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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 <sup>1</sup>				
	1984/85	1985/86	1986/87	1987/88	1988/89 <sup>2</sup>
	<i>Million bushels</i>				
<b>Supply</b>	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
<b>Utilization</b>	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
<b>Ending stocks</b>	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

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

**Table 2. Most Grain Sorghum Is Fed to Livestock**

Grain sorghum	Marketing year <sup>1</sup>				
	1984/85	1985/86	1986/87	1987/88	1988/89 <sup>2</sup>
	<i>Million bushels</i>				
<b>Supply</b>	1,154	1,421	1,489	1,483	1,240
Beginning stocks	287	300	551	743	663
Production	866	1,120	938	739	578
<b>Utilization</b>	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
<b>Ending stocks</b>	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

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

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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 <sup>1</sup>				
	1984/85	1985/86	1986/87	1987/88	1988/89 <sup>2</sup>
	<i>Million acres</i>				
<b>Acreage</b>					
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>				
<b>Yield</b>	106.7	118.0	119.3	119.4	84.6
	<i>Dollars per bushel</i>				
<b>Prices</b>					
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>				
<b>Income</b>	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 <sup>3</sup>
Diversion	—	—	133	1,456	560
Conservation reserve	—	—	17	196	167

— = not applicable. <sup>1</sup>The crop and marketing year for corn is September 1 to August 31. <sup>2</sup>Estimated. <sup>3</sup>Includes \$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. ■

### References

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

Grain sorghum	Marketing year <sup>1</sup>				
	1984/85	1985/86	1986/87	1987/88	1988/89 <sup>2</sup>
	<i>Million acres</i>				
<b>Acreage</b>					
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>				
<b>Yield</b>	56.4	66.8	67.7	69.7	63.8
	<i>Dollars per bushel</i>				
<b>Prices</b>					
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>				
<b>Income</b>	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. <sup>1</sup>The crop and marketing year for sorghum is September 1 to August 31. <sup>2</sup>Estimated.