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Barley

Background for 1990 Farm Legislation

Mark Ash
Linwood Hoffman

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Abstract

Barley is the third leading feed grain grown in the United States. Production is concentrated in the Northern Plains and Pacific regions. Barley is mainly used for livestock feed and the manufacture of malt beverages. Feed use often accounts for well over half of total use. Barley is the most important grain product used by brewers. Exports are much smaller than domestic use and are highly variable. Barley yields have steadily risen, but production costs have also increased relative to returns. Government loan rates and target prices for barley are based on those for corn. Returns above cash expenses in recent years were considerably lower than during 1975-80. Returns have increased gradually since 1986. Government payments to barley growers, while relatively small compared with corn, have been a significant portion of barley net returns in recent years.

Keywords: barley, barley feeding, malt, costs and returns, exports, farm programs, policies, program benefits

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 an earlier version entitled Barley: Background for 1985 Farm Legislation, (AIB-477) by William Lin, Sam Evans, Greg Davenport, and Brad Karmen. Andy Novick updated the report tables. This report is one of a series of updated and new Economic Research Service background papers for farm legislation discussions. The reports summarize in a nontechnical form 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 December 1989

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Summary

Barley is the third leading feed grain produced in the United States, ranking behind corn and sorghum. In 1987, 530 million bushels of barley were harvested from 10 million acres. The farm value of this output was over $982 million. Barley normally accounts for about 7 percent of total acres planted to feed grains in the United States and 4 percent of feed grain production.

Barley production is concentrated in North and South Dakota, Idaho, Montana, Minnesota, California, and Washington. Malting varieties dominate barley production in the Dakotas and Minnesota, with over 83 percent of the acreage planted. Feed barley predominates in the West, where only about 30 percent is planted to malting varieties.

Prior to 1960, farm legislation and programs imposed no production controls on barley. However, due to the close substitution between barley and other feed grains, periodic surplus stocks of corn meant not only weak corn prices but also weak barley prices. To stabilize barley prices and to enhance farm income for barley growers, farm legislation since the 1960's has provided price support for barley producers. Price and income support levels for barley are now related to those for corn.

There was a decreasing trend in barley used for feed in the 1970's. However, an upward trend emerged starting in 1981. Feed accounts for the largest portion of total use, from 40-60 percent. The feed demand for barley is influenced by the supplies and prices of barley and competing feed grains and depends upon the number of grain-consuming animals. Barley compares favorably with other grains in terms of feeding value when fed to ruminants (sheep and dairy and beef cattle). The metabolizable energy in barley is only slightly less than in corn and sorghum for ruminants. Over three-fourths of barley is fed to ruminants.

The proportion of barley used for alcohol and alcoholic beverages has increased since the 1960's. Malt beverage use has averaged 24 percent of total supply over the past 5 years. There is not much fluctuation in barley malt use, reflecting a mostly static brewing industry.

U.S. barley exports have fluctuated widely over the past three decades, ranging from 10 million bushels in the 1969 crop year to 137 million in 1986. These major swings in U.S. barley exports have been influenced by changes in U.S. corn production and exports. About 24 percent of U.S. barley production was exported in 1987, primarily to Saudi Arabia, Israel, and Eastern Europe.

Barley farm prices, adjusted for inflation, from 1985-87 have been about 40 percent of the 1950-59 average. This is largely a result of the lower feed grain loan rates enacted in 1985. The

1960-69 and 1970-79 averages were 70 percent and 80 percent. Prices during the 1950's were supported by high loan rates. On average, loan rates were lowered in the 1960's to about 80 percent of 1950-59, and farm prices dropped accordingly. A price increase occurred for all grains in the early 1970's as export demand increased. Barley farm prices in the 1970's averaged about 20 percent above those of a decade earlier, but they still fell short of the inflation-adjusted average for the 1950's. Real barley farm prices in the late 1980's have been about half of the average for the 1970's.

Barley yields increased steadily from 29 bushels per acre during 1950-59 to an average of about 52 bushels during 1983-87, although yields appear to have plateaued since 1978. Revenue per harvested acre has gradually grown. However, since 1985, real revenue per acre (in constant 1972 dollars) has been less than most years going back to 1950.

