important for processors and marketers of beverage products, since transportation costs for fresh milk are relatively high. In contrast, processed dairy products are shipped across country and

Figure 3. The Minnesota-Wisconsin Price Links the Price Support Program and Marketing Orders



around the world at relatively low costs. For example, a pound of cheese can be shipped from Wisconsin to Florida for about 5 cents, but the 10 pounds of milk (1.2 gallons) required to make the pound of cheese would cost about 50 cents to transport. Thus, the location of fluid milk processing facilities is more sensitive to changes in population, while hard manufactured dairy product processing facilities are relatively more sensitive to sources of milk available for manufacturing.

● *Technological changes.* New production, processing, and marketing techniques have contributed to substantial changes in the productivity and structure of the dairy industry. Research continues on new technologies that could have a major impact. Developments in feed additives, hormone injections, reproduc-

tion practices, and computers could be used to increase productivity and efficiency of milk output. Overall, this could lead to lower milk prices, lower returns to producers who do not adopt the new technology, and also major structural adjustments since fewer cows and fewer herds will be needed to produce an adequate milk supply.

Since milk is a relatively bulky product containing 87 percent water, the emerging technology for removing water or separating milk into its components and then reconstituting the product after shipment to high-cost markets has potential for improving the processing industry's efficiency. If changes in Federal order provisions accommodate such developments, the structure and location of the milk production and processing sectors could change considerably. ■

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A California Alternative

Thirteen percent, 19 million pounds, of the milk produced in the continental United States in 1988 came from California dairy herds. In 1978, California produced only 10 percent, and in 1968, only 7 percent. In 1988, it ranked second among States in its proportion of total U.S. milk production, surpassed only by Wisconsin's 17 percent. New York followed with 8 percent of the total, and Minnesota with 7 percent. California surpassed Minnesota in 1971, and New York in 1972.

Because of the large increases in California milk production and the high proportion of the Federal purchases of surplus dairy products coming from there, the State's alternative dairy policy has attracted considerable attention in the debate over regional allocation of industry proceeds. For example, in the 1988 marketing year, 17 percent of the cheese, 24 percent of the butter, and 34 percent of the nonfat dry milk purchased under the Federal dairy price support program came from California.

California has set its own prices since its milk control program began in 1935. It is the major State-regulated milk pricing and marketing system in the country. California is geographically isolated from most other major producing areas and has lower prices. Therefore, only a small amount of raw milk or packaged fluid products move across the State line.

Prior to August 1978, the State established fluid milk prices based on information received at public hearings. These prices remained in effect until evidence gathered at a subsequent hearing supported a price change.

In the late 1970's, consumer groups petitioned the State to cut fluid milk prices when it became apparent that production costs, particularly feed costs, were dropping. These pressures prompted producers to request a shift from specified prices to formula pricing. In August 1978, after a public hearing, the State adopted a formula to automatically determine the fluid milk price based on costs of production, dairy product prices, and consumers' spendable earnings.

Another difference in California pricing is the quota plan associated with the fluid milk market. A milk pooling plan, initiated in July 1969, terminated the individual handler pool system and gave each eligible Grade A producer a production base and pool quota that represented historical shares of California's fluid milk market. The base and quota belonged to the individual producer and could be bought and sold without arbitrary restrictions by a third party. The average market value of a quota in early 1989 was about \$2,000 per cow.

New producers and those who expand milk production and are not covered by the quota receive a different price for the milk they market over the base. This "over-base" price has been running about 75 cents per cwt lower than the Minnesota-Wisconsin Grade B price. Currently, about 12 percent of the producers have no quota, so they receive the over-base price for all of their milk, which represents about 8 percent of the total California Grade A supply. Grade A milk makes up about 97 percent of California milk production.

Price Support Programs for Wool and Mohair

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Wool and mohair have been declining industries in the United States for 40 and 25 years, respectively. Sheep inventories are one-fifth of their mid-1940's level, and Angora goat numbers have declined by nearly two-thirds since the mid-1960's. The drop occurred as the U.S. textile industry replaced wool and mohair with manmade fibers. Reduced consumption of lamb and mutton also contributed as fewer sheep were available to produce wool. Per capita consumption of lamb and mutton dropped from over 7 pounds in the 1940's to 1.4 pounds in 1988. Similarly, wool's share of domestic fiber use fell from 10 percent in 1950 to 2 percent in 1988.

Despite significantly lower stock numbers—11 million head in 1988, compared with 56 million in 1942—sheep are raised in all States, with about 70 percent of the total in the Rocky Mountains, Texas, and California. Wool from these areas is called "territory" wool and makes up the finer grades, meaning the fibers have smaller diameters. The finer grades are used in making high-quality, high-value clothing. Wool from sheep in the Midwest and Eastern States is called "fleece" wool, and most of it consists of the medium grades. Fleece wool goes into sweaters, coats, and blankets. The coarser, thicker diameter grades used in carpeting are not produced in this country and must be imported.

Most of the revenue from raising sheep comes from the sale of meat. Only about one-third of the cash receipts (including price support payments) result from the sale of wool (*table 1*). Hence, changes in raw wool prices have a relatively minor effect on a producer's decision to change flock size or wool

Table 1. Only One-Third of Sheep Producers' Total Receipts Comes From Wool

Item	1982	1983	1984	1985	1986	1987
<i>Dollars per female sheep</i>						
Producer receipts	47.20	46.89	58.24	66.16	67.12	73.05
Meat	33.14	30.86	38.15	46.12	45.59	53.16
Wool	6.28	6.72	8.81	6.84	7.35	7.62
Wool support payments ¹	7.78	9.31	11.28	13.20	14.18	12.27
Producer expenses	48.39	43.03	40.90	39.27	43.27	44.66
Variable ²	28.53	29.25	29.47	29.40	28.43	28.59
Fixed ³	19.86	13.78	11.43	9.87	14.84	16.07
Receipts less cash expenses	-1.19	3.86	17.34	26.89	23.85	28.39
<i>Percent</i>						
Wool payments as a percent of wool receipts	55	58	56	66	66	62
Wool receipts as a percent of total receipts	30	34	34	30	32	27

¹Includes price support payments for unshorn lambs. ²Includes labor, feed, and miscellaneous expenses.

³Includes taxes, insurance, and interest.

production. The decline in lamb and mutton consumption by Americans has had a greater effect. Consumption of lamb and mutton in the late 1980's, as a percentage of total meat consumption, was one-fourth the relative consumption of lamb meat during the first few years following World War II.

Price and performance competition between wool and manmade fibers, overall economic activity, and raw wool price variability are all important factors influencing the demand for wool. Widespread consumer acceptance of manmade textiles—such as nylon, polyester, and acrylic—for apparel and floor covering has limited the demand for wool. The relative price stability and uniform quality of these manmade fibers make them attractive to textile mills. Also, since two-thirds of the wool used by U.S. mills is imported, currency fluctuations and changes in foreign wool pro-

duction and demand can cause substantial swings in U.S. wool prices.

The two major end-uses of wool purchased by domestic mills are apparel and carpet. Apparel wool includes the fine- and medium-grade fibers that are primarily used to make apparel yarns and fabrics. Two wool textile processes, the woolen and worsted systems, each account for half of the apparel wool used. The worsted system uses the finer wool grades to produce fabric for expensive suits and other high-value items. The woolen system uses the medium grades to produce sweaters, tweed suits, winter coats, and blankets. Carpet wools are the coarser, imported fibers used in carpets and rugs. About 8 to 10 percent of the wool used by U.S. mills is made into floor coverings.

Unlike wool, which is a secondary product of sheep and lamb production, Angora goats are raised specifically for

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their fleece. Mohair, the shorn hair of the Angora goat, is a specialty fiber with a relatively high price. Eighty-two percent of the Angora goats in the United States are raised in Texas, mainly in the Edwards Plateau region in the southwestern part of the State. New Mexico and Arizona rank a distant second and third. Altogether, the United States accounts for nearly 30 percent of world mohair production. South Africa is also a major mohair-producing country, as is Turkey to a lesser extent. All three nations

export almost all of their production. The major buyers are European and Far Eastern mills.

Mohair is used almost entirely in apparel, and thus its demand is strongly influenced by clothing trends. Mohair is a desirable textile fiber because of its luster, resilience, wrinkle resistance, durability, and feel. The finer grades are mostly used in summer-weight clothes and sweaters. The coarser grades go into coats and suits.

Price Support Programs

Wool has received Federal price support since 1947 and mohair since 1949. During the late 1940's and early 1950's, wool and mohair prices were supported using Government loan programs. Producers were offered nonrecourse loans at the support rate. If market prices were below this level at the end of the loan period, producers could forfeit their wool and keep the loan proceeds. (*Program terms are explained in the Glossary.*) Market prices were below support rates during this time, so the Commodity Credit Corporation (CCC) ended up with a lot of wool. Congress abandoned the loan programs in 1954 when Government-owned stocks of wool reached a level equal to half of a year's production.

The National Wool Act of 1954 authorized price support for wool and mohair by means of loans, purchases, payments, or other operations. From the start, direct payments have been used. The change to supporting wool and mohair through payments rather than



loans allowed market prices to fall below the support price. The support price-direct payment method was a forerunner of the target price-deficiency payment concept implemented for grains and cotton in the 1970's.

The method of computing wool and mohair payments differs from the procedure used to calculate crop deficiency payments, which equal a fixed amount per unit of production. Instead, payments for wool and mohair increase as the sales value of the producer's fibers rises (*see box*). The aim is to encourage production of higher quality, and therefore higher value, wool and mohair and to improve their marketing potential.

Changes in the Support Price

Since 1955, the major legislative changes in the wool and mohair programs have centered on how support prices are computed. From 1955 through 1965, they were set by the Secretary of Agriculture. During that time, the support price for shorn wool remained constant at 62 cents per pound. The law required mohair to be supported at between 85 and 115 percent of the rate at which shorn wool was supported. This resulted in mohair support prices ranging from 70 to 76 cents.

The Food and Agriculture Act of 1965 introduced a formula for determining the shorn wool support price. The formula adjusted the 1965 support price by the percentage change in the index of prices paid by all farmers for production inputs during the 3 most recent years, compared with that index during 3 base years, 1958-60. There was no adjustment in the formula for changes in the amount of wool produced per sheep. The use of the formula resulted in a slow rise in support prices during the late

Understanding Support Payments

Wool and mohair producers receive Government support in the form of direct payments. Determining the amount of this support is a multistep process involving both USDA and producers. A hypothetical example of two farmers selling shorn wool may illustrate how these payments are made.

USDA calculates the national support price for shorn wool using a formula specified by law. The first part of the formula utilizes a parity-index ratio:

average parity index for the 3 previous years
average parity index for 1958-60

This is used to provide a current level of purchasing power, considering the changes in prices over the past three decades. The index includes prices paid by farmers for commodities, services, interest, taxes, and farm wage rates. This ratio is multiplied by 62 cents, the support price in 1965, to give a support rate adjusted to current price levels. For 1988 and 1989, this figure is then multiplied by 76.4 percent. In 1988, the support price for shorn wool equaled \$1.78 per pound and in 1989, \$1.77.

The payment rate is based on the percentage needed to bring the national average return received by producers up to the support price. The 1988 farm price for shorn wool was \$1.38 per pound. USDA calculates the payment rate by sub-

tracting the farm price (\$1.38) from the support price (\$1.78), then dividing that amount by the farm price. In 1988, the payment rate for shorn wool was 0.29. This means a producer would receive 29 cents in the form of a Government support payment for every \$1.00 of greasy wool marketed. (Greasy wool has been neither cleaned nor scoured).

Since 1985, USDA has capped the per-pound sales value on which payments can be made. For 1985-88, that cap has been set at four times the national average price.

For example, farmer Johnson has 100 sheep, from which he obtained 800 pounds of greasy wool last year. Selling this to his local cooperative, he received \$1,104 (\$1.38 per pound). To receive his support payment, he took his receipts to USDA's local Agricultural Stabilization and Conservation Service office. They calculated his payment by multiplying the payment rate, 0.29, by the value of the wool he sold, \$1,104, yielding \$320.

Farmer Smith also got 800 pounds of greasy wool from his 100 sheep last year. However, since the wool was of a finer grade, it sold for \$2,400 (\$3.00 per pound). His support payment equaled \$696, 29 percent of \$2,400. The amount Smith received was larger than Johnson's payment because of the higher value of Smith's wool.

1960's. By 1970, they had reached 72 cents a pound for wool and 80.2 cents for mohair.

With the gap between growing support prices and lower market prices widening each year (*figure 1*), the agricultural acts of 1970 and 1973 abandoned the formula. Instead, both wool and mohair support prices were fixed at 1970's level through 1976.

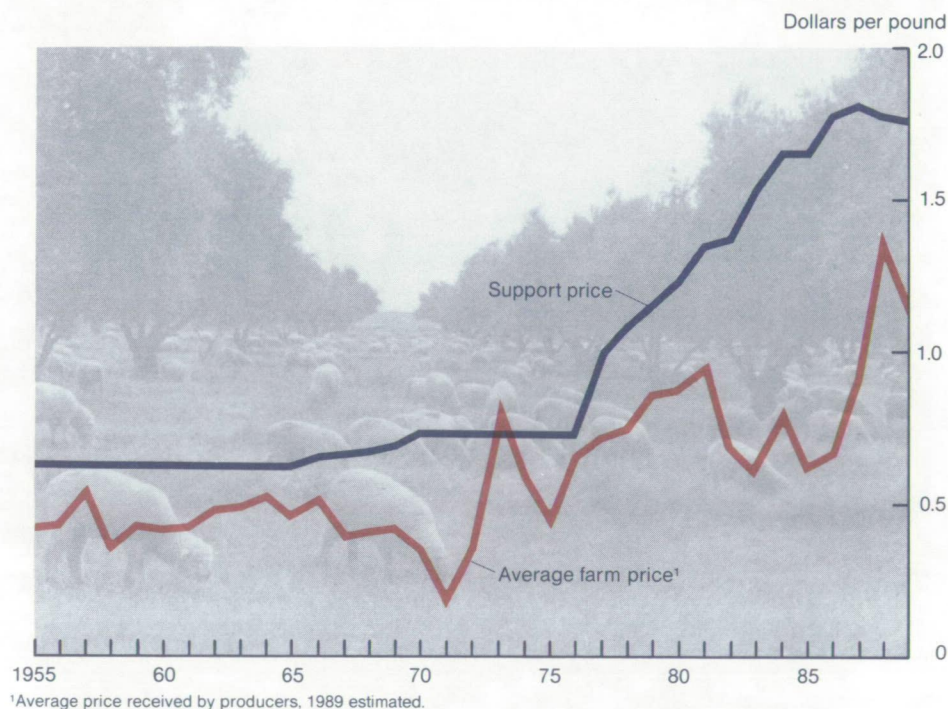
The Food and Agriculture Act of 1977 returned to the formula, setting the shorn wool support price for 1977-81 at 85 percent of the amount calculated by the formula. The Agriculture and Food Act of 1981 revised this computation for 1982-85, basing the shorn wool support price on 77.5 percent of the amount indicated by the formula. The Food Security Act of 1985 again set the percentage at 77.5 for 1986-90. Recent legislation lowered it to 76.4 percent for 1988 and 1989.

