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Wheat

Background for 1990 Farm Legislation

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Abstract

Surplus wheat stocks declined under the 1985 Food Security Act as exports expanded due in part to the export enhancement program and reductions in the loan rate. Cutbacks in wheat production and recent droughts in key producing areas further reduced wheat stocks and increased prices. Although burdensome stocks could easily return, there is also the risk of shortage and high prices if additional production shortfalls and demand increases occur in the near future. Exports will likely be the main source of demand growth for U.S. wheat. However, world trade is not expected to match the sharp expansion of the 1970's and competition among the major exporters may intensify. Issues for 1990 farm legislation include loan rate and target price levels, the level of farm program costs, planting flexibility, and the future of the export enhancement program.

Keywords: wheat, production, domestic use, prices, world trade, costs and returns, farm programs, program effects.

Foreword

Congress will soon consider new farm legislation to replace the expiring Food Security Act of 1985. In preparation for these deliberations, the Department of Agriculture and many groups throughout the Nation are studying preceding legislation to see what lessons can be learned that are applicable to the 1990's. This report updates Wheat: Background for 1985 Farm Legislation, (AIB-467) by Sam Evans. It was updated by Joy L. Harwood and C. Edwin Young. This report is one of a series of updated and new Economic Research Service background papers for farm legislation discussions. These reports summarize the experience with various farm programs and the key characteristics of the commodities and the farm industries which produce them. For more information, see the Additional Readings listed at the end of the text.

Washington, DC 20005-4788 October 1989

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Summary

Barring a 1-year extension, the 1990 wheat crop will be the last one produced under the Food Security Act of 1985. Experience with the 1985 Act has raised the following issues associated with new farm legislation debate:

(1) What guidelines should be followed in adjusting loan rates and target prices?

(2) If wheat is in short supply, should the acreage reduction requirement be eliminated?

(3) Should a flexible base program be implemented?

(4) Should the conservation reserve program be altered or enlarged? Can we afford to remove more wheat base from production?

(5) How large an acreage base should be eligible for farm program benefits?

(6) Should the size of the wheat farmer-owned reserve be limited? What purpose do we want the reserve to serve? How can the reserve be made more responsive to market signals?

(7) What level of farm program costs is acceptable?

(8) Should the wheat program encourage the use of less chemical inputs to protect the environment at the expense of wheat production?

(9) Should the export enhancement program be continued?

These questions must be considered in the light of important developments in the wheat industry and in the markets for wheat:

(1) The U.S. share of world wheat trade declined in the mid-1980's, but has recently risen. Because of record foreign production in the mid-1980's, which some argue was the result of high U.S. support prices, the U.S. share of the world market fell to 33 percent, on average, from 1985-87, down from an average 44 percent for 1975-79. In 1988, U.S. exports were estimated at 42 percent of the world total. Because of drought-induced shortfalls, high U.S. prices, and increased competitor exports, the U.S. market share is expected to drop dramatically in 1989, to 32 percent.

(2) Foreign countries continue to expand production.

(3) Double-cropping of soft red winter wheat and soybeans is an activity that is more market-oriented and less program payment-oriented than the production of other wheat classes. At low wheat prices, production of soft red winter wheat

falls, reducing surpluses. This phenomenon is due in large part to the availability of production alternatives. If producers of all classes had the alternatives of soft red winter producers, surpluses would not persist.

(4) The potential for continued and even more rapid growth in wheat yields makes it more difficult to have effective production control.

Important wheat production and marketing characteristics must also be considered in finding appropriate policies:

(1) Wheat is a supplementary enterprise on a majority of the farms on which it is grown, while in traditional growing areas it is a major enterprise. Program needs may be different for the two situations.

(2) Wheat's relatively low production costs per acre, relatively stable national-average yields (around trend), and the lack of good alternative crops in traditional growing areas contribute to surplus conditions.

(3) Flour quality, when measured by standardized baking tests, has dropped substantially in the past 25 years. This decline has in part been caused by changes in wheat varieties, increased input use, and other factors.

(4) Policies that treat all classes as an average may not function well when one or two wheat classes are in short supply. For instance, durum imports increased in 1988 while durum stocks remained in the farmer-owned reserve because the release price for all wheat was not reached. This is true even though durum prices were considerably above the release price.

(5) Some foreign buyers of U.S. wheat have complained about the low quality of U.S. exports. Complaints focused on dirty, molded, or infested grain and that characteristics of the grain contracted for were not met. Improvement of grain quality may lead to higher prices or to increased exports, especially when competition for sales is high.

Production cutbacks and droughts in key producing areas recently reduced stocks and increased prices, following several years of surplus production. But structural problems persist and burdensome stocks could easily return. Although exports will likely be the main source of demand growth for U.S. wheat, world trade is not expected to match the sharp expansion of the 1970's, and competition among the major exporters might intensify.

Wheat

Background for 1990 Farm Legislation

Joy L. Harwood
C. Edwin Young

Introduction

The 1990 wheat crop will probably be the last one produced under the provisions of the 1985 Food Security Act. Experience with the 1985 Act has raised a number of important issues, with most of the debate focused on levels of income and price supports, the export enhancement program, the acreage base eligible for support, farmers' flexibility to produce alternative crops on part of their base acres, and ways of making crop production decisions more responsive to world prices. The 1988 and 1989 droughts and a sharp reduction in grain stocks have renewed interest in the role of the farmer-owned reserve.

Many observers argue that the 1985 Act functioned reasonably well and that with minor modifications it should continue to work for wheat production and marketing. However, others argue that the costs of the program are excessive and less costly alternatives, such as further reductions in target prices or in the amount of production eligible for income and price supports, are needed. Surplus stocks of wheat declined under the 1985 Act as exports expanded due in part to the combined effects of the export enhancement program, reductions in the loan rate, and the 1988 and 1989 droughts.

This report describes major factors and developments in wheat production and in wheat markets that must be considered in finding appropriate policies. The current and prospective economic well-being of wheat farmers is likely to affect the policy debate, as it has in the past. This report accordingly discusses the economic and structural factors affecting the current cost/returns position of wheat farmers. Trends in supply, exports, and domestic use are examined to explain the supply and price fluctuations that have historically plagued the wheat industry.

The report also defines the characteristics of wheat production and demand that distinguish it from other crops. There are five major classes of wheat which are grown in distinct regions and which have different uses. The economic and environmental conditions under which wheat is grown and accompanying trends greatly influence how wheat farmers respond to market conditions and to farm programs as well.

The historical review of wheat programs presented in this report, economic conditions motivating the programs, and the results of those programs are useful in developing future policy.

Structure of the Wheat Industry

Background information on the characteristics and performance of the U.S. wheat industry is presented in this section to provide a basis for evaluating policy alternatives. Wheat is the principal food grain produced in the United States. Wheat exports frequently exceed domestic use but are highly variable.

Production Characteristics

Wheat is the fourth leading field crop produced in the United States in terms of value of production. Only corn, hay, and soybeans are more important. In 1987/88, the farm value of wheat production was $5.4 billion, about 8 percent of the total value of U.S. agricultural production. Wheat is the principal grain used for food consumption both in the United States and throughout the world. The United States exported about 40 percent of its wheat supply in 1987/88.

Structure of Wheat Farms

About 446,000 farms harvested wheat according to the 1982 Census of Agriculture. These farms harvested an average 160 acres of wheat, up from 140 acres in 1978. About 18 percent of these farms harvested 250 or more acres of wheat, while 52 percent harvested fewer than 100 acres, indicating that wheat is often supplementary to other enterprises such as soybeans, sorghum, sunflowers, corn, and cattle. The wheat program would not be as important to a farmer growing wheat as a supplementary crop as it would to a farmer for whom wheat is the main enterprise.

Wheat is grown over a wide geographical area and under a variety of weather and soil conditions. The success of wheat production in the United States is, in part, a tribute to the adaptability of the wheat plant. In addition to being grown throughout the country, wheat has two distinct growing seasons. Winter wheat, sown in the fall and harvested during the following spring or summer, normally accounts for 70-80 percent of total production. Spring wheat, sown in the spring and harvested in the late summer or early fall, accounts for the remainder.

Because wheat production is less concentrated geographically than the production of other major crops and is grown throughout the year, aggregate production is less affected by regional weather patterns that affect yields than for other crops such as corn and soybeans. The national average yield for all wheat varies less from year to year than for other crops. During 1980-88, the average variability in national wheat yields was less than 6 percent, compared with almost 15 percent for corn. The widespread drought in 1988 further illustrates the lower variability of wheat yields. In 1988, the average wheat yield declined by 6 percent over its 1980-87 average, primarily because winter wheat yields were not affected by the drought, compared with a 20-percent decline in corn yields. This means that, compared with other crops, imbalances in total wheat supply

and demand are less likely to be caused by weather. Weather related problems can influence wheat yields in any particular region, especially since in the United States wheat is generally grown in poorer quality soils and in more arid regions.

Of the farms producing wheat as the principal crop in 1987, over 90 percent were located in the 18 leading wheat-producing States. The size distribution, in terms of total cropland and sales class, for wheat farms in those 18 States is shown in table 1. Farms with 500 acres of cropland or more accounted for 42 percent of wheat farms; those with fewer than 100 acres accounted for about 13 percent. About 25 percent of the farms had sales of $100,000 or more, while 17 percent had sales of less than $10,000.

About 68 percent of U.S. wheat farmers rented cropland in 1987: over three-fourths of these growers were part-owners and the remainder were tenants. Furthermore, census data indicate that about half of the land farmed by wheat farmers is leased from others. Farming is the principal occupation of 78 percent of the wheat farmers. In 1987, wheat farmers harvested wheat on 27 percent of their cropland and other crops on 37 percent of their cropland. Almost 17 percent of the cropland on wheat farms was fallow in 1987.

Wheat Classes

Unlike most other crops, five major classes of wheat are grown in the United States: hard red winter (HRW), soft red winter (SRW), hard red spring (HRS), white, and durum. These classes are grown in distinct regions and have different end uses. The range of

Table 1--Number of wheat farms by cropland area and sales class, 18 leading States, 1987 1/

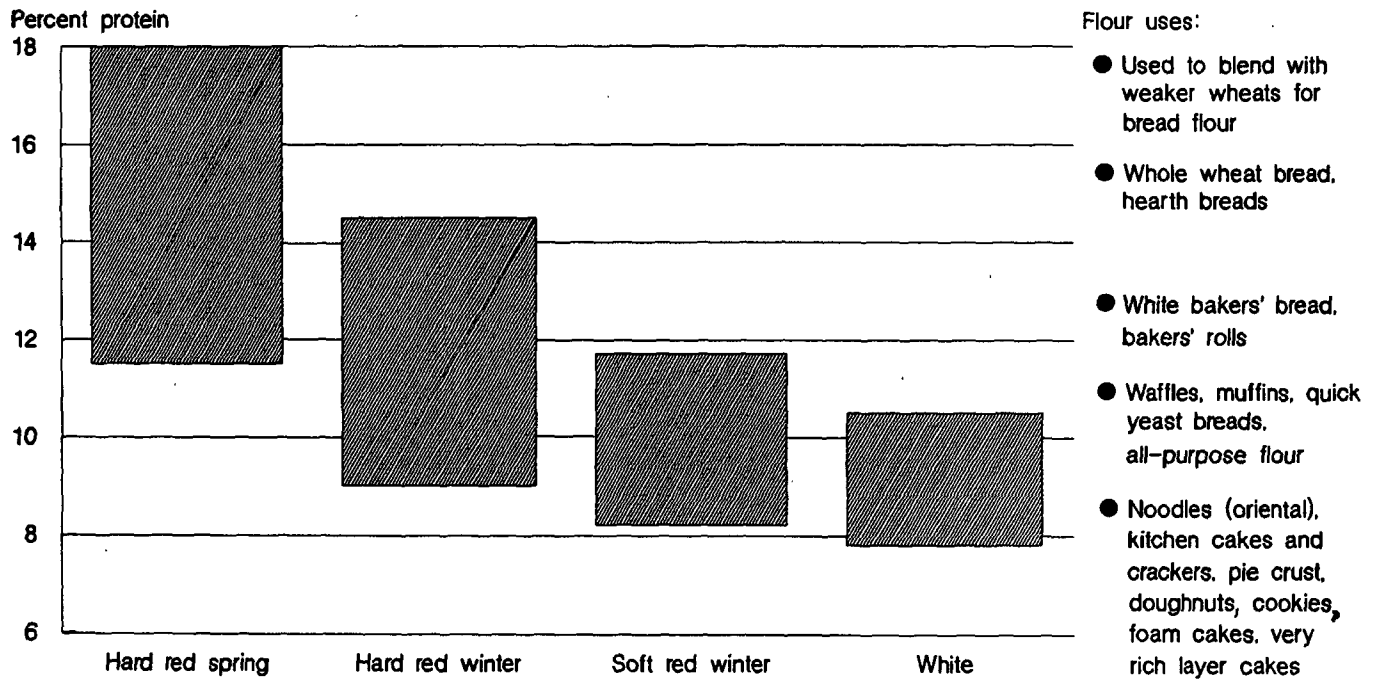
Cropland acres	Farms	Share of total	Gross sales	Farms	Share of total
	Number	Percent		Number	Percent
1-99	36,664	13.3	Less than $2,500	9,148	3.3
100-249	58,870	21.5	$2,500-$9,999	36,438	13.3
250-499	62,227	22.7	$10,000-$39,999	87,432	31.9
500-999	63,381	23.1	$40,000-$99,999	72,518	26.4
1,000 and over	53,035	19.3	$100,000-$249,999	49,384	18.0
			$250,000-$499,999	13,375	4.9
			Greater than $500,000	5,882	2.1
Total	274,177	100.0		274,177	100.0

1/ Calculated from a 1987 Census of Agriculture tabulation for 18 States.

flour uses for the different classes and the potential for substitution among classes are illustrated in figure 1.

The United States exports all five classes. HRW, the largest class, is used for bread wheat or for all purpose flour. Since 1985 our primary customers for HRW have included the USSR, China, Iraq, Japan, Morocco, and Poland. China, Egypt, and Morocco frequently are our largest customers for SRW, which is used for cakes, pastries, and crackers. HRS, also an excellent bread wheat, is often exported primarily to Central America, Japan, the Philippines, and the USSR. White wheat is imported mostly by Asian countries, primarily South Korea and Japan, where it is used for noodle products. Egypt is also a large importer of white wheat and in some years Pakistan and India are major markets. SRW, HRS, and white wheat are exported in roughly equal amounts. Less than 5 percent of U.S. wheat exports are durum; the largest importer is Algeria.

Figure 1
Protein range and flour uses of major wheat classes



Notes: Flour uses are approximate levels of protein required for specified wheat products. Durum is not shown because it is not traded on the basis of protein content.
Source: (150).

Production by class is regionally concentrated (table 2 and fig. 2). So, even when total wheat supplies are large, the supply of a particular class may be tight and vice versa. For instance, while average wheat yields were off by only 6 percent in 1988, average yields for HRS and durum declined by 40 and 50 percent.

Parts of the wheat program have operated on the basis of a single national average farm price because of the fairly broad substitutability among the wheat classes. However, problems occasionally arise. For example, durum, which is used almost exclusively in pasta production, is the most specialized wheat class in terms of use. During the summer of 1988, durum prices were abnormally high relative to the national average farm price for all wheat. Yet, durum could not be sold from the farmer-owned wheat reserve without penalty because the rules for selling from the reserve are based on the national average price. As a result, durum sales may have been lost even though some supplies were available. Over 100 million bushels of durum stocks were in storage during the summer of 1988. The rules for computing the 5-day moving average price of wheat were revised in June 1989 to more accurately reflect the composition of stocks held in the farmer-owned reserve.

Trends in Production

Before the mid-1970's, increases in wheat production came mostly from increasing yields per acre. The average yield increased from about 14 bushels per acre in 1930 to 31 bushels per acre in 1970 and almost 38 bushels per acre in 1987 (app. table 1). The year 1987 is used as a benchmark for yields and production trends due to weather-related production problems in 1988 and 1989. Throughout the 1970's and the first half of the 1980's, harvested acreage was also increasing. The 1985 Food Security Act restricted growth in wheat production through constraints on planted acreage which have held wheat production below 1980-85 levels.

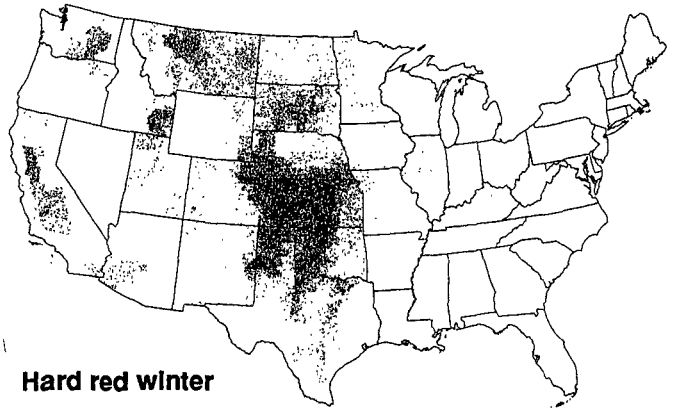
Table 2--Wheat production by class: Total and leading States, 1987

Class	Production	Share	Leading States and percentage of class
	Mil. bu.	Percent 1/	
Hard red winter	1,019	48	KS 36, OK 13, TX 9
Soft red winter	348	17	MO 10, IL 16, OH 13
Hard red spring	431	20	ND 44, MN 23, MT 15
White	216	10	WA 42, OR 24, ID 24
Durum	93	4	ND 80, CA 6, MT 6
Total	2,107	100	

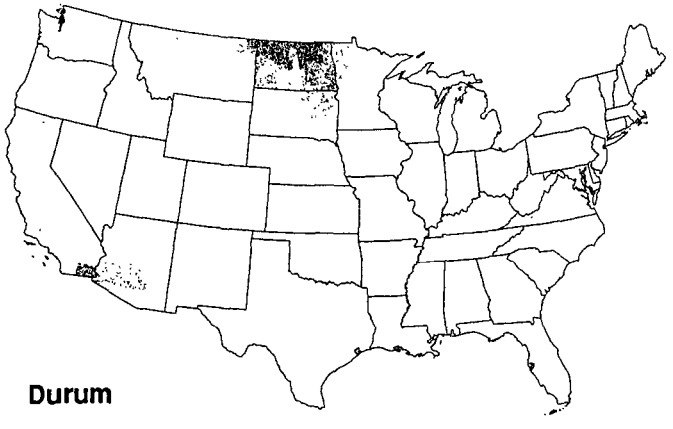
1/ Total does not add due to rounding.

Figure 2

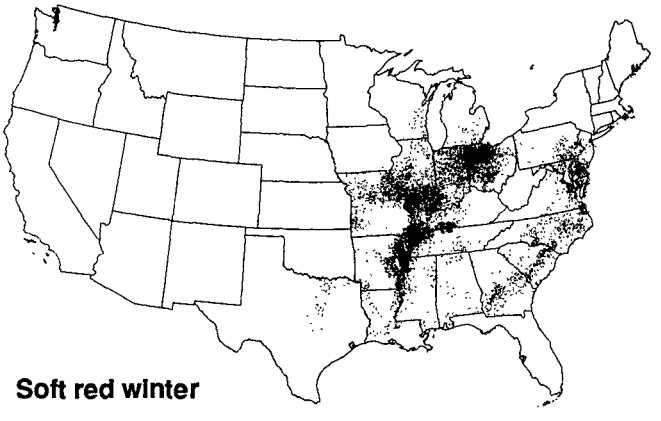
Distribution of the five U.S. market classes of wheat



Hard red winter

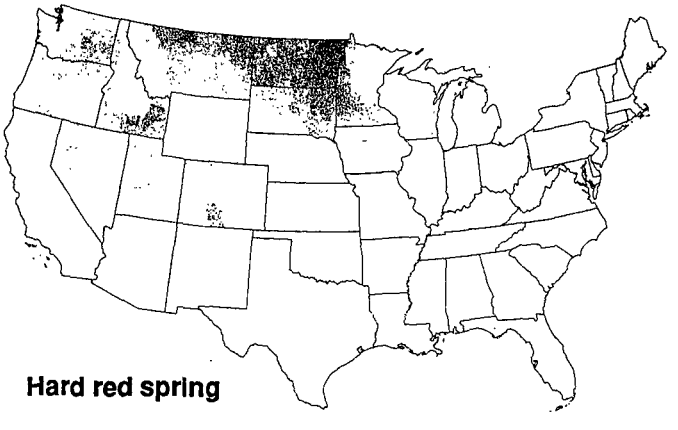


Durum



Soft red winter

White



Hard red spring

1 Dot = 5,000 acres.
Source (9).

Wheat yields for the next 5-10 years are projected to increase 1-2 percent per year in the United States, or even faster as long as marginal acreage is idled and weather is favorable. While wheat yields historically have been increasing at about 3 percent per year, the rate of increase in yields appears to be leveling off. Weak demand for alternative uses of cropland is likely to leave wheat farmers holding about an 80-million-acre effective base that could be planted even with lower prices.

Many factors affect yield: weather, disease, chemical input use, weeds, management practices, variety, total acreage level, and regional distribution of acreage. But plant breeding has been responsible for significant strides in wheat yields. Potential exists for improvements in yields. Average dryland yields of 60 bushels per acre are achieved in some States, while average irrigated yields have approached 100 bushels per acre. This simply shows the genetic potential in the wheat plant. Yield increases in the hard wheat producing States may be limited by moisture availability.

U.S. yields and average yields in foreign countries were virtually the same in 1930. The United States slowly pulled away until 1970. Then, between 1970 and 1980, foreign producers narrowed the gap. This is the result of the green revolution throughout the world and technological advances in the European Community that started in the late 1960's. So far in the 1980's, yields appear to be growing by 1-2 percent per year for most of the major wheat producers, except in the European Community and in China where yield increases are greater. In 1987/88, yields in the European Community and China exceeded average yields in the United States. The European Community and China grow high yielding soft wheats. Yield increases in many countries can affect U.S. exports. China is a major importer of U.S. wheat, while in other markets the European Community, with its aggressive export policy, is a major competitor.

A second, more recent trend is the growth in wheat acreage outside the traditional areas of the Great Plains. In 1970, the Great Plains, Texas to Montana, accounted for 73 percent of harvested wheat acreage, while the Pacific Northwest accounted for 9 percent and the South accounted for only 3 percent. In recent years, harvested area in the Plains and Northwest declined slightly, while the South's share has averaged about 7 percent. This means that soft red production has grown relative to other classes (table 3). In 1970, soft red accounted for 13 percent of U.S. wheat production (17 percent in 1987 and over 26 percent in 1988).