Returns above cash expenses in recent years have been considerably lower than during 1975-80, in both nominal and real dollars. A gradual increase in returns has emerged since 1986. Cash costs associated with barley production have more than doubled since 1975 but revenue per acre, including direct Government payments, has risen less than 50 percent. Economic (full ownership) costs represent the average longrun costs required to keep land in production. The national average economic cost has fallen from $149 per acre in 1984 to $121 in 1987 (or $2.58 per bushel). Total cash expenses are expected to rise by 7 percent in 1989 due to higher fertilizer prices. Regional returns to management have been highest in the Northwest and lowest in the Southwest (due to high custom operations and irrigation costs).

This report reviews several policy issues for the 1990's, including Government budget costs of farm programs, realignment of grain price supports, planting flexibility on base acreage, effectiveness of the export enhancement program, design of the Federal crop insurance program, effectiveness of the stocks release mechanism of the farmer-owned reserve, and encouragement of grain quality.

Barley

Background for 1990 Farm Legislation

Mark Ash
Linwood Hoffman

Introduction

The 1986 barley crop was the largest ever, totaling 611 million bushels and 12 million acres harvested. At $994 million, barley ranked eleventh among principal U.S. agricultural crops in production value for 1986. However, due to high temperatures and drought in the major barley growing States of the Northern Plains, 1988 production dropped 54 percent from 1987 to 291 million bushels, the smallest crop since 1953. Lower yields pushed feed barley prices up 20 percent in 1988, while malting barley prices about doubled. Production in 1989 is expected to rebound to over 400 million bushels.

This report describes major factors and trends in barley production and markets. Economic and structural factors affecting the costs/returns position of barley farmers are discussed. Trends in supply, domestic use, and exports are examined to gain an idea of future economic conditions in the barley industry. The report reviews past barley farm programs, economic conditions motivating the programs, and effects of the programs on farmers, processors, input suppliers, taxpayers, and consumers.

Structure of the Barley Industry

Barley is an internationally grown and consumed commodity. The progression from the farm to purchase in final product markets is quite complex. The structure of the barley industry consists of the resources employed in farm production, transportation, storage, processing, and the consumer demand for food products.

Production Characteristics

Barley is more adaptable to areas with cooler temperatures and lower rainfall. But it is generally less profitable than corn, sorghum, and soybeans in areas where these crops compete for land. As a result, barley production has been concentrated in the Northern Plains and Pacific Northwest where the other grains cannot adapt as well to the climate. Barley production is concentrated in North Dakota, Montana, Idaho, Minnesota, and Washington, which account for nearly three-fourths of the

national total. Soybeans compete for acreage with barley in the Lake States and Northeast. Wheat competes with barley in most production regions where barley is grown. Other competitive crops include sorghum in the Central and Southern Plains regions, sunflowers and oats in the Northern Plains, cotton in the Southeast, and corn in the Lake States, Central Plains, and Southeast.

An important feature of the barley market is the distinction between feed and malting uses. High-quality malt can be produced only from certain barley varieties. North Dakota, Minnesota, and South Dakota are the major malting barley producing States (table 1). Most six-rowed barley varieties (the most desired by American maltsters) are produced in these three States, with over 83 percent of the acreage planted there.

In the West, malting barley varieties are primarily grown in six States: Colorado, Idaho, Montana, Oregon, Washington, and Wyoming. Two-rowed varieties, used mostly for feed, dominate the barley acreage in these Western States. Only about 30 percent of the planted acres are seeded to barley varieties suitable to the major American brewers. However, plantings of six-row malting varieties have been increasing.

Not only must barley be of a suitable variety to be used for malting, the grain must also possess certain quality characteristics. Conditions during the growing season can damage the quality of a malting variety so that it cannot be used for malting. Important barley quality factors are: (1) germinability, (2) protein, (3) plumpness, and (4) physical condition.