Beginning in 1977, the support price for mohair was again set at a level between 85 and 115 percent of the rate for shorn wool. The support price has been established at the minimum—85 percent—since 1977, except for 1981 through 1984, when it was supported at 100 percent.

Effects of Programs on Producers

The objective of the National Wool Act is to encourage production of wool at prices that will assure a viable domestic industry. Wool production depends on the expected profitability of raising sheep relative to the next best alternative, usually cattle or field crops. Sheep profitability depends on wool prices, wool support payments, lamb and sheep prices, and production costs. Because only about 30 percent of the annual income from a sheep operation comes from wool, a 10-percent increase in wool

Figure 1. Market Prices for Shorn Wool Have Consistently Been Below Support Prices



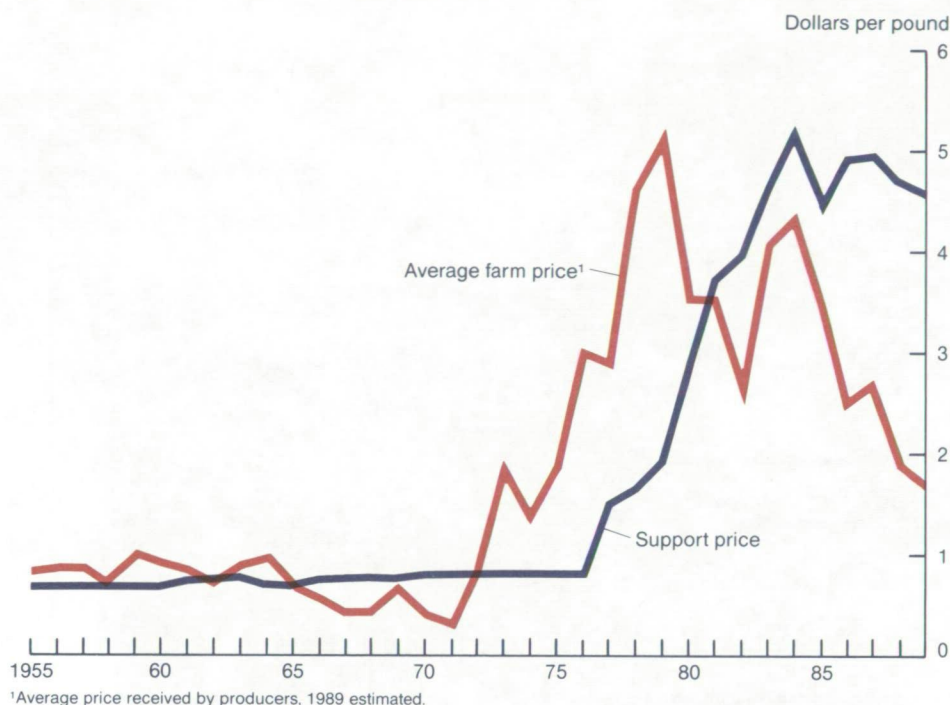
receipts would raise operators' income only 3 percent. Thus, large changes in the expected price for wool would be necessary to elicit modest changes in sheep production and wool output.

Because of these unique features of wool production, market prices would be similar with or without the wool program. As a result, producers receive almost the full benefit of the support payments. There are two reasons why this happens. First, and foremost, U.S. wool prices depend greatly on foreign wool prices. The extra output caused by the wool program tends to replace imported wool, rather than drive down U.S. prices. Second, wool demand responds more to

price changes than does wool production. This means it takes only a small drop in the market price to raise demand enough to absorb the extra production caused by large support payments.

The mohair program has not had as large a cumulative effect on producers as the wool program has had. The value of mohair rose during the mid- and late 1970's and for 9 years farm prices remained above support levels (*figure 2*). However, since 1981, farm prices have been below the support price. Compared with no program, it has encouraged production, lowered farm prices, raised producer receipts, and increased mohair exports.

Figure 2. Mohair Prices Rose During the 1970's



Impact on Consumers

The effect of the wool program on consumers is negligible. The small size of the domestic wool market relative to the world market and the substantial volume of U.S. wool imports suggest that domestic wool prices are more related to world wool prices than to support payments. The additional production caused by support payments probably has only a small, long-term effect on U.S. wool prices and likely causes domestic wool to replace imported wool in U.S. mills. However, to the extent that the higher output causes a short-term drop in U.S. prices, textile mills benefit.

The mohair program, on the other hand, has greater benefits for consumers. This is because changes in U.S. production affect both domestic and world mohair prices. Since 1981, the mohair support price has exceeded market levels, causing greater production than if the price support program did not exist. The higher output pushed down mohair prices, enabling processors and mills to buy more at lower prices.

The effect on consumers of any decline in raw wool and mohair prices caused by the program is lessened because textile products are highly processed. A typical wool sport coat selling for \$120 may contain only 4 pounds of raw wool having a farm value of about

\$3. A mohair sweater selling for \$150 may contain only a pound of raw mohair, with a farm value of \$4. Because they account for so little of final product value, changes in raw fiber prices are indiscernible to the average American customer.

Effects on Taxpayers

However, as taxpayers, Americans bear the cost of Government expenditures for the programs. These expenditures are primarily a transfer of income from taxpayers to wool and mohair producers. Total wool and mohair program costs were \$130 million during fiscal 1988. CCC expenditures for price support and related activities for all commodities were \$12.5 billion that year. Thus, the wool and mohair programs accounted for only about 1 percent of public expenditures on price support and related programs during 1988. ■

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The U.S. Sugar Program in the 1980's

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Household and table use accounts for only about one-fourth of the sugar consumed in the United States. Most sugar and other sweeteners are consumed in manufactured products, from soft drinks to baked goods, cereals, processed and canned foods, dairy products, and confectionery items. Sugar itself is valued not only as a sweetener but as a preservative, bulking agent, and appearance enhancer. It has many other qualities, including the "snap" in some cookies.

U.S. Government intervention in the sugar market, which began 200 years ago, is as controversial as ever. More than five legislative bills sought to address the "sugar problem" in the last Congress, and new bills have been introduced in the 101st Congress. Not only Congress but the Administration, private industry, public interest groups, and foreign officials have proposed changes in the U.S. sugar program.

One reason the program attracts controversy is that it affects more than just the sugar industry. Producers of other sweeteners benefit from the price umbrella provided by Government support for sugar. The corn-wet-milling industry, for example, closely monitors changes in the sugar program. In 1987, sales of sugar equaled about \$4.4 billion, while corn sweeteners reached about \$2.2 billion. Honey, maple syrup, cane syrup, edible molasses, refiner syrup, and low-calorie sweeteners (saccharin and aspartame) added several hundred million dollars more. Another low-calorie sweetener, acesulfame-K, was introduced in 1988.

Sugar is also a lightning rod for controversy internationally. More than 110 countries produce sugar, which is pro-

cessed from sugarcane in tropical climates as well as from sugarbeets in temperate zones. Not surprisingly, sugar has long been involved in North-South, developed-developing country trade issues.

Over the years, quite a few developing countries have become dependent on sugar as a significant source of foreign exchange, national income, and employment. Sugar support programs that restrict imports, raise domestic prices (thereby lowering demand), and hold down world sugar prices vitally affect the welfare and stability of many countries. Sugar policies and programs—particularly in the larger producing and trading countries like the United States and members of the European Community—have important foreign policy implications.

Why Have a Sugar Program?

Sugar is the most price-volatile among internationally traded commodities. This provides not only the U.S. Government but many other nations a ready rationale for supporting their domestic industries.

Historically, world prices have followed a 1- to 2-year cycle of high prices, followed by a long period of low prices. After 5 to 10 or more years of slow growth and low prices, demand tends to outpace the world's sugar-producing capacity. The market then becomes sensitive to production shortfalls and potentially explosive price spikes. High prices in turn encourage many countries to invest in their sugar industries. Typically, world investment in production capacity far exceeds demand, bringing about another round of low prices.

"World" prices, however, are a misnomer in that they apply to only a small part of world sugar output. Global exports equal about one-fourth of total

production, but part of those exports are governed by bilateral agreements with preferential terms, including prices typically above the "world" level. The volume of exports sold using the so-called world, or free market, price has varied over the years but has been as low as about 12 percent of world sugar production. Consequently, small changes in world production and consumption tend to exaggerate the swings in world prices. These "ups and downs" occur throughout the broader price swings of the sugar cycle.

Cyclical swings in prices are dramatic episodes. For example, during 1980-88, prices for raw sugar went from a high of 29 cents a pound in 1980 to an average 6.5 cents in 1982-87, far below costs of even the world's most efficient producers. Average production expenses for 61 countries ranged between 12.6 and 15.4 cents a pound for raw cane sugar during 1980-87.

Persistently low world prices have caused sugar industries to seek protection. The capital investment for producing and processing sugarbeets and sugarcane is substantial and often involves extensive and expensive infrastructure. Once the investment in a plant is made, there is strong incentive to fully use its productive capacity. Many jobs and local community well-being are also at stake. Therefore, governments have frequently intervened in sugar production and marketing to stabilize prices both for consumers and producers, maintain employment, secure revenue, and assure supplies of a common staple and important food component. Globally, however, the aggregate effect has only weakened the adjustment of supply to price changes, diverted resources from other industries, and prolonged low-price periods.

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Government Intervention

U.S. Federal involvement in sugar began in 1789 with an import tariff to raise revenue. For the next century, the sugar tariff yielded close to 20 percent of all import duties, which were the major source of Government revenues until the Civil War. Tariffs were fixed, usually at about 2.5 cents a pound of sugar.

An ad valorem tariff was imposed in 1894 and continued until passage of the Jones-Costigan Act, often called the Sugar Act of 1934. The Act's basic features, modified only slightly in subsequent legislation, lasted 40 years and required comprehensive regulation of domestic sugar production, imports, and prices. U.S. growers received benefit payments, which were funded by a processing tax, if they restricted their acreage and met other conditions. Foreign countries were assigned quotas each year, specifying the amount of sugar they could sell to the United States.

Between 1975 and 1981, U.S. Government support for sugar was sporadic. No price support was provided for the 1975 and 1976 crops but, when world prices plunged, an amendment to the Food and Agriculture Act of 1977 offered processors short-term payments for part of the 1977 crop equal to the difference between a market price objective and actual prices. Subsequently, nonrecourse loans were provided for the rest of the 1977 crop and all of the 1978 crop, and tariffs were imposed on sugar imports to ensure that domestic prices reached desired levels. Loans were also provided for the 1979 crop, but no program was established for 1980 and most of the 1981 crop because of high world prices. *(Program terms are explained in the Glossary.)*

Falling world sugar prices after mid-1981 led to inclusion of sugar in the Agriculture and Food Act of 1981. For part of the 1981 and 1982 crops, the Federal Government agreed to purchase raw cane



sugar at 16.75 cents and refined beet sugar at 19.70 cents a pound if prices for commercial sales were not sufficiently high. To avoid these purchases, the Government imposed tariffs on imported sugar to keep supplies in check and raise prices to the desired level.

For the rest of the 1982 crop and subsequent 1983-85 crops, loans were made available at rates starting at 17 cents per pound and climbing to 18 cents for raw cane sugar (20.15 cents, rising to 21.06 cents, for refined beet sugar). In May 1982, restrictive import quotas replaced tariffs as the mechanism to achieve desired domestic supplies and market prices.

The Food Security Act of 1985 continues support for sugar producers through nonrecourse loans for the 1986-90 crops. The mechanics of supply and price management through import quotas were not changed, but the 1985 Act strengthened effective support for sugar in some important ways. The Secretary of Agriculture not only has the authority to increase loan rates when domestic costs of production rise or other circumstances change, but each year has to provide a justification if the rate is not raised. More significantly, the Act mandates that

the President use all available authority to operate the sugar program "at no cost to the Federal Government" by preventing sugar from being forfeited to the Commodity Credit Corporation (CCC). This puts pressure on the Government to keep import quotas tight and prices high in the domestic market so as to reduce the risk of forfeiture to near zero.

How the Program Works

The sugar program provides price support through nonrecourse loans for domestically grown sugarcane and sugarbeets. However, unlike most other commodity programs, loans are made to processors and not directly to producers. This is because sugarcane and sugarbeets, being very bulky and perishable, must first be processed into sugar before they can be traded or stored. Beets are processed directly into refined sugar, while cane is milled into raw sugar and then marketed to cane refiners for further processing. When processors sell the sugar, growers share in the returns. The loans made to processors are expressed in cents per pound of raw cane sugar or refined beet sugar.

Raw cane sugar and refined beet sugar are used as collateral for loans

obtained from the CCC. To qualify for loans, processors must agree to pay producers no less than the USDA-established minimum price support levels based on the loan rates for sugarcane and sugarbeets. Generally, growers receive about 60 percent of the loan or sale proceeds of the sugar and processors 40 percent, but the exact arrangements vary by contract.