There are several reasons for the changes in the level and location of wheat acreage. First, since wheat is grown in many areas where there are limited alternatives, it has not faced the competition that soybeans, for example, have given corn and cotton. In addition, land can be converted from idle or fallow to wheat at a relatively low cost. As a result, wheat acreage varies from one year to the next, especially SRW acreage in the Delta region.

Second, wheat production costs per acre are relatively low, so wheat production may be favored during times when either inflation rates or interest rates are high. Since 1985, however, the wheat program has exerted a greater influence on total production than macroeconomic factors such as inflation rates and interest rates.

Third, changes in the wheat program have affected wheat plantings. The Food and Agriculture Act of 1977 increased the acreage of wheat covered by price and income supports. Farm program benefits previously covered production from a historical allotment (62 million acres in 1977). Since 1978, price and income supports have applied to a base acreage that reflects current plantings. Under the 1981 Act, base acres were defined as the number of acres planted or considered to have been planted. Acres considered to have been planted include acres set aside due to acreage reduction programs or paid land diversions. Under the 1985 Act, wheat base acres were defined as a 5-year moving average of acreage planted or considered planted. Under the 1985 Act, acreage reduction programs played a significant role in limiting wheat acreage as a condition for participating in the wheat program. For example, in 1988 wheat farmers had to set aside 27.5 percent of their wheat base acres; in 1989, the set aside was reduced to 10 percent; and in 1990, it was reduced to 5 percent. The conservation reserve program, new with the 1985 Act, also acted to limit wheat plantings. By the end of 1988, 47 percent of the base acres or 8.4 million acres enrolled in the conservation reserve were wheat base acres. Thus, the farm programs have become more important in shaping producers' planting decisions. For example, price and income supports would

Table 3--Wheat harvested area by region, 1960-88

Selected regions	1960	1970	1980	1986	1987	1988
			Percent			
Great Plains 1/	72	73	68	71	72	67
North Central 2/	15	11	15	11	11	14
South 3/	3	3	5	6	7	8
Northwest 4/	7	9	9	8	7	7
Southwest 5/	2	3	3	2	2	2
Northeast 6/	2	1	1	1	1	1
			Million acres			
U.S. wheat acreage	51.9	43.6	71.1	60.7	56.0	53.2

1/ CO, KS, MT, NE, ND, OK, SD, TX, and WY. 2/ IL, IN, IA, MI, MN, MO, OH, and WI. 3/ AL, AR, FL, GA, KY, LA, MS, NC, SC, TN, VA, and WV. 4/ ID, OR, and WA. 5/ AZ, CA, NV, NM, and UT. 6/ DE, MD, NJ, NY, PA, and New England States.

probably cover 85-90 million acres today in the absence of an acreage reduction program and the conservation reserve program.

A fourth reason for the change in wheat acreage is that growers are reducing the ratio of summer fallow to harvested wheat acreage on their farms. In 1980, 38 percent of wheat followed summer fallow, dropping to an estimated 19 percent by 1987. While more recent farm-level land use data are unavailable, comparison of total fallow acres to total wheat acres indicates that this trend is continuing, especially in the Northern Plains region. Better varieties, better tillage practices, financial pressure, and the reduction in risk afforded by price and income supports have likely encouraged this adjustment.

Finally, farmers in the Delta and Southeast can double-crop wheat with soybeans and sorghum. Throughout the 1980's, the amount of land double-cropped with soybeans has varied depending in part on the relative profitability of wheat and soybean production. In the fall of 1979, for example, 4.3 million acres had been seeded to wheat in the Southeast. In 1986/87, area seeded fell to 3.6 million acres. In 1988/89, as wheat prices rose in response to the 1988 drought, 5.7 million acres were seeded in the region.

Double-Cropping

Double-cropping is a significant factor behind the variability in wheat acreage in the Southeast. Much of the wheat in the Southeast is part of a double-crop rotation, and it is likely that the majority of double-cropped soybeans follow wheat.

From the farmer's standpoint, double-cropping wheat and soybeans has obvious advantages such as reduction of risk through diversification, more efficient use of fixed resources (land, equipment, labor), and the potential for increased earnings. An important additional advantage is improved cash flow in terms of both amount and timing. This is important when interest rates are high, because it can reduce borrowing needs. However, with double-cropping, it is difficult to harvest wheat in a timely manner so that the second crop, usually soybeans, has a sufficiently long growing season. Planting delays for the second crop can result in lower yields, thereby increasing risk.

The three leading States in double-cropped acreage have been Arkansas, Georgia, and Missouri. Other States with significant double-cropped acreage are Mississippi, Louisiana, Tennessee, Kentucky, and North Carolina.

Double-cropping wheat with another crop peaked at over 10 million acres in 1982, declined to a low of about 4 million acres in 1987, and began to increase in 1988 and 1989. Changes in the relative prices of wheat and soybeans and USDA programs have contributed to the variability in double-cropping. When wheat acreage reduction program requirements are high, double-cropping is restricted since soybeans cannot be planted on the set-aside land. A constraint to growth of double-cropping is length of growing season. Moisture at wheat harvest-soybean planting time

is critical. Wet conditions may delay the wheat harvest. However, sufficient soil moisture must be available to insure soybean seed germination. So, irrigation of soybeans could play a major role in determining the rapid growth areas of double-cropping. Experiments have shown that under irrigation, double-cropped soybean yields can be nearly equal to single-cropped yields. Thus, there is a strong economic incentive to plant wheat in front of soybeans, as long as wheat production covers the low variable costs of planting and harvesting. However, reduced soybean yields constrain incentives to double-crop. The ability of acreage reduction programs to bring about desired reductions in production is higher when double-cropped wheat acreage is low.

Trends in Domestic Wheat Use

Wheat is used domestically for food, feed, seed, and industrial purposes. Over 60 percent of domestic use of wheat is for food, by far the largest component of domestic use. However, whenever wheat prices have been low relative to corn, sharp increases in the amount of wheat fed to livestock have occurred. During the early 1950's, domestic uses of wheat often were double the amount exported. In recent years, wheat exports frequently have been much larger than domestic use but highly variable, and as a result, analyses of wheat demand have focused on exports (table 4 and app. table 2).

Food Use

Consumer preferences have changed over time, and these changes have affected the relative demand for the different classes of wheat. It was not until World War II that flour sold to bakeries exceeded flour sold directly to consumers. Consumers increasingly favor processed foods and eating away from home. Expenditures on food eaten away from home increased by 76 percent between 1980 and 1988. Fast food restaurants have led the way, and the types of products offered by these firms have provided a demand for soft wheats. This changing product demand has coincided with the increased soft red wheat production in the Southeast.

Table 4--Domestic use of wheat, selected crop years

Use	1970		1980		1985		1988 1/	
	Use	Share of total use	Use	Share of total use	Use	Share of total use	Use	Share of total use
	Mil. bu.	Pct.	Mil. bu.	Pct.	Mil. bu.	Pct.	Mil. bu.	Pct.
Total domestic	772	51	783	35	1,046	53	1,040	42
Seed	62	4	114	5	93	5	100	4
Food	517	34	610	27	674	34	730	29
Feed 2/	193	13	59	3	279	14	210	9

1/ Estimated. 2/ Calculated as a residual.

The demand for wheat for food uses is relatively unaffected by changes in wheat prices and in economic conditions. Demand is closely related to population growth and the trend toward convenience in food consumption. Between 1980 and 1988, consumption of wheat as flour increased from 117 lbs. per person to 128 lbs.

The outlook for flour consumption has a downside, however. Baking analysts contend that flour quality, when measured by laboratory tests, has dropped substantially in the past 25 years. Several factors have contributed to the change in flour quality, including: the characteristics of semi-dwarf varieties, increased irrigation and fertilization, changes in milling practices, declines in average protein content, and the proliferation of wheat varieties. Wheat varieties that represented 85 percent of the acreage planted in Kansas in 1986 did not exist in 1977. Solutions to this issue must emphasize communication among grain handlers, millers, and bakers, who typically measure quality using different standards.

Wheat Feeding

During World War II, wheat feeding was subsidized by the Government in an effort to reduce wheat inventories and to increase output of meat, milk, eggs, and animal fat. Wheat feeding decreased in the 1950's because loan rates kept wheat prices at levels that were not competitive with feed grains. Substitution between corn and wheat has been moderated in the past by wheat programs that set wheat loan rates relative to corn loan rates at a level in excess of feed value. A bushel of wheat has 100-105 percent of the feed value of a bushel of corn while the wheat loan has usually been around 125 percent of the corn loan.

There is no firm estimate of feed use. The feed and residual category is what is left after deducting reported use from supply. Production, the beginning and ending stocks, and the seeding rates used to calculate seed use are reported by USDA's National Agricultural Statistics Service (NASS). Exports and imports, as well as the data for calculating food use, are reported by the Bureau of the Census. The residual (reported supply less reported use) potentially encompasses many things, including feed use. Losses from the farm to end user or port, either while in transit or storage, could show up in the residual. Measurement error could also play a role. Because of these many factors, estimating the feed and residual category with any degree of accuracy is impossible. This problem becomes even more pronounced on a quarterly basis, including negative estimates of feed and residual in later quarters.

Most wheat is fed during the first period (June-August) of the wheat marketing year when wheat supplies are largest and corn and sorghum stocks are generally lowest. During late summer, prices are seasonally low for wheat and high for corn and sorghum, especially in feed grain deficit areas.

Wheat feeding is important in the hard red winter wheat region, particularly the Southern Plains. The concentration of cattle feedlot operations there, along with large supplies of wheat, have

been conducive to wheat feeding. Cyclical changes in cattle feeding in Western States are usually accompanied by changes in wheat feeding.

Wheat feeding has also increased in the Southeast and Delta. When large supplies of soft red winter wheat are available, coupled with low wheat/corn price ratios, the profitability of wheat feeding improves in this region. Increased poultry production in this feed grain deficit area also pushed up the total demand for feed and thus for wheat.

In the 1980's, feed and residual use averaged over 10 percent of total use but was highly variable. As wheat prices rose in 1988, wheat feeding declined to less than 10 percent. Statistical analysis suggests that a 10-percent drop in the wheat/corn price ratio boosts wheat feed use by 35 percent.

Trends in the World Wheat Market

Between the early 1960's and the 1980's, world wheat trade more than doubled, from an average of 1.74 billion bushels (47.3 million metric tons) in 1960-64 to 3.6 billion bushels (97.7 million metric tons) for 1980-88 (excluding intra-EC trade). American farmers have generally supplied about 40 percent of the wheat in world trade (app. tables 7-9). However, this percentage declined in the mid-1980's, but returned in 1987 and 1988 to the 40-percent range with the aid of the lower loan rate, the export enhancement program, other Government programs (such as GSM-102 and -103 and PL 480), and continued increases in world trade. (See Glossary for an explanation of these programs.)

Several factors contributed to this doubling of world wheat trade. Importing nations, particularly developing countries, experienced strong population growth. Population in third world countries increased by about 50 percent from 1970 through 1988. Some nations had rapid growth in income, especially in the 1970's. Income growth was most pronounced in oil-exporting and other middle-income developing nations. This growth, with massive population movement from rural areas to cities, caused a shift in demand toward staple foods such as bread that required imported grain. Some nations, such as those in central Africa, increased grain imports because per capita food production declined. Government policies subsidized wheat for consumers in China, Pakistan, Brazil, and Egypt, encouraging imports. Finally, industrial nations provided free or low-cost food aid.

Since the early 1970's, instability in the world wheat market has been a major issue facing exporters, importers, and policymakers. There has been debate over the relative importance of the various factors contributing to price instability. Certainly, the events of the early 1970's led to increased price sensitivity: reductions in stocks by major exporters through the use of production controls in the United States and stock disposal in Canada, the decision by the Soviet Union to import grain rather than to adjust domestic use in response to crop failure, and the imposition of controls by both

importing and exporting countries to reduce the domestic impact of fluctuating prices.

Grain price variability has also been associated with changes in the world monetary system. The devaluation of the dollar in 1972 and the shift from a fixed to a floating exchange rate system have led to variations in the value of the dollar in relation to other currencies. The boom in U.S. wheat exports in the 1970's may have been due in part to the dollar's depreciation against foreign currencies. In turn, the dollar's appreciation against foreign currencies in the early 1980's in effect raised the price of U.S. wheat and reduced our competitiveness. However, some studies of U.S. exports during the mid- to late 1980's found that changes in the value of the dollar had a minimal effect on U.S. exports in the short run. Some longer run effects (3-4 years) on exports have been attributed to currency fluctuations.

Export subsidy programs in the European Community and in the United States in the 1980's also contributed to price instability. For the United States, export enhancement bonuses from the start of the program through July 1989 have been valued at $2.6 billion.

A system of restitutions is the primary tool used by the EC to compete in the world wheat market. Intervention prices for wheat in the EC are set high above the world market price. Export restitutions, equal to the difference between the EC market price and the world market price, allow wheat to be exported. The restitutions differ depending on the destination of the wheat, thus permitting certain markets to be targeted at different price levels.

The U.S. export enhancement program operates by way of a two-step bid process to help U.S. exporters compete. USDA initially targets a country for a specific quantity of a commodity. Then, U.S. exporters compete for sales to the targeted market. U.S. exporters can offer competitive prices to that market because they know they may have the opportunity to obtain a USDA bonus. If the sale is completed, the exporter receives the bonus in the form of generic certificates exchangeable for CCC commodities.

Major Importers

Wheat imports by developing and centrally planned countries have grown rapidly over the past two decades while those of developed countries have declined, from about 30 percent in 1960-64 to about 15 percent in 1982. Most of the decline occurred in the European Community. EC imports declined to 2 million metric tons in 1988/89 from almost 6 million metric tons in 1978/79 (table 5). The EC shifted from being a net importer to a net exporter during the mid-1970's when policies setting high farm prices stimulated wheat production via both area expansion and yield increases, and dampened consumption. Until 1974, feeding wheat to livestock was subsidized. Thereafter, some of the excess supplies were exported at subsidized prices.

The proportion of world wheat trade imported by developing nations peaked during 1975-79. The recession and the rise in interest rates

in the early 1980's caused debt-servicing problems for many of these nations throughout the 1980's and a decline in imports. Further, the cost of subsidizing consumers proved burdensome, causing some nations to shift toward self-sufficiency.

The Japanese share of world wheat imports increased during the early 1970's with income growth and a change in food habits favoring bread and noodles. Although domestic wheat prices were fixed by the Japan Food Agency above world market prices, wheat prices at the consumer level still fell relative to rice. After 1974, Japan's share of world imports fell because rising incomes no longer increased wheat demand. Japanese consumers, because of domestic policies, often are not affected by changes in the world prices for wheat and rice.

In 1972/73, the Soviet Union decided to import grain rather than to internally absorb crop shortfalls. In 1976, the United States signed a grain trade agreement with the USSR which was expected to limit the unforeseen fluctuations in grain trade between the two countries. In most years, the Soviet Union is the world's largest wheat producer. Slightly less than half of the wheat it grows is fed. Imports are generally used for food, although some wheat from the EC has been imported for feed. Soviet imports continue to exhibit large annual fluctuations.

Limited supplies of foreign exchange contributed to a decline in the importance of Eastern Europe as a market for U.S. agricultural commodities, including wheat. Eastern Europe is a potentially large market for U.S. exports, including some wheat, if economic progress is sufficient to meet the demand for better diets.

China has emerged in recent years as a major importer of wheat. Closer U.S.-Chinese relations enabled China to become a major purchaser of U.S. wheat (table 6). In 1988/89, China imported

Table 5--World wheat imports, selected countries, 1983/84-1988/89 1/

Country	1983/84	1984/85	1985/86	1986/87	1987/88	1988/89 2/
			Million metric tons			
EC-12 3/	4.0	3.4	2.8	2.4	2.2	2.0
USSR	20.5	28.1	15.7	16.0	21.5	13.0
Japan	5.9	5.6	5.5	5.8	5.7	5.4
East Europe	3.8	2.6	3.4	3.7	3.2	2.3
China	9.6	7.4	6.6	8.5	15.0	15.0
All others	58.2	59.8	50.9	54.3	57.8	57.7
World total	102.0	107.0	85.0	90.7	105.4	95.4

1/ July-June year. 2/ Preliminary. 3/ EC numbers include current EC-12 countries for all years.

about 8 million metric tons of U.S. wheat, making China our largest customer.

The growing importance of centrally planned and developing countries in the world wheat trade in the past decade has led to an increased reliance on long-term agreements. Such agreements are estimated to have accounted for 10-30 percent of world wheat trade during the 1980's. The state trading agencies, which control grain trade for many of these countries, frequently prefer arrangements which assure long-term supplies. In addition, exporters favor long-term agreements when wheat stocks are ample and competition is greater for sales. Future U.S. wheat exports may not be affected by long-term agreements as long as they comprise a small proportion of trade or merely formalize a trade flow which would have occurred anyway.

Some foreign buyers of U.S. wheat have complained about the low quality of U.S. exports. Complaints focused on dirty, molded, or infested grain and that characteristics of the grain contracted for were not met. Improvement of grain quality may lead to higher prices or to increased exports, especially when competition for sales is high.

Table 6--U.S. wheat exports to selected countries, June-May years, 1984-88

Destination	1984	1985	1986	1987	1988 1/
			1,000 metric tons		
European Community 2/	1,410	1,331	1,020	708	752
Egypt	1,419	1,478	2,487	2,474	2,983
Algeria	543	1,296	1,705	1,979	1,125
Morocco	1,611	1,084	1,362	1,842	1,004
Nigeria	1,569	885	800	6	2
Poland	31	68	520	1,503	0
Mexico	21	0	83	237	1,009
Brazil	3,153	753	647	0	0
Iraq	753	626	765	1,016	679
India	64	2	0	9	1,839
South Korea	1,970	1,928	1,849	2,129	1,816
China	2,770	541	61	3,883	7,798
Japan	3,287	3,167	3,268	3,021	2,586
Soviet Union	6,292	153	0	12,276	4,634
Bangladesh	1,138	487	520	795	908
Total wheat and wheat products	38,722	24,932	27,329	42,562	38,200

1/ Preliminary. 2/ EC numbers include current EC-12 countries for all years.

Major Exporters

The major foreign exporters do not grow the variety of wheat classes grown in the United States. Argentina is a competitor for medium protein hard wheat. The Canadians sell mostly hard spring, durum, and white wheat, while the EC sells low-protein soft bread wheat and durum. Australia exports hard and soft white wheat. Lower quality wheat is sold as feed by several exporters. But only an insignificant quantity of such wheat is exported in most years, unless the crop is damaged and is considered to be only feed quality as occurred in Australia in 1984/85 and in Canada in 1986/87.

The United States, Canada, and Australia supplied about three-fourths of world wheat exports throughout the 1970's. World market shares for Canada and Australia have not changed significantly, except in 1988 when drought reduced Canada's exports. However, the U.S. share fell from over 40 percent prior to 1985 to less than 35 percent during 1985-87. The EC greatly expanded its market share over time (table 7). The striking gain in the EC share was due to price-support and trade policies that encouraged production in excess of domestic needs and subsidized exports.

Table 7--Distribution of world wheat exports and stocks, 1970-88

Country or region	1970-74	1975-79	1980-84	1985-87	1988 1/
			Percent share 2/		
Exports: 3/					
United States	42.5	44.0	41.3	34.5	42.9
Canada	21.2	19.2	19.3	21.8	12.3
Australia	12.5	13.6	11.1	15.3	11.3
European Community 4/	0	6.8	16.2	16.8	19.9
Argentina	3.2	5.4	6.6	5.0	3.5
Other	20.6	10.9	5.4	6.6	10.2
Ending stocks:					
United States	21.0	22.5	26.6	27.8	14.8
Canada	15.5	10.2	6.8	5.8	5.0
Australia	2.3	2.5	3.8	2.6	2.4
European Community 4/	10.3	8.2	8.9	9.8	9.3
Argentina	.7	.9	.6	.2	--
Other	50.2	55.6	53.4	53.8	68.5

-- = Negligible.
1/ Preliminary. 2/ Totals may not add to 100 percent due to rounding. 3/ Excludes intra-EC trade; July/June year. 4/ EC numbers include current EC-12 countries for all years.

The Australian market share has been about 13 percent since 1970, except for the drought year of 1982. Both Australia and Canada rely on marketing boards which can partially insulate producers from world market price changes. These nations have been increasingly willing to sign bilateral trade agreements with importers to guarantee access to key markets.

The market share of Argentina was highly variable from 1970-88, peaking in 1980-84. Restrictive agricultural policies, such as export taxes and differential exchange rates, in the early 1970's reduced that nation's competitiveness. The change in government policies in 1976 made Argentina more competitive, especially in meeting the needs of the Soviet Union following the 1980 U.S. embargo. For many years, Argentina's export taxes on wheat, coarse grains, and soybeans were a major source of government revenue. The export taxes for wheat reached a peak of 24.7 percent of total value in 1983, and were gradually reduced until they were eliminated in December 1987. These taxes discouraged wheat production and reallocated resources toward industrial production. Export taxes on agricultural products were again imposed in 1989.

The United States increased its share of exports the most during the 1970's, because it was able to increase production fast enough to meet the growing needs of importers. The U.S. market share peaked at 47 percent in 1981/82 and then dropped to less than 30 percent in 1985/86 (app. table 7), as U.S. prices remained higher than world prices due in part to the relatively high loan rate. The U.S. share returned to over 40 percent in 1987/88 and 1988/89, due in part to the aggressive export enhancement program and wheat auctions, increased import demand by the centrally planned economies, and reductions in the U.S. loan rate. (See the "The Food Security Act of 1985" section for information about the export enhancement program and wheat auctions.) Wheat exports are projected to decline in 1989/90 due to the large drop in U.S. wheat supplies and subsequent high wheat prices.

Strategies of Major Exporters

U.S. wheat policy plays an important role in determining exports. When the loan rate provided a price floor to the world market and CCC stocks were often isolated from the market from 1981-85, importers purchased less from the United States and competing exporters sold more in world markets, thereby reducing U.S. wheat exports. The United States has operated a wheat storage program which actively contributes to the stabilization of shortrun fluctuations in the world market. In the past, therefore, the United States absorbed much of the shock resulting from changing world market conditions. It stored excess grain when world supplies were large and provided additional supplies when the market ran short. The policies instituted under the 1985 Act, especially the lower loan rates, wheat auctions, and the export enhancement program, reduced the U.S. role in stabilizing the world wheat market. While there were year-to-year fluctuations, exportable supplies of wheat in foreign countries have expanded

since the 1970's as competitors' yields and area expanded (table 8). Average yields in the EC rose by about 4 percent per year from 1970/71 to 1987/88, greatly expanding exportable supplies.

The Australian Wheat Board is the sole marketing authority for its export sales. Because Australia has limited storage capacity, supplies held at the end of the local marketing year are primarily pipeline supplies. The board provides extended payment terms, but only to a limited number of overseas markets. The board has entered long-term agreements with Egypt, Iraq, Japan and Yemen.