Prices for malting barley generally are about 20 cents per bushel higher than for feed barley. However, the 1988 drought ran premiums as high as $2 per bushel as yields dropped sharply. The 1988 average yield was 38.6 bushels per acre, down from 52.7 bushels in 1987. In addition, hot and dry weather will often produce barley with a protein content too high for malting. High protein content in barley is desirable for feed use, but not for malting. Maltsters may be forced to import additional foreign barley in 1989 because supplies of quality U.S. malt barley were low.

Barley yields increased an average of about 2 percent annually over the past 25 years. Among the important producing States, yields are highest in regions that produce barley for feed, primarily because more nitrogen fertilizer is used on feed barley than on malting barley. Yield and protein content may be raised by increasing fertilization, if other growing conditions are favorable.

The number of farms growing barley declined from 121,700 in 1969 to 79,300 in 1982, while the acreage of barley harvested per farm increased from 79 to 109 acres. Barley is produced primarily on larger farms. Nearly half of the farms growing barley in 1982 had total cropland of 500 acres or more (table 2).

Table 1--Acreage of feed and malting barley planted in major producing States, 1970-89

State	1970	1975	1980	1985	1986	1987	1988	1989
				1,000 acres				
North Dakota:								
Total	2,039	2,220	1,850	3,500	3,700	3,000	2,600	2,800
Feed	163	278	209	560	847	609	481	406
Malting	1,876	1,942	1,641	2,940	2,853	2,391	2,119	2,394
Montana:								
Total	1,800	1,360	1,180	2,350	2,400	2,300	1,800	1,700
Feed	1,091	838	615	1,182	1,142	1,081	974	877
Malting	709	522	565	1,168	1,258	1,219	826	823
Idaho:								
Total	673	775	900	1,280	1,140	840	880	870
Feed	323	403	513	870	695	487	488	420
Malting	350	372	387	410	445	353	392	450
Minnesota:								
Total	607	950	900	1,200	1,200	1,200	1,250	925
Feed	55	104	45	60	96	48	50	18
Malting	552	846	855	1,140	1,104	1,152	1,200	907
South Dakota:								
Total	389	560	535	760	930	870	700	700
Feed	184	240	176	245	--	276	238	211
Malting	205	320	359	515	--	594	462	489
Washington:								
Total	436	420	440	1,200	920	660	580	500
Feed	340	375	381	1,125	858	605	532	453
Malting	96	45	59	85	62	55	48	47
Oregon:								
Total	440	200	170	360	375	250	225	210
Feed	361	152	124	328	--	227	212	188
Malting	79	48	46	32	--	23	13	22
Colorado:								
Total	340	245	265	360	390	230	185	190
Feed	--	126	144	293	--	121	110	85
Malting	--	119	121	67	--	109	75	105

-- = Survey not conducted. Note: Malting varieties planted include all those recommended by the American Malting Barley Association for malting and brewing and other nonrecommended varieties utilized for malting and brewing. Not all malting barley varieties harvested meet malting quality specifications.

Source: American Malting Barley Association and U.S. Department of Agriculture, National Agricultural Statistics Service.

Table 2--Number of farms harvesting barley, by area and sales class, 1982 1/

Cropland	Farms	Proportion	Sales class	Farms	Proportion
Acres	Number	Percent		Number	Percent
1-99	6,709	11.5	Less than $2,500	1,274	2
100-249	10,337	17.7	$2,500-$9,999	4,475	8
250-499	12,010	20.6	$10,000-$39,999	14,923	26
500-999	14,250	24.4	$40,000-$99,999	18,773	32
1,000 and over	15,018	25.7	$100,000-$249,999	13,512	23
			$250,000-$499,999	3,585	6
Total	58,324	100.0	$500,000 and over	1,782	3
			Total	58,324	100

1/ Calculated from the 1982 Census of Agriculture special tabulation for 14 important barley-producing States: Oklahoma, Minnesota, California, South Dakota, Montana, North Carolina, Washington, Wisconsin, North Dakota, Idaho, Colorado, Texas, Oregon, and Kansas. A barley farm is defined as any place that grows barley and from which $1,000 or more of agricultural products were sold or normally would have been sold during the census year.