The Food Security Act of 1985 set the minimum national loan rate for sugarcane at 18 cents per pound for raw cane sugar. Sugarbeets are to be supported at a level that is "fair and reasonable" in relation to the loan rate for sugarcane. But what is fair and reasonable? USDA calculates the beet loan rate by using a production-weighted, 10-year ratio of prices received for sugarbeets relative to sugarcane. The ratio, multiplied by the cane loan rate plus fixed marketing expenses for beet sugar, is the national average loan rate for refined beet sugar. This rate usually runs about 3 cents above the loan level for cane sugar.

Loan rates differ by location. The farther a processor is from its markets, the lower the loan rate. If freight costs for a region are above the national weighted average, the difference is reflected in a lower loan level. The opposite is also true. For example, Hawaii's loan rate for 1988-crop raw cane sugar was 17.42 cents a pound, while Louisiana's was 18.27 cents. This is done so that the loans do not distort the routine marketing of sugar. In other words, no area will have more of an incentive to default on its loans than any other (*see box*).

The processing company can either repay its loan with interest or default on it. If the firm defaults, the sugar held as collateral is forfeited to the CCC. The processor (borrower) will be inclined not to default if the market price for sugar is high enough to permit repayment of the loan, interest, freight, and related market-

Regional Loan Rates and Support Levels

The national weighted average loan rate for 1988-crop raw cane sugar was 18.00 cents a pound. The corresponding loan rate for refined beet sugar was 21.37 cents. These national rates were adjusted for location, so they reflect where the sugar offered as collateral for a price support loan was processed.

The loan rate for sugar processed in a specific region is based on freight costs associated with moving it to regional markets.

Minimum price supports for sugarbeets and sugarcane are established based on regional loan rates. Processors participating in the sugar program must pay producers at least the minimum price support for their region.

Sugar Loan Rates and Price Support Levels Vary Among Regions

Area	Loan rate ¹		Price support level ²	
	1987	1988 ³	1987	1988 ³
	<i>Cents per pound</i>		<i>Dollars per ton⁴</i>	
Sugarcane regions				
Florida	18.07	17.76	24.68	24.71
Hawaii	17.64	17.42	⁵	22.17
Louisiana	18.54	18.27	23.20 ⁶	20.72 ⁷
Texas	18.29	18.03	⁵	16.89 ⁸
Puerto Rico	17.53	17.19	⁸	16.52 ⁹
U.S. weighted average	18.00	18.00		
Sugarbeet regions				
Michigan and Ohio	22.10	21.94	28.44	29.53
Minnesota and eastern North Dakota	21.15	21.04	28.74	30.45
Colorado, Nebraska, and southeast Wyoming	21.01	20.91	31.39	31.16
Texas	21.76	21.74	33.85	33.74
Montana, northwest Wyoming, and northwest North Dakota	20.97	20.90	31.41	31.21
Idaho and Oregon	20.76	20.55	31.87	31.46
California	21.13	21.34	32.30	32.55
U.S. weighted average	21.16	21.37		

¹For refined beet or raw cane sugar. ²For sugarbeets or sugarcane. ³Loan rates and price support levels (except U.S. weighted average) reflect 1.4-percent reduction in program outlays mandated by the Omnibus Budget Reconciliation Act of 1987. ⁴Net-ton basis (excludes dirt, leaves, and other extraneous materials). ⁵Determined by contract. ⁶A formula was used for mills that used a core sampler. ⁷\$20.38 per gross ton (includes dirt, leaves, and other extraneous material) for mills that used a core sampler. ⁸Determined by local legislation. ⁹Per gross ton.

ing expenses. (Freight is not part of the formula for beet sugar since the buyer pays for transport.) Prior to the 1985 Act, part of Florida's 1984 crop was forfeited at a net cost to the Government of \$47 million. But because the current program is required to be run "at no cost," the market stabilization price (MSP) plays a critical role. For purposes of the overall sugar program, the MSP serves as a reference price—the level considered sufficient to avoid loan forfeitures.

The MSP is comprised of the national average loan rate for raw cane sugar, loan interest for 6 months, transportation and handling costs, and a market incentive of 0.20-cent a pound (*table 1*).

Transportation costs are based on average shipping charges from Hawaii to U.S. ports north of Cape Hatteras, North Carolina. This means that the MSP will be high enough to cover the processing area with the highest costs. As a result, all the other sugarcane areas are automatically covered from risk of forfeiture.

Sugarbeet areas are also protected from forfeiture because the cost of refining raw sugar, including weight loss in the physical refining process, is more than 4 cents a pound. Therefore, the price of refined cane sugar would exceed the market price at which beet sugar is forfeited.

The MSP is announced each September for the next fiscal year. For fiscal 1988, the MSP was 21.76 cents a pound and actual market prices in New York averaged 22.10 cents (includes insurance and freight charges).

Import Quotas

To get U.S. prices up to the MSP, USDA estimates the domestic demand for sugar and then limits supply. No limit is placed on domestic production, but imports are restrained by a quota. Without the quota, low-priced sugar in

Table 1. How the Market Stabilization Price for Sugar Is Calculated

	Fiscal year		
	1987	1988	1989
	Cents per pound		
National average loan rate	18.00	18.00	18.00
Transportation and handling costs ¹	2.93	2.96	2.97
Loan interest ²	0.65	0.60	0.63
Incentive	0.20	0.20	0.20
Market stabilization price	21.78	21.76	21.80

¹Average shipping charges from Hawaii to U.S. ports north of Cape Hatteras, North Carolina. ²Weighted-average cost of money to the Commodity Credit Corporation.

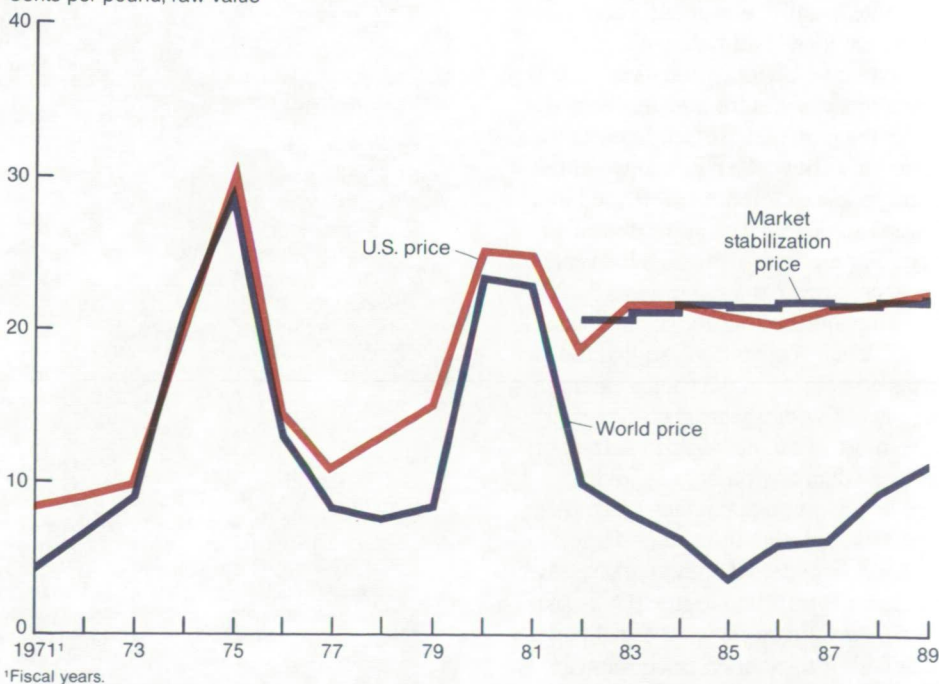
the world market would flood the U.S. market, undercut the MSP, and thus interfere with the operation of the sugar program (*figure 1*).

Before May 1982, tariffs were used to raise the U.S. sugar price to the desired level. However, the duty could not exceed 2.8125 cents a pound, raw value, and the fee could not exceed 50 percent of the sugar price for U.S. imports. When world prices plunged in the 1980's, tariffs were no longer able to assure achievement of the MSP and restrictive quotas were imposed.

Today, only a nominal duty exists, at the legal minimum of 0.625-cent a pound. Fees are zero for raw sugar and 1 cent a pound for refined. With the restrictive quota in place, the duty and fee do not affect the price of U.S. sugar,

Figure 1. U.S. Sugar Prices Are Supported Above World Prices

Cents per pound, raw value



¹Fiscal years.

but serve to capture some of the price premium of sugar marketed in the United States. Most nations eligible to ship sugar to the United States receive duty-free status under the Generalized System of Preferences, the Caribbean Basin Initiative, or both. (*See Glossary for details.*) All countries are subject to the fee on refined sugar, little of which is imported.

The size of the import quota each year is determined on the basis of estimated demand for sugar in the U.S. market and domestic supplies. Conditions can change, however, and the quota revised. For example, in 1988, the drought reduced sugar production far below the forecasted level and, in order to keep prices from skyrocketing, the quota was raised from 758,000 tons to 1,057,000.

Allocation of the quota to individual countries is generally based on their share of the U.S. market during 1975-81 when imports were relatively unrestricted. Quotas were extended to 39 countries for 1989. Nicaragua and South Africa, original quota recipients, have been excluded and their shares reallocated.

The United States actually imports more sugar each year than prescribed by the quota. The extra imports enter under special programs at world prices. (The world price plus charges for delivery to New York averaged about 12 cents a pound in 1988 versus quota sugar priced at about 22 cents.) Quota-exempt raw sugar enters the United States for refining and then is reexported as refined sugar or in sugar-containing products. A small amount of quota-exempt sugar comes in for industrial uses as polyhydric alcohol. Sugar also enters the domestic market indirectly through imports of sugar-containing products.

Industry Structure in the 1980's

The U.S. sugar industry has seen radical changes in the 1980's. The sugar program has been a major factor, but no less significant has been the development and use of high fructose corn syrup (HFCS) as a low-cost substitute for liquid sugar in many industrially processed foods and beverages, especially soft drinks. Mainly because of HFCS, corn sweeteners replaced sugar as the dominant sweetener in the United States in 1985.

Consumption of refined sugar fell 1.9 million tons or nearly 20 percent between 1980 and 1988, despite population and income growth. HFCS use, which raced from 2.2 million tons to 6.0 million, accounted for most of this loss (*table 2*). Over 70 percent of HFCS use is in beverages. HFCS is also used in baked goods, canned and processed foods, dairy products, and confectionery. However, since 1987, overall sugar consumption has slowly begun to rise again

as displacement of sugar by HFCS has ebbed.

HFCS now accounts for about 45 percent of combined sugar-HFCS consumption. This may be close to the limit that HFCS can be substituted for sugar unless other technological breakthroughs occur. Seasonally, sugar demand is now more stable throughout the year because of its declining use in soft drinks. The annual surge in demand caused by higher soft drink consumption during the summer no longer occurs.

High world sugar prices during 1980 and 1981 were a catalyst in the U.S. shift to HFCS, but the sugar program itself contributed to the rapid investment in HFCS production that occurred during 1975-85. Existence of a sugar program in the 1981 Farm Act—covering the 1982-85 crops—guaranteed a minimum price for sugar that served as an umbrella sheltering HFCS and other sweeteners from low world prices.

Table 2. Sugar Consumption Fell as High Fructose Corn Syrup Use Rose

Year	Sugar ¹		Corn sweeteners			Other		Total caloric sweeteners
	Raw value	Refined basis	HFCS ²	Glucose syrup	Dextrose	Pure honey	Edible syrups	
Million tons, dry basis								
1975	10.3	9.6	0.5	1.9	0.5	0.1	³	12.7
1980	10.2	9.5	2.0	2.0	0.4	0.1	³	14.1
1985	8.1	7.6	5.3	2.2	0.4	0.1	³	15.6
1988	8.1	7.6	5.9	2.2	0.4	0.1	³	16.3
Pounds per capita, dry basis								
1975	—	89.2	4.9	17.5	5.0	1.0	0.4	118.0
1980	—	83.6	18.0	17.6	3.5	0.8	0.4	123.9
1985	—	63.4	44.1	18.0	3.5	1.0	0.4	130.4
1988	—	61.7	48.0	18.0	3.6	1.0	0.4	132.7

— = not applicable. ¹ Sugar consumption is the total of U.S. sugar deliveries for domestic food and beverage use, and sugar imported in blends and mixtures. ² High fructose corn syrup. ³ About 50,000 tons.

Beneath the price umbrella, HFCS prices paralleled sugar prices closely but consistently at a discount. HFCS producers were able to reap considerable revenues—because of much lower production costs than for sugar—for further research, development, and promotion. Relatively low corn prices and net starch costs during 1975-85 contributed to HFCS's development and its competitive position in the sweeteners market. Further advances in enzyme technology have permitted HFCS to be mass-produced at a cost so low that in the United States HFCS can now compete with sugar from practically any source, unless the sugar is sold below cost.

In 1988, HFCS and other corn sweeteners accounted for over 500 million bushels of annual corn use in the United States or more than 6 percent of a normal crop. Although the corn-wet-milling industry, which produces corn sweeteners, and corn growers are among the strongest supporters of the U.S. sugar program, it is an uneasy alliance. Development of a high-quality and low-cost crystalline fructose would expand corn's potential for further penetration of the sugar market.

The decline in U.S. sugar deliveries in the 1980's came about not only from HFCS but from increased imports of sugar-containing products, which could be manufactured more cheaply abroad. These imports reduced the sugar needs of U.S. food firms. The General Accounting Office, an arm of Congress, estimated the loss in domestic sugar demand at about 175,000 tons annually.

While industrial demand for sugar dropped in the 1980's, household and table use continued to rise as the population grew. Changes in income affect sugar demand, but only slightly. Because the United States is a mature

economy, where sugar intake is already close to saturation, sugar consumption would likely rise less than 1 percent with a 10-percent rise in income. Price changes also have little effect on sugar use, which declines about 0.5 percent with a 10-percent price rise.

Estimates of the sugar program's impact on consumers are controversial, partly because it is not clear what the world price would be if all trade-distorting government policies were eliminated worldwide. International comparisons of sugar production costs are complicated by differing standards on minimum wages, health and safety, environmental safeguards, and other factors.