Argentine export sales are transacted by the National Grain Board and private companies. Argentina engages in long-term agreements to move supplies into the export market. The long-term agreements often cover payment terms as well as quantities to be traded. The government generally does not provide credit to importers, but in recent years it has provided short-term credit to other Latin American countries, primarily Peru and Cuba.

Table 8--Wheat area, production, exports, and ending stocks, major exporters, 1977/78 and 1987/88

Country	Area harvested	Pro-duction	Exports 1/	Ending stocks 1/	Exports-to-production ratio	Ending stocks-to-exports ratio
	Mil. ha.	--Million metric tons--			----Percent 2/----	
1977/78:						
Argentina	3.9	5.7	2.6	1.2	45.6	45.2
Australia	10.0	9.4	11.1	.8	118.3	7.0
Canada	10.1	19.9	15.9	12.1	79.9	76.4
European Community 3/	14.0	44.5	5.1	7.4	11.5	146.0
Major competitors	37.9	79.4	34.6	21.5	43.6	62.1
United States	27.0	55.7	31.5	32.1	56.6	101.7
1987/88:						
Argentina	4.8	8.8	3.7	.7	42.1	19.3
Australia	9.1	12.4	9.9	2.8	79.2	27.9
Canada	13.5	26.0	23.5	7.3	90.6	31.3
European Community 3/	15.9	71.6	15.3	15.2	21.4	99.4
Major competitors	43.3	118.8	52.4	26.0	44.1	49.7
United States	22.7	57.4	43.4	34.3	75.6	79.1

1/ Local marketing year. 2/ Computed with unrounded data. 3/ EC numbers include current EC-12 countries for all years, but exclude intra-EC trade.

Wheat stocks are kept at a minimum because of storage constraints and high rates of inflation. However, the Argentine government and private exporters have not hesitated to undercut the U.S. price.

Like its Australian counterpart, the Canadian Wheat Board is the sole legal exporter of its wheat. Canada has had agreements with the USSR, Brazil, Bangladesh, Japan, Egypt, and Iraq. These agreements account for about 10 million tons, or less than half of Canada's total exports. Canada also offers credit to importers. The government provides guarantees to the board to extend credit to certain countries. Canada has provided credit to Brazil, Iraq, Egypt, and Algeria, among others.

The European Community dramatically increased its share of the export market by using export subsidies. The EC adjusts the export subsidy to reflect the difference between the world price and its high internal market prices, depending upon how much wheat it wishes to move into the export market. Individual member countries in the EC have had supply or credit arrangements with the USSR, China, Cuba, Brazil, Algeria, Egypt, Morocco, Portugal, Poland, and Vietnam. Credit arrangements are usually for a maximum of 2 years at market interest rates.

Wheat Agreements

International wheat agreements are difficult to negotiate. The major objective of international commodity agreements has been to stabilize world prices by getting importing and exporting countries to agree to trade within a mutually determined price band. The most successful International Wheat Agreement lasted from 1962 to 1967, but broke down because the United States and Canada began to export burdensome stocks. The success of the 1962 agreement was more a result than a cause of market stability.

The conflicting interests of importers and exporters cause these stockholding agreements to be inherently unstable. A price band too narrow is difficult to defend. But, a price band too wide indicates a meaningless agreement. Buffer stocks, necessary for defending the price bands, are frequently too small to be effective because no country wants to contribute funds or wheat to buffer stocks which may be used counter to its national interests.

The current international wheat agreement, covering 1986-91, has two primary functions: market information and food aid. Smooth operation of the markets for wheat, rice, and coarse grains is promoted through the collection and dissemination of information and the sponsoring of consultations between member countries. It does not involve stockholding schemes to stabilize prices. Food aid is maintained through an agreement that donor countries provide minimum food aid obligations.

Trade Liberalization

Problems created by domestic policies--particularly heavy domestic costs and price-depressing surpluses--have brought agriculture to the forefront of the Uruguay Round of trade negotiations under the General Agreement on Tariffs and Trade (GATT). The Ministerial Declaration, made in September 1986, calls for the reform of domestic and trade policies and GATT principles governing world agricultural trade. Negotiators agreed to focus on:

(1) Reducing the use of domestic and export subsidies.
(2) Providing for greater market access.
(3) Harmonizing sanitary and phytosanitary barriers.
(4) Strengthening the role of GATT in agricultural trade.

At the April 1989 midterm review, negotiators agreed on a framework for both long- and short-term reform. Short-term measures would freeze support and protection levels in 1989, with unspecified reductions slated for 1990. Long-term measures call for "substantial progressive reductions" in agricultural support, encompassing all measures directly or indirectly affecting import and export competition.

This agreement offers the potential for substantial liberalization of agricultural markets. In the absence of government support, economic theory indicates that production would shift to those areas which can deliver to importers at the lowest costs. In any one country, the most efficient farmers would fare the best.

Studies disagree on whether world wheat trade would rise or fall after trade reform. The result depends on whether importers or exporters currently protect their producers more. As importers remove protection, their domestic prices (initially above world prices) likely would fall, production would decline, and imports would increase. These forces would push up now-depressed world prices. At the same time, despite higher world prices, some exporting countries' supplies should also decline as subsidies are removed and domestic prices fall toward world prices.

If production declines are larger in the major wheat exporting countries than in importing countries, world trade could contract rather than expand. However, on balance, research suggests that world trade volume would likely not change substantially. Some exporters would expand production, while other exporters would cut production.

World wheat prices under trade liberalization likely would rise as exporters cut back production and importers look even more to the world market. Even if world market prices rise, however, the removal of high supports could reduce domestic producer and consumer prices in countries with relatively high protection, such as the EC and Japan. Studies suggest that world wheat prices might increase as much as 25 percent, but the price rise

would be dampened depending on how much land now idled under U.S. acreage reduction programs re-entered production.

Some aspects of liberalization could contribute to further world price instability. Stockholders, such as the United States and EC, might hold lower stocks with the elimination of support programs linked to the acquisition of surpluses. With lower world stocks, prices would be more sensitive to changes in yields and imports. As a result, liberalization could heighten interest in an international wheat stockholding mechanism, as certain exporters shed their traditional role of holding large stocks. But overall, some argue that world price stability would rise.

The United States probably has a long-term comparative advantage in wheat production because of its climate, soil fertility, and well-developed production and distribution system. Trade reform would likely enhance the long-term U.S. position, since the most efficient producers and marketers would gain the most from trade reform. But producers who cannot cover their costs over the long run without Government support, or who cannot absorb any increased variability in returns, would likely not fare well. The U.S. wheat sector would likely become increasingly concentrated as management and labor are used more efficiently.

U.S. Export Prospects

Recent history points to several factors which will continue to be important to U.S. export growth prospects throughout the 1990's. First, imports by developed countries will probably continue to shrink in importance, while purchases by developing and centrally planned nations will continue to be important. The growth in world wheat trade in the late 1970's was, in large part, due to increased imports by developing nations. These imports were heavily dependent upon increased export income, growing per capita income, continued population growth, and the availability of credit. Indonesia, Mexico, and Nigeria relied heavily upon foreign exchange earned from petroleum exports to finance food imports. Although some developing and centrally planned countries would likely increase their imports if they had sufficient foreign exchange reserves, many countries are constrained by export revenues and international debt problems, reducing their ability to finance wheat imports.

The rapidly developing economies of East Asia have increased their demand for imported wheat. As incomes rise in these countries, the demand for increased variety in food products is likely to rise.

The centrally planned nations have also been major contributors to the growth in world wheat trade. While the rate of growth in wheat imports is likely to decline, these countries are expected to maintain their current import levels. Import demand could decline if yields and area increased in these countries. However, recent history indicates that these countries might not be able to expand production sufficiently to meet demand. Since the early 1970's, their imports have fluctuated widely from year

to year. Policymakers are likely to continue facing the demand for providing a variety of food products, including wheat, to satisfy consumer demands. Although the political turmoil in China creates great uncertainty regarding China's import policies, China will likely continue to be a major buyer of U.S. wheat as it attempts to meet food demand for its urban population. Soviet agriculture continues to struggle to increase production targets or meet consumption needs. Hence, that country will continue to need large, but variable, imports. The weak financial condition of the Eastern European nations, particularly Poland, will be a continuing problem. Although these nations need the grain, they will likely have problems financing purchases.

Competition among exporting countries intensified in the late 1980's as growth in world wheat trade slowed. Major exporters took steps to protect market share. The subsidy policies of the EC and the United States will be important factors influencing world wheat trade. The EC greatly expanded its share of world wheat trade during the 1980's in response to the support programs provided through the Common Agricultural Policy. Total production increased as average yields increased by about 4 percent per year. The level of funding for domestic agricultural price support programs in the EC is expensive, which may reduce EC incentives to encourage growth in domestic wheat production.

U.S. decisions on income and price support levels, acreage reduction programs, stockholding policies, export credits, long-term trade agreements, and food aid will affect U.S. wheat exports. Exchange rates may also play a role in foreign sales. Actions designed to encourage U.S. export sales may be offset by economic policies that bolster the value of the dollar relative to importers and exporters. Credit guarantees and concessional sales remain important, and shipments under the export enhancement program played a significant role in expanding U.S. exports throughout the latter part of the 1980's. Export enhancement program shipments grew from less than a fifth of wheat exports in 1985/86 to nearly two-thirds of U.S. wheat exports in 1987/88. If extended into the 1990's, the program could continue to play an important role in reducing the cost of wheat to foreign purchasers.

These factors suggest that balancing supplies and demands is difficult. Specifically, the variability in world wheat production often makes it impossible to maintain a situation where neither surpluses nor shortages create problems.

Trends in Prices and Farm Returns

Net farm returns for wheat increased from 1985 through 1987. Drought in 1988 and 1989 allowed prices to increase further but hindered net farm income for those farmers who faced large production declines.

Price Trends

The average farm price of wheat fell from $3.99 per bushel in 1980/81 to $2.42 per bushel in 1986/87 (fig. 3). The 1988 drought, combined with acreage restrictions and an aggressive export program, caused prices to rebound to $3.74 in 1988/89.

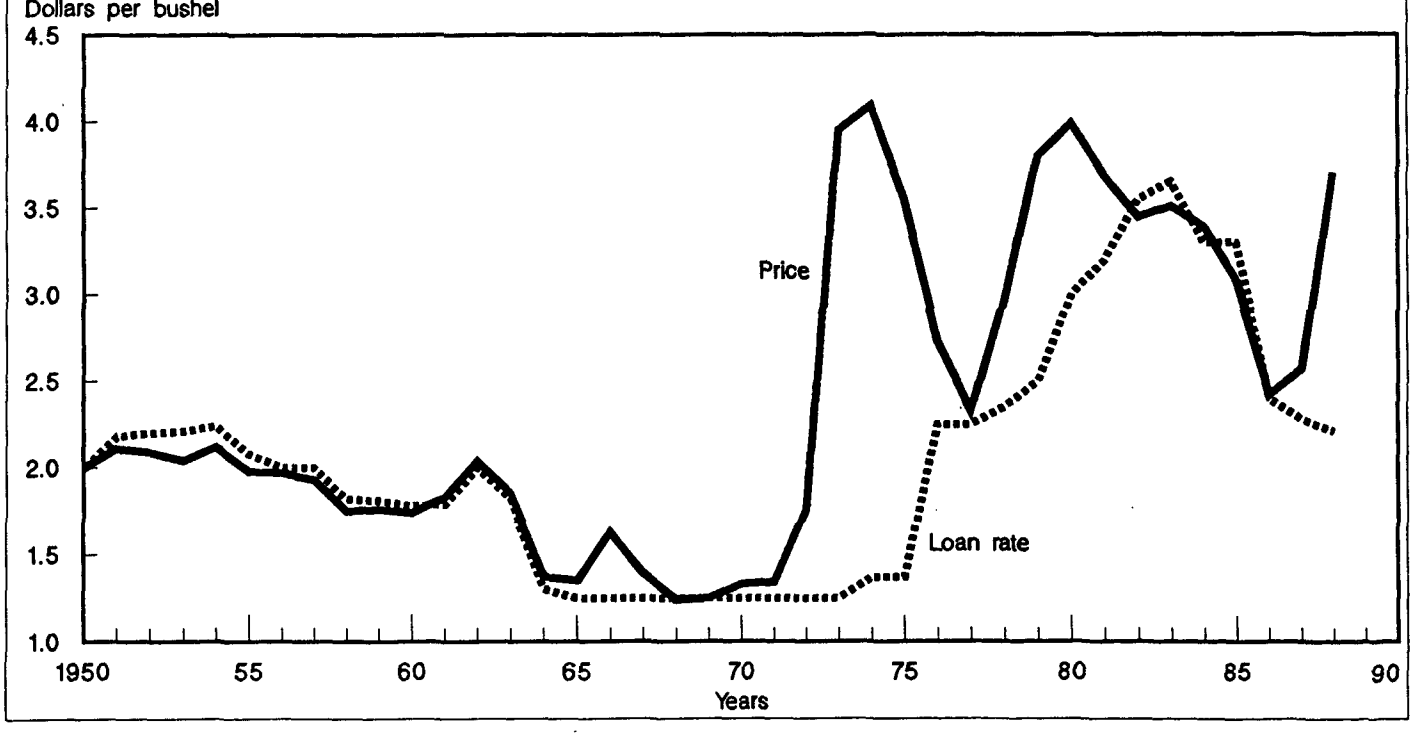
Even so, the real price of wheat has declined steadily since the post-World War II period, the exception being sharp increases in 1973-75 and in 1988/89. The real price for 1988/89 is lower than real prices in previous decades. However, real price trends do not tell the whole story. Wheat yields are now about double those of the 1950's. Despite the increase in wheat yields, annual revenues per harvested acre, excluding Government payments, in the 1980's are about 33 percent lower than those of the previous decades (table 9). Technological change allows farmers to farm more acres, thereby maintaining income potential.

Costs and Returns

The overall financial condition of wheat farmers improved gradually from 1985 through 1987. The 1988 drought in the spring wheat growing areas reduced average net returns. However, disaster relief payments and higher wheat prices enabled real net returns in 1988 to remain above 1985 levels (table 10).

There is much variation in the cash flow position and the importance of Government payments to individual wheat growers. Established farmers owning land with little or no debt should be

Figure 3
Wheat prices and loan rates



financially sound. Farmers who must rent land or have heavy debt loads have cash flow problems when prices are low. Farm program benefits are more important to these farmers.

Total wheat per-acre returns above cash expenses gradually increased from 1980 through 1987 due to the combined effect of higher yields and Government payments. The loan rate increased annually from 1980 through 1983 (see fig. 3). While the 1985 Food Security Act provided for immediate reductions in loan rates, target prices were not reduced until 1988 and direct Government payments exceeded $1.00 per bushel between the 1986/87 and 1988/89 crop years. The higher market prices that occurred in the 1988/89 crop year as well as the reduction in target prices reduced the value of Government payments. The higher market value enabled net returns above cash expenses per acre to be maintained throughout the 1980's.

Prior to enactment of the 1985 Act, wheat land tended to stay in production unless the acreage reduction program was attractive. Where wheat is supplementary to a larger enterprise, producers tend to consider only returns above cash expenses rather than returns above cash and fixed expenses in deciding whether to produce the crop. The returns above cash expenses also help explain why wheat acreage has expanded, especially outside the traditional areas.

Table 9--Wheat farm prices, yields, and revenue, 1940-88

Crop year	Average farm price		Yield	Gross revenue per harvested acre 1/
	Nominal	1982$		
	Dollars per bushel		Bushels/acre	1982$ 2/
1940-44	1.10	7.56	17.1	130.39
1945-49	1.91	9.21	17.0	156.91
1950-54	2.07	8.00	17.3	137.74
1955-59	1.88	6.52	22.2	143.48
1960-64	1.77	5.55	25.2	139.67
1965-69	1.37	3.79	27.5	103.55
1970-74	2.49	5.10	31.3	156.64
1975-79	3.08	4.55	31.4	143.12
1980-84	3.61	3.71	36.3	133.82
1985	3.08	2.78	37.5	104.15
1986	2.42	2.12	34.4	73.09
1987	2.57	2.18	37.7	82.32
1988	3.74	3.04	34.1	103.67

1/ Excludes direct Government payments received by participants in the wheat program. 2/ Yield times nominal price divided by the GNP deflator (1982 = 1.0).

The 1985 Act established two programs that were relatively attractive to wheat producers to retire land. The 50/92 (later the 0/92) program provides a guaranteed deficiency payment for the annual retirement of land. The conservation reserve program provided annual rental payments to landowners who placed cropland in a conserving use for 10 years. The rental payments were relatively attractive in the Southern and Northern Plains States, areas which predominately produce wheat.

History Of Wheat Programs

Current Federal wheat policies trace back to World War I. Since that time, the U.S. Government has pursued price and production objectives through policies including: export quotas and fixed wheat prices, acreage allotments, a soil bank, nonrecourse loans, set-asides, target prices, deficiency payments, the farmer-owned reserve, the conservation reserve program, and the export enhancement program.

Table 10--Wheat sector costs and returns, 1981-88

Crop year	Aggregate market value of production 1/	Aggregate direct payments 2/	Aggregate gross income	Aggregate cash expenses 3/	Returns above cash expenses: Aggregate 4/	Returns above cash expenses: Nominal 5/	Returns above cash expenses: 1982$ 6/
	Billion dollars					Dollars/bushel	
1981	10.28	0.79	11.06	7.67	3.40	1.22	1.30
1982	9.54	.77	10.31	7.44	2.87	1.04	1.04
1983	10.42	1.31	11.73	7.43	4.30	1.78	1.71
1984	9.13	1.73	10.86	7.54	3.32	1.28	1.19
1985	7.37	2.35	9.72	6.01	3.71	1.53	1.38
1986	5.04	3.86	8.90	5.12	3.78	1.80	1.58
1987	5.42	3.61	9.03	4.82	4.21	2.00	1.70
1988	6.77	2.03	8.80	5.39	3.42	1.89	1.55

1/ Production times average farm price. Market value of production in 1983 and 1984 includes payment-in-kind entitlements valued at the season average price. 2/ The sum of deficiency, diversion, disaster, reserve storage, and long-term conservation reserve program payments. 3/ Total cash expenses equal the sum of planted acre, conservation, and conservation reserve program cash expenses. Planted acre cash expenses equal planted acres times total cash expenses (fixed and variable) per acre. Conservation cash expenses per acre equal conservation acres (acreage reduction program, paid land diversion, payment-in-kind, and 0-92) times variable cash expenses per acre times 0.25. Conservation reserve program cash expenses per acre equal conservation reserve acres times variable cash expenses per acre times 0.25. 4/ The difference between aggregate gross income and aggregate cash expenses. 5/ The difference between aggregate gross income and aggregate cash expenses divided by the quantity produced. 6/ Nominal per bushel returns above cash expenses deflated by the GNP implicit price deflator (1982 = 100).

World War I and the 1920's

With wheat supplies scarce in Europe and the United States during 1916 and 1917, the U.S. Government imposed export quotas and fixed wheat prices. The Government pursued its price and production objectives through wheat purchases and sales and was successful in preventing runaway inflation and in supporting wheat prices at harvest, successes which inspired demands for subsequent programs.

During the 1920's, world wheat production exceeded demand, despite lower prices, and major exporters accumulated large stocks. The collapse of wheat prices in the early 1920's spurred the demand for subsequent programs. The trend toward overproduction generated calls to raise wheat farm income through a two-price system. Legislative versions of the two-price proposals were vetoed by President Coolidge in 1927 and 1928. These bills, based on the McNary-Haugen plan, were the first to propose boosting domestic wheat prices to "parity," a relationship between costs and prices which was defined to exist in 1910-14.

A Federal farm program, designed to stabilize prices and control surpluses, was finally implemented when President Hoover signed the Agricultural Marketing Act of 1929. A federally funded corporation was set up to make loans to marketing cooperatives that would purchase surplus wheat and other products from farmers. However, large supplies and plunging prices exhausted the resources of the corporation, and it ceased to function.

Legislation in the 1930's

The agricultural policies of the 1930's introduced many features that appeared in later programs, including acreage allotments, nonrecourse loans, and direct payments.

The AAA of 1933

The Agricultural Adjustment Act of 1933 (AAA) was enacted to raise farm incomes and control production. The wheat program under this act had many now-familiar features. Producers were assigned an allotment based on an average of past acreages. They were given the opportunity to reduce area by a certain percentage of this allotment base and in return receive a cash payment on their domestic allotment, that part of their allotment that would be used for domestic food. The programs of the AAA coincided with droughts and the Dust Bowl. Together, they turned wheat surplus into scarcity by 1936.

In January 1936, the Supreme Court ruled against processing taxes which had been imposed to finance the production control and declared the production control features of the 1933 Act unconstitutional. Higher prices combined with the lack of effective production controls for wheat under the Soil Conservation and Domestic Allotment Act of 1936 prompted a large increase in production and, once again, low prices.

The AAA of 1938

The Agricultural Adjustment Act of 1938 was the next major piece of legislation. It came in response to surpluses and low prices as a result of large wheat and cotton crops in 1937. This act introduced features contained in legislation that followed: nonrecourse loans, storage payments, direct payments, allotments, marketing quotas, export subsidies, and conservation incentives. Loan rates were to be set between 52 and 75 percent of parity, a term used for the first time in legislation. In order to receive parity payments--based on the difference between the farm price and 75 percent of parity--on normal production, and to be eligible for loans, farmers had to abide by acreage allotments. If supplies exceeded 135 percent of total use, compulsory marketing quotas were to be announced, and if approved by two-thirds of the farmers, put into effect. If a marketing quota was in effect, all producers were required to comply with the announced program provisions. The first mandatory quotas for wheat were approved for the 1941 crop. Quotas made acreage allotments mandatory and imposed penalties on any farmer exceeding the assigned allotment.

The 1938 Act sharply lowered wheat acreage from 80 million planted acres in 1938 to 63 million in 1939. U.S. prices were pushed well above world prices and export subsidies were used to maintain exports. The Government acquired large wheat stocks which were later reduced through a subsidized "wheat-for-feed" program and the world food shortages during and after World War II.

Postwar and the 1950's

The Agricultural Acts of 1948 and 1949 revised the parity formula because the relative prices of crops based on 1910-14 did not reflect economic conditions. The 1949 legislation also pegged support rates at 90 percent of parity for 1950. Support rates could be reduced in subsequent years depending on supplies. Despite Government authority to lower support prices, the wheat loan rate was set at or above 90 percent of parity through 1954. Because acreage allotments and market quotas were not in effect during this period, the high loan rates supported prices and wheat stocks grew sharply. After passage of the Agricultural Act of 1954, wheat support prices were reduced below 90 percent of parity, from 82.6 percent in 1955 to 75 percent in 1960. However, it was not enough to balance the market, one reason being that the act specified a minimum allotment of 55 million acres.