Trends In Domestic Use

Total disappearance of barley--both domestic use and exports--has fluctuated widely during the past two decades. Barley use typically goes up whenever corn prices go up because barley may be substituted for corn in the feed ration. Barley feed use dropped from 333 million bushels in 1985/86 to a 35-year low of 162 million in 1988/89.

Livestock and Poultry Feed

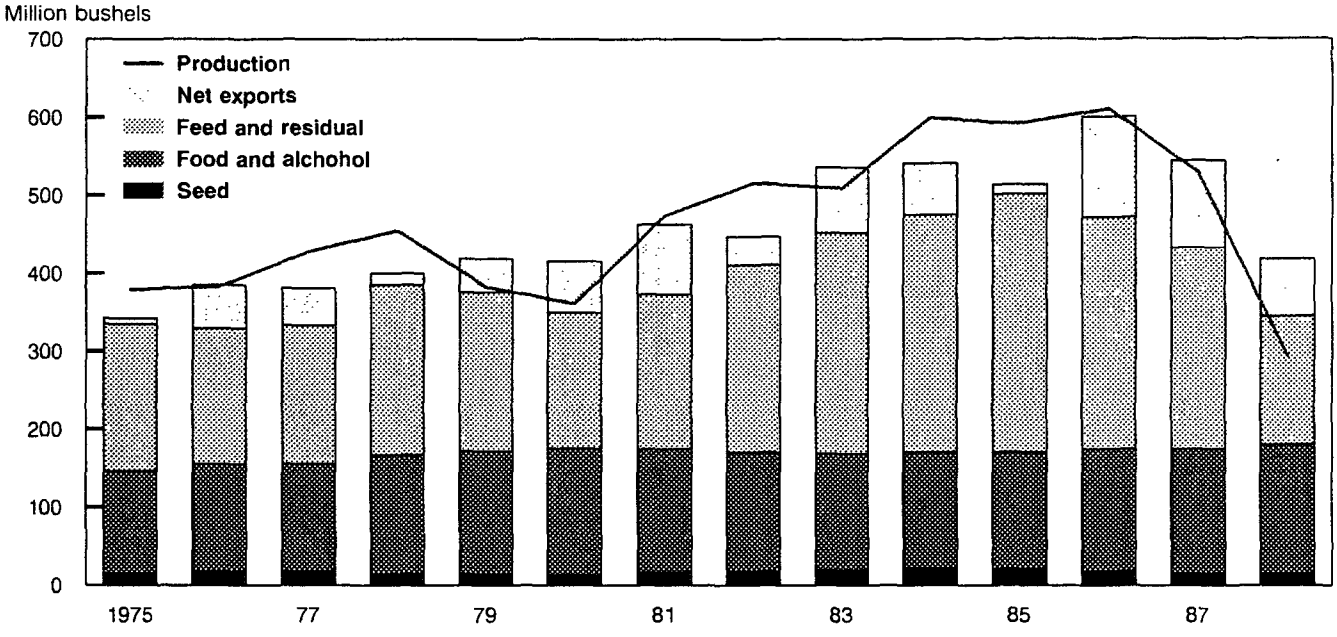
Almost 60 percent of the U.S. barley crop is fed to livestock. Fluctuations in total barley disappearance have largely been caused by large swings in barley feed use (fig. 1). Over three-fourths of barley feed is for ruminants: beef cattle in the Northern Plains and Southwest, and cattle and sheep in the Pacific and Mountain States. The other 40 percent of domestic demand is for beverage and food use. Beverage and food use increased gradually throughout the 1970's, dropped slightly in the first half of the 1980's, and has recently returned to 1970's levels.

Feed consumption for all livestock includes approximately 60 percent roughages and pasture and 40 percent concentrates. Poultry relies primarily on concentrates. Feed concentrates include feed grains, wheat, rye, oilseed meals, animal protein feeds, grain protein, mill byproducts, vitamins, and mineral supplements.

Competition among feed ingredients depends primarily on relative price and relative energy value. The percentage of metabolizable energy in barley is slightly less than corn and sorghum averaged across all livestock classes. Barley is equivalent to corn in terms of feeding value when fed to ruminants like dairy and beef cattle and sheep. Barley's high fiber content makes it less palatable and digestible to young swine and poultry; however,

Figure 1

Barley production and use, 1975-88



breeding programs have begun to develop barley varieties of better value.