If a truly competitive world price were, say, 15 cents a pound and another 1.5 cents were needed to get the sugar to U.S. ports, the estimated costs of the pro-

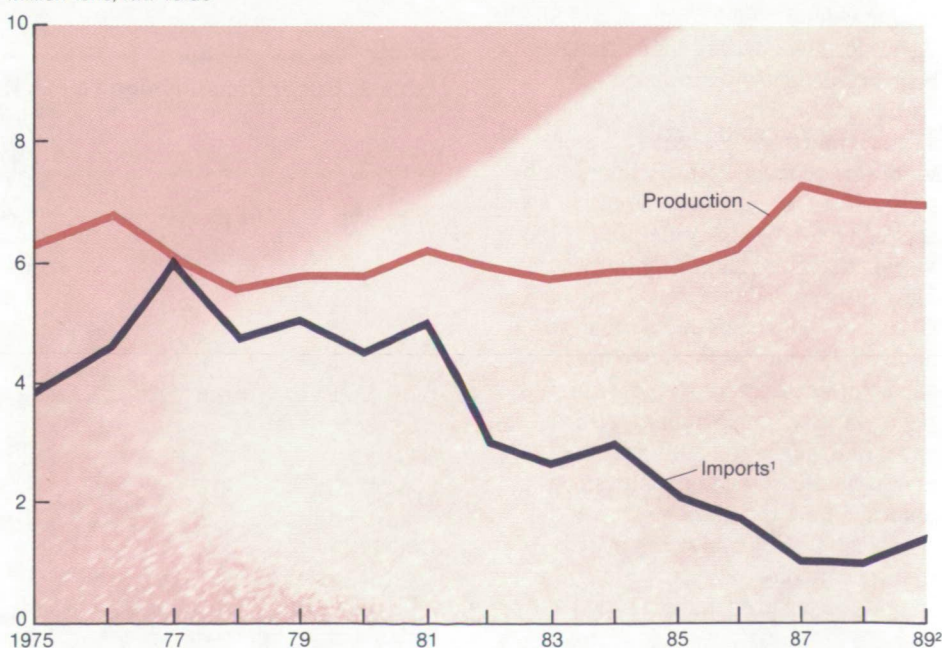
gram to sugar consumers would be about \$1 billion a year at 1989's MSP of 21.8 cents a pound. But this would only be a start in a full accounting of the gains and losses. The sugar program also influences the prices of other sweeteners, especially HFCS.

The U.S. Sugar Supply

Vast changes in the U.S. sugar supply occurred in the 1980's. Although domestic sugar demand fell, production increased. As a result, imports plunged from a 1979-81 annual average of over 4 million tons to a quota of about 1 million in 1988 (figure 2). The 1988 quota represented 13 percent of sugar consumption compared with the customary 40 to 50 percent before the 1980's. Even more telling is the fact that imports accounted for only about 7 percent of combined

Figure 2. U.S. Sugar Production Has Risen While Imports Have Fallen

Million tons, raw value



¹Imports for domestic use, excludes reexports. ²Estimated.

consumption of sugar and HFCS in 1988 and 9 percent in 1989. Foreign suppliers benefit from the premium price in the American market. However, export earnings have been severely hurt because the percentage reduction in the quota has been much greater than the percentage gain in U.S. prices. This has been especially galling to countries targeted for U.S. assistance through the Caribbean Basin Initiative.

Reduced sugar imports (almost all raw cane) have also hurt American cane refiners, which previously processed more raw sugar from abroad than from U.S. mills. Ten refineries out of 21 have ceased operations since 1981. With cane imports down and beet production rising more than domestic cane production, beets have become a more important source of U.S. sugar. They accounted for over 40 percent of total use in 1988, compared with about 30 percent in the 1970's. If the 1988 drought had not occurred, beet sugar's share would have been nearly 50 percent.

The consequences have been far reaching for the flow of sugar in the United States. In a reversal of previous patterns, beet sugar is now shipped into the Northeast and South, and cane refiners' profits are being pressured by

lower priced beet sugar. Such changes have spurred some significant corporate restructuring. Cane refiners are now owners of sugarbeet processing firms. One company has diversified its operations to include the largest cane refining firm in the country, a beet processing firm, and a wet-milling company for manufacturing corn sweeteners.

How Sustainable Is the Program?

Pressures to change the U.S. sugar program may occur as domestic sugar production rises and demand falls because of increasing use of competing sweeteners. Import needs could drop to the point where quotas no longer effectively help manage supply. Even before then, lower quotas could spell severe problems for sugar-dependent countries that are strategically significant to the United States.

Already, bills to lower loan rates and to guarantee import levels, if only for some countries, have been introduced in the 101st Congress. New farm legislation is up for consideration in 1990, and price support for sugar will surely be scrutinized relative to other crops. The program is also susceptible to significant change as a result of the Uruguay Round of multilateral trade negotiations, where government intervention in agricultural

markets is under serious discussion for the first time in history. Pressure for change in the program has been heightened by a General Agreement on Tariffs and Trade (GATT) panel finding in May 1989 that U.S. use of sugar import quotas is inconsistent with GATT trade rules. ■

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Beekeeping and the Honey Program

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Many Americans perceive honeybees as useful only to produce the honey we eat in liquid or creamed form or use as an ingredient in a wide array of food products. The National Honey Board reports that 493 different honey-containing products were available to consumers in 1988. (The Board is an industry group appointed by the Secretary of Agriculture that coordinates a national marketing research, advertising, and promotion program for honey.) In most supermarkets, today's shopper can usually find 40 to 50 of these items, including bakery goods, beverages, candies, cereals, condiments, dairy products, desserts, entrees, spreads, and side dishes.

Manufacturers of these products prominently advertise their use of honey, listing it in bold letters in the names of many honey-containing items. "Honey Graham Crackers," "Honey Nut Cheerios," "Honey Raisin Bran," "Honey Wheat Bread," and "Honey Bran Cookies" are just a few.

However, honeybees (*Apis Mellifera* L.) play a more important role than mere honey producers. They assist in the production of a wide variety of commodities, such as apples, melons, cucumbers, almonds, flax, sunflowers, and clover. These and other fruits, vegetables, tree nuts, and field, seed, and forage crops require, or benefit directly from, bee pollination. For U.S. agriculture, the value of honeybees as pollinators far exceeds the value of the honey and beeswax they produce.

In addition, honeybees are important to the production of plants that provide food and shelter for wildlife, control soil erosion, and beautify the environment. To ensure an ample supply of honeybees

for pollination, the Government has supported the price of honey for nearly 40 years. It was deemed impractical for the Government to subsidize beekeepers through payments for pollination. The alternative is to support honey prices at levels that make it possible for beekeepers to maintain viable operations.

History of the Honey Program

The price support program for honey was established by the Agricultural Act of 1949 and put into effect in 1950. The Act mandated honey supports at a level between 60 and 90 percent of parity. (*Program terms are explained in the Glossary.*) The program was established because depressed prices and overcapacity within the industry developed after sugar rationing was terminated at the end of World War II. Congress also recognized the importance of beekeeping to pollinate our crops.

Under the 1950 program, honey packers signed contracts with USDA whereby they agreed to meet certain standards regarding the cleanliness, moisture content, and flavor of the honey. USDA agreed to pay contracting packers the support price for all the honey that could not be marketed through regular channels. USDA also paid the expenses incurred by packers for handling, storing, and any processing requested by the Department. Beekeepers were paid 9 cents per pound for honey delivered to participating packers who met program requirements. A similar program in 1951 introduced a price support differential of 1.1 cents per pound between honey of "general national acceptability" and "limited acceptability" for table use.

From 1952 through 1985, the price of honey was supported through a loan and purchase program set up on the basis of class (table or nontable honey) and color (white, extra light amber, light amber, and amber). Under the loan feature of

the program, participating producers and marketing cooperatives received an initial loan disbursement on a portion of their crop. This was equal to the established loan rate per pound times the eligible quantity, which was up to 90 percent of farm-stored honey or 95 percent of honey stored in Commodity Credit Corporation (CCC) approved warehouses. Participants received price support for the additional 5 or 10 percent of the crop when the loan was settled.

These nonrecourse loans enabled producers to store their honey and wait for a more advantageous market price. They had until the end of the marketing year, which runs from April 1 to March 31, to sell their honey in the marketplace and repay the loan with interest. However, if borrowers were unable or unwilling to market their honey for a price sufficient to repay the loan, they could forfeit the honey to the CCC.

Under the purchase feature of the program, beekeepers designated a quantity of honey to be sold to the CCC and made delivery according to instructions. At the end of the marketing year, the beekeepers participating in the purchase option received payment from the CCC based upon the support price and the quantity of honey delivered. Although beekeepers were not obligated to deliver any honey to CCC, the CCC was required to accept as much as 110 percent of the eligible honey covered by the agreement. For beekeepers who did not need the working capital provided by nonrecourse loans, purchase agreements were an ideal means of receiving price support for their honey.

Current Honey Program

The Food Security Act of 1985 made several changes in the honey program. The new law eliminated the parity formula and progressively lowered support

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National Honey Board

prices for the 1986 through 1990 crops. The 1986 national average support price was set at 64 cents a pound, down from 65.3 cents for the 1985 crop. The average loan rates for 1987, 1988, and 1989 were 61 cents, 59.1 cents, and 56.36 cents a pound, respectively. In addition to the 5-percent annual reduction required for 1986-90 crops, the Budget Reconciliation Act of 1987 further lowered the loan rate 2 cents for the 1987 crop, 0.75 cent for 1988, 0.5 cent for 1989, and 0.25 cent for 1990.

The 1985 Act also authorized a lower loan repayment option for the 1986 through 1990 crops. This feature allows a honey producer to repay a loan at a rate below the support price. The option, discretionary on the part of the Secretary, was put into effect for the 1986-89 crops. Since October 8, 1987, honey loan repayment levels have ranged from 40 cents per pound for white honey to 33 cents for nontable class honey. These repayment

rates are based on current market conditions, as well as honey price support activity. To further encourage use of the repayment option, the purchase agreements allowed under earlier programs were dropped.

Impacts on U.S. Honey Producers

Beekeepers strongly support the honey program because it smooths out price fluctuations and provides a market for honey at an assured price. Since 1981, prices paid by CCC under the support program have exceeded those in the domestic market, thus providing additional benefits to producers.

Much of the program's history has centered around loan activity rather than CCC purchases. That is because the wholesale price of honey in 60-pound and larger containers, the minimum quantity eligible for delivery under a loan or purchase, usually exceeded the price support level. However, beginning in the

early 1980's and continuing through the 1985 crop, support prices rose above average domestic wholesale and world prices due to high parity prices.

Consequently, beekeepers found it profitable to forfeit their honey to CCC, while packers and industrial users imported honey for domestic use. As a result, forfeitures grew from 6.0 million pounds during the 1980 crop year to 106.4 million pounds in 1983 (table 1). For fiscal years 1980-88, CCC spent an estimated \$525.6 million to operate the honey program. Through August 31, 1989, about 532 million pounds of honey were forfeited to the CCC from the 1980-88 crops.

The repayment option announced by the Secretary for the 1986-89 crops increased participation in the program and significantly reduced honey imports. The number of loans increased from about 6,300 in 1985 to 11,600 in 1987. For the 1988 crop, 15,090 loans were made through August 31, 1989, for 206.7 million pounds, nearly 98 percent of U.S. production. Nearly half of the honey placed under loan was in California, Florida, Minnesota, North Dakota, and South Dakota.

With the reduced support price and lower loan repayments, CCC acquisitions of honey dropped significantly. Acquisitions of 1986 crop honey were 41 million pounds, down from 98 million in 1985. Of the record 216.4 million pounds of 1987 crop honey placed under loan, CCC acquisitions are estimated to be about 52 million pounds. This is up slightly from 1986, but still about 47 percent less than 1985 crop forfeitures.

Effects on Consumers

Calculations of domestic honey disposition include commercial sales and Government sales and donations. Commercial sales increased from 1985

Table 1. Costs of the Honey Program Rose Tenfold Between 1980 and 1984

Crop year ¹	Honey placed under loan	CCC acquisitions
<i>Million pounds</i>		
1980	41.1	6.0
1981	55.2	35.2
1982	88.4	74.5
1983	113.6	106.4
1984	107.5	105.8
1985	102.0	97.6
1986	180.4	41.0 ²
1987	216.4	52.2 ²
1988	206.7	13.3 ²
<i>Estimated cost</i>		
Fiscal year	Total outlays ³	Net Government expenditures ⁴
<i>Million dollars</i>		
1980	26.5	8.7
1981	29.1	8.4
1982	38.7	27.4
1983	58.1	48.0
1984	97.4	90.2
1985	85.8	80.8
1986	96.9	89.4
1987	114.9	72.6
1988	179.5	100.1

¹The crop year for honey runs from January 1 to December 31. ²Estimated as of August 31, 1989.

³Includes loans, purchases, storage, handling, and other costs. ⁴Outlays less receipts.

Source: Agricultural Stabilization and Conservation Service.

through 1987 because declining support prices and the loan repayment option lowered market prices. In addition, the recent promotional campaign by the National Honey Board has likely stimulated honey use in the United States. Domestic disposition was estimated to be a record 331.2 million pounds in 1987, up from 291.4 million in 1986. However, disposition declined to 275.6 million pounds in 1988, as smaller amounts of forfeitures led to reduced Government donations.

CCC honey stocks are disposed of through the National School Lunch Program and the Temporary Emergency Food Assistance Program (TEFAP), operated by USDA's Food and Nutrition Service. TEFAP generally involves donations of honey to food banks distributing emergency food assistance. The Bureau of Prisons also receives CCC honey stocks.

The honey program also provides indirect benefits to consumers because it helps maintain sufficient honeybee colonies in the United States so that many important food and fiber crops are pollinated. An estimated 15 percent of the plant-derived portion of our diet comes from plants dependent upon, or helped by, insect pollination. Beef and dairy products also rely somewhat on an adequate U.S. bee population since cattle consume a variety of forage crops, such as alfalfa and clover, that benefit from insect pollination. In total, about one-third of the human diet is derived directly or indirectly from insect-pollinated plants.