The soil bank was established by the Agricultural Act of 1956 to withdraw farmland from production to help reduce the growing surpluses. It had two components: (1) an acreage reserve which aimed at shortrun production adjustments by paying farmers to put part of their wheat and feed grain allotments into a conserving use and (2) a conservation reserve which allowed for longrun (3 to 10 years) land retirement. Neither program was especially effective for wheat. The acreage reserve often attracted land

that was fallowed or had poor yield prospects and the conservation reserve was not crop-specific. The acreage reserve program ended in 1958 and the conservation reserve ended in 1961. Some conservation reserve land remained idle through the 1960's because of the long-term contracts. Over 85 percent of the land planted to trees as part of the conservation reserve remains in forest and did not return to crop production.

Farm Program Adjustments in the 1960's

Wheat surpluses had built to immense levels by the early 1960's. From 1959 to 1962, beginning stocks were higher than total disappearance in each year. If the 1962 wheat allotment had been determined solely on the basis of the supply formula rather than the 55-million-acre statutory minimum, the allotment would have been zero.

As a result, a supplemental voluntary paid land diversion was implemented in 1962 and 1963. Growers disapproved marketing quotas for the 1964 crop, ending mandatory acreage control programs for wheat. New legislation was passed quickly, and the wheat program changed significantly under the Cotton-Wheat Act of 1964.

The national minimum acreage allotment was lowered, the loan rate was reduced to the feed value of wheat, and the program became entirely voluntary. Program compliers received domestic and export wheat certificates so that the blend of the market price and certificate value would be about 80 percent of parity. These measures were the first steps in separating income and price supports, an attempt to keep U.S. wheat prices competitive and at the same time support farmers' incomes.

The Food and Agriculture Act of 1965 made some important changes. Feed grains, wheat, and cotton were covered by the same omnibus legislation. The act extended the voluntary programs through 1969 (later extended to include 1970) and added a cropland adjustment program to retire land under 5- and 10-year contracts. These programs in the early and mid-1960's were effective in reducing wheat surpluses, and they showed that surpluses could be managed without mandatory programs. Food aid exports of wheat under the PL 480 program were important in reducing surpluses during this period (app. table 11).

Farm Program Adjustments in the 1970's

The farm programs of the 1970's introduced several adjustments that made agriculture more market-oriented. New programs included set-asides, target prices, and deficiency payments.

Agricultural Act of 1970

The program changes that occurred in the 1960's, such as the introduction of direct payments, were important first steps toward a more market-oriented agriculture. However, direct payment program costs were large and visible. In addition,

attention focused on the distribution of program benefits which showed farmers receiving large payments, some in excess of $1 million. In reaction, the Agricultural Act of 1970 limited payments to $55,000 per crop per person.

The 1970 Act introduced the set-aside concept in an effort to give market prices a greater role in planting decisions. It also recognized that area and regional adjustments in cropping patterns were being inhibited by the use of historical allotments. Once the farmer idled a stated percentage of the farm's domestic allotment, remaining land could be planted to any nonquota crop, including wheat. Thus, the program did not specifically restrict acreage of any crop. Farmers who did not comply with the set-aside requirement were not eligible for direct payments or the loan program. Program participation was very high during 1971-73, and wheat acreage was kept below levels reached in the late 1960's.

Target Prices Introduced in 1973 Legislation

During the 1974-77 crop years, the period covered by the Agriculture and Consumer Protection Act of 1973, wheat and other crops generally enjoyed strong exports and prices which aided the move toward more market-oriented farm programs. The 1973 Act made significant revisions in income programs. To complete the separation of price and income support, the wheat certificate program was repealed and replaced with the target price concept. Under target prices, deficiency payments would be made to farmers when the farm price fell below the target, with the maximum payment rate equal to the difference between the target and the loan rate. The goal of the target price system was to support income without affecting the market price. The target price covered production from allotment acreage and allotments were sharply increased. The target price was set directly by legislation for 1974 and 1975 and was adjusted thereafter by a formula based on an index of prices paid by farmers and changes in yields.

The 1973 Act also initiated the disaster payments program. Participating farmers would receive payments to cover losses due to natural causes which either prevented the crop from being planted or resulted in abnormally low yields. The payment rate was a percentage of the target price. Disaster payments did not count against the payment limitation, which was reduced to $20,000 per person by the 1973 Act. The disaster payments program recognized that farm income is affected by yield as well as price. At that time, all-risk crop insurance was not available in many high-risk counties. The disaster payments program was available to any participating producer and no premium was required.

The disaster payments program was later replaced by the all-risk crop insurance program provided by the Federal Crop Insurance Act of 1980. The high cost of the disaster payments program and the perception that it encouraged keeping marginal land in production were reasons for the change. Although the Government now pays a

portion of the insurance premium, participation has been low. Farmers cite high premiums relative to expected indemnities as a reason.

The Food and Agricultural Act of 1977

The Food and Agricultural Act of 1977 made significant changes in farm programs. Under the 1973 Act, wheat farmers received deficiency payments based on their allotments, regardless of how many acres of wheat they planted. In many cases, allotments were out of line with current planting patterns. The 1977 Act replaced the allotments with the current plantings concept: deficiency payments were to be based on normal production from current plantings. Normal production was determined by the program yield. To control the size of the payment, the payment rate could be reduced by an "allocation factor" if plantings were too large relative to needs (the minimum factor was 0.8).

The 1977 Act adjusted target prices on the basis of changes in wheat production costs per bushel, instead of using the aggregate prices paid index. Therefore, fluctuations in wheat yields had to be taken into account in setting the levels of target prices.

The farmer-owned grain reserve, established by the 1977 Act, was a recognition of the growing importance of exports to U.S. agriculture and the potential for greater demand and price instability. In return for loans and annual storage payments, farmers agree not to market their grain for an extended period (initially 3 years, but now 3 to 5 years), unless the average farm price reaches a specified level, the release price. The farmer-owned reserve loan rate was sometimes higher than the regular 9-month loan.

The farmer-owned reserve left stocks under the ownership of farmers. Thus, if and when prices rose, farmers would realize the increase in the value of the stocks. When the Government owns stocks, farmers who have forfeited their production to the Government at low prices have no opportunity to realize any gain if prices go up. The reserve also specified trigger prices to provide control over release and give potential buyers an idea of price levels required in order for them to be able to purchase farmer-owned reserve stocks.

The Agriculture and Food Act of 1981

Set-aside programs in 1978 and 1979 reduced wheat acreage to some extent and raised prices. Strong exports eliminated the need for further acreage control programs until 1982, the first year under the Agriculture and Food Act of 1981. The 1981 Act continued the wheat target price/deficiency payment program, farmer-owned reserve program, and set-aside program authority. It also authorized a crop-specific acreage reduction program aimed at better crop selectivity under acreage reductions. Minimum loan rates and target prices for each year were written into the legislation. The target prices were based on forecasts of

inflation which, as it turned out, were too high. The act allowed the wheat loan rate to be reduced 10 percent when the average farm price in the previous year was less than 105 percent of that year's loan rate. The minimum loan rate was $3 a bushel in 1980. It reached $3.65 in 1983, but was reduced to $3.30 in the 1984 and 1985 crop years.

The acreage reduction program, introduced as a new and more specific acreage control method, required diversion from a crop-specific acreage base. The diverted land had to be put in an approved conservation use. There was a 15-percent acreage reduction program for wheat in 1982. In 1983, a 15-percent acreage reduction program, a 5-percent cash diversion program, and a 10- to 30-percent payment-in-kind program were in effect. Participating growers could also submit bids to idle their entire bases for payment-in-kind in 1983. Bids were stated as a percentage of the farm program yield. Lowest bids were accepted first on a county-by-county basis. No more than 50 percent of the wheat base in any county could be idled under the combined programs.

The effects of the 1982 and 1983 programs were mixed. Deficiency, diversion, and in-kind payments did support income but added to high Government costs. The reserve loan rate in 1982/83 was set at $4 a bushel, 45 cents above the regular loan. The higher reserve loan was granted to raise program participation, but questions also surfaced about the goals of the farmer-owned reserve: price stability or price enhancement? Despite 48 percent of the wheat base in the program, harvested acreage in 1982/83 was the second highest ever, contributing to a rise in carryover stocks to 1.52 billion bushels, including over 1 billion bushels in the reserve. In reaction to this, the attractive payment-in-kind program, with over 75-percent participation, put record wheat acreage into conserving uses. Program participation was large because the payment-in-kind compensation did not count against the $50,000-per-person payment limit. However, falling exports and record yields prevented 1983's sharp acreage cut from achieving a significant reduction in stocks.

The Food Security Act of 1985

The Food Security Act of 1985, which came at a time of large stock buildups (see table 11 and app. table 3), was designed to increase U.S. competitiveness in world markets and to support farm income. To achieve these goals, it employed lower loan rates, generic certificates, and export promotion in the wheat program. It gave the Secretary of Agriculture greater flexibility in setting loan rates and allowed exporters greater latitude in setting competitive prices.

Under the act, loan rates and target prices continued to protect producer incomes. The "basic" (or statutory) loan rate for crop years 1987-90 was set at 75-85 percent of the simple average of the season farm prices over the previous 5 years, excluding high and low values. It could not fall by more more than 5 percent

Table 11--Wheat supply, disappearance, area, and prices, 1985-89

Item 1/	1985/86	1986/87	1987/88	1988/89 2/	1989/90 3/
			Million bushels		
Supply:					
Beginning stocks, June 1	1,425	1,905	1,821	1,261	616
Production	2,425	2,092	2,107	1,811	2,028
Imports 4/	16	21	16	24	21
Total	3,866	4,018	3,945	3,096	2,665
Domestic disappearance:					
Food	674	696	719	730	735
Seed and industrial	93	84	85	100	105
Feed and residual 5/	279	413	288	210	175
Total	1,046	1,193	1,092	1,040	1,015
Exports 4/	915	1,004	1,592	1,440	1,150
Total disappearance	1,961	2,197	2,684	2,480	2,165
Ending stocks, May 31	1,905	1,821	1,261	616	500
Farmer-owned reserve	433	463	467	287	100
Special program 6/	163	169	0	0	0
CCC inventory 7/	602	830	283	190	100
Free	707	359	511	139	300
Outstanding loans 8/	678	236	178	19	9
			Million acres		
Area:					
Planted	75.6	72.1	65.8	65.5	75.3
Harvested	64.7	60.7	56.0	53.2	60.3
Set-aside and diverted 9/	18.8	21.0	23.9	22.5	9.5
Conservation reserve	---	.6	4.2	7.1	9.5 10/
National base acreage	94.0	92.2	91.8	91.9	91.2
			Bushels per acre		
Yield per harvested acre	37.5	34.4	37.7	34.1	33.6
			Dollars per bushel		
Prices:					
Received by farmers	3.08	2.42	2.57	3.74	4.00
Loan rate	3.30	2.40	2.28	2.21	2.06
Target	4.38	4.38	4.38	4.23	4.10

--- = Not applicable.

1/ Totals may not add because of rounding. 2/ Estimated. 3/ Projected. 4/ Imports and exports include flour and other products expressed in wheat equivalent. 5/ Residual. Approximates feed use and includes negligible quantities used for alcoholic beverages. 6/ Projected amount of free stock carryover in the special producer storage loan program. 7/ Includes 147 million bushels in the food security reserve in each year. 8/ Projected amount of free stock carryover under 9-month loan. 9/ Includes acreage reduction program, diverted, 50/92, and 0/92 acres. 10/ Through the 7th signup, 8.4 million acres of wheat base were enrolled in the conservation reserve program.

from year to year. Under the Findley Amendment, the Secretary could reduce the statutory loan rate by as much as 20 percent. This provision has been implemented in each year.

Loan rates fell substantially under the 1985 Act. The national average loan rate was $3.30 in 1985. After implementation of the Findley Amendment, the loan rate fell from $2.40 per bushel in 1986 to $1.95 for crop year 1990 (table 12). The target price was initially frozen at the 1985 level of $4.38 per bushel for the 1986-87 crops, and then was allowed to drop to $4.23 in 1988, $4.10 in 1989, and $4.00 in 1990.

To be eligible for loans and deficiency payments (see below), producers must participate in an acreage reduction program (ARP) if supplies are expected to be excessive. The percentage of a farm's wheat acreage base idled under the 1985 Act has depended on the stocks level. If projected beginning stocks exceeded 1 billion bushels, the acreage reduction was allowed to range from 15-22.5 percent in 1986, from 20-27.5 percent in 1987, and from 20-30 percent in 1988-90. If stocks were 1 billion bushels or less, the reduction could range from 0-15 percent in 1986, and from 0-20 percent in 1987-90. A farm's wheat acreage base is defined under the 1985 Act as a 5-year moving average of the number of acres planted and "considered" planted (idled under Government programs). The acres idled under the ARP must be devoted to conserving use.

Even with an acreage reduction program in effect, the Secretary can offer a paid land diversion if supplies are projected to be excessive. Under the 1985 Act, a mandatory 2.5-percent paid land diversion was in effect in 1986. In addition, an optional diversion was offered in the same year to winter wheat producers who reduced their acreage by an additional 5 or 10 percent beyond the acreage reduction program, for which they received a $2-per-bushel payment.

Participating producers are eligible for a "regular" deficiency payment under the 1985 Act. If the national weighted average farm price received by producers for the first 5 months of the marketing year falls below the target level, eligible producers receive deficiency payments in December of that year, less any advance. This payment is equal to the difference between the target level and the higher of the basic loan rate or the national weighted average market price received by farmers for the first 5 months of the marketing year.

Advance deficiency payments were also allowed under the act. The Secretary made advance deficiency payments to participants in the 1986 wheat program because an acreage limitation was in effect and it was likely that deficiency payments were to be made. The Secretary has had the option of offering these payments in 1987-89, and has done so in each year. In 1989, producers participating in the acreage reduction program could request 40 percent of their projected deficiency payments in advance. The advance deficiency payment in 1989 was $0.20 per bushel.

Participating producers have also been eligible for additional payments under the 1985 Act, called "Findley" or emergency compensation payments. These payments equal the difference between the basic loan rate and the higher of the announced national average loan rate or the national weighted average market price received by farmers for the entire marketing year. Findley payments were made in 1986 and 1987, but not in 1988.

There were no Findley payments in 1988, and none were projected for 1989, because the weighted average market price received by farmers for the marketing year had been above the basic loan rate and the national average loan rate. If Findley payments were to have been made under the 1989 program, they would be paid to

Table 12--Wheat program provisions, 1986-90

Provisions	1986/87	1987/88	1988/89	1989/90	1990/91
			Percent of base acres		
Acreage reduction program	22.5	27.5	27.5	10	5
Paid land diversion	2.5 1/	0	0	0	0
Winter wheat paid land diversion	5-10 2/	0	0	0	0
			Dollars per bushel		
Target price	4.38	4.38	4.23	4.10	4.00
Basic loan rate	3.00	2.85	2.76	2.58	2.44
Findley loan rate	2.40	2.28	2.21	2.06	1.95
Advance deficiency payment	.732/.183 3/	.84	.612	.20	NA
Farmer-owned reserve	4/	5/	6/	7/	NA

NA = not available.

1/ Payment rate of $1.10 per bushel paid in generic certificates. 2/ Winter wheat growers who elected to reduce their acreage an additional 5 percent or 10 percent of base received a diversion payment in generic certificates. Diversion payments were valued at $2.00/bu times those additional acres diverted times the program yield. 3/ 0.732 at signup; 0.183 in August 1986. 4/ A ceiling was placed on the size of the farmer-owned reserve. If the quantity of wheat in the farmer-owned reserve exceeded 17 percent of estimated wheat usage for the 1986 crop year, entry of 1986 crop wheat was not to be permitted. 5/ If total wheat in the farmer-owned reserve exceeded 17 percent of estimated domestic and export disappearance for the 1987 marketing year, entry of 1987 crop wheat was not to be permitted. 6/ The farmer-owned reserve level for the 1988 crop was 300 million bushels. When 9-month loans matured, entry into the farmer-owned reserve was to be permitted only if reserve quantities fell below 300 million bushels and farm prices did not exceed 140 percent of the current loan rate. 7/ The limit on the farmer-owned quantity for wheat was 300 million bushels for the 1989/90 marketing year. If reserve quantities exceeded the limit at the time that the 1989-crop wheat loans mature or if market prices were greater than 140 percent of the loan rate, no entry into the reserve was to be permitted.

eligible producers in July 1990. In this situation, producers could have elected, at signup time, to receive a minimum of 75 percent of this deficiency payment in December 1989 based on a December 1, 1989, estimate of the season average market price.

Deficiency payments equal the deficiency payment rate times the farm program yield times the payment acreage (the amount of land planted to wheat after meeting any acreage reduction program requirements). Except for 0/92 acres (see below), the payment acreage is the acreage actually planted. The payment acreage cannot exceed the permitted acreage (the difference between the base acreage and the acres idled under the acreage reduction program and paid land diversion). Program yields under the 1985 Act equal the average program yield on the farm during crop years 1981-85, excluding the years with the highest and lowest yields, although some adjustments have been made to avoid reducing program yields too far below 1985 levels.

Wheat producers have had the option of participating in an acreage diversion program in which they may underplant their permitted wheat acres and still, under some conditions, receive deficiency payments on a portion of the underplanted acreage. Producers participating in the "50/92" program, in effect for the 1986 and 1987 crops, planted between 50 and 92 percent of their permitted acreage to wheat and devoted the remaining acres to a conserving use. Participating farmers were eligible to receive deficiency payments on 92 percent of the permitted acreage.

Beginning with the 1988 wheat program, the "50/92" provision was replaced by the "0/92" provision. Growers who plant less than their permitted acreage may receive deficiency payments on a portion of their underplanted acreage. If growers plant between 0 and 92 percent of their permitted acreage to wheat and devote the remaining permitted acres to a conserving use, they are eligible to receive deficiency payments on 92 percent of the permitted acreage. The production of alternate crops on the conserving use acreage has not been permitted.

The 1985 Act also authorized generic certificates. Certificates can be used to acquire stocks held as collateral on Government loans or owned by the CCC. Certificates free stocks that otherwise would be unavailable to the market. The largest impact occurs when market prices are near the loan rate. Certificates are part of the 1985 Act's focus on developing a more market oriented agricultural sector.

Generic certificates have a fixed dollar face value and an 8-month life beginning at the end of the month they are issued. They are not currency. Rather, they are a claim on CCC assets and are backed by commodities owned by the CCC. Because they are generic, they can be exchanged for a variety of commodities under loan and in CCC inventory, including wheat, rice, rye, corn, grain sorghum, barley, oats, soybeans, upland cotton, honey, and dairy products. The certificates are also negotiable: ownership and the right to exchange can be transferred.

Generic certificates have been used as payment for participation in several Government programs, including the acreage reduction, paid land diversion, conservation reserve, and disaster programs. In addition, grain merchants and commodity groups have been issued certificates through the export enhancement program and the targeted export assistance program.

Farmers exchange generic certificates for grain loan collateral based on an exchange price determined daily by USDA's Agricultural Stabilization and Conservation Service. These exchange prices, or posted county prices, are based on the previous day's closing market prices for 19 terminal markets. Posted county prices are determined for over 3,000 counties and 7,000 warehouse locations by adding or subtracting a predetermined differential to the terminal market price. Most counties are assigned two terminal markets with a differential assigned for each market.

Advantages of using certificates include ready access to most program commodities, easy sale or transfer of certificates to others, and the certificates' fixed dollar face value. Holders of certificates are protected when commodity prices decline because the amount of commodity for which certificates can be exchanged increases.

Wheat auctions were an administrative decision by USDA to facilitate transition to a more market oriented agriculture. To start the wheat auction process, the CCC prepares a list or a "catalogue" of specific lots of wheat in specific locations. Interested parties submit bids in generic certificates to the CCC office in Kansas City for individual lots. The highest bids can be accepted. CCC reserves the right to reject all bids if bids do not reflect market prices.

Wheat exchanges were heaviest over the initial months of the auctions. CCC auctioned 388 million bushels between the first wheat auction in November 1987 and February 15, 1989. CCC auction sales of wheat dropped dramatically after April 1988 because of the drought's effect on stocks. Lots have still been available for auction, but the CCC has accepted few bids. A monthly average of 64 million bushels was sold between November 1987 and April 1988. Between May 1988 and February 15, 1989, monthly sales averaged 0.5 million bushels.

The act also mandated a 40- to 45-million-acre conservation reserve to help protect highly erodible cropland. Under the program, USDA contracts with farmers to idle highly erodible cropland for 10 years. Land that was in production for 2 of the 5 years between 1981 and 1985 is eligible.

Landowners enrolling land in the conservation reserve must retire a portion of their base acres for wheat and/or other annual program commodities. Base acres entering the reserve must be retired at the same rate as the number of base acres to the total acres on the farm. About 8.4 million acres of wheat base were

retired by the end of calendar year 1988, accounting for about 9 percent of total wheat base acres.

If the bid submitted by a producer to enter the reserve is accepted, a contract is signed and the land must be planted in grasses, trees, or other vegetative cover, and may not be hayed or grazed except in emergencies determined by the Secretary. Annual rental payments, which may be in cash or generic certificates, are made on the basis of accepted bids.

The export enhancement program, also authorized by the 1985 Act, helps U.S. exporters compete with other countries that subsidize exports. The program employs a two-step, competitive bid process. The CCC initially targets a country for a specific quantity of a commodity. U.S. exporters then compete for the sale, knowing that they have the opportunity to obtain a CCC bonus. The exporters make sales contingent on receiving a CCC bonus and then bid against each other. The CCC evaluates the sales prices and bids to see if they fall within an acceptable range, and then awards the bonuses. Exporters receive bonuses in generic certificates.

Effects of the 1985 Act

Wheat programs under the 1985 Act have had sizable effects on farmers and taxpayers. Participation in the wheat program increased sizably between 1984 and 1988. Government direct payments for wheat, financed by taxpayers, peaked in 1986 and have since trended downward, but are considerably above 1981-85 levels. The 1985 Act has had a relatively small direct impact on consumers.

Farmers

Direct payments made under the wheat program have been a larger proportion of growers' incomes in the mid- to late 1980's than in the early 1980's. Total direct payments--the sum of deficiency, diversion, reserve storage, disaster, and conservation reserve payments--ranged from $0.79 billion in 1981 to a high of $3.86 billion in 1986 (table 13). They were an average 12 percent of the market value of production from 1981 to 1984, increasing to an average of over 50 percent from 1985 to 1988.