Protein and other nutrients are generally more economically supplied by concentrates other than feed grains. For barley to substitute on the basis of protein, the cost on a per-unit basis would have to be less than soybean meal and other protein supplements, not corn. However, barley does provide more crude protein than corn. Barley's added crude protein, associated with the energy portion of the feed ration, would allow less soybean meal to be used. The supplementary feed value of barley depends on the actual protein absorbed by the animal versus other grains and the price of the least-cost sources of protein, which invariably fluctuate.

Although nearly 60 percent of barley's domestic use was for livestock and poultry feeding in recent years, it accounted for only about 5 percent of feed grains or 3 percent of concentrates consumed by livestock. Barley feed use ranged from a low of 3.8 million metric tons in 1980/81 to a high of 7.2 million metric tons in 1985/86. Feed use of barley is positively related to the number of grain consuming animal units (GCAUs) and the feeding rate. For example, feed use of barley dropped in 1988/89 as both animal units and feeding rate declined (table 3).

Variation in feed use also reflects adjustments made over time by livestock and poultry producers in response to relative prices

Table 3--Feed use and animal numbers, October-September years, 1975-88

Item	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988 1/
							Million metric tons							
Feed and residual use:														
Barley	4.1	3.8	3.9	4.7	4.4	3.8	4.3	5.2	6.2	6.6	7.2	6.5	5.6	5.2
Corn	91.2	91.2	94.4	108.3	115.6	105.6	105.9	114.8	97.0	103.6	104.0	119.7	120.3	109.2
Sorghum	12.6	10.4	11.4	13.7	12.6	8.2	10.6	12.6	9.8	13.7	16.9	13.6	14.3	13.1
Oats	8.1	7.0	7.4	7.6	7.1	6.3	6.6	6.4	6.8	6.3	6.7	5.7	5.2	3.1
Total feed grains	116.0	112.1	117.1	134.3	139.7	123.9	127.4	139.0	119.8	130.2	134.8	145.5	145.4	130.6
Wheat and rye	1.7	6.8	4.5	3.3	2.8	4.4	3.9	5.5	10.3	11.4	7.6	11.6	8.3	7.6
Total grains	117.7	118.9	121.6	137.6	142.5	128.3	131.3	144.5	130.1	141.6	142.4	157.1	153.7	138.2
Byproduct feeds 2/	33.8	31.0	33.8	37.8	38.3	36.2	33.7	34.5	33.4	37.6	36.1	36.9	38.7	37.4
Total grains and byproduct feeds	151.5	149.9	155.4	175.4	180.8	164.5	165.0	179.0	163.5	179.2	178.5	194.0	192.4	175.6
							Million units							
Animal numbers														
GCAU 3/	72.6	74.1	75.7	78.3	79.3	77.6	74.3	76.4	75.9	76.5	74.4	74.2	76.6	76.4
							Dollars per bushel							
Prices:														
Feed barley	2.42	2.25	1.78	1.92	2.21	2.77	2.39	2.11	2.46	2.23	1.90	1.52	1.64	2.28
Corn	2.54	2.15	2.02	2.25	2.48	3.12	2.47	2.55	3.21	2.63	2.23	1.50	1.94	2.55
Sorghum	2.37	2.03	1.82	2.01	2.35	2.91	2.24	2.47	2.74	2.32	1.93	1.37	1.70	2.35
Oats	1.46	1.56	1.09	1.20	1.33	1.72	1.88	1.49	1.62	1.67	1.23	1.21	1.56	2.67
Wheat	3.56	2.73	2.33	2.97	3.80	3.99	3.69	3.45	3.51	3.39	3.08	2.42	2.57	3.72
							Metric ton per GCAU							
Feeding rate 4/	2.09	2.02	2.05	2.24	2.28	2.12	2.22	2.34	2.15	2.34	2.40	2.61	2.51	2.30