The United States has been a net honey importer almost every year since 1967, with the exception of 1973 (*figure 1*). Since 1981, China, Mexico, Argentina, and Canada have accounted for about 85 percent of U.S. honey imports. Because of the loan repayment option under the U.S. price support program, American honey is regaining a substantial portion of the domestic market. In 1988, 20 percent of the honey consumed in the United States was imported, compared with nearly 50 percent in 1984.

Marketing Honey Under the Program

Honey moves to consumers through several marketing channels. Some producers sell their entire crop in bulk containers to cooperative marketing associations, packers, or dealers. Others use smaller containers and sell their

honey directly to retail stores, consumers, or both. Processing honey beyond the extraction stage may be done by the producer, the packer, or both.

Processed honey is generally marketed by three types of suppliers:

- *Producer-packers* bottle and sell part or all of their honey crop. They generally market their honey from roadside stands, their homes, local stores, or door-to-door. Some employ brokers to move the honey into retail chains.

- *Cooperative marketing organizations* process, pack, and distribute members' honey under the cooperative label. Some cooperatives pool and market their honey in bulk containers.

- *Bottlers* are generally large, well-organized firms that distribute advertised brands of honey or provide private-label packing for retail chains. These firms buy honey from domestic and foreign sources and may blend the final product to keep color and flavor as uniform as possible.

Industrial users primarily purchase honey in bulk from processors, but some comes directly from producers and importers. The major industrial users are the baking, dairy, cereal, confectionery, pharmaceutical, and tobacco industries, the restaurant trade, and other processors of sweetened products.

The honey program influences the procurement decisions of processors and industrial users. With the high support rates characteristic of the early to mid-1980's, manufacturers found it more profitable to use imported honey. However, the lower loan repayment option and reduced support prices for the 1986-89 crops have made domestic honey available to manufacturers at prices competitive with imports. (Manufacturers are using more higher quality domestic honey and less imported honey.) This has reduced imports and raised domestic honey sales (*table 2*).

Figure 1. U.S. Honey Imports Increased Dramatically in the Early 1980's

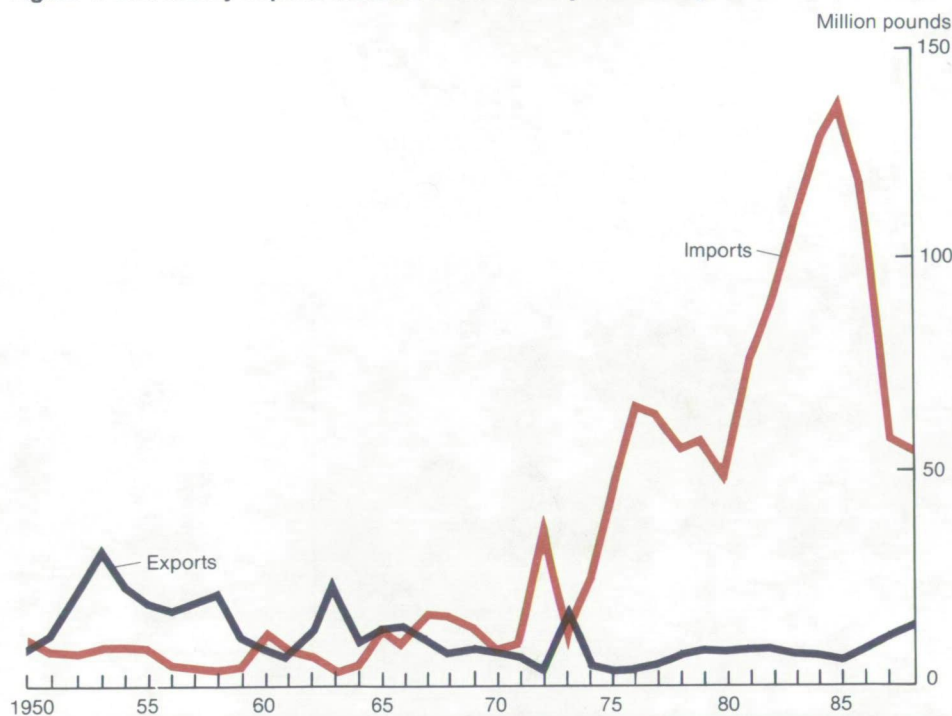


Table 2. Domestic Production Accounted for a Greater Share of U.S. Honey Use in 1987 and 1988

Item	1985 ¹	1986	1987	1988
Thousands				
Number of colonies	4,325	3,200 ²	3,190 ²	3,186 ²
Pounds per colony				
Yield	34.7	62.5	71.1	66.4
Million pounds				
Supply	479.5	534.7	519.1	442.9
Beginning stocks	191.2	215.9	234.1	175.5
Production	150.1	200.4	226.8	211.5
Imports	138.2	118.4	58.2	55.9
Utilization	263.6	300.6	343.6	289.5
Domestic ³	257.1	291.4	331.2	275.6
Exports	6.5	9.2	12.4	13.9
Ending stocks	215.9	234.1	175.5	153.4
Commercial	22.8	25.0	26.0	22.5
Outstanding loans ⁴	52.7	122.4	108.7	107.0
CCC inventory	140.4	86.7	40.8	23.9

¹Estimated due to lack of production data. ²Beekeepers with five or more colonies. ³Commercial sales and Government sales and donations. ⁴Honey used as collateral for price support loans.

Lower market prices for domestic honey, increased consumer awareness of the nutritional and taste benefits of honey, as well as the expanding promotional activities by the National Honey Board, have encouraged food manufacturers to develop and market new honey-flavored products. In turn, these products have stimulated the recent growth in U.S. honey consumption. ■

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The United States is the world's leading exporter and importer of tobacco, and the second largest producer of tobacco and cigarettes behind China. In 1987, the United States became the world's largest cigarette exporter. Cigarettes annually account for about 95 percent of domestic tobacco product sales. Cigars, smoking tobacco (pipe and roll-your-own), snuff, and chewing tobacco account for the rest.

Farmers in 21 States produce tobacco (*figure 1*). They now grow about 20 different types, each with its own distinctive attributes and uses. The 20 types fit into one of six major classes (*table 1*). (USDA maintains a standard system of classification for tobacco grown in the United States.)

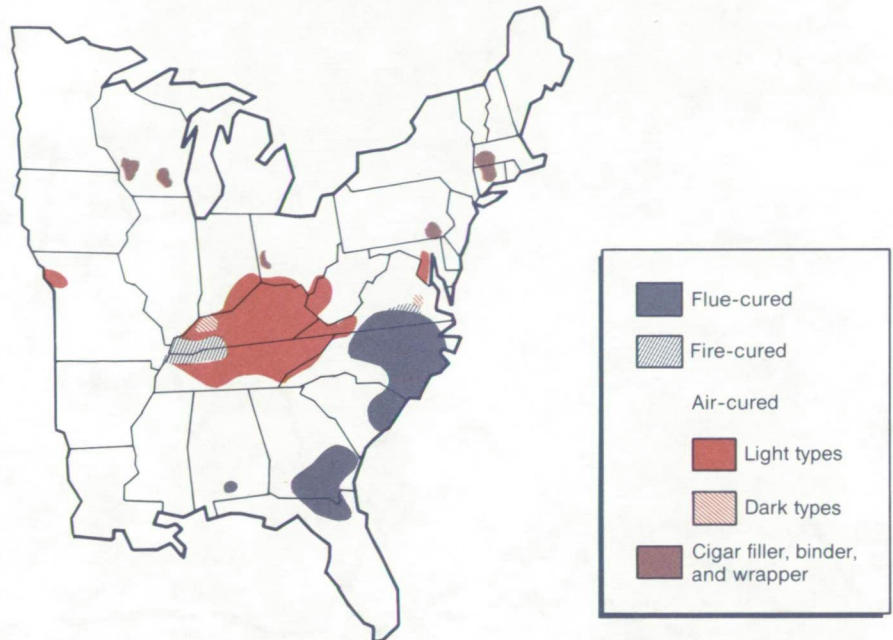
The first three classes—flue-, fire-, and air-cured—are named after the curing method used. The last three classes—filler, binder, and wrapper, which are all cigar leaf tobaccos—are named according to their traditional use in cigars, although wrapper tobacco may be used for all three purposes. Filler, binder, and wrapper may also be used for loose-leaf chewing tobacco. Flue-cured and burley (an air-cured tobacco), which are both used in cigarettes, account for over 90 percent of U.S. production.

A History of the Tobacco Program

Government programs influencing the supply and price of U.S. tobacco began with passage of the Agricultural Adjustment Act of 1933. Over the years, the major aims of the program have been to stabilize prices and to assure a balanced flow of tobacco. Growers have benefited from the higher prices they receive because of marketing quotas and price supports. Tobacco manufacturers have been assured adequate supplies of the

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Figure 1. Tobacco Is Grown from Wisconsin to Florida



Source: Verner N. Grise and Karen F. Griffin, *The U.S. Tobacco Industry*, AER-589, ERS, USDA, September 1988.

types and qualities of leaf needed for their particular products.

The 1933 Act designated tobacco as a basic (storable) commodity and provided cash payments to tobacco growers who restricted their production through 1935. The Agricultural Adjustment Act of 1938, which remains the foundation of today's tobacco program, authorized marketing quotas. The quotas set specific limits on the amount of tobacco that can be sold without penalty.

Many legislative changes have been made since 1938, but the authority for marketing quotas—which balance the flow of tobacco through marketing channels—continues. The Secretary of Agriculture is required to establish a national marketing quota for each kind of tobacco and hold a referendum every 3 years for producers to decide whether to continue

the program. If two-thirds of the growers voting in a particular referendum approve their quota, that kind of tobacco is then eligible for price support.

The Agricultural Act of 1949 authorized tobacco price supports. A support price (loan rate) is set for each grade of tobacco. To be eligible for price supports, growers must adhere to strict marketing quotas or acreage allotments. (Allotments refer to acreage constraints on production.)

Price support activities are administered by producer-owned cooperative associations through loan agreements with the Commodity Credit Corporation (CCC). Under the agreements, the associations arrange for receiving, redrying, packing, storing, and eventually selling the tobacco under loan. The CCC loans these associations the money necessary

to pay the support price to producers and to process and store the tobacco until it is sold. Thus, the tobacco becomes not only the collateral but also the means of repaying the loan.

Eligible growers receive the loan rate for their type and grade of tobacco even if a buyer does not bid at that level. Loan rates for each grade are determined by USDA, based on trends in market prices, loan holdings, and the share of particular grades under loan. The weighted average of various grade loan rates equals the overall support level for each type of tobacco.

In the 1960's and 1970's, several changes were made in the tobacco pro-

gram. In 1962, legislation permitted farmers to lease and transfer acreage allotments within counties. Even though allotments are tied to specific farms, producers could lease an allotment—pay for the right to grow and sell a specified quantity of tobacco—and transfer it to another farm.

Marketing quotas (pounds) and allotments (acres) were implemented for flue-cured tobacco in 1965. Until then, marketing constraints were defined using acreage alone. However, because tobacco yields were increasing, the law was changed to include poundage limitations, which have become the effective constraint on marketing flue-cured

tobacco. Marketing quotas, and their lease and transfer, became effective for burley in 1971.

When marketing quotas were first implemented for flue-cured and burley, tobacco producers could sell up to 110 percent of their quota during a year. (This was reduced to 103 percent in 1986.) However, their marketings the following year had to be adjusted by the amount of overmarketings or undermarketings. A quota plus undermarketings, or minus overmarketings, is known as an effective quota.

Recent Program Changes

Laws enacted in 1982 and 1983 substantially altered the tobacco program. These laws were brought about by a number of pressing concerns. Although the program has historically operated without large Government outlays, various health organizations and some members of Congress objected to Federal support for a commodity statistically associated with lung cancer and other serious illnesses. Another concern was that many quota owners did not grow tobacco, since many farmers originally given allotments and quotas had retired. Current producers had to rent the farmland, along with the corresponding quota, or lease the quota from these absentee owners or their families and transfer it to another farm within the county in order to grow tobacco. Still another issue was that price supports were so high U.S. tobacco was losing its competitiveness in world markets.

The first law, the No Net Cost Tobacco Program Act of 1982, was mandated by the Agriculture and Food Act of 1981. To be eligible for price supports, producers must pay assessments into a CCC account established by their cooperative association to cover potential program losses. Beginning with the 1982

Table 1. USDA Categorizes Tobacco Into Six Classes

Class	1988 production		Major uses
	Quantity	Share	
	<i>Million pounds</i>	<i>Percent</i>	
Flue-cured (types 11-14)	813.2	59.3	Cigarettes
Fire-cured (types 21-23)	30.7	2.2	Snuff, chewing tobacco
Air-cured ¹ (light types 31-32 and dark types 35-37)	504.2	36.8	Cigarettes
Cigar filler (types 41-44 and 46)	11.7	0.9	Cigars
Cigar binder (types 51-52 and 54-55)	8.7	0.6	Cigars, chewing tobacco
Cigar wrapper (type 61)	2.1	0.2	Cigars
Total	1,370.6	100.0	

¹Burley (type 31) is the main component of this class. Also includes Maryland types. Dark air-cured types are mostly used in chewing tobacco and snuff.



The Tobacco Institute

crop, if sale proceeds from the collateral securing the CCC loan are insufficient, the balance must be made up by growers. On the other hand, when proceeds from the sale of tobacco exceed the loan

amount, the remainder is put in the account to help pay for future losses.

Prior to 1982, profits were returned to growers and the Treasury absorbed any losses. Under current law, net costs

(except administrative expenses) of operating the tobacco program cannot be legally borne by the U.S. Government for crops produced after 1981. (Legislation passed in 1986 declared the 1983 burley crop a disaster and permitted Treasury outlays to cover the loss.)