Aggregate direct payments in 1986 were the largest in the decade, at over three-fourths of the market value of production. This is because the loan rate fell faster than the target price and market prices were low, increasing deficiency payments. Deficiency payments prevented a drop in net income again in 1987. However, in 1988, payments were projected to fall as production shortfalls for the major producers and reduced stocks pushed up world wheat prices.

When idled acreage requirements are taken into account, direct payments to wheat growers raised net returns by 62 percent on average between 1981 and 1988 (table 14). Using a different

calculation, nonparticipants were worse off in 1986 than in any other year, with participant returns 125 percent higher than nonparticipant returns (table 15). Participants, on average, fared better than nonparticipants in each year except 1988.

Participation in the annual wheat program grew from 60 percent of wheat base acres in 1984 to a high of 87.5 percent in 1987:

Year	Participation rate
1984	60.0
1985	73.0
1986	85.3
1987	87.5
1988	85.7

Returns to participants were cushioned by deficiency payments and relatively high target prices despite stringent acreage reduction requirements. Until 1988, nonparticipants faced relatively low wheat prices due to large surplus stocks and a drop in the loan rate.

Generic commodity certificates, new with the 1985 Act, also contributed to greater producer participation. Before certificates, when prices were below the loan rate, farmers put their grain under loan for 9 months and paid storage costs (see "nonrecourse loans" in Glossary). With certificates, producers have other options. For instance, they can put their grain under loan, immediately redeem those loans with commodity certificates, and market the grain, thus avoiding storage costs. This can reduce forfeitures of wheat to the CCC, reducing CCC stock buildups. Generic certificates provide a mechanism for moving wheat stocks into commercial channels. This increased the price

Table 13--Direct payments to wheat farmers, 1981-88 crops

Item 1/	1981	1982	1983	1984	1985	1986	1987	1988
				Billion dollars				
Deficiency payments	0.42	0.48	0.77	1.05	1.54	3.46	3.29	1.31
Diversion payments	---	---	.31	.51	.65	.23	---	---
Reserve storage payments	.15	.28	.24	.17	.16	.17	.11	.05
Disaster payments	.22	.01	---	---	---	---	---	.28
Conservation reserve payments	---	---	---	---	---	---	.21	.39
Total direct payments	.79	.77	1.31	1.73	2.35	3.86	3.61	2.03
Market value of production	10.28	9.54	10.42	9.13	7.37	5.04	5.42	6.77
Total income	11.06	10.31	11.73	10.86	9.72	8.90	9.03	8.80

--- = No payments.

1/ Totals may not add because of rounding.

risk to nonparticipants, since the loan rate no longer sets an effective price floor to those outside the program.

The 1985 Act also allows producers to sell or transfer commodity certificates to others. Certificates sold for more than their face value between spring 1986, when they were first issued, and the spring of 1988, benefiting producers. Between spring 1988 and July 1989, certificates sold at par or at a discount. As availability tightened, certificates sold for as much as 105 over par between July and September of 1989.

Under the 1985 Act, program participation has also been influenced by a change in the definition of a farm's crop acreage base (the acreage certified by Agricultural Stabilization and Conservation Service county offices for disbursement of program payments). With the Food Security Act of 1985, a farm's wheat base acreage is calculated as a 5-year moving average of planted and "considered" planted acres (idled under Government programs). As a result, producers who do not participate for a year can increase their crop acreage base by only 20 percent of the additional acres they planted that year.

Table 14--Wheat returns above cash costs, with and without direct Government payments, 1981-88

Crop Year	Net returns, 1982$ 1/				Direct payments as percentage of--	
	Without direct payments		With direct payments		Farm value	Net returns 2/
	$/bu.	$/planted acre	$/bu.	$/planted acre 3/	---Percent---	
1981	1.00	31.47	1.30	40.95	7.6	23.1
1982	.76	24.39	1.04	33.27 (28.28)	8.0	26.7
1983	1.19	37.56	1.71	54.11 (27.05)	12.6	30.6
1984	.57	18.66	1.19	38.95 (19.47)	19.0	52.1
1985	.51	16.29	1.38	44.28 (31.00)	31.8	63.2
1986	-.03	-.99	1.58	45.99 (29.89)	76.4	102.1
1987	.24	7.70	1.70	54.34 (39.39)	66.7	85.8
1988	.63	17.40	1.55	42.85 (31.06)	30.0	59.4
Average	.61	19.05	1.43	44.34		
Coefficient of variation	.25	7.99	.04	1.17		

1/ Calculated from data in table 10 and appendix table 1. Total net returns without direct payments equal the market value of production less total cash expenses. Total net returns with direct payments equal total income less total cash expenses. All data are deflated by the GNP implicit price deflator (1982 = 100). 2/ Net returns include direct payments. 3/ Numbers in parentheses are per-acre returns reduced by the maximum acreage reduction/paid land diversion/payment-in-kind percentage in effect in that year.

Table 15--Wheat returns above variable costs to program nonparticipants and participants, 1984-88 1/

Year	Nominal net returns to:		Real net returns to:		Gain to participants
	Nonparticipants	Participants	Nonparticipants	Participants	
	--Dollars per acre--		---Dollars per acre---		Percent
1984	78.88	92.66	73.24	86.03	17
1985	64.40	86.27	58.07	77.79	34
1986	37.31	83.90	32.76	73.66	125
1987	52.33	85.44	44.46	72.59	63
1988	81.53	79.56	67.00	65.37	-2

1/ Net returns to nonparticipants equal market returns per acre less variable expenses. Market returns equal yield times the season average market price received by farmers. Planted acre expenses equal planted acres times variable expenses per acre. Net returns to participants equal the sum of Government returns and market returns per acre less variable expenses (planted and idled). Government returns per acre equal the sum of deficiency payment returns (the nonacreage reduction program fraction of the acre times deficiency payment rate times program yield) plus diversion payment returns (the diverted fraction of the acre times diversion payment rate times program yield). Planted acre expenses equal the fraction of the acre planted times variable expenses per acre. Idled acre (acreage reduction program and paid land diversion) expenses equal the fraction of the acre idled times variable expenses times 0.25. For participants, it is assumed that for every 10 percent of acreage set aside, yield on the remaining acreage increases 2.2 percent. Only the required acreage reduction program and paid land diversion for program participation are taken into account.

About 87 percent of the 1987/88 wheat base was in compliance with the 27.5-percent acreage reduction program (table 16). Participation across regions was fairly typical for wheat: highest in the Great Plains (93.3 percent) and Northwest (92.8 percent) and lowest in the Northeast (53.5 percent) and South (70.8 percent).

Taxpayers

Under the 1985 Act, farmers receive direct payments to ease the transition toward a market-oriented agricultural policy. Program support costs have consequently risen dramatically. Although Government expenditures for wheat have trended downward since 1986, net price support and related expenditures for wheat averaged $3.2 billion from 1986 through 1988. This is 78 percent above the 1983-85 average and about four times the 1981-82 average (see table 13).

Other factors indicate the importance of taxpayer contributions. Net expenditures amounted to about $1.60 per bushel of wheat (nominal $) produced during 1986-88. At the same time, taxpayer expenditures averaged 58 percent of the market value of production and 35 percent of total farm income from wheat.

Taxpayers are indirectly affected by generic certificates, wheat auctions, and the export enhancement program. Although these instruments are not line items in the USDA budget, they may, however, entail some costs or savings that indirectly affect taxpayers. They affect taxpayers primarily through their effect on stocks and market prices, and hence, on deficiency payments.

Strong pressure to cut domestic spending forces lawmakers to scrutinize farm program costs. Cost-cutting proposals have included further reductions in target prices, setting target prices to reflect the costs of production, and establishing more flexible acreage bases.

The "triple-base" concept, which many believe would increase the flexibility of farm programs, has received considerable interest in 1989. The proposed program, introduced in 1985 by Rep. Charles Stenholm (D-TX), would continue to divide a producer's base acreage into conserving use and permitted acres. Permitted acres would be further divided into those which would be planted to program crops (which would continue to receive program payments) and flexible acres. The "triple-base" phrase is derived from the three types of acres: permitted acres (divided into program acres and flexible acres) and conserving use acres.

Crops produced on flexible acres would not be eligible for deficiency payments. The ratio of permitted acres to flexible acres, as well as any limitations on what could be planted on flexible acres, would be determined by law or by the Secretary. Proponents hope the triple-base concept would decrease Federal expenses by cutting the number of acres receiving payments, while giving farmers greater flexibility.

Consumers

The fall in the loan rate under the 1985 Act had little effect on the retail prices of baked goods, pastas, and other wheat products because the marketing margin between farm and retail levels is wide. Wheat prices are typically low compared with the prices of packaging, distribution, and other inputs. The amount of wheat used to produce a loaf of bread usually costs less than 15 percent of the retail price. In contrast, distribution can account for 40 percent of the retail price.

The effect of the wheat program on consumers has also been small because the quantity of wheat consumed per capita, although rising, is relatively low. Consumers used 128 pounds of flour per capita in 1988, up from 123 pounds in 1985 and 111 pounds in 1970. The 128 pounds used in 1988 is the equivalent of 2.9 bushels of wheat. The farm value of this wheat in 1988 was about $10.85.

Higher prices for certain wheat products 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. The retail price of white pan bread, for instance, rose by 18 percent between 1980 and 1988, although it actually fell between 1986 and 1987. The prices of two of the more popular items, french bread and whole wheat bread, have increased at the most rapid rates between 1980-88, 40 and 29 percent.

Table 16--Distribution of wheat acreage base and deficiency payments by region, 1987/88

Region	Base	Participation base	Participation rate	Deficiency payments	Share of payments
	--Million acres--		Percent	Million dollars	Percent
Great Plains 1/	59.56	55.60	93.3	2.163	65.0
North Central 2/	11.52	8.13	71.0	.414	12.4
South 3/	7.69	5.44	70.8	.246	7.4
Northwest 4/	5.98	5.55	92.8	.396	11.9
Southwest 5/	2.26	1.60	70.9	.093	2.8
Northeast 6/	.54	.29	53.5	.015	.5
Total	87.55	76.61	87.5	3.327	100.0

1/ CO, KS, MT, NE, ND, OK, SD, TX, and WY. 2/ IL, IN, IA, MI, MN, MO, OH, and WI. 3/ AL, AR, FL, GA, KY, LA, MS, NC, SC, TN, VA, and WV. 4/ ID, OR, and WA. 5/ AZ, CA, NV, NM, and UT. 6/ DE, MD, NJ, NY, PA, and New England States.

Supply

Since 1962, the Federal Government has attempted to reduce wheat production by offering diversion, set-aside, and/or acreage reduction programs in all marketing years except 1967-68, 1973-77, and 1980-81. These diversion programs were 67 percent effective, on average, in reducing harvested acreage between 1962 and 1985. That is, a 1-million-acre increase in diverted acres led to an average 670,000-acre reduction in harvested area (see app. table 1).

As seen from this example, the effect of acreage reduction programs has not historically reduced wheat acreage by the full desired amount. This reduced program effectiveness is known as "acreage slippage." It occurs when harvested acres change by less than the change in idled acres. Slippage can refer to acreage in all crops or specific crops. Slippage varies by crop, region, and year, and by the type of acreage control program in effect and the program rules. Acreage slippage can result from nonparticipants in the program who plant more acres, from inflated acreage bases, and from the designation of fallow land as diverted acres.

Unlike earlier years, however, acreage slippage was not apparent after 1985. Harvested acreage declined more rapidly than the increase in diverted acreage between 1985-88. Several factors are responsible for this occurrence. With program participation at 73-87 percent, fewer producers were outside the program to increase their planted acres. In addition, the conservation reserve took a considerable amount of marginal land out of production. The change in base acreage calculation has also had an effect, as has limited cross-compliance, where participants in wheat, corn, sorghum, barley, and upland cotton programs cannot plant more acres of other program crops than their base acres.

Further, low wheat prices relative to corn prices contributed to sizable declines in harvested acreage. As the price of wheat fell relative to corn between 1985 and 1987, many Southeastern and Delta farmers stopped double-cropping soybeans and wheat. Corn Belt farmers who previously planted wheat more often concentrated on corn and soybeans. However, as wheat prices rose relative to corn prices in the late 1980's, double-cropping increased in 1988 and 1989.

Exports

The U.S. share of the world wheat market increased substantially in 1987 and 1988. U.S. wheat exports rose from 915 million bushels in 1985 to 1.6 billion in 1987, but are projected to decline in 1989 because of production shortfalls. The U.S. share of the world wheat market likewise expanded, from 27 percent in 1985 to about 41 percent in 1987 and 1988.

The 1985 Act assisted U.S. wheat exports through a variety of means. Recent USDA research indicates that 25 percent of the expansion in U.S. wheat exports between 1986 and 1988 was due to

subsidized exports (primarily through the export enhancement program) and 25 percent was due to the lower loan rate. About 40 percent was due to expanded imports by the USSR and China, and 10 percent was due to lower yields by competing exporters. The depreciation of the dollar was also a factor.

Prior to the act, export merchants were restrained from lowering export prices below the loan rate despite world market conditions because they could not do so profitably. With the export enhancement program, however, bonuses are provided to exporters who sell to markets targeted by USDA. The program uses a two-step, competitive bid process that helps exporters compete, while minimizing bonuses awarded from CCC stocks (see earlier discussion).

The export enhancement program has been among the most important provisions helping U.S. exporters compete with other countries' subsidies. Over 60 million tons of wheat and flour (wheat equivalent) were sold under the program between May 1985 (the start of the program) and July 1989. By value, about 85 percent of EEP-assisted sales have moved wheat into the world market. Major purchasers include the Soviet Union, North Africa, and China. Since May 1985, wheat bonuses have averaged about $30 per metric ton, or about 25 percent of U.S. wheat export prices.

The use of generic certificates and wheat auctions have also contributed to export expansion. Prior to the 1985 Act, the CCC could not sell stocks in commercial markets unless farm prices reached a specified CCC release price. Between 1986 and 1988, 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.

Stocks-to-Use Ratio

Given the small stocks-to-use ratio in 1989, there is a risk of shortage and high prices if additional production shortfalls and demand increases occur in the near future. Supply and demand forces in 1989 similar to those existing in 1973, for instance, would imply a nominal U.S. wheat price of about $11 per bushel. Small stocks-to-use ratios also imply greater price variability.

To increase 1990 supplies, the Secretary announced on September 13 that participating farmers have the option of planting up to 105 percent of their wheat base acres. For every acre of wheat planted in excess of 95 percent of base, the acreage used to compute deficiency payments will be cut by 1 acre. For instance, if a producer planted 105 percent of his or her base, only 85 percent would be used to compute deficiency payments. Farmers who plant the extra wheat on corn or other program crop base acres will not lose that base, although the increase in plantings will not increase their future wheat base. Moreover, farmers still retain the option of holding to the 5-percent acreage reduction announced earlier, with the usual deficiency payment computations.

The decreased role of the United States as a world wheat stockholder (through wheat auctions, generic certificates, and the export enhancement program) has increased the likelihood of shortrun year-to-year variations in wheat supply, increasing price variability. Even so, significant amounts of excess land capacity exist for many crops, some of which could be brought into wheat production.

Indirect

Wheat programs also have had some indirect, but significant, effects on land values, resource use, and other crop and livestock production.

In particular, studies have shown that a portion of program benefits, particularly those associated with a base or allotment, are capitalized into land values. The result is that landowners who acquired land before bases or allotments were created earn windfall capital gains when they sell their land. When subsequent landowners pay higher prices for land with program bases, part of the higher price is from the program benefits that accompany the land. Their total production costs are higher and, thus, the net returns from the land are lower than if program benefits had not been capitalized.

Wheat production also has important indirect effects on environmental quality. Pesticides and fertilizers are contained in agricultural runoff and affect water quality. Limiting the use of these inputs, however, will tend to raise production costs or restrict yields. Because of concerns about environmental quality, expansion of the conservation reserve to environmentally sensitive areas has been debated. The long-term gains to society from limiting wheat production in certain areas to enhance environmental quality may exceed the costs of foregone wheat production.

Wheat programs also affect other agricultural sectors. Limited substitution can occur between grains, especially for livestock feed. Programs that tend to raise wheat prices may also lead to cost increases for livestock and poultry producers.

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Glossary

Acreage allotment -- An individual farm's share of the national acreage that the Secretary of Agriculture determines is needed to produce sufficient supplies of a particular crop. The farm's share is based on its previous production.

Acreage reduction program (ARP) -- A voluntary land retirement system in which participating farmers idle a prescribed portion of their crop acreage base of wheat, feed grains, cotton, or rice. The base is the average of the acreage planted for harvest and considered to be planted for harvest. Acreage considered to be planted includes any acreage not planted because of acreage reduction and diversion programs during a period specified by law. Farmers are not given a direct payment for ARP participation, although they must participate to be eligible for benefits such as Commodity Credit Corporation loans and deficiency payments. Participating producers are sometimes offered the option of idling additional land under a paid land diversion program, which gives them a specific payment for each idled acre.

Acreage slippage -- A measure of the effectiveness of acreage reduction programs. Slippage occurs when harvested acres change by less than the change in idled acres.

Advance deficiency payments -- The Secretary is required to make advance deficiency payments to producers of crops when an acreage limitation program is in effect and deficiency payments are expected to be paid. Advance deficiency payments can range from 30 to 50 percent of expected payments.

Commodity Credit Corporation (CCC) -- A federally owned and operated corporation within the U.S. Department of Agriculture created to stabilize, support, and protect farm income and prices through loans, purchases, payments, and other operations. All money transactions for agricultural price and income support and related programs are handled through the CCC; the CCC also helps maintain balanced, adequate supplies of agricultural commodities and helps in their orderly distribution.

Common Agricultural Policy (CAP) -- A set of regulations by which member states of the European Community (EC) seek to merge their individual agricultural programs into a unified effort to promote regional agricultural development and achieve other goals. The variable levy and export subsidies are the two main elements of the CAP.

Concessional sales -- Credit sales of a commodity in which the buyer is allowed more favorable payment terms than those on the open market (such as low-interest, long-term credit).

Conservation reserve program (CRP) -- A major provision of the Food Security Act of 1985 designed to reduce erosion on 40-45 million acres of farmland. Under the program, producers who sign contracts agree to convert highly erodible cropland to approved

conservation uses for 10 years. In exchange, participating producers receive annual rental payments and cash or inkind payments to share up to 50 percent of the cost of establishing permanent vegetative cover.

Conserving uses -- Land idled from production and planted in annual, biennial, or perennial grasses, or other soil conserving crop.

Crop year -- The year in which a crop is planted; used interchangeably with marketing year.

Deficiency payment -- A Government payment made to farmers who participate in wheat, feed grain, rice, or cotton programs. The payment rate is per bushel, pound, or hundredweight, based on the difference between the price level established by law (target price) and the higher of the market price during a period specified by law or the price per unit at which the Government will provide loans to farmers to enable them to hold their crops for later sale (loan rate). The payment is equal to the payment rate multiplied by the acreage planted for harvest and then by the program yield established for the particular farm.

Direct payments -- Payments in the form of cash or commodity certificates made directly to producers for such purposes as deficiency payments, annual land diversion, or conservation reserve payments.

Disaster payments -- Federal aid provided to farmers for feed grains, wheat, rice, and upland cotton who have crop insurance (when available), when either planting is prevented or crop yields are abnormally low because of adverse weather and related conditions. Payments also may be made under special legislation enacted after an extensive natural disaster.

European Community (EC) -- Established by the Treaty of Rome in 1957, also known as the European Economic Community and the Common Market. Originally composed of six 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, including the Common Agricultural Policy (CAP).

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

Export enhancement program (EEP) -- Begun in May 1985 under a Commodity Credit Corporation charter to help U.S. exporters meet competitors' prices in subsidized markets. Under the EEP, exporters are awarded bonus certificates which are redeemable for CCC-owned commodities, enabling them to sell certain commodities to specified countries at prices below those of the U.S. market.

Export subsidies -- Special incentives, such as cash payments, tax exemptions, preferential exchange rates, and special contracts, extended by governments to encourage increased foreign sales; often used when a nation's domestic price for a good is artificially raised above world market prices.

Farm acreage base -- The annual total of the crop acreage bases (wheat, feed grains, upland cotton, and rice) on a farm, the average acreage planted to soybeans, peanuts, and other approved nonprogram crops, and the average acreage devoted to conserving uses. Conserving uses include all uses of cropland except crop acreage bases, acreage devoted to nonprogram crops, acreage enrolled in annual acreage reduction or limitation programs, and acreage in the conservation reserve program.

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. Farmers can place eligible grain in storage and receive extended loans for 3 years with extensions as warranted by market conditions. The loans are nonrecourse in that farmers can forfeit the commodity held as collateral to the Government without penalty and without paying accumulated interest in full settlement of the loan.

Findley loan rates -- Originally proposed by Representative Paul Findley (R-Ill.), this provision was adopted in the Food Security Act of 1985. It gives the Secretary of Agriculture the discretionary authority to reduce the loan rate (price per unit at which the Government will provide loans to farmers to enable them to hold their crops for later sale) by up to 20 percent, if necessary, to make the commodity more competitive on the world market.

Food Security Act of 1985 (PL 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.

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. The agreement provides a code of conduct for international commerce and a framework for periodic multilateral negotiations on trade liberalization and expansion.

Generic commodity certificates -- Negotiable certificates, which do not specify a certain commodity, that are issued by USDA in lieu of cash payments to commodity program participants and sellers of agricultural products. The certificates, frequently referred to as payment-in-kind (PIK) certificates, can be used to acquire stocks held as collateral on Government loans or owned by the Commodity Credit Corporation.

Intermediate export credit guarantee program (GSM-103) -- Established by the Food Security Act of 1985, this program complements GSM (General Sales Manager)-102 but guarantees repayment of private credit for 3-10 years.

International commodity agreement -- Agreements by a group of countries that contain substantive economic provisions aimed at stabilizing world trade, supplies, and prices, such as quotas, buffer stocks and so forth.

Loan rate -- The price per unit (bushel, bale, or pound) at which the Government will provide loans to farmers to enable them to hold their crops for later sale.

Nonrecourse loans -- The major price support instrument used by the Commodity Credit Corporation (CCC) to support the price of wheat, feed grains, cotton, peanuts, and tobacco. Farmers who agree to comply with all commodity program provisions may pledge a quantity of a commodity as collateral and obtain a loan from the CCC. The borrower may elect either to repay the loan with interest within a specified period and regain control of the collateral commodity or default on the loan. In case of a default, the borrower forfeits without penalty the collateral commodity to the CCC.

Paid land diversion -- If the Secretary of Agriculture determines that planted acres for a program crop should be reduced, producers may be offered a paid voluntary land diversion. Farmers are given a specific payment per acre to idle a percentage of their crop acreage base. The idled acreage is in addition to an acreage reduction program.

Payment-in-kind (PIK) -- A payment made to eligible producers in the form of an equivalent amount of commodities owned by the Commodity Credit Corporation.