1/ Estimated. 2/ Byproduct feeds include oilseed meals, animal protein feeds, grain protein feeds, and other byproduct feeds.
3/ A grain consuming animal unit is a weighted average of the number of livestock and poultry fed during the feed year converted to milk cow equivalents and weighted by grains consumed. 4/ Total grains and byproduct feeds per GCAU.

and availability of barley and competing feed grains or nongrain feeds, such as soybean meal. Feed barley prices closely follow the movement of corn prices (fig. 2). Barley feed use declined in 1986 and 1987 to 298 and 258 million bushels (table 4), while corn feed use increased to 4,714 and 4,735 million bushels. The declines of barley feed use in 1987 and 1988 were caused in part by the increase in feed barley price from $1.52 a bushel in 1986/87 to $1.64 in 1987 and $2.28 in 1988.

Malt

Barley's second most important domestic use is for malt which in 1987/88 accounted for 36 percent of domestic barley use (table 4). Malt is produced from barley by germinating moistened barley under controlled conditions for 5-7 days, depending on barley type and intended use. Germination brings about changes in the barley, including development and activation of enzyme systems important in producing the desired color and flavor characteristics. The germination process is ended by kilning (drying with heat). Rootlets that formed during germination are removed and the resulting product is malt. The residual brewer's spent grains are dried and sold as a protein supplement for dairy feeds.

Most malt produced in the United States is used for beer production. In the brewing process, a mixture of ground malt, other grains, and water is heated under controlled conditions,