The no-net-cost law also allows owners of flue-cured allotments and quotas to sell them separately from the farms to which they were attached. Allotments and quotas must be sold to active producers for use on other farms in the same county. The law also required corporations, utilities, educational and religious institutions, and other entities owning tobacco allotments—but not significantly involved in farming—to sell their allotments by December 1, 1983, or forfeit them. (The deadline was later extended to December 1, 1984.)

To address the problem of world competitiveness, the no-net-cost law allowed USDA to limit increases in support prices. A 1983 law froze tobacco supports for that year at their 1982 levels. The freeze was extended to 1984 and 1985 by the Dairy and Tobacco Adjustment Act of 1983. The Dairy and Tobacco Act also abolished the lease and transfer of flue-cured quotas beginning in 1987 and requires grade and quality inspection of some imported tobaccos.

The Program Since 1985

Although significant changes were enacted in 1982 and 1983, major problems still existed in the tobacco program.

There was a sense of urgency in 1985 in much of the industry to further modify price supports and production controls. Those changes came about with passage of the Omnibus Budget Reconciliation Act of 1985, which was enacted in April 1986. This law affected price supports, marketing quotas, no-net-cost account assessments, purchase requirements and penalties, and inventory stock purchases.

Beginning with the 1987 crop, price supports for burley and flue-cured tobacco are determined using a market price-cost index formula. The preceding year's support level is adjusted for the change in a 5-year moving average of market prices and the change in a cost of production index. The Secretary can then set the price support at the previous year's level plus 65 to 100 percent of the calculated increase.

Price supports for 1986 and subsequent crops of the other kinds of tobacco are still set using a prices-paid index. The support can be held to as little as 65 percent of any increase called for by changes in the index in any given year if market conditions warrant. USDA can also reduce these support levels upon request of the relevant cooperative association.

The national marketing quotas for flue-cured and burley are now based on intended purchases by cigarette manufacturers, average annual exports for the preceding 3 years, and the amount of tobacco needed for reserve stocks. The reserve stock levels are set at 15 percent

of the basic quota or a minimum of 100 million pounds of flue-cured and 50 million pounds of burley tobacco. Flue-cured and burley quotas cannot be reduced from one year to the next by more than 6 percent during 1986-89 and 10 percent during 1990-93. The actual quotas announced by USDA must equal between 97 and 103 percent of the sum of manufacturers' needs, exports, and the adjustment in reserve stocks.

Beginning with the 1986 crop, purchasers of flue-cured and burley tobacco are required to pay the same amount to the associations' no-net-cost accounts as producers do (to the extent practical). Failure to remit the assessment fee will result in a marketing penalty equaling 75 percent of the average market price of the tobacco involved.

Any manufacturer who fails to buy at least 90 percent of its intended purchases is subject to a penalty. However, the purchase requirement for each manufacturer is proportionally reduced if total marketings are less than the effective national marketing quota. Collected penalties are deposited in the no-net-cost flue-cured and burley accounts.

Another part of the 1985 Reconciliation Act allows the Flue-Cured Stabilization Cooperative and the two burley cooperative associations to sell their tobacco stocks from previous years—the 1976-84 flue-cured loan stocks and the 1982 and 1984 burley loan stocks—at discounted prices to cigarette manufacturers. Four manufacturers agreed to pur-

chase those older stocks according to their prorated share of U.S. cigarette production. This buyout is to take place over a 5-year period for burley and an 8-year period for flue-cured. The buyout is well ahead of schedule with about 82 percent of the flue-cured and 87 percent of the burley purchased by September 1989.

The 1985 Reconciliation Act is helping make U.S. tobacco more competitive in world markets. Without these changes in the price support program, economic prospects for tobacco were deteriorating rapidly. High support prices, stagnant world demand, and greater foreign competition had reduced U.S. growers' chances for increased quotas or improved prices. By 1987, production had begun to rise and unsold loan stocks had dropped sharply from 1985. However, even with the program changes and substantially increased exports of cigarettes, continued declines in U.S. consumption are likely to limit production in the future.

Effects of the Tobacco Program

The Federal tobacco program is intended to support the price farmers receive and thus improve their incomes. Growers overwhelmingly support the program even though it restricts what they can produce. Program benefits also accrue to quota holders even if they do not grow tobacco because most quotas can be leased or sold to other growers. Quota rents and values vary widely

among kinds of tobacco and geographically among States and counties. The rates declined after price supports were lowered in 1986, but still average 25 to 30 cents per pound.

Tobacco product manufacturers benefit from the program by receiving a reliable supply of leaf. Since tobacco is easily stored, surpluses in one year can be made up with quota cuts in following years. In times of shortfall, leaf can be taken from previous years' stocks or purchased from other countries since there are no import restrictions.

Although leaf prices are a small share of the total costs of manufacturing tobacco products, companies can influence leaf costs by purchasing lower priced leaf from foreign sources. In the last 15 years, manufacturers have included an increasing share of lower priced, foreign tobacco in their blends, resulting in a drop in demand for U.S. leaf.

Consumers have likely paid higher prices for cigarettes and other tobacco products than they would have without the program. However, because the program has existed for so long, it is difficult to say what unregulated tobacco prices would be. Most analysts estimate the program boosts leaf prices 30 to 40 cents a pound. But since leaf costs only account for 5 percent of the price of a pack of cigarettes, the program probably increases cigarette prices only 1 to 2 percent, or 1 to 2 cents a pack. Since con-

Table 2. Imports of Flue-Cured Tobacco Have Increased Since 1975/76

Flue-cured tobacco	Marketing year ¹			
	1975/76	1980/81	1985/86	1988/89
<i>Thousand acres</i>				
Acreage	717	555	357	366
<i>Pounds per acre</i>				
Yield	1,973	1,957	2,241	2,219
<i>Dollars per pound</i>				
Prices				
Support rate	0.932	1.415	1.699	1.442
Average farm price	0.998	1.445	1.719	1.613
<i>Million pounds</i>				
Supply	3,067	3,052	2,870	2,309
Beginning stocks	1,652	1,965	2,080	1,513
Marketings	1,415	1,086	789	796
Imports	24	73	151	147
Utilization	1,193	1,039	912	885
Domestic	671	530	477	522
Exports	523	509	435	363
Ending stocks ²	1,898	2,013	1,958	1,424

¹The crop and marketing year for flue-cured tobacco runs from July 1 to June 30. ²Domestic.

sumers respond to price changes, tobacco product use may be slightly lower because of the program.

While the United States remains the major tobacco-exporting country in the world, U.S. leaf exports have fallen during the last two decades. At the same

time, exports from Brazil, Zimbabwe, Turkey, and Malawi rose. A major factor in the decline in the U.S. share of the world market has been relative prices. Between 1970 and 1984, U.S. prices rose nearly 150 percent. The price support program was a major factor in pushing

Table 3. Burley Tobacco Imports Have Become an Important Component of Supply

Burley tobacco	Marketing year ¹			
	1975/76	1980/81	1985/86	1988/89 ²
<i>Thousand acres</i>				
Acreage	282	277	255	226
<i>Pounds per acre</i>				
Yield	2,265	2,027	2,247	2,109
<i>Dollars per pound</i>				
Prices				
Support rate	0.961	1.459	1.488	1.500
Average farm price	1.055	1.659	1.594	1.610
<i>Million pounds</i>				
Supply	1,733	1,583	2,004	1,542
Beginning stocks	1,094	1,026	1,462	1,074
Marketings	638	558	542	468
Imports	47	137	138	118
Utilization	603	583	576	577
Domestic	510	478	425	413
Exports	92	106	151	164
Ending stocks²	1,160	1,000	1,428	913

¹The crop and marketing year for burley tobacco runs from October 1 to September 30. ²Domestic.

U.S. prices to nearly double those of the competing countries like India, Canada, Thailand, Malawi, Brazil, Zimbabwe, and Korea.

High prices have reduced the United States' share of world leaf exports from 30 to 14 percent during the last 20 years.

While U.S. leaf is of higher quality, the price differential helped boost overseas production and caused U.S. exports to decline and imports to increase. During the last 20 years, U.S. imports of flue-cured and burley tobacco have risen from around 1 percent to more than 20 percent

of total use of these kinds (tables 2 and 3).

To slow the escalation in prices, the 1985 Reconciliation Act reduced tobacco price supports and changed how they are calculated. While this law will help the competitive position of the United States, some observers feel greater price reductions are needed before the United States can effectively compete in world markets.

Most other commodity programs support the price of agricultural products through a system of loans and deficiency payments funded by U.S. taxpayers. However, with tobacco, the 1982 no-net-cost law allows the Government to only pay for the program's administrative expenses. Therefore, those who use tobacco products ultimately pay most of the costs of the tobacco program. ■

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Fruit and Vegetable Marketing Orders

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In response to farmers' demands for higher prices during the Depression, Congress enacted legislation in 1937 authorizing marketing orders for certain commodities, giving growers unprecedented market power. Because orders may impede individual free choice on how to market output, opinions vary widely about the desirability of such orders as a marketing institution.

Most farmers who grow commodities covered by orders support them. However, some growers dislike them, and most consumers never heard of them. Yet marketing orders regulate the quantity or quality of nearly all fresh citrus, about 60 percent of domestically produced tree nuts, and many other fruit, vegetable, and specialty commodities consumed in the United States. Other than some USDA administrative expenses, direct outlays are paid for by the affected industry and do not show up in the Federal budget, so marketing orders have been called "farm programs you don't see" (*see box*).

Federal marketing orders are producer-operated programs aimed at raising grower prices and incomes by regulating product marketing. Federal orders are also used for fluid milk, but they are administered differently than for fruits and vegetables.

Marketing orders are sometimes controversial because they may have adverse, as well as beneficial, effects on growers and consumers. For instance, some producers claim that the California-Arizona citrus orders fail to enhance their incomes and create inequities among growers by being less restrictive

Marketing Orders Hold Little Promise for Major Field Crops

Could marketing orders substitute for Federal price and income support programs covering the major field crops? The idea has considerable appeal because marketing orders involve no direct outlays from the U.S. Treasury. Besides, most producers covered by orders appear satisfied with the program.

However, in most cases, overcoming the organizational and administrative problems in establishing orders for various field crops would be extremely difficult. Most marketing order crops are grown by relatively few producers within defined geographic areas, whereas field crop production occurs over wide areas of the country and involves many producers. The diverse production and marketing conditions for field crops would make it difficult to develop regulations that most growers would agree to.

Supply management regulations appear most likely to measurably

improve grower prices, but only when an industry can isolate its market from other suppliers. Because of specialized production regions and short marketing seasons for many perishable commodities, it is generally easier to isolate markets for horticultural crops than for the major field crops.

Field crop producers in other countries compete directly with U.S. producers through world trade. High tariffs or nontariff barriers would be needed to restrict imports. Furthermore, if prices rose within the United States, grain users could circumvent the marketing restrictions by producing their own grain and selling it in a different form. Feedlot operators, for example, could grow their own corn and market it through fed cattle.

In short, despite their benefits for producers of many specialty crops, marketing orders do not appear to offer a workable alternative to the current price and income support programs for major field crops.

for those who sell in export markets. Orders may be rejected or terminated for lack of industry support. In August 1988, strawberry producers rejected a proposed order calling for mandatory assessments to fund research and promotion activities. The Secretary of Agriculture terminated orders for hops, tart cherries, and Florida Indian River grapefruit after producers voted not to continue them. Meanwhile, the Secretary approved new orders for Texas-New

Mexico potatoes and Vidalia onions in 1989 after growers voted in favor of them.

Consumers benefit directly from the quality standards provided by orders, such as those for Florida and Texas citrus that require fruit to meet minimum ripeness requirements. On the other hand, orders that regulate the flow of product to market, such as those for California-Arizona citrus, can potentially uphold retail prices when supplies are large.

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Orders Emerged from Co-op Movement

Marketing orders grew out of a 1930's farmers' cooperative movement aimed at combating low prices and chaotic marketing conditions. Fruit and vegetable cooperatives tried to raise prices by voluntarily cutting sales and setting quality standards. Most attempts failed because nonparticipating producers and handlers benefited from the higher prices without restricting marketings or observing the quality standards.

As a result, those that participated paid the full cost of holding products off the market without receiving proportional benefits. This inequity, known as the "free rider" problem, in part, led to Federal marketing order and agreement programs enacted in the Agricultural Marketing Agreement Act of 1937. The stated purpose is to provide "orderly marketing," establish parity prices for producers, and provide an orderly intraseasonal flow of product to market, while protecting consumer interests. The Act has been amended several times to include additional commodities and activities.

Growers can request that the Secretary of Agriculture establish a marketing order on their behalf. The Secretary establishes an order on the basis of evidence presented at a public hearing and on approval by two-thirds of the producers involved (three-fourths for California citrus fruits). Orders occasionally regulate marketing in several States (a cranberry order covers production in 10 States from Massachusetts to Washington), but more commonly apply only to production in a limited geographic area, such as a group of States, one State, or a portion of a State (one order covers peaches grown only in Mesa County, Colorado). The law limits marketing

orders to the smallest practical area. Sometimes they cover most of a commodity sold during a specific period of the marketing year. For example, the California-Arizona Valencia order covers most of the fresh oranges marketed during the summer.

After they are approved, orders are managed by administrative committees composed of growers or both growers and handlers. Sometimes, a consumer representative is also a member. These committees recommend marketing regulations to the Secretary. USDA reviews recommendations and frequently requests modifications to better carry out the intent of the 1937 Act. If the Secretary accepts a recommendation, USDA issues the necessary regulations, which are binding on all handlers in the areas designated. Handlers are individuals or firms who sell the product and move it into commercial marketing channels. Handlers generally pack and ship the commodity and, in some instances, arrange for picking.

The Secretary can suspend or terminate an order if it obstructs or fails to support the declared policy of the Act. The Secretary must cancel an order when growers controlling at least half of the production and those representing a majority vote against it. Some marketing orders require periodic referenda, in which growers vote on whether to continue the order. USDA encourages all administrative committees to hold such referenda periodically. The Secretary is required to protect the public's interest by not taking actions that cause prices to rise too fast or too high.