Program yield -- The farm commodity yield of record determined by averaging the yield for the 1981-85 crops, dropping the high and low years. Program yields are constant for the 1986-90 crops. The farm program yield applied to eligible acreage determines the level of production eligible for direct payments to producers.

Public Law 480 (PL 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.

Set-aside -- A voluntary program to limit production by restricting the use of land. When offered, producers must participate to be eligible for Federal loans, purchases, and other payments.

Target price -- A price level established by law for wheat, feed grains, rice, and cotton. Farmers participating in the Federal commodity programs receive the difference between the target price and the higher of the market price during a period

prescribed by law or the unit price at which the Government will provide loans to farmers to enable them to hold their crops for later sale (the loan rate).

Variable levies -- The difference between the price of a foreign product at the port and the official price at which competitive imports can be sold; levies are effectively a variable tax on imports or a variable subsidy to exports.

0/92 -- An optional acreage diversion program that allows wheat and feed grain producers to devote all or a portion of their permitted acreage to conserving uses and receive deficiency payments on the acreage. The program makes deficiency payments for a maximum of 92 percent of a farm's permitted acreage.

Appendix table 1--Acreage, yield, and production for wheat, 1955-89

Year	Planted	Harvested	Diverted 1/	Yield	Production
	Million acres			Bushels/acre	Million bushels
1955	58.2	47.3	---	19.8	935
1956	60.7	49.8	---	20.2	1,005
1957	49.8	43.8	---	21.8	956
1958	56.0	53.0	---	27.5	1,457
1959	56.7	51.7	---	21.6	1,118
1960	54.9	51.9	---	26.1	1,355
1961	55.7	51.6	---	23.9	1,232
1962	49.3	43.7	10.7	25.0	1,092
1963	53.4	45.5	7.2	25.2	1,147
1964	55.7	49.8	5.1	25.8	1,283
1965	57.4	49.6	7.2	26.5	1,316
1966	54.1	49.6	8.3	26.3	1,305
1967	67.3	58.4	---	25.8	1,508
1968	61.9	54.8	---	28.4	1,557
1969	53.5	47.1	11.1	30.6	1,443
1970	48.7	43.6	15.7	31.0	1,352
1971	53.8	47.7	13.5	33.9	1,619
1972	54.9	47.3	20.1	32.7	1,546
1973	59.3	54.1	7.4	31.6	1,711
1974	71.0	65.4	---	27.3	1,782
1975	74.9	69.5	---	30.6	2,127
1976	80.4	70.9	---	30.3	2,149
1977	75.4	66.7	---	30.7	2,046
1978	66.0	56.5	9.6	31.4	1,776
1979	71.4	62.5	8.2	34.2	2,134
1980	80.8	71.1	---	33.5	2,381
1981	88.3	80.6	---	34.5	2,785
1982	86.2	77.9	5.8	35.5	2,765
1983	76.4	61.4	29.8	39.4	2,420
1984	79.2	66.9	18.3	38.8	2,595
1985	75.6	64.7	18.8	37.5	2,425
1986	72.1	60.7	21.0	34.4	2,092
1987	65.8	56.0	23.9	37.7	2,107
1988	65.5	53.2	22.5	34.1	1,811
1989 2/	75.3	60.3	9.5	33.6	2,028

--- = Not applicable.

1/ Acreage idled under wheat programs only. For 1986-89, includes acreage reduction program, paid land diversion, 50/92, and 0/92. Does not include acres retired under the conservative reserve program (0.6 million acres in 1986, 4.2 million acres in 1987, 7.1 million acres in 1988, and 9.5 million acres in 1989). 2/ Projected.

Appendix table 2--Use and ending stocks for wheat, 1955-89

Crop year	Food	Feed 1/	Exports 2/	Total use 3/	Ending stocks 4/	Stocks-to-use ratio
	Million bushels					Percent
1955/56	484	51	322	926	1,130	122.0
1956/57	482	58	541	1,140	1,004	88.1
1957/58	484	43	419	1,008	962	95.4
1958/59	497	49	450	1,060	1,368	129.1
1959/60	495	49	502	1,109	1,384	124.8
1960/61	497	30	654	1,245	1,502	120.6
1961/62	504	44	716	1,320	1,421	107.7
1962/63	503	35	649	1,248	1,270	101.8
1963/64	488	29	846	1,427	994	69.7
1964/65	514	55	723	1,358	921	67.8
1965/66	518	146	852	1,577	661	41.9
1966/67	505	101	771	1,454	513	35.3
1967/68	518	37	765	1,391	630	45.3
1968/69	522	157	544	1,284	904	70.4
1969/70	520	188	603	1,367	983	71.9
1970/71	517	193	741	1,513	823	54.4
1971/72	524	262	610	1,459	983	67.4
1972/73	532	200	1,135	1,934	597	30.9
1973/74	544	125	1,217	1,970	340	17.3
1974/75	545	35	1,019	1,690	435	25.7
1975/76	589	37	1,173	1,899	666	35.1
1976/77	588	74	950	1,704	1,113	65.3
1977/78	587	193	1,124	1,983	1,178	59.4
1978/79	592	158	1,194	2,031	924	45.5
1979/80	596	86	1,375	2,158	902	41.8
1980/81	611	59	1,514	2,296	989	43.1
1981/82	602	135	1,771	2,618	1,159	44.3
1982/83	616	195	1,509	2,417	1,515	62.7
1983/84	643	369	1,429	2,540	1,399	55.1
1984/85	651	405	1,424	2,578	1,425	55.3
1985/86	674	279	915	1,961	1,905	97.1
1986/87	696	413	1,004	2,197	1,821	82.9
1987/88	719	288	1,592	2,684	1,261	47.0
1988/89 5/	730	210	1,440	2,480	616	24.8
1989/90 5/	735	175	1,150	2,165	500	23.1

1/ Residual. Approximates feed use and includes negligible quantities used for alcoholic beverages. 2/ Exports include flour and other products expressed in wheat equivalent. 3/ Totals do not add because of seed and industrial use. 4/ Includes Government-owned and privately owned stocks. 5/ Projected.

Appendix table 3--Prices and ending stocks for wheat, 1960-89

Crop year	Ending stocks CCC	FOR 1/	Free	Total 2/	Price received	Loan rate	Target price	Direct payment
	Million bushels				Dollars/bushel			
1960/61	1,225	---	278	1,502	1.74	1.78	---	---
1961/62	1,074	---	346	1,421	1.83	1.79	---	---
1962/63	1,102	---	168	1,270	2.04	2.00	---	---
1963/64	800	---	194	994	1.85	1.82	---	0.18 3/
1964/65	635	---	286	921	1.37	1.30	---	.70 4/
1965/66	299	---	361	661	1.35	1.25	---	.75
1966/67	122	---	391	513	1.63	1.25	---	1.32
1967/68	100	---	530	630	1.39	1.25	---	1.36
1968/69	140	---	765	904	1.24	1.25	---	1.38
1969/70	277	---	705	983	1.25	1.25	---	1.52
1970/71	353	---	470	823	1.33	1.25	---	1.57
1971/72	355	---	628	983	1.34	1.25	---	1.63
1972/73	6	---	591	597	1.76	1.25	---	1.34
1973/74	1	---	340	340	3.95	1.25	---	.68
1974/75	---	---	435	435	4.09	1.37	2.05	---
1975/76	---	---	666	666	3.56	1.37	2.05	---
1976/77	---	---	1,113	1,113	2.73	2.25	2.29	---
1977/78	48	342	788	1,178	2.33	2.25	2.90	.65
1978/79	50	393	481	924	2.97	2.35	3.40	.52
1979/80	188	260	454	902	3.80	2.50	3.40	---
1980/81	200	360	429	989	3.99	3.00	3.63 5/	---
1981/82	190 6/	562	407	1,159	3.69	3.20	3.81	.15 7/
1982/83	192 6/	1,061	262	1,515	3.45	3.55	4.05	.50
1983/84	188 6/	611	600	1,399	3.51	3.65	4.30	.65
1984/85	378 6/	654 8/	393	1,425	3.39	3.30	4.38	1.00
1985/86	602 6/	433 8/	870	1,905	3.08	3.30	4.38	1.08
1986/87	830 6/	463 8/	528	1,821	2.42	2.40	4.38	1.98
1987/88	283 6/	467	511	1,261	2.57	2.28	4.38	1.81
1988/89 9/	190 6/	287	139	616	3.74	2.21	4.23	0.69
1989/90 10/	100 6/	100	300	500	4.00	2.06	4.10	0.10

--- = Not applicable.

1/ Farmer-owned reserve. 2/ Totals may not add because of rounding. 3/ Price support payment. 4/ Value of domestic marketing certificate, 1964/65-1973/74. 5/ Growers who planted in excess of their normal crop acreage were eligible for a target price of $3.08 per bushel. 6/ Includes 147 million bushels in the food security reserve. 7/ Deficiency payment, 1981/82 to date. 8/ Does not include special producer storage loan program. 9/ Estimated. 10/ Projected.

Appendix table 4--Program costs for wheat and products, 1970-87 1/

Fiscal year 2/	Outlays: Deficiency payment	Outlays: Acreage diversion 3/	Outlays: Set-aside and/or disaster 4/	Outlays: Exports 5/	Outlays: Reseal loan or producer storage 6/	Loan operations: Outlays	Loan operations: Repayments	Other 7/	Net price support and related expenditures 8/
				Million dollars					
1970	0	47.4	0	55.6	48.9	519.0	325.5	420.4	765.8
1971	0	0	62.6	126.8	39.4	280.4	412.2	333.7	430.7
1972	0	0	0	63.5	27.0	544.0	316.1	512.5	830.9
1973	0	0	132.2	297.9	28.3	160.1	510.7	-71.9	35.9
1974	0	0	98.5	43.2	4.3	74.7	141.6	129.5	208.6
1975	0	0	101.5	0	0	42.7	48.7	-70.0	25.5
19760	0	0	52.8	0	0	64.8	44.9	-2.5	70.2
1976TQ	0	0	71.3	0	0	64.8	10.6	-1.8	123.7
1977	0	---	136.9	0	.4	1,940.0	181.1	2.7	1,898.9
1978	996.4	---	122.3	0	109.3	827.0	1,231.4	16.7	840.3
1979	617.4	---	105.3	0	66.5	367.9	867.3	10.4	300.2
1980	-.1	---	96.9	0	18.0	587.3	565.2	729.0	865.9
1981	0	---	320.6	0	110.5	1,594.5	559.4	70.3	1,536.5
1982	414.5	---	79.2	0	230.2	2,033.5	556.0	28.6	2,230.0
1983	820.8	---	146.6	0	200.9	2,583.3	1,705.3	1,363.7	3,410.0
1984	423.9	---	657.2	0	176.9	1,605.3	1,709.6	1,368.4	2,522.1
1985	1,739.5	---	651.6	0	167.6	2,277.8	404.2	213.3	4,645.6
1986	1,674.0	---	14.8	0	172.3	1,570.3	550.7	509.8	3,390.5
1987	1,547.3	---	-.5	0	171.9	1,170.4	1,373.9	1,293.5	2,808.7

1/ Excludes PL 480 commodity costs. Payments or receipts less than $50,000 are recorded as "0." 2/ Includes July/September 1976 to allow for shift from July/June to October/September fiscal year. 3/ Included in set-aside and/or disaster payments column from 1977 to present. 4/ Additional set-aside in 1971 and 1972; additional set-aside or disaster from 1973-75; disaster in 1976; disaster or diversion from 1977-87. 5/ Commodity export payments. 6/ Reseal storage payments ended in 1975. Producer storage payments began in 1977. 7/ Other outlays include: storage, handling, transportaton, processing, and packaging costs; net certificate operations; purchases; and other items. Receipts include sales and other items. Negative indicates net receipts. 8/ Direct price support or deficiency, diversion, disaster, certificate, export, and producer storage payments plus Government expenditures for storage and handling, transportation, processing and packaging, loan collateral settlements, loans, purchases, and other expenses less sales proceeds, loan repayments, certificates sold, and other receipts. Totals may not add because of rounding.

Appendix table 5--Value comparisons for wheat, 1960-88

Year	Loan value per acre		Market value per acre		Gross value of production	
	Nominal 1/	Real 2/	Nominal 3/	Real 2/	Nominal 4/	Real 2/
	Dollars				Billion dollars	
1960	46.46	150.35	45.41	146.97	2.36	7.63
1961	42.78	137.12	43.74	140.18	2.26	7.23
1962	50.00	156.74	51.00	159.87	2.23	6.98
1963	45.86	141.56	46.62	143.89	2.12	6.55
1964	33.54	101.95	35.35	107.43	1.76	5.34
1965	33.13	98.00	35.78	105.84	1.78	5.25
1966	32.88	93.93	42.87	122.48	2.13	6.08
1967	32.25	89.83	35.86	99.89	2.10	5.84
1968	35.50	94.16	35.22	93.41	1.93	5.12
1969	38.25	96.11	38.25	96.11	1.80	4.53
1970	38.75	92.26	41.23	98.17	1.80	4.28
1971	42.38	95.44	45.43	102.31	2.17	4.89
1972	40.88	87.90	57.55	123.77	2.72	5.85
1973	39.50	79.80	124.82	252.16	6.76	13.65
1974	37.40	69.26	111.66	206.77	7.29	13.50
1975	41.92	70.69	108.94	183.70	7.57	12.77
1976	68.18	108.04	82.72	131.09	5.87	9.30
1977	69.08	102.64	71.53	106.29	4.77	7.08
1978	73.79	102.20	93.26	129.17	5.27	7.30
1979	85.50	108.78	129.96	165.34	8.11	10.32
1980	100.50	117.27	133.67	155.97	9.50	11.09
1981	110.40	117.45	127.31	135.43	10.28	10.93
1982	126.03	126.03	122.48	122.48	9.54	9.54
1983	143.81	138.41	138.29	133.10	8.49	8.17
1984	128.04	118.89	131.53	122.13	8.80	8.17
1985	123.75	111.59	115.50	104.15	7.47	6.74
1986	82.56	72.48	83.25	73.09	5.06	4.44
1987	85.96	73.03	96.89	82.32	5.42	4.60
1988	75.36	61.92	127.53	104.79	6.77	5.57

1/ Loan rate times yield per harvested acre. Loan rate includes allowance for unredeemed loans and purchases by the Government valued at the average loan and purchase rate, by State. 2/ Nominal dollars deflated by the GNP implicit price deflator (1982 = 1.00). 3/ Season average price received by farmers times yield per harvested acre. Season average price received by farmers is obtained by weighting State prices by quantities sold. 4/ U.S. production times season average price received by farmers.

Appendix table 6--World production, consumption, and ending stocks for wheat, 1960-89

Crop year 1/	Production	Consumption 2/	Ending stocks 3/	Ending stocks-to-consumption ratio
	Million metric tons			Percent
1960/61	238.4	235.8	82.8	35.1
1961/62	224.8	237.9	69.9	29.4
1962/63	251.8	245.8	75.8	30.9
1963/64	233.9	239.4	70.3	29.4
1964/65	270.4	262.3	78.5	29.9
1965/66	263.3	281.1	60.7	21.6
1966/67	306.7	279.8	87.6	31.3
1967/68	297.6	287.5	97.7	34.0
1968/69	330.8	307.2	121.3	39.5
1969/70	310.0	327.8	103.6	31.6
1970/71	313.7	336.7	80.6	23.9
1971/72	350.9	342.2	89.3	26.1
1972/73	343.4	357.7	74.9	20.9
1973/74	373.1	365.3	82.7	22.6
1974/75	360.1	361.5	81.4	22.5
1975/76	356.5	351.2	86.6	24.7
1976/77	421.4	380.8	127.2	33.4
1977/78	384.1	402.4	108.9	27.1
1978/79	446.9	421.2	134.6	31.9
1979/80	424.5	438.3	120.7	27.5
1980/81	443.0	450.9	112.9	25.0
1981/82	449.3	449.5	112.7	25.1
1982/83	477.3	460.2	129.9	28.2
1983/84	489.3	474.0	145.1	30.6
1984/85	511.9	493.0	164.0	33.3
1985/86	500.1	496.2	167.9	33.8
1986/87	530.7	522.4	176.1	33.7
1987/88 4/	503.7	533.5	146.3	27.4
1988/89 5/	501.0	534.3	112.9	21.1
1989/90 5/	531.1	535.1	108.9	20.3

1/ July-June year. 2/ Consumption data are based on an aggregate of differing local marketing years. For countries for which stocks are not available (excluding the USSR), consumption estimates represent apparent utilization. 3/ Ending stocks data are based on an aggregate of differing local marketing years and should not be construed as representing world stock levels at a fixed point in time. Stock data are not available for all countries and exclude parts of Eastern Europe and parts of Asia. Stock levels have been adjusted for estimated year-to-year changes in USSR grain stocks, but do not purport to include the entire level of USSR stocks. 4/ Preliminary. 5/ Projected.

Appendix table 7--Wheat production, trade, and stocks, world and United States, 1965-89

Year 1/	Production			Exports			Ending stocks		
	World	United States	U.S. share	World 2/	United States	U.S. share	World 3/	United States	U.S. share
	Million bushels		Percent	Million bushels		Percent	Million bushels		Percent
1965	9,675	1,316	14	2,308	852	37	2,232	661	30
1966	11,270	1,305	12	2,028	771	38	3,220	513	16
1967	10,935	1,508	14	1,914	765	40	3,589	630	18
1968	12,157	1,557	13	1,712	544	32	4,457	904	20
1969	11,390	1,443	13	1,848	603	33	3,805	983	26
1970	11,525	1,352	12	1,947	741	38	2,960	823	28
1971	12,895	1,619	13	1,988	610	31	3,280	983	30
1972	12,618	1,546	12	2,524	1,135	45	2,753	597	22
1973	13,711	1,711	12	2,330	1,217	52	3,040	340	11
1974	13,232	1,782	13	2,289	1,019	44	2,989	435	15
1975	13,100	2,127	16	2,517	1,173	47	3,183	666	21
1976	15,483	2,149	14	2,289	950	41	4,674	1,113	24
1977	14,114	2,046	14	2,730	1,124	41	4,002	1,178	29
1978	16,419	1,776	11	2,612	1,194	46	4,944	924	19
1979	15,597	2,134	14	3,142	1,375	44	4,437	902	20
1980	16,278	2,381	15	3,472	1,514	44	4,147	989	24
1981	16,510	2,785	17	3,741	1,771	47	4,142	1,159	28
1982	17,538	2,765	16	3,605	1,509	42	4,771	1,515	32
1983	17,977	2,420	13	3,737	1,429	38	5,330	1,399	26
1984	18,810	2,595	14	3,987	1,424	36	6,026	1,425	24
1985	18,376	2,425	13	3,333	915	27	6,169	1,905	31
1986	19,499	2,092	11	3,289	1,004	31	6,472	1,821	28
1987	18,507	2,107	11	3,899	1,592	41	5,374	1,261	23
1988 4/	18,408	1,811	10	3,465	1,440	42	4,149	616	15
1989 4/	19,514	2,028	10	3,575	1,150	32	4,000	500	12

1/ World data based on a July/June year. U.S. data based on a June/May year. 2/ Excludes intra-EC trade. 3/ Stocks data are based on an aggregate of differing local marketing years and should not be construed as representing world stock levels at a fixed point in time. Stock data are not available for all countries and exclude parts of Eastern Europe and parts of Asia. Stock levels have been adjusted for estimated year-to-year changes in USSR grain stocks, but do not purport to include the entire level of USSR stocks. 4/ Projected.

Appendix table 8--World wheat trade as a share of production, world stocks as a share of consumption, and U.S. exports as a share of consumption, 1960-89

Year 1/	World trade 2/ to world production	World stocks to world consumption	U.S. exports to foreign consumption
		Percent	
1960	18	35	8
1961	21	29	8
1962	17	31	7
1963	24	29	10
1964	19	30	7
1965	24	22	8
1966	18	31	8
1967	18	34	7
1968	14	39	5
1969	16	32	5
1970	17	24	6
1971	15	26	5
1972	20	21	9
1973	17	23	9
1974	17	23	8
1975	19	25	9
1976	15	33	7
1977	19	27	8
1978	16	32	8
1979	20	28	9
1980	21	25	9
1981	23	25	11
1982	21	28	9
1983	21	31	8
1984	21	33	8
1985	18	34	5
1986	17	34	5
1987	21	27	8
1988 3/	19	21	7
1989 3/	18	20	6

1/ July/June year. 2/ Excludes intra-EC trade. 3/ Projected.

Appendix table 9--Wheat production and exports, major foreign exporters and total foreign, 1960-89

Year 3/	Australia		Canada		Argentina		EC 1/		Foreign 2/	
	Prod.	Exports	Prod.	Exports	Prod.	Exports	Prod.	Exports	Prod.	Exports
	Million bushels									
1960	274	237	518	353	146	40	1,239	96	7,405	957
1961	247	182	283	358	210	100	1,179	121	7,026	1,009
1962	307	226	566	331	209	66	1,538	158	8,161	1,050
1963	328	257	723	595	328	127	1,297	162	7,448	1,295
1964	369	269	601	400	414	231	1,487	229	8,653	1,293
1965	260	172	649	585	223	205	1,575	241	8,392	1,392
1966	467	312	827	515	230	82	1,386	205	9,955	1,375
1967	277	208	593	336	269	81	1,624	269	9,428	1,203
1968	544	234	650	306	211	92	1,631	339	10,600	1,303
1969	387	296	671	346	258	85	1,562	383	9,947	1,448
1970	290	336	332	435	181	36	1,517	214	10,173	1,334
1971	316	286	530	504	209	60	1,776	331	11,276	1,461
1972	242	157	533	577	254	117	1,778	444	11,071	1,515
1973	440	258	594	419	241	58	1,752	433	12,000	1,465
1974	417	315	489	395	219	66	1,938	452	11,450	1,496
1975	440	318	628	450	315	116	1,657	533	10,973	1,545
1976	434	349	867	494	404	217	1,711	402	13,334	1,652
1977	344	298	730	588	209	65	1,635	465	12,068	1,651
1978	665	430	777	480	298	150	2,033	564	14,643	1,893
1979	595	485	631	584	298	175	1,954	655	13,463	2,053
1980	399	352	709	598	286	141	2,261	796	13,897	2,046
1981	601	404	911	678	305	134	2,135	821	13,725	2,190
1982	326	267	982	785	551	363	2,376	805	14,773	2,423
1983	809	490	972	800	468	288	2,344	821	15,557	2,612
1984	686	539	779	645	485	346	3,055	1,043	16,215	2,832
1985	594	589	891	650	312	158	2,632	1,020	15,951	2,622
1986	592	575	1,153	764	328	163	2,647	1,030	17,407	2,746
1987	457	366	953	863	323	136	2,624	1,024	16,399	2,650
1988 4/	531	397	575	448	279	129	2,745	1,177	16,597	2,537
1989 4/	551	423	955	735	367	198	2,860	1,110	17,486	2,728

1/ Includes intra-EC trade. 2/ Aggregate of differing local marketing years. 3/ July/June year. 4/ Projected.

Appendix table 10--Coefficients of variation for U.S. wheat, 1951-89

Period 1/	Harvested acres	Yield	Production	Exports	Price received 2/	Value of production
1951-55	1.5745	0.1098	22.8734	32.0610	0.0016	0.0520
1956-60	.2739	.4280	40.7682	16.3778	.0067	.0415
1961-65	.2244	.0371	7.1827	10.3353	.0571	.0292
1966-70	.6896	.2003	7.6760	15.8989	.0184	.0125
1971-75	1.8265	.2023	28.9118	58.9752	.5680	1.3058
1976-80	.5831	.0939	22.7316	39.1594	.1589	.6078
1981-85	1.0203	.1188	11.9929	68.2900	.0145	.1270
1986-89	.2277	.0993	9.2866	55.3540	.2027	.3052

1/ June/May year. 2/ Season average price received by farmers.

Appendix table 11--U.S. wheat exports: Commercial and concessional, fiscal years, 1955-87 1/

Wheat exports	1955	1956-60 average	1961-65 average	1966-70 average	1971-75 average	1976-80 average	1981-85 average	1986	1987
				Million dollars					
Concessional/Government-financed: 2/									
Wheat	299	478	735	485	294	441	507	641	480
Wheat flour	4	56	123	81	68	123	159	118	98
Wheat and wheat flour 3/	303	534	857	565	362	564	666	759	578
Commercial	192	251	415	601	2,485	4,104	5,915	2,704	2,506
Total U.S. wheat and wheat flour 3/	495	785	1,272	1,166	2,847	4,668	6,581	3,463	3,084
				1,000 metric tons					
Concessional/Government-financed:									
Wheat	4,206	7,747	11,666	8,068	3,438	3,260	3,378	5,273	4,334
Wheat flour (grain equivalent)	43	750	2,002	1,308	757	797	898	808	719
Wheat and wheat flour (grain equivalent) 3/	4,249	8,497	13,668	9,376	4,195	4,057	4,277	6,081	5,053
Commercial	3,233	3,768	5,831	9,526	21,367	27,790	35,476	20,514	24,456
Total U.S. wheat and wheat flour 3/	7,482	12,265	19,500	18,903	25,561	31,846	39,753	26,595	29,509

1/ July/June for 1950-1976; October/September for 1977-1987. 2/ Concessional/Government-financed is composed of PL 480, Sec. 416, and Mutual Security Assistance Program shipments. 3/ Totals may not add because of rounding.

Appendix table 12--Provisions of wheat programs, 1961-90

Provision	1961 1/	1962 2/	1963	1964
Parity price ($/bu) 3/	2.39	2.43	2.51	2.52
Support price ($/bu)	1.79	2.00	2.00	2.00
Payment rate ($/bu)	--	--	0.18	--
Payment ($)	--	--	0.18*Production	--
Marketing certificates:				
Value of domestic ($/bu)	--	--	--	0.70
Amount of domestic (mil bu)	--	--	--	0.45*Yld*Alt
Value of export ($/bu)	--	--	--	0.25
Amount of export (mil bu)	--	--	--	0.45*Yld*Alt
Target price ($/bu)	--	--	--	--
Deficiency payment: 4/	--	--	--	--
Advance payment ($/bu)	--	--	--	--
Final payment ($/bu)	--	--	--	--
Allocation factor (%) 5/	--	--	--	--
Nonrecourse loan rate:				
Basic rate ($/bu) 6/	1.79	2.00	1.82	7/ 1.30
Adjusted rate ($/bu) 8/	--	--	--	--
CCC domestic sales: 9/				
Legislated minimum ($/bu) 10/	1.88+CC	2.10+CC	2.10+CC	2.10+CC
Actual price ($/bu) 11/	--	--	--	--
Farmer-owned reserve:				
Loan rate ($/bu)	--	--	--	--
Release level ($/bu)	--	--	--	--
Call level ($/bu)	--	--	--	--
Storage payment ($/bu)	--	--	--	--
Immediate entry	--	--	--	--
Ceiling (mil bu)	--	--	--	--
Floor (mil bu)	--	--	--	--
Food Security reserve (mil bu)	--	--	--	--
Acreage diversion (%)	--	11.11	20	11.11
Payment rate ($/bu)	--	45% of loan rate	50% of loan rate	0
Payment ($)	--	0.90*Yld*Div	0.91*Yld*Div	0
Acreage diversion optional (%)	--	0-30	0-30	0-20
Payment rate ($/bu)	--	60% of loan rate	50% of loan rate	20% of loan rate
Payment ($)	--	1.20*Yld*Div	0.91*Yld*Div	0.26*Yld*Div
Set-aside (%)	--	--	--	--
Payment rate ($/bu)	--	--	--	--
Payment ($)	--	--	--	--
Set-aside voluntary (%)	--	--	--	--
Payment rate ($/bu)	--	--	--	--
Payment ($)	--	--	--	--
Acreage reduction (%)	--	--	--	--
Payment rate ($/bu)	--	--	--	--
Payment ($)	--	--	--	--
Acreage reduction voluntary (%)	--	--	--	--
Payment rate ($/bu)	--	--	--	--
Payment ($)	--	--	--	--
PIK acreage diversion (%)	--	--	--	--
Payment rate (bu)	--	--	--	--
Payment (bu)	--	--	--	--
Compliance restrictions:				
Soil conserving base 12/	Yes	Yes	Yes	Yes
Cross compliance 13/	No	No	No	No
Offsetting compliance 14/	No	No	No	No
Normal crop acreage 15/	--	--	--	--
National marketing quota (mil bu)	Yes	Yes	None	None
Marketing quota penalty ($/bu)	16/ 45% of parity	16/ 65% of parity	None	None

See footnotes at end of table.

Continued--

Appendix table 12--Provisions of wheat programs, 1961-90--Continued

Provision	1961 1/	1962 2/	1963	1964
National allotment acres (mil):				
Wheat	17/ 55.0	17/ 55.0	17/ 55.0	17/ 53.2
Wheat domestic	--	--	--	--
National program acres (mil)	--	--	--	--
National base acres (mil):				
Wheat	--	--	--	--
Wheat base in CRP	--	--	--	--
National program yield (bu/ac)	--	--	25.8	25.3
Disaster program: 19/				
Prevented plantings payment ($/bu)	--	--	20/	20/
Low yield criterion (%)	--	--	--	--
Low yield payment ($/bu)	--	--	20/	20/
Payment limitation ($)	--	--	--	--
Advanced payment (%)	50	50	50	50
Support payment limitation ($)	--	--	--	--

See footnotes at end of table.

Continued--

Appendix table 12--Provisions of wheat programs, 1961-90--Continued

Provision	1965	1966	1967	1968
Parity price ($/bu) 3/	2.57	2.57	2.6	2.63
Support price ($/bu)	2.00	2.57	2.61	2.63
Payment rate ($/bu)	--	--	--	--
Payment ($)	--	--	--	--
Marketing certificates:				
Value of domestic ($/bu)	0.75	1.32	1.36	1.38
Amount of domestic (mil bu)	0.45*Yld*Alt	21/ .45*Yld*Plt	22/ .35*Yld*Plt	23/ .40*Yld*Alt
Value of export ($/bu)	0.30	--	--	--
Amount of export (mil bu)	0.35*Yld*Alt	--	--	--
Target price ($/bu)	--	--	--	--
Deficiency payment: 4/	--	--	--	--
Advance payment ($/bu)	--	--	--	--
Final payment ($/bu)	--	--	--	--
Allocation factor (%) 5/	--	--	--	--
Nonrecourse loan rate:				
Basic rate ($/bu) 6/	6/ 1.25	1.25	1.25	1.25
Adjusted rate ($/bu) 8/	--	--	--	--
CCC domestic sales: 9/				
Legislated minimum ($/bu) 10/	2.10+CC	2.70+CC	2.74+CC	2.76+CC
Actual price ($/bu) 11/	--	--	--	--
Farmer-owned reserve:				
Loan rate ($/bu)	--	--	--	--
Release level ($/bu)	--	--	--	--
Call level ($/bu)	--	--	--	--
Storage payment ($/bu)	--	--	--	--
Immediate entry	--	--	--	--
Ceiling (mil bu)	--	--	--	--
Floor (mil bu)	--	--	--	--
Food Security reserve (mil bu)	--	--	--	--
Acreage diversion (%)	11.11	15	0	0
Payment rate ($/bu)	0	0	0	0
Payment ($)	0	0	0	0
Acreage diversion optional (%)	0-20	0-50	0	0
Payment rate ($/bu)	50% of loan rate	40% of loan rate	0	0
Payment ($)	0.625*Yld*Div	0.50*Yld*Div	0	0
Set-aside (%)	--	--	--	--
Payment rate ($/bu)	--	--	--	--
Payment ($)	--	--	--	--
Set-aside voluntary (%)	--	--	--	--
Payment rate ($/bu)	--	--	--	--
Payment ($)	--	--	--	--
Acreage reduction (%)	--	--	--	--
Payment rate ($/bu)	--	--	--	--
Payment ($)	--	--	--	--
Acreage reduction voluntary (%)	--	--	--	--
Payment rate ($/bu)	--	--	--	--
Payment ($)	--	--	--	--
PIK acreage diversion (%)	--	--	--	--
Payment rate (bu)	--	--	--	--
Payment (bu)	--	--	--	--
Compliance restrictions:				
Soil conserving base 12/	Yes	Yes	Yes	Yes
Cross compliance 13/	Yes	No	No	No
Offsetting compliance 14/	Yes	Yes	Yes	Yes
Normal crop acreage 15/	--	--	--	--
National marketing quota (mil bu)	None	None	None	None
Marketing quota penalty ($/bu)	None	None	None	None

See footnotes at end of table.

Continued--

Appendix table 12--Provisions of wheat programs, 1961-90--Continued

Provision	1965	1966	1967	1968
National allotment acres (mil):				
Wheat	17/ 18/ 53.3	17/ 18/ 51.6	17/ 18/ 68.2	17/ 18/ 59.3
Wheat domestic	--	--	--	--
National program acres (mil)	--	--	--	--
National base acres (mil):				
Wheat	--	--	--	--
Wheat base in CRP	--	--	--	--
National program yield (bu/ac)	25.4	27.0	27.3	27.5
Disaster program: 19/				
Prevented plantings payment ($/bu)	20/	20/	20/	20/
Low yield criterion (%)	--	--	--	--
Low yield payment ($/bu)	20/	20/	20/	20/
Payment limitation ($)	--	--	--	--
Advanced payment (%)	50	--	--	--
Support payment limitation ($)	--	--	--	--

See footnotes at end of table.

Continued--

Appendix table 12--Provisions of wheat programs, 1961-90--Continued

Provision	1969	1970	1971	1972
Parity price ($/bu) 3/	2.76	2.81	2.92	2.99
Support price ($/bu)	2.77	2.82	2.93	3.02
Payment rate ($/bu)	--	--	--	--
Payment ($)	--	--	--	--
Marketing certificates:				
Value of domestic ($/bu)	1.52	1.57	26/ 1.63	26/ 1.34
Amount of domestic (mil bu)	24/ .43*Yld*Alt	25/ .48*Yld*Alt	--	--
Value of export ($/bu)	--	--	--	--
Amount of export (mil bu)	--	--	--	--
Target price ($/bu)	--	--	--	--
Deficiency payment: 4/	--	--	--	--
Advance payment ($/bu)	--	--	--	--
Final payment ($/bu)	--	--	--	--
Allocation factor (%) 5/	--	--	--	--
Nonrecourse loan rate:				
Basic rate ($/bu) 6/	1.25	1.25	1.25	1.25
Adjusted rate ($/bu) 8/	--	--	--	--
CCC domestic sales: 9/				
Legislated minimum ($/bu) 10/	2.91+CC	2.96+CC	3.08+CC	3.17+CC
Actual price ($/bu) 11/	1.55	1.70	1.64	2.31
Farmer-owned reserve:				
Loan rate ($/bu)	--	--	--	--
Release level ($/bu)	--	--	--	--
Call level ($/bu)	--	--	--	--
Storage payment ($/bu)	--	--	--	--
Immediate entry	--	--	--	--
Ceiling (mil bu)	--	--	--	--
Floor (mil bu)	--	--	--	--
Food Security reserve (mil bu)	--	--	--	--
Acreage diversion (%)	15	30.3	--	--
Payment rate ($/bu)	0	0	--	--
Payment ($)	0	0	--	--
Acreage diversion optional (%)	0-50	0-50	--	--
Payment rate ($/bu)	50% of loan rate	50% of loan rate	--	--
Payment ($)	0.625*Yld*Div	0.625*Yld*Div	--	--
Set-aside (%)	--	--	75	27/ 83
Payment rate ($/bu)	--	--	Value of cert.	Value of cert.
Payment ($)	--	--	1.63*Yld*Alt	1.34*Yld*Alt
Set-aside voluntary (%)	--	--	--	75
Payment rate ($/bu)	--	--	--	0.94
Payment ($)	--	--	--	0.94*Yld*Vol
Acreage reduction (%)	--	--	--	--
Payment rate ($/bu)	--	--	--	--
Payment ($)	--	--	--	--
Acreage reduction voluntary (%)	--	--	--	--
Payment rate ($/bu)	--	--	--	--
Payment ($)	--	--	--	--
PIK acreage diversion (%)	--	--	--	--
Payment rate (bu)	--	--	--	--
Payment (bu)	--	--	--	--
Compliance restrictions:				
Soil conserving base 12/	Yes	Yes	Yes	Yes
Cross compliance 13/	No	No	No	No
Offsetting compliance 14/	Yes	Yes	Yes	Yes
Normal crop acreage 15/	--	--	--	--
National marketing quota (mil bu)	None	None	None	None
Marketing quota penalty ($/bu)	None	None	None	None

See footnotes at end of table.

Continued--

Appendix table 12--Provisions of wheat programs, 1961-90--Continued

Provision	1969	1970	1971	1972
National allotment acres (mil):				
Wheat	17/ 18/ 51.6	17/ 18/ 45.5	--	--
Wheat domestic	--	--	28/ 19.7	28/ 19.7
National program acres (mil)	--	--	--	--
National base acres (mil):				
Wheat	--	--	--	--
Wheat base in CRP	--	--	--	--
National program yield (bu/ac)	28.3	28.9	30.3	29.8
Disaster program: 19/				
Prevented plantings payment ($/bu)	20/	20/	--	--
Low yield criterion (%)	--	--	--	--
Low yield payment ($/bu)	20/	20/	--	--
Payment limitation ($)	--	--	--	--
Advanced payment (%)	--	--	75	--
Support payment limitation ($)	--	--	29/ 55,000	29/ 55,000

See footnotes at end of table.

Continued--

Appendix table 12--Provisions of wheat programs, 1961-90--Continued

Provision	1973	1974	1975	1976
Parity price ($/bu) 3/	3.32	3.87	4.54	4.83
Support price ($/bu)	3.39	--	--	--
Payment rate ($/bu)	--	--	--	--
Payment ($)	--	--	--	--
Marketing certificates:				
Value of domestic ($/bu)	26/ 0.68	Suspended	Suspended	Suspended
Amount of domestic (mil bu)	--	--	--	--
Value of export ($/bu)	--	--	--	--
Amount of export (mil bu)	--	--	--	--
Target price ($/bu)	--	2.05	2.05	2.29
Deficiency payment: 4/	--			
Advance payment ($/bu)	--	--	--	--
Final payment ($/bu)	--	--	--	--
Allocation factor (%) 5/	--	--	--	--
Nonrecourse loan rate:				
Basic rate ($/bu) 6/	1.25	1.37	1.37	2.25
Adjusted rate ($/bu) 8/	--	--	--	--
CCC domestic sales: 9/				
Legislated minimum ($/bu) 10/	3.56+CC	2.36+Adj+CC	2.36+Adj+CC	2.63+Adj+CC
Actual price ($/bu) 11/	4.64	4.43	4.90	None
Farmer-owned reserve:				
Loan rate ($/bu)	--	--	--	--
Release level ($/bu)	--	--	--	--
Call level ($/bu)	--	--	--	--
Storage payment ($/bu)	--	--	--	--
Immediate entry	--	--	--	--
Ceiling (mil bu)	--	--	--	--
Floor (mil bu)	--	--	--	--
Food Security reserve (mil bu)	--	--	--	--
Acreage diversion (%)	--	--	--	--
Payment rate ($/bu)	--	--	--	--
Payment ($)	--	--	--	--
Acreage diversion optional (%)	--	--	--	--
Payment rate ($/bu)	--	--	--	--
Payment ($)	--	--	--	--
Set-aside (%)	86	None	None	None
Payment rate ($/bu)	Value of cert.	--	--	Def
Payment ($)	0.68*Yld*Alt	Def*Yld*Alt	Def*Yld*Alt	0.00*Yld*Allot
Set-aside voluntary (%)	150	--	--	--
Payment rate ($/bu)	0.88	--	--	--
Payment ($)	0.88*Yld*Vol	--	--	--
Acreage reduction (%)	--	--	--	--
Payment rate ($/bu)	--	--	--	--
Payment ($)	--	--	--	--
Acreage reduction voluntary (%)	--	--	--	--
Payment rate ($/bu)	--	--	--	--
Payment ($)	--	--	--	--
PIK acreage diversion (%)	--	--	--	--
Payment rate (bu)	--	--	--	--
Payment (bu)	--	--	--	--
Compliance restrictions:				
Soil conserving base 12/	Yes	No	No	No
Cross compliance 13/	No	No	No	No
Offsetting compliance 14/	Yes	Yes	Yes	No
Normal crop acreage 15/	--	--	--	--
National marketing quota (mil bu)	None	Suspended	Suspended	Suspended
Marketing quota penalty ($/bu)	None	Suspended	Suspended	Suspended

See footnotes at end of table.

Continued--

Appendix table 12--Provisions of wheat programs, 1961-90--Continued

Provision	1973	1974	1975	1976
National allotment acres (mil):				
Wheat	--	28/ 55.0	28/ 53.5	28/ 61.6
Wheat domestic	28/ 18.7	--	--	--
National program acres (mil)	--	--	--	--
National base acres (mil):				
Wheat	--	--	--	--
Wheat base in CRP	--	--	--	--
National program yield (bu/ac)	31.0	32.6	32.8	33.1
Disaster program: 19/				
Prevented plantings payment ($/bu)	--	0.68	0.68	0.76
Low yield criterion (%)	--	Less than normal	Less than normal	Less than normal
Low yield payment ($/bu)	--	0.68 on the shortfall	0.68 on the shortfall	0.76 on the shortfall
Payment limitation ($)	--	--	--	--
Advanced payment (%)	--	--	--	--
Support payment limitation ($)	29/ 55,000	30/ 20,000	30/ 20,000	30/ 20,000

See footnotes at end of table.

Continued--

Appendix table 12--Provisions of wheat programs, 1961-90--Continued

Provision	1977	1978	1979	1980
Parity price ($/bu) 3/	5.09	5.27	5.95	6.46
Support price ($/bu)	--	--	--	--
Payment rate ($/bu)	--	--	--	--
Payment ($)	--	--	--	--
Marketing certificates:				
Value of domestic ($/bu)	Suspended	Suspended	Suspended	Suspended
Amount of domestic (mil bu)	--	--	--	--
Value of export ($/bu)	--	--	--	--
Amount of export (mil bu)	--	--	--	--
Target price ($/bu)	2.90	3.40	31/ 3.40	32/ 3.63/3.08
Deficiency payment: 4/				
Advance payment ($/bu)	--	--	--	--
Final payment ($/bu)	--	0.52	--	--
Allocation factor (%) 5/	--	100	100	100
Nonrecourse loan rate:				
Basic rate ($/bu) 6/	2.25	2.35	33/ 2.35/2.50	3.00
Adjusted rate ($/bu) 8/	--	--	--	--
CCC domestic sales: 9/				
Legislated minimum ($/bu) 10/	3.36+Adj+CC	4.23	34/ 33/ 4.23/4.75	5.83
Actual price ($/bu) 11/	None	None	None	None
Farmer-owned reserve:				
Loan rate ($/bu)	2.25	2.35	33/ 2.35/2.50	35/ 3.00/3.30
Release level ($/bu)	3.15	3.29	33/ 3.29/3.75	4.20
Call level ($/bu)	3.94	4.11	33/ 4.11/4.63	5.25
Storage payment ($/bu)	0.25	0.25	0.25	0.265
Immediate entry	No	No	No	No
Ceiling (mil bu)	36/ 700	36/ 700	36/ 700	--
Floor (mil bu)	300	300	300	--
Food Security reserve (mil bu)	--	220	220	150
Acreage diversion (%)	--	--	--	--
Payment rate ($/bu)	--	--	--	--
Payment ($)	--	--	--	--
Acreage diversion optional (%)	--	--	--	--
Payment rate ($/bu)	--	--	--	--
Payment ($)	--	--	--	--
Set-aside (%)	None	37/ 20	37/ 20	None
Payment rate ($/bu)	Def	AF*Def	AF*Def	AF*Def
Payment ($)	0.00*Yld*Allot	0.52*Yld*Plt	0.00*Yld*Plt	0.00*Yld*Plt
Set-aside voluntary (%)	--	38/ 20	38/ 15	39/ 0
Payment rate ($/bu)	--	Def	Def	Def
Payment ($)	--	0.52*Yld*Plt	0.00*Yld*Plt	0.00*Yld*Plt
Acreage reduction (%)	--	--	--	--
Payment rate ($/bu)	--	--	--	--
Payment ($)	--	--	--	--
Acreage reduction voluntary (%)	--	--	--	--
Payment rate ($/bu)	--	--	--	--
Payment ($)	--	--	--	--
PIK acreage diversion (%)	--	--	--	--
Payment rate (bu)	--	--	--	--
Payment (bu)	--	--	--	--
Compliance restrictions:				
Soil conserving base 12/	No	No	No	No
Cross compliance 13/	No	40/ Yes	40/ Yes	No
Offsetting compliance 14/	No	41/ Yes	41/ Yes	No
Normal crop acreage 15/	--	Yes	Yes	Yes
National marketing quota (mil bu)	Suspended	Suspended	Suspended	Suspended
Marketing quota penalty ($/bu)	Suspended	Suspended	Suspended	Suspended

See footnotes at end of table.