Each order is tailored to the special problems of the particular commodity for which it applies. Some orders regulate the maximum amount that handlers may sell in certain markets (supply management); some specify minimum size, qual-

ity, or both; and others provide for collecting assessments to support product advertising and production and marketing research. Most orders provide for several of these activities. Currently there are 45 Federal marketing orders for horticultural crops. In addition, numerous State marketing orders and agreements provide support for research and promotion and quality and packaging standards. For instance, the dancing raisins and California fresh strawberry promotions are supported by State commissions.

Managing Supply

Marketing order legislation allows four types of supply management regulations that may help growers secure higher prices: producer allotments, market allocations, reserve pools, and market flow controls (*tables 1 and 2*).

Producer allotment orders, the most restrictive type of supply management, have caused vigorous debates among farmers. Intended to prevent price-depressing market gluts, these orders set the maximum amount of a product that can be sold in specific markets on behalf of growers. Allotments are normally assigned to growers based on historical sales.

When allotments restrict sales, they take on a value of their own. Growers desiring to expand production or establish themselves as new producers must lease or purchase allotments from existing growers in order to sell their output. New growers complain this unnecessarily raises their costs and gives established producers an unfair advantage. Public hearing records suggest that high allotment values may have contributed to the Secretary's suspension of marketing allotments for hops. All of the remaining allotment orders—cranberries, Florida celery, and spearmint oil—provide for

Table 1. Supply Management Is an Important Part of the Marketing Orders for Dried Fruits and Nuts

Commodity and order	Supply management provisions					Quality provisions		Market support activities		
	Producer allotments	Market allocations	Reserve pools	Prorates	Shipping holidays	Minimum grade	Minimum size	Production and marketing research	Advertising and promotion	Package standardization
Vegetables										
Idaho-East Oregon potatoes						X	X			X
Washington potatoes						X	X			
South Oregon-North California potatoes						X	X	X	X	
Colorado potatoes						X	X	X	X	X
Maine potatoes						X	X			X
Virginia-North Carolina potatoes						X	X			
Texas-New Mexico potatoes ¹						X	X	X	X	X
Idaho-East Oregon onions					X	X	X	X	X	X
South Texas onions					X	X	X	X	X	X
Vidalia onions								X	X	
Rio Grande Valley, Texas tomatoes ¹						X	X	X	X	X
Florida tomatoes						X	X	X	X	X
Florida celery	X			X	X	X	X	X	X	X
South Texas lettuce				X	X	X	X	X	X	X
Texas melons						X	X	X	X	X
Dried fruits, nuts, and specialty crops										
California almonds		X	X			X		X	X	
Oregon-Washington hazelnuts		X				X	X			
Pacific Coast walnuts		X	X			X	X	X	X	
Far West spearmint oil	X		X					X	X	
California dates		X				X	X	X	X	X
California raisins		X	X			X	X	X	X	
California prunes			X			X	X	X	X	X

¹Order only, no marketing agreement.

Table 2. Most Fruit Marketing Orders Authorize Quality Control Provisions

Commodity and order	Supply management provisions					Quality provision		Market support activities		
	Producer allotments	Market allocations	Reserve pools	Prorates	Shipping holidays	Minimum grade	Minimum size	Production and marketing research	Advertising and promotion	Package standardization
Florida citrus					X	X	X			X
Texas oranges and grapefruit ¹						X	X	X	X	X
California-Arizona navel oranges ²				X			X	X	X	
California-Arizona Valencia oranges ²				X			X	X	X	
California-Arizona lemons ²				X			X	X	X	
Florida limes				X	X	X	X	X	X	X
Florida avocados					X	X	X	X	X	X
California nectarines						X	X	X	X	X
California pears, plums, peaches						X	X	X	X	X
Georgia peaches						X	X			
Colorado peaches						X	X	X	X	
California kiwi fruit						X	X			X
Washington peaches						X	X	X	X	X
Washington apricots						X	X	X	X	X
Washington sweet cherries						X	X	X	X	X
Washington-Oregon fresh prunes						X	X	X	X	X
California dessert grapes					X	X	X	X	X	X
California Tokay grapes				X	X	X	X	X	X	X
Pacific Coast winter pears						X	X	X	X	
Hawaii papayas						X	X	X	X	X
Cranberries (10 states) ³	X	X								
Washington-Oregon Bartlett pears						X	X	X	X	X
California olives						X	X	X	X	

¹Restricting handler deliveries is specifically prohibited. ²Order only, no marketing agreement. ³Grade and size specifications apply only to restricted portion of crop.



assigning some allotments to new and existing growers each season.

On the other hand, those who favor allotment orders point out that assigning marketing rights effectively prevents price-depressing market gluts and reduces the likelihood of costly crop abandonment by enabling growers to more easily plan their scale of production. However, allotments may raise consumer prices if they effectively reduce marketings.

Allotments in the cranberry order have never been used. Although allotments are set for the other two commodities, Florida celery and spearmint oil, their effectiveness in raising prices may be limited. Any attempt on the part of Florida celery growers to raise prices by reducing sales would likely be thwarted by increased marketings of California celery. Similarly, growth in imports and expanded domestic production in non-order States would likely counter high spearmint oil prices caused by market order restrictions.

Market allocations, a second type of supply management, specify the proportion of output handlers can sell in certain markets. Such orders may raise producers' returns when supplies are diverted from a price-sensitive primary market (usually the fresh or domestic segments) to a less price-sensitive secondary market (usually processing or export segments).

Although they are generally less contentious than the allotment orders, market allocation orders also have detractors. Opponents charge that market allocations raise consumer prices and lead to excessive production. Proponents claim strategic allocation during years of abundant production can prevent drastic cuts in growers' average prices. In addition, allocations permit an industry with many

small producers to develop marketing strategies, such as assuring buyers a reliable supply at steady prices and developing markets for new products. The almond order helped that industry develop exports and new products, such as almond butter.

A third kind of supply control, *reserve pools*, helps farmers stabilize prices and quantities across seasons by storing supplies during bountiful years for sale during short-crop years. Many perennial tree crops, almonds being one example, frequently produce a copious crop one season and a meager harvest the next. Consequently, prices may fall so low during abundant years that some production is abandoned, while years with short supplies mean sky-high prices.

Reserve pools set aside part of an excessively large crop so it can be sold when market conditions improve. Pool contents typically are sold in succeeding marketing periods; however, they may be exported or disposed of through nonfood uses, such as livestock feed. Because pools can provide greater year-to-year price and supply stability, they may bene-

fit both growers and consumers. Also, by assuring processors a steady supply of raw product, the industry can better develop new markets. Yet, reserve pools can backfire on growers. If their trees produce a bounteous crop during the subsequent year, growers may have to sell the previous year's reserve at a loss. This may have been a contributing factor in the vote by growers to discontinue the order for tart cherries.

Market flow controls, the fourth type of supply management, are directed at the problems that occur when shippers, making independent decisions, create short-term gluts and shortages and cause volatile prices. This volatility creates difficulty for retailers in planning promotions and raises their costs. Coordinating industry sales reduces the risks of alternating high and low prices and facilitates retail planning of product promotions.

Some commodities like oranges and grapefruit can be stored on the tree and harvested as needed for sale over an extended period. Market flow provisions smooth out shipments over the season and help alleviate price flip-flops. There are two kinds of market flow provisions, *prorates* and *shipping holidays*.

Prorates specify the maximum quantity a handler may ship to the regulated market during a specified period, usually a week. If used during all or nearly all the season, prorates may have the effect of market allocation—limiting sales and raising prices in the regulated market and causing some product to be diverted to a secondary market (*see box*).

The California-Arizona fresh citrus industry uses prorates extensively, but their use is controversial. Proponents claim the prorates reduce weekly price volatility and therefore are generally beneficial for both producers and consumers. Opponents argue that prorates unduly

Marketing Navel Oranges

To better understand how fruit and vegetable marketing orders operate, consider the following example.

Farmer Peterson grows navel oranges in California's San Joaquin Valley and contracts with a packer-handler, Oranges, Inc., to harvest, grade, pack, and market the fruit. Oranges, Inc., deducts a handling charge and pays Peterson what is left of the proceeds.

Navel oranges are excellent eating, so Oranges, Inc., likes to sell most of the crop in the fresh market, fetching the highest return. Small, scarred, or misshapen oranges that do not meet fresh market standards are sold to a processor, who turns them into juice concentrate. Since navel oranges do not make good juice concentrate, processors pay a lower price for them.

Because Peterson's farm is in California, Oranges, Inc., must abide by the regulations of the Federal order for California-Arizona navel oranges. Under the order, the Navel Orange Administrative Committee, subject to USDA review and approval, determines the maximum weekly quantities that may be sold in the fresh domestic market (the industry's prorate) during a portion of the season. The Committee takes into account the expected supply and demand for oranges and recom-

mends a prorate to avoid market gluts and excessively low prices. While the initial determination is made at the beginning of the season, prorates are decided and set on a weekly basis. Oranges, Inc.'s share of the prorate is proportional to the share of total industry production that it has under contract with growers like Peterson.

Oranges, Inc., sells as many of its oranges in the fresh domestic market as its share of the prorate permits. The remainder may be held for later sale, exported, sold for processing, or donated to charitable organizations. Peterson receives an average of Oranges, Inc.'s returns from all sales.

Experience has demonstrated that a glut of oranges depresses the fresh price more than an equal amount of oranges, if diverted, would reduce processing prices. Hence, if the order causes some oranges to be diverted to processing (most likely during a large-crop year), Peterson's returns would rise. If this happens, consumers pay higher prices for fresh oranges.

However, there may be some benefits to consumers that offset potentially higher prices. Prorates may even out supplies over the season, resulting in smaller week-to-week swings in prices and quantities marketed. Greater stability probably lowers marketing costs and eventually retail prices.

restrict decisions by individual handlers. Furthermore, opponents say that by diverting shipments to secondary markets, prorates are used to raise prices and may cause overinvestment in citrus production.

Shipping holidays, a weaker form of market flow control, temporarily prohibit commercial sales by handlers. This limits supply buildups in market channels during periods of limited trade activity, such as the week between Christmas and New Year's. For example, the Florida citrus industry sometimes uses shipping holidays to clear market channels of unsold fruit following the pre-Christmas volume peak.

Quality Controls Improve Product Image

Farmers and consumers generally benefit from quality assurance. When consumers are spared the expense and disappointment of unexpectedly purchasing inferior-quality products, they likely will purchase more in the future, thereby expanding demand. Growers then benefit from improved sales. In addition, reduced losses from spoilage and consumer rejection lowers marketing costs and may simultaneously raise producer returns and hold down retail prices.

Voluntary programs to improve quality have generally been unsuccessful. One reason is that nonparticipating producers have reaped short-term benefits by selling inferior products at high prices. As a result, consumers buying the inferior goods perceived a drop in the product's overall quality and consequently purchased less. Hence, participating growers, unable to realize the full benefits of their efforts, abandoned the programs.

Quality control orders establish minimum grade, size, and maturity requirements, which usually are enforced through mandatory Federal inspection paid for by handlers. Quality standards enable an industry to establish a positive product image by assuring buyers of a mature and desirable product. Standards for Florida and Texas citrus, for example, prevent handlers from shipping attractive, but immature oranges and grapefruit.

Quality standards also are sometimes controversial. The kiwi fruit order, for example, has a "shape-of-fruit" standard, which some people claim excludes good, wholesome fruit from the market. Proponents, on the other hand, argue that mis-

shapen fruit creates a poor image among consumers and thereby limits sales. Minimum quality regulations also may cause some people to forgo purchases. Some buyers might have preferred to purchase a lower priced, below-standard product, such as small or misshapen fruit.

Funding Market Support Activities

Some orders facilitate joint industry action to fund research and product promotion and establish package and container standards. These provisions are referred to as market support activities. Production and marketing research and commodity promotion require a large expenditure to be effective. Yet they are a relatively small part of total costs if spread over all producers.

However, voluntary research and promotion efforts in industries made up of many small growers generally have failed for the same reason that cooperative efforts to enhance prices by regulating quantity or quality have failed—nonparticipating producers benefit from the voluntary program without bearing any of the cost. Because compliance is mandatory, marketing orders enable industries consisting of many farmers and handlers to spread the cost

of joint research and promotion uniformly. For example, handlers of California pears, plums, and fresh peaches are assessed fees for industry promotion in proportion to the volume sold.

Package and container standards assure buyers of shipment consistency and may reduce marketing costs. For example, the Florida tomato order requires that tomatoes be shipped in new boxes holding either 20 or 25 pounds net weight.

Market support regulations, as with supply management and quality controls, have not been spared controversy. The raisin, filbert, almond, and olive orders authorize programs that permit handlers who brand advertise to obtain credit for advertising expenditures, thereby reducing or eliminating their pro rata assessments for joint promotion programs. Opponents claim that the brand advertisers benefit from the industry advertising program without paying. The brand advertisers, on the other hand, argue that their advertising expands total demand and benefits the industry as well as themselves. Presently, only the almond order has an active program of crediting brand advertising.

If Farmers Gain, Who Pays?

If orders raise farm prices, and that is one of the law's stated purposes, who pays the cost? There is not always a clear-cut answer.

When an order helps correct a genuine market failure, such as eliminating immature but attractive-looking fruit from the market, everyone gains. Similarly, everyone probably benefits if a regulation reduces extreme volume and price swings from week to week, thereby reducing marketing costs. Some of the savings probably are passed on to both growers and consumers.

Joint funding for research and promotion tends to promote efficiency, which generally benefits both consumers and producers. Industry-supported research and some advertising also benefit consumers, as well as producers, by providing market information.

On the other hand, growers may be the only gainers from regulations that enforce quality standards for cosmetic

attributes, such as size or shape, and certain groups of consumers may lose. For example, regulations that prohibit the sale of smaller or misshapen products penalize those buyers willing to purchase such items at a lower price.