Continued--

Appendix table 12--Provisions of wheat programs, 1961-90--Continued

Provision	1977	1978	1979	1980
National allotment acres (mil):				
Wheat	26/ 62.2	--	--	--
Wheat domestic	--	--	--	--
National program acres (mil)	--	42/ 58.8/58.8	42/ 57.1/70.1	42/ 70.0/75.0
National base acres (mil):				
Wheat	--	--	--	--
Wheat base in CRP	--	--	--	--
National program yield (bu/ac)	32.0	31.3	32.4	33.7
Disaster program: 19/				
Prevented plantings payment ($/bu)	0.97	1.13 on 75% normal yld	1.13 on 75% normal yld	32/ 1.21/1.03 on 75% normal yld
Low yield criterion (%)	Less than normal	60% of normal	60% of normal	60% of normal
Low yield payment ($/bu)	0.97 on the shortfall	1.70 on the shortfall	1.70 on the shortfall	1.82/1.54 on the shortfall
Payment limitation ($)	--	--	--	43/ 100,000
Advanced payment (%)	--	--	--	--
Support payment limitation ($)	30/ 20,000	44/ 40,000	44/ 45,000	45/ 50,000

See footnotes at end of table.

Continued--

Appendix table 12--Provisions of wheat programs, 1961-90--Continued

Provision	1981	1982	1983	1984
Parity price ($/bu) 3/	7.08	7.26	7.39	7.51
Support price ($/bu)	--	--	--	--
Payment rate ($/bu)	--	--	--	--
Payment ($)	--	--	--	--
Marketing certificates:				
Value of domestic ($/bu)	--	--	--	--
Amount of domestic (mil bu)	--	--	--	--
Value of export ($/bu)	--	--	--	--
Amount of export (mil bu)	--	--	--	--
Target price ($/bu)	3.81	4.05	4.30	4.38
Deficiency payment: 4/				
Advance payment ($/bu)	--	0	0.325	--
Final payment ($/bu)	0.15	0.50	0.65	1.00
Allocation factor (%) 5/	100	46/ NA	46/ NA	46/ NA
Nonrecourse loan rate:				
Basic rate ($/bu) 6/	3.20	3.55	3.65	3.30
Adjusted rate ($/bu) 8/	--	--	--	--
CCC domestic sales: 9/				
Legislated minimum ($/bu) 10/	4.88	5.12	47/ 5.12/4.90	4.90
Actual price ($/bu) 11/	6.72	7.04	6.57	5.61
Farmer-owned reserve:				
Loan rate ($/bu)	48/ 3.50	49/ 4.00	47/ 3.65/3.65	3.30
Release level ($/bu)	48/ 4.65	49/ 4.65	47/ 4.65/4.45	4.45
Call level ($/bu)	48/ 4.65	--	--	--
Storage payment ($/bu)	0.265	0.265	0.265	0.265
Immediate entry	No	Yes	No	No
Ceiling (mil bu)	--	No	No	50/ Could be
Floor (mil bu)	--	--	--	--
Food Security reserve (mil bu)	4	4	4	4
Acreage diversion (%)	--	--	5	10
Payment rate ($/bu)	--	--	2.70	2.70
Payment ($)	--	--	2.70*Yld*Div	2.70*Yld*Div
Acreage diversion optional (%)	--	--	--	--
Payment rate ($/bu)	--	--	--	--
Payment ($)	--	--	--	--
Set-aside (%)	None	--	--	--
Payment rate ($/bu)	AF*Def	--	--	--
Payment ($)	0.15*Yld*Plt	--	--	--
Set-aside voluntary (%)	39/ 0	--	--	--
Payment rate ($/bu)	Def	--	--	--
Payment ($)	0.15*Yld*Plt	--	--	--
Acreage reduction (%)	--	15	15	20
Payment rate ($/bu)	--	Def	Def	Def
Payment ($)	--	0.50*Yld*Plt	0.65*Yld*Plt	1.00*Yld*Plt
Acreage reduction voluntary (%)	--	--	--	--
Payment rate ($/bu)	--	--	--	--
Payment ($)	--	--	--	--
PIK acreage diversion (%)	--	--	51/ 10-30	10-20
Payment rate (bu)	--	--	95% of yield	85% of yield
Payment (bu)	--	--	.95*Yld*Div	.85*Yld*Div
Compliance restrictions:				
Soil conserving base 12/	No	No	No	No
Cross compliance 13/	No	No	No	No
Offsetting compliance 14/	No	No	No	No
Normal crop acreage 15/	No	46/ NA	46/ NA	46/ NA
National marketing quota (mil bu)	Suspended	Suspended	Suspended	Suspended
Marketing quota penalty ($/bu)	Suspended	Suspended	Suspended	Suspended

See footnotes at end of table.

Continued--

Appendix table 12--Provisions of wheat programs, 1961-90--Continued

Provision	1981	1982	1983	1984
National allotment acres (mil):				
Wheat	--	--	--	--
Wheat domestic	--	--	--	--
National program acres (mil)	42/ 71.0/84.5	46/ NA	46/ NA	46/ NA
National base acres (mil):				
Wheat	--	90.7	90.9	94.0
Wheat base in CRP	--	--	--	--
National program yield (bu/ac)	34.6	32.5	33.3	33.0
Disaster program: 19/				
Prevented plantings payment ($/bu)	1.27 on 75% of normal yield	52/ 1.35	52/ 1.43	52/
Low yield criterion (%)	--	--	--	--
Low yield payment ($/bu)	1.91	52/ 2.03	52/ 2.15	52/
Payment limitation ($)	43/ 100,000	43/ 100,000	43/ 100,000	43/ 100,000
Advanced payment (%)	--	--	50	No
Support payment limitation ($)	45/ 50,000	45/ 50,000	53/ 50,000	54/ 50,000

See footnotes at end of table.

Continued--

Appendix table 12--Provisions of wheat programs, 1961-90--Continued

Provision	1985	1986 56/	1987	1988
Parity price ($/bu) 3/	7.09	6.72	6.72	7.07
Support price ($/bu)	--	--	--	--
Payment rate ($/bu)	--	--	--	--
Payment ($)	--	--	--	--
Marketing certificates:				
Value of domestic ($/bu)	--	--	--	--
Amount of domestic (mil bu)	--	--	--	--
Value of export ($/bu)	--	--	--	--
Amount of export (mil bu)	--	--	--	--
Target price ($/bu)	4.38	4.38	4.38	4.23
Deficiency payment: 4/				
Advance payment ($/bu)	0.54	0.732/0.183	0.84	0.612
Final payment ($/bu)	1.08	1.98	1.81	0.69
Allocation factor (%) 5/	46/ NA	46/ NA	46/ NA	46/ NA
Nonrecourse loan rate:				
Basic rate ($/bu) 6/	3.30	3.00	2.85	2.76
Adjusted rate ($/bu) 8/	--	2.40	2.28	2.21
CCC domestic sales: 9/				
Legislated minimum ($/bu) 10/	4.90	4.95	4.81	4.65
Actual price ($/bu) 11/	5.45	5.45	5.34	5.26
Farmer-owned reserve:				
Loan rate ($/bu)	3.30	2.40	2.28	2.21
Release level ($/bu)	4.45	4.45	4.38	4.23
Call level ($/bu)	--	--	--	--
Storage payment ($/bu)	0.265	0.265	0.265	0.265
Immediate entry	No	No	No	57/ No
Ceiling (mil bu)	50/ Could be	58/ Yes	58/ Yes	Yes
Floor (mil bu)	--	--	--	--
Food Security reserve (mmt)	4	4	4	--
Acreage diversion (%)	10	2.5	--	--
Payment rate ($/bu)	2.70	1.10	--	--
Payment ($)	2.70*Yld*Div	1.10*Yld*Div	--	--
Acreage diversion optional (%)	--	59/ 5 or 10	--	--
Payment rate ($/bu)	--	2.00		
Payment ($)	--	2.00*Yld*Div	--	--
Set-aside (%)	--	--	--	--
Payment rate ($/bu)	--	--	--	--
Payment ($)	--	--	--	--
Set-aside voluntary (%)	--	--	--	--
Payment rate ($/bu)	--	--	--	--
Payment ($)	--	--	--	--
Acreage reduction (%)	20	22.5	27.5	27.5
Payment rate ($/bu)	Def	Def	Def	Def
Payment ($)	1.08*Yld*Plt	1.98*Yld*Plt	1.78*Yld*Plt	1.53*Yld*Plt
Acreage reduction voluntary (%)	--	60/ 50-92 rule	60/ 50-92 rule	61/ 0-92 rule
Payment rate ($/bu)	--	Def	Def	Def
Payment ($)	--	1.8216*Yld*Base	1.638*Yld*Base	1.408*Yld*Base
PIK acreage diversion (%)	--	--	--	--
Payment rate (bu)	--	--	--	--
Payment (bu)	--	--	--	--
Compliance restrictions:				
Soil conserving base 12/	No	No	No	No
Cross compliance 13/	No	No	62/ Limited	62/ Limited
Offsetting compliance 14/	No	No	No	No
Normal crop acreage 15/	46/ NA	46/ NA	46/ NA	46/ NA
National marketing quota (mil bu)	Suspended	Suspended	Suspended	Suspended
Marketing quota penalty ($/bu)	Suspended	Suspended	Suspended	Suspended

See footnotes at end of table.

Continued--

Appendix table 12--Provisions of wheat programs, 1961-90--Continued

Provision	1985	1986 56/	1987	1988
National allotment acres (mil):				
Wheat	--	--	--	--
Wheat domestic	--	--	--	--
National program acres (mil)	46/ NA	46/ NA	46/ NA	46/ NA
National base acres (mil):				
Wheat	94.0	91.6	87.6	84.8
Wheat base in CRP	--	0.6	4.2	7.1
National program yield (bu/ac)	35.0	63/ 35.0	63/ 35.0	63/ 35.0
Disaster program: 19/				
Prevented plantings payment ($/bu)	52/	52/	52/	52/
Low yield criterion (%)	--	--	--	--
Low yield payment ($/bu)	52/	52/	52/	52/
Payment limitation ($)	43/ 100,000	43/ 100,000	64/ Yes	64/ Yes
Advanced payment (%)	50	65/ 40/100	66/ 40/50	67/ 40/100
Support payment limitation ($)	55/ 50,000	69/ 50,000	70/ 50,000	70/ 50,000

See footnotes at end of table.

Continued--

Appendix table 12--Provisions of wheat programs, 1961-90--Continued

Provision	1989	1990
Parity price ($/bu) 3/	--	--
Support price ($/bu)	--	--
Payment rate ($/bu)	--	--
Payment ($)	--	--
Marketing certificates:		
Value of domestic ($/bu)	--	--
Amount of domestic (mil bu)	--	--
Value of export ($/bu)	--	--
Amount of export (mil bu)	--	--
Target price ($/bu)	4.10	4.00
Deficiency payment: 4/		
Advance payment ($/bu)	0.20	--
Final payment ($/bu)	--	--
Allocation factor (%) 5/	46/ NA	46/ NA
Nonrecourse loan rate:		
Basic rate ($/bu) 6/	2.58	2.44
Adjusted rate ($/bu) 8/	2.06	1.95
CCC domestic sales: 9/		
Legislated minimum ($/bu) 10/	--	--
Actual price ($/bu) 11/	--	--
Farmer-owned reserve:		
Loan rate ($/bu)	2.06	--
Release level ($/bu)	--	--
Call level ($/bu)	--	--
Storage payment ($/bu)	0.265	
Immediate entry	57/ No	--
Ceiling (mil bu)	Yes	--
Floor (mil bu)	--	--
Food Security reserve (mil bu)	--	--
Acreage diversion (%)	--	--
Payment rate ($/bu)	--	--
Payment ($)	--	--
Acreage diversion optional (%)	--	--
Payment rate ($/bu)		
Payment ($)	--	--
Set-aside (%)	--	--
Payment rate ($/bu)	--	--
Payment ($)	--	--
Set-aside voluntary (%)	--	--
Payment rate ($/bu)	--	--
Payment ($)	--	--
Acreage reduction (%)	10	5
Payment rate ($/bu)	Def	Def
Payment ($)	0.50*Yld*Plt	Def*Yld*Plt
Acreage reduction voluntary (%)	61/ 0-92 rule	
Payment rate ($/bu)	Def	--
Payment ($)	0.46*Yld*Base	
PIK acreage diversion (%)	--	--
Payment rate (bu)	--	--
Payment (bu)	--	--
Compliance restrictions:		
Soil conserving base 12/	No	No
Cross compliance 13/	62/ Limited	--
Offsetting compliance 14/	No	--
Normal crop acreage 15/	46/ NA	46/ NA
National marketing quota (mil bu)	Suspended	Suspended
Marketing quota penalty ($/bu)	Suspended	Suspended

See footnotes at end of table.

Continued--

Appendix table 12--Provisions of wheat programs, 1961-90--Continued

Provision	1989	1990
National allotment acres (mil):		
Wheat	--	--
Wheat domestic	--	--
National program acres (mil)	46/ NA	46/ NA
National base acres (mil):		
Wheat	82.4	--
Wheat base in CRP	8.4	--
National program yield (bu/ac)	63/ 35.0	--
Disaster program: 19/		
Prevented plantings payment ($/bu)	52/	52/
Low yield criterion (%)	--	--
Low yield payment ($/bu)	52/	52/
Payment limitation ($)	64/ Yes	64/ Yes
Advanced payment (%)	68/ 40	40
Support payment limitation ($)	70/ 50,000	70/ 50,000

Footnotes for Appendix table 12--Provisions of wheat programs, 1961-90.

1/ Price support made available to program compliers in nondesignated commercial areas at 75 percent of the level available to compliers in the designated commercial area.

2/ Program available only in the designated commercial wheat producing area.

3/ Average parity price of wheat for May.

4/ Deficiency payment is the difference between the target price and the higher of the 5-month national weighted average market price received by farmers or the loan rate. Starting in 1986, a supplementary (loan) deficiency payment was authorized as the difference between the basic loan rate and the higher of the adjusted loan rate or the national weighted average market price received by farmers for the entire marketing year.

5/ The allocation factor, ranging from 80 to 100, is determined by dividing national program acres by number of acres harvested.

6/ Before 1985 legislation, this is the national average loan rate. Under the 1985 Act, this is the basic loan rate as determined by the legislated formula.

7/ Noncertified wheat grown by program participants eligible for price support loans.

8/ This is the loan rate after adjustment by the Secretary as authorized by the 1985 Act in order to make U.S. wheat competitive in export markets.

9/ Sales made at fixed prices or through competitive bids.

10/ In any event, the CCC cannot sell stockholdings for less than the going market price.

11/ Simple average of actual sales.

12/ Producers must maintain a soil conserving base in addition to planting diverted acres to conserving use.

13/ Producers must be in compliance with programs for all program crops planted on the farm.

14/ Producers must be in compliance with wheat program requirements on other farms they own or have an interest in.

15/ The total acres of crops in the normal crop acreage (NCA) -- barley, corn, dry edible beans, flax, oats, rice, rye, sorghum, soybeans, sugarbeets, sugar cane, sunflowers, upland cotton, and wheat -- planted on a farm plus acres set-aside cannot exceed a farm's NCA.

16/ May avoid penalty by storing or delivering excess to the Secretary in accordance with regulations.

17/ May overplant allotment by no more than 50 percent without penalty, provided that the excess is stored under bond.

18/ Wheat and feed grain (including oats and rye) acreage substitution allowed if producer is signed up for both programs.

19/ Bad weather or unavoidable hazard.

20/ Price support income and full allotment of certificates is assured regardless of drought, hail, excess moisture, or other crop damage.

21/ By planting 45 percent of the allotment and meeting other requirements, participants eligible for maximum number of certificates.

22/ By planting 35 percent of the allotment and meeting other requirements, participants eligible for maximum number of certificates.

23/ By planting 40 percent of the allotment and meeting other requirements, participants eligible for maximum number of certificates.

24/ By planting 43 percent of the allotment and meeting other requirements, participants eligible for maximum number of certificates.

25/ By planting 48 percent of the allotment and meeting other requirements, participants eligible for maximum number of certificates.

26/ Face value set at the difference between 100 percent of parity and the national average market price received over the first 5 months of the marketing year.

27/ Producers of winter wheat, which have already planted, must designate acreage for set-aside that is already planted to wheat. This acreage may be grazed or otherwise must be disposed of before certification dates.

28/ Producers do not have to plant wheat to qualify for program benefits. Failure to plant at least 90 percent of farm allotment to an authorized crop may result in as much as a 20-percent reduction in the allotment for the following year. If no wheat planted for 3 consecutive years, the entire allotment is lost.

29/ Applies to wheat program and public access payments, but not to loans or purchases.

30/ Applies to total amount of payments that a person can receive under a combination of the wheat, feed grain, and upland cotton programs but does not apply to payments for public access, loans, and purchases.

31/ The target price level was increased above the levels authorized in the 1977 Act to compensate producers for participation in the set-aside program.

32/ Target price for farmers who plant within their normal crop acreage (NCA) is $3.63, otherwise it is $3.08.

33/ Announced before (Reserve I)/announced following the suspension of exports to the Soviet Union in January 1980 (Reserve II).

34/ Secretary stated that wheat will not be offered for sale until the wheat in reserve has been called. Then the minimum sales price would be the higher of 180 percent of the loan rate or market price.

35/ Announced before/effective after passage of Agricultural Act of 1980 on December 3, 1980 (Reserve III).

36/ May be adjusted upward to meet any U.S. commitment to an international agreement on grain reserves.

37/ Set-aside based on current plantings.

38/ Voluntary set-aside requirement applies to previous year's plantings.

39/ By holding plantings at or below previous year levels, farmers will be guaranteed 100-percent target price coverage. That is, their program payment would not be reduced by the allocation factor.

40/ Cross compliance requires farmers to comply with set-aside and NCA requirements for all crops in order to become eligible for program benefits on any crop in their farms' NCA.

41/ Offsetting compliance requires that to qualify for program benefits for crops included in the NCA on participating farms, landlords, landowners, and operators must assure that the NCA is not exceeded on any nonparticipating farms they own or operate that produce a set-aside crop.

42/ Preliminary/final announced national program acres.

43/ Limit to disaster payments per person for all programs.

44/ Total amount of payments a person can receive under a combination of wheat, feed grain, and upland cotton programs. The limitation does not apply to loans or purchases, or to payments for either prevented plantings or low yield disaster loss.

45/ Total amount of payments a person can receive under a combination of the wheat, feed grain, rice, and upland cotton programs. The limitation does not apply to loans or purchases, or to payments for either prevented plantings or low yield disaster loss.

46/ Normal crop acreages, national program acreages, allocation factors, and voluntary reduction provisions are not applicable when acreage reduction programs are in effect.

47/ Before January 19 (Reserve V)/on or after January 19 (Reserve VI).

48/ For grain entered after July 23 (Reserve IV).

49/ For grain entered during 1982 marketing year (Reserve V), as announced January 29, 1982.

50/ If a cap is imposed, it cannot be less than 700 million bushels.

51/ An alternative for the farmer is withdrawing the whole base from production, with the producer bidding the percentage of program yield up to a maximum of 95 percent. However, bids would not be accepted, which would cause the combined acreage taken out of production under the acreage reduction, cash diversion, and PIK programs to exceed 45 percent of the county's total acreage.

52/ Available only to producers for whom Federal crop insurance is not available.

53/ Total amount of payments a person can receive under a combination of wheat, feed grain, rice, and upland cotton programs. The limitation does not apply to loans, purchases, or PIK.

54/ Total amount of payments, including PIK, a person can receive under a combination of wheat, feed grain, rice, upland cotton, and extra-long staple cotton programs. The limitation does not apply to loans or purchases.

55/ Total amount of payments a person can receive under a combination of the wheat, feed grain, rice, upland cotton, and extra long staple cotton programs. The limitation does not apply to loans or purchases.

56/ All cash payments subject to reductions of 4.3 percent, Gramm-Rudman-Hollings Act.

57/ When 9-month loans mature, entry in the farmer-owned reserve will be permitted only if reserve quantities of wheat fall below 300 million bushels, and farm prices do not exceed 140 percent of the current loan rate.

58/ If the quantity of wheat in the farmer-owned reserve exceeds 17 percent of the estimated wheat usage for the crop year, entry of the crop wheat into the reserve will not be permitted.

59/ Winter wheat producers have the option of an additional 5 or 10 percent paid land diversion, with a payment rate of $2.00.

60/ Under the 50-92 rule, growers who plant between 50 and 92 percent of the permitted acreage to feed grains and devote the remaining permitted acres to a conserving use are eligible to receive deficiency payments on 92 percent of the permitted acreage.

61/ Under the 0-92 rule, growers who plant between 0 and 92 percent of the permitted acreage to feed grains and devote the remaining permitted acres to a conserving use, are eligible to receive deficiency payments on 92 percent of the permitted acreage.

62/ To be eligible for benefits for a participating wheat, feed grain, upland cotton, or rice crop, the acreage planted for harvest (or approved as prevented plantings) on a farm in other nonparticipating program crops, excluding extra-long staple cotton and oats, may not exceed the crop acreage bases of these crops. Oats and extra-long staple cotton are not subject to limited cross compliance requirements.

63/ Average of the program payment yields for 1981-85 crops, excluding the high and the low.

64/ The total of the following payments, combined with the total deficiency and diversion payments, is limited to $250,000 per person: (1) disaster payments; (2) gain realized by repayment of a loan at a lower level than the original loan level; (3) any deficiency payment for wheat or feed grains attributed to a reduction in the statutory loan rate; (4) any loan deficiency payment; (5) any inventory reduction payment; and (6) any payment representing compensation for resource adjustment or public access for recreation.

65/ At signup, participants may request 40 percent (75 percent in cash and 25 percent in generic certificates) of their projected 1986 deficiency payments and 100 percent of their diversion payments. A second advance was authorized in August 1986 permitting participants to request an additional 10 percent of their projected deficiency payments in generic certificates.

66/ At signup, participants may request 40 percent (50 percent in cash and 50 percent in generic certificates) of their projected 1987 deficiency payments and 50 percent (50 percent in cash and 50 percent in generic certificates) of their diversion payments.

67/ At signup, participants may request 40 percent (50 percent in cash and 50 percent in generic certificates) of their projected 1988 deficiency payments and 100 percent (100 percent in generic certificates) of their diversion payments.

68/ At signup, participants may request 40 percent of their projected 1989 deficiency payments in cash.

69/ Total payments a person can receive under any combination of wheat, feed grain, rice, upland cotton, and extra-long staple cotton programs. The limitation does not apply to loans, purchases, loan deficiency payments, first handler certificates, inventory protection certificates, or deficiency payments resulting from lowering the basic (statutory) loan rate.

70/ Total deficiency and diversion payments a person can receive under a combination of wheat, feed grain, upland cotton, extra long staple cotton, and rice programs.

Source: Green, Robert C. A Database for Support Programs of Program Crops, 1961-90. Staff Report (forthcoming). U.S. Dept. Agr., Econ. Res. Serv.

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