The short-term effects of marketing orders may be different from the long-term effects. Controls such as market allocations—which, for example, divert output from the fresh domestic market to processing or export—may raise average farm prices in the short term and cause consumers to pay higher prices. However, elevated prices likely will cause farmers to expand capacity in the longer term, which may benefit consumers by providing insurance against shortages and extremely high prices during years with relatively small crops. ■

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Glossary

Here are definitions of some important terms used in farm commodity programs.

Acreage allotment. An individual farm's share, based on production history, of the national acreage needed to produce sufficient supplies of a particular crop; used for several kinds of tobacco, except burley.

Acreage reduction program (ARP). A program in which farmers voluntarily reduce their planted acreage from their crop acreage base as a requirement for participation in the wheat, feed grain, cotton, and rice programs. Farmers are not paid for ARP reductions, although participation is necessary to be eligible for benefits like Commodity Credit Corporation (CCC) nonrecourse loans and deficiency payments.

Agricultural Stabilization and Conservation Service (ASCS). USDA agency responsible for administering farm price and income support programs, as well as some conservation and forestry cost-sharing, environmental protection, and emergency programs. ASCS offices are maintained in nearly all farming counties.

Caribbean Basin Initiative (CBI). Popular name for the Caribbean Basin Economic Recovery Act of 1983, which eliminates duties on imports of products from designated Caribbean countries until September 30, 1995. The CBI also provides for import relief to U.S. industries injured or threatened by increased imports from CBI countries.

Class I milk. Grade A milk for fluid milk products.

Class II milk. Grade A milk used to produce soft manufactured dairy products, such as cream, cottage cheese, ice cream, and yogurt.

Class III milk. Grade A milk used to produce hard manufactured dairy products, such as butter, cheese, and nonfat dry milk.

Commodity Credit Corporation (CCC). A federally owned corporation within USDA. CCC functions as the financial institution through which all money transactions are handled for agricultural price and income support and related programs.

Conservation Reserve. A long-range program under which farmers voluntarily contract to take highly erodible cropland out of production for 10 years and devote it to conserving uses. In return, farmers receive annual rental payments for the contract period.

Conserving uses. Land idled from production and planted in a soil-conserving crop, such as annual or perennial grasses, as required for commodity program participation.

Cost of production. The sum (measured in dollars) of all purchased inputs and other expenses necessary to produce farm products. Cost of production statistics may be expressed as an average per animal, per acre, or per unit of production (bushel, pound, or hundredweight) for all farms in an area or in the country.

Crop acreage base. For the wheat, feed grain, cotton, and rice programs, the average number of acres planted for harvest and not planted because of acreage reduction and diversion programs during the 5 preceding crop years. For upland cotton and rice not planted in all 5 years, the average during the years a crop was planted, but it cannot exceed the average of the most recent 2 years. Crop acreage bases are permanently reduced by the portion of land placed in the Conservation Reserve.

Dairy Termination Program. A program to reduce milk production in which producers received payments from USDA, based on bids submitted to the Secretary of Agriculture. Producers whose bids were accepted agreed to slaughter or export all female dairy cattle, have no interest in milk production or dairy cattle for 5 years, and not allow their facilities to be used for such purposes during that time. The program lasted from April 1986 through September 1987. During that period, 1.6 million dairy cows were removed from production.

Deficiency payments. Government payments made to farmers who participate in wheat, feed grain, cotton, or rice programs. Payment rates (per bushel, pound, or hundredweight) are based on the difference between a target price and either the national average market price during a period determined by law or the loan rate, whichever is higher. (For wheat, feed grains, and rice, the law specifies the first 5 months of the marketing year; for upland cotton, the calendar year; and for extra-long-staple (ELS) cotton, the first 8 months of the marketing year.) A farmer's deficiency payment is determined by multiplying the payment rate by the eligible quantity, which equals the permitted acreage times the program yield.

European Community (EC). An organization established by the Treaty of Rome in 1957 and also known as the European Economic Community and the Common Market. Originally composed of 6 European nations, it has expanded to 12. The EC attempts to unify and integrate member economies by establishing a customs union and common economic

policies. Member nations include the original six countries of Belgium, France, Italy, Luxembourg, the Netherlands, and West Germany, as well as Denmark, Greece, Ireland, Portugal, Spain, and the United Kingdom.

Export Credit Guarantee Program (GSM-102). The largest U.S. agricultural export credit program, functioning since 1982. It guarantees repayment of private, short-term credit for up to 3 years.

Export Enhancement Program (EEP). Initiated in May 1985 to help U.S. exporters meet competitors' prices in subsidized markets. Under EEP, exporters are awarded generic certificates that are redeemable for CCC-owned commodities, enabling them to sell certain commodities to specified countries at prices below those of the U.S. market.

Farm acreage base. The annual total of the crop acreage bases on a farm, the average acreage planted to soybeans, peanuts, and other approved nonprogram crops, and the average acreage devoted to conserving uses.

Farmer-Owned Reserve (FOR). A program designed to provide protection against wheat and feed grain production shortfalls and provide a buffer against unusually sharp price movements. Wheat and feed grain farmers can place eligible grain in storage and receive extended nonrecourse loans for 3 years, with extensions as warranted by market conditions. Interest on the loan may be waived by the Secretary of Agriculture, and farmers may receive annual storage payments from the Government. Farmers may not take grain out of storage without penalty unless the market price reaches a specified "release price" or the

loan matures. When the release price is reached, farmers may elect to remove their grain from the Reserve but are not required to do so. However, at that point, the storage and interest incentives may be reduced or eliminated.

Federal marketing orders and agreements. A means for agricultural producers to promote orderly marketing and collectively influence the supply, demand, price, or quality of particular commodities. A marketing order is requested by a group of producers and must be approved by the Secretary of Agriculture and a required number of the commodity's producers, usually two-thirds. The order is then binding on handlers of the commodity.

Feed grains. Any of several grains most commonly used for livestock or poultry feed, such as barley, corn, grain sorghum, oats, and rye.

Food Security Act of 1985 (P.L. 99-198). The omnibus food and agriculture legislation signed into law on December 23, 1985, that provides a 5-year framework for the Secretary of Agriculture to administer various agriculture and food programs. The act amends permanent legislation for the 1986 through 1990 crops.

General Agreement on Tariffs and Trade (GATT). An agreement, originally negotiated in Geneva, Switzerland, in 1947 among 23 countries, including the United States, to increase international trade by reducing tariffs and other trade barriers. GATT provides a code of conduct for international commerce. It also offers a framework for periodic multilateral negotiations on trade liberalization and expansion. The eighth and most recent round of negotiations began in Punta del Este, Uruguay, in 1986. Cur-

rently, 105 nations are participating in the talks, including most industrialized market economies, most less developed countries, and several centrally planned economies in Eastern Europe.

Generalized System of Preferences. A U.S. policy that permits duty-free entry of certain imports from designated developing countries. Among other things, the system aims to increase economic growth in these nations, help maintain favorable relations with them, and provide a low-cost means of giving these countries economic assistance.

Generic certificates. Negotiable certificates, which do not specify a certain commodity, issued by USDA in lieu of cash payments to commodity program participants and sellers of agricultural products. The certificates can be used to acquire stocks held as collateral for non-recourse loans or owned by the CCC. Farmers have received generic certificates as payment for participation in numerous Government programs including acreage reduction, paid land diversion, the Conservation Reserve, disaster, and emergency feed programs. Grain merchants and commodity groups have also been issued certificates through the Export Enhancement Program and the Targeted Export Assistance Program.

Grade A milk. Milk produced under sanitary standards that qualify it for fluid (beverage) consumption. Only Grade A milk is regulated under Federal milk marketing orders.

Grade B milk. Milk not meeting Grade A standards. Less stringent standards generally apply.

Import quota. The maximum quantity or value of a commodity allowed to enter a country during a specified time

period. A quota may apply to amounts of a commodity from specific countries.

Intermediate Export Credit Guarantee Program (GSM-103). A program established by the Food Security Act of 1985 that complements the Export Credit Guarantee Program (GSM-102) but guarantees repayment of private credit for 3 to 10 years.

Loan rate. The price per unit (bushel, pound, or hundredweight) at which the Government will provide loans to farmers so that they can hold their crops for sale at a later date.

Marketing certificate. A certificate that may be redeemed for a specified amount of CCC stocks. Such certificates may be generic or for a specific commodity.

Marketing loan. Authorizes producers to repay their nonrecourse loans at a lower "market" level whenever the world price is less than the loan rate. Marketing loans are mandatory for upland cotton and rice, and discretionary for wheat, feed grains, and soybeans. To date, the discretionary programs have not been implemented.

Marketing quota. Authorized by the Agricultural Adjustment Act of 1938 to regulate the marketing of some commodities when supplies are, or could become, excessive. A quota represents the quantity USDA estimates to be required for domestic use and exports during the

year. Quota provisions have been suspended for wheat, feed grains, and upland cotton since the 1960's. Rice quotas were abolished in 1981. Poundage quotas are still used for peanuts consumed domestically, but not for exported peanuts. Marketing quotas are also used for major types of tobacco.

Milk Diversion Program. A program in which producers signed contracts to reduce their milk marketings by 5 to 30 percent from levels of a specified base period. In return, they received payments from USDA of \$10 per hundredweight of milk. Participating producers could only sell their dairy cattle for slaughter or to another producer in the program. The program ran from January 1984 through March 1985.

National School Lunch Program. The oldest and largest child-feeding program that provides financial and commodity assistance for meal service in public and nonprofit private schools from elementary through high school, as well as public and private licensed nonprofit residential child-care institutions. All children may participate in the program. Based on household income guidelines, a child may receive a free, reduced-price, or full-price meal.

Nonrecourse loans. The major instrument used by the CCC to support the price of most program commodities. The loans enable farmers to hold their crop for sale at a later date, usually within the marketing year. The loans are

nonrecourse in that farmers can forfeit without penalty the loan collateral (the commodity) to the Government as settlement of the loan.

Paid land diversion. A program that offers payments to producers to idle a percentage of their crop acreage base if the Secretary of Agriculture estimates that production will be excessive. Farmers are given a specific payment per acre. The idled acreage is in addition to any reductions required by an acreage reduction program.

Parity price. A measurement of the purchasing power of one unit (bushel, pound, or hundredweight) of a farm commodity. Parity was originally defined as the price that gives a unit of a commodity the same purchasing power today as it had in the 1910-14 base period. In 1948, the parity price formula was revised to allow parity prices for individual commodities to reflect a more recent relationship of farm and nonfarm prices by making the base price dependent on the most recent 10-year average price for commodities. Except for wool, mohair, and certain minor tobaccos, parity is not currently used to set price support levels for any program commodities. However, parity remains part of permanent legislation.

Payment limitation. A limit set by law on the amount of money a person

may receive in farm program payments each year under the wheat, feed grain, cotton, and rice programs. Total deficiency and diversion payments are limited to \$50,000. The total limit of all government payments—including, for example, gains made from marketing loans and disaster payments—is \$250,000 per person. (Persons are defined to be individuals, members of joint operations, or entities—such as limited partnerships, corporations, associations, trusts, and estates—that are actively engaged in farming.)

Permanent legislation. The statutory legislation upon which many agricultural programs are based. For the major commodities, the legislation is principally the Agricultural Adjustment Act of 1938 and the Agricultural Act of 1949. Although frequently amended, the permanent provisions of these laws go back into effect if current amendments, such as the Food Security Act of 1985, lapse and new legislation is not enacted.

Permitted acreage. The maximum acreage of a crop that may be planted for harvest by program participants. The permitted acreage is usually the crop acreage base less any land idled by acreage reduction and paid land diversion.

Program commodities. Federal support programs are available to producers of wheat, corn, grain sorghum, barley, oats, rye, upland cotton, ELS cotton, rice, milk, soybeans, peanuts, sugar, honey, wool, mohair, and tobacco.

Program yield. The commodity yield of record used in calculating deficiency payments. It is determined by averaging the program yield for the 1981-85 crops, dropping the high and low years. Program yields are constant for the 1986-90 crops.

Public Law 480 (P.L. 480). Common name for the Agricultural Trade Development and Assistance Act of 1954, which seeks to expand foreign markets for U.S. agricultural products, combat hunger, and encourage economic development in developing countries. Title I, also called the Food for Peace Program, makes U.S. agricultural commodities available through long-term dollar credit sales at low interest rates for up to 40 years. Donations for emergency food relief are provided under Title II. Title III authorizes “food for development” projects.

Set-aside. A program to limit production by restricting the use of land. Such a program restricts a farmer’s total cropland base used for production rather than the acres used to produce a specific crop (as is the case with acreage reduction programs). Producers must comply to be eligible for nonrecourse loans or deficiency payments. Introduced in 1970, set-asides may be implemented at the discretion of the Secretary of Agriculture, but have not been offered since 1979.

Target price. A price level established by law for wheat, feed grains, cotton, and rice. If the market price falls below the target price, an amount equal

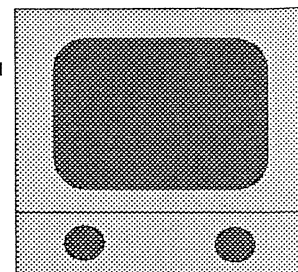
to the difference between the target price and either the market price during a period prescribed by law or the loan rate, whichever is higher, is paid to farmers who participate in these programs.

Targeted Export Assistance Program (TEA). A program authorized by the Food Security Act of 1985 that assists U.S. producer groups or regional organizations whose exports have been adversely affected by foreign government policies. TEA promotes exports of specific American commodities or products in specified markets. Under the program, eligible participants receive generic certificates in payment for promotional activities approved by the Secretary of Agriculture.

Tariffs. Taxes imposed on commodity imports by a government. A tariff may be either a fixed charge per unit of product imported (specific tariff) or a fixed percentage of value (ad valorem tariff).

Temporary Emergency Food Assistance Program (TEFAP). A program established in 1983 to allow donation of commodities owned by the CCC to States in amounts relative to the number of unemployed and needy persons. The food is distributed by charitable organizations to eligible recipients.

(Some terms used in this glossary are from *A Glossary of Food and Agricultural Policy Terms*, 1989, AIB-573, by Kathryn L. Lipton and Susan L. Pollack, ERS, USDA, November 1989.) ■



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