Figure 2

Feed grain price relationships, Sept. 1982-July 1989

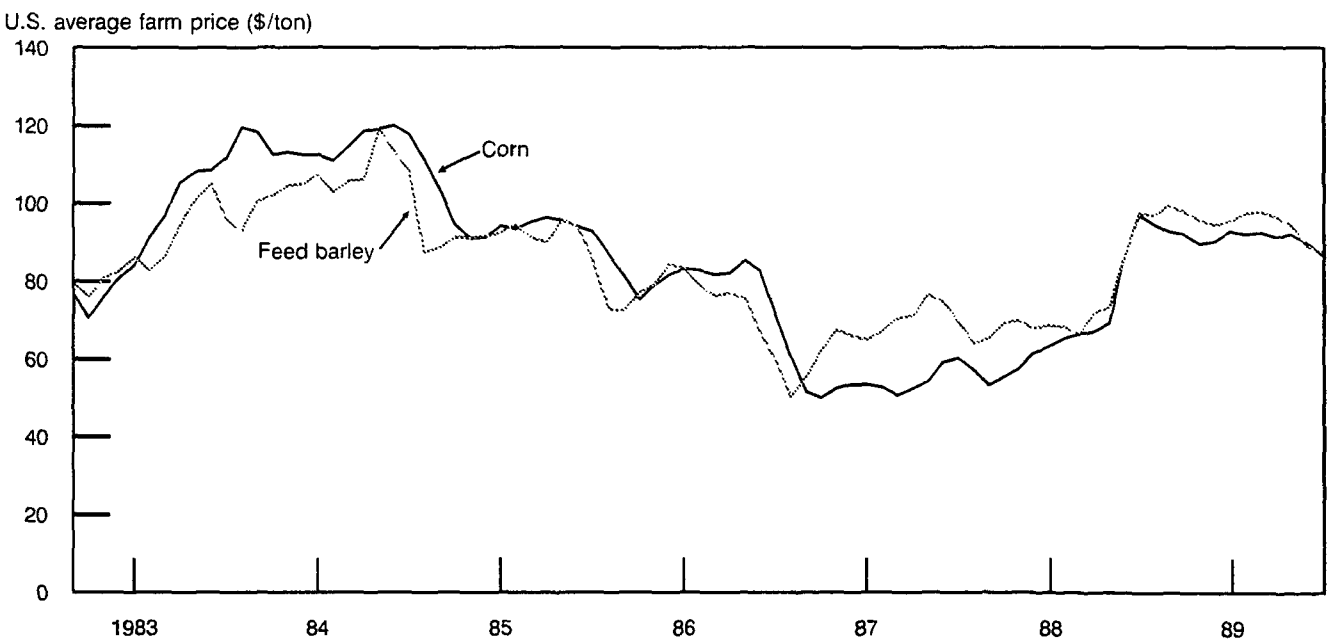


Table 4--Barley: Marketing year supply and disappearance, 1958-88

Year beginning June 1	Supply			Disappearance					Ending stocks				Stocks-to-use ratio
	Beginning stocks	Production	Imports	Total	Domestic use			Exports	Total disappearance	Government owned	Privately owned 1/	Total	
					Food, alcohol, and seed	Feed and residual	Total						
	Million bushels												Percent
1958	197	477	15	689	112	236	347	114	461	99	129	228	49
1959	228	420	18	666	111	241	352	123	475	71	120	191	40
1960	191	429	15	635	114	254	368	89	457	51	127	178	39
1961	178	392	20	590	110	253	363	78	441	29	120	149	34
1962	149	428	6	583	111	229	340	72	412	38	133	171	42
1963	171	393	13	577	107	240	347	68	415	29	133	162	39
1964	162	386	12	560	109	260	369	59	428	20	113	133	31
1965	133	393	8	534	114	208	322	78	400	11	122	133	33
1966	133	392	7	532	114	222	336	48	384	6	142	148	39
1967	148	374	9	531	122	212	334	36	370	6	155	161	44
1968	161	426	10	597	123	238	360	12	372	8	217	225	60
1969	225	427	13	665	126	260	387	10	397	47	221	269	68
1970	269	416	10	695	136	290	427	84	511	24	160	184	36
1971	184	462	12	658	134	275	409	41	450	37	171	208	46
1972	208	422	17	647	140	245	385	70	455	2	189	192	42
1973	192	417	9	618	138	241	379	93	472	1	146	146	31
1974	146	299	20	465	148	183	331	42	373	0	92	92	25
1975	92	379	16	487	150	184	335	24	359	0	128	128	36
1976	128	383	11	522	159	171	330	66	396	0	126	126	32
1977	126	428	11	565	161	174	335	57	392	0	173	173	44
1978	173	455	11	638	172	214	386	26	412	3	224	226	56
1979	226	383	12	621	176	198	374	55	429	3	189	192	45
1980	192	361	10	564	180	170	350	77	427	3	134	137	32
1981	137	474	10	620	179	193	372	100	472	3	145	148	31
1982	148	516	11	675	170	241	411	47	458	6	211	217	47
1983	217	509	7	733	169	283	452	92	544	12	178	189	35
1984	189	599	10	798	171	304	475	77	551	15	233	247	45
1985	247	591	9	847	168	333	501	22	523	57	267	325	62
1986	325	611	9	945	164	298	472	137	608	76	261	335	55
1987	336	530	14	879	174	258	432	126	558	50	271	321	58
1988	321	291	12	623	180	162	342	85	427	30	166	197	46

1/ Includes quantity of free and farmer-owned reserve ending stocks.
Note: Some totals may not add due to rounding.

which is called mashing. During mashing, enzymes in the malt break down the insoluble grain starch to soluble sugars necessary during fermentation. Some malt is also used for distilled beverages and in certain food products, such as breakfast cereals.

The demand for malting barley depends primarily on per capita disposable income and consumer taste and preference. Per capita consumption of malt beverages has trended upward from 15.4 gallons in fiscal year 1960 to 22.8 in 1986 (table 5). Improvements in malting barley varieties have increased the ability of malt to convert grain to beer, thus somewhat less malt and more adjunct grains are being used. The amount of barley malt used per barrel of beer has declined from 28.5 pounds in fiscal year 1960 to 24.3 pounds in 1986. By comparison, the brewing industry's use of rice as an adjunct increased from 3.7 pounds per barrel in 1960 to 5.2 pounds in 1986.

The demand for malting barley is largely insensitive to price change because there is no alternative grain. Barley malt is the most important grain product used by the brewers, accounting for about two-thirds of the total grain and grain products used by the industry. Additional starch sources, called adjuncts, are also used and include corn, corn syrups, and rice.

Table 5--Production and taxpaid withdrawals of malt beverages and brewing industry use of barley malt, selected years

Year ended June 30	Production of malt beverages	Total barley malt used	Barley malt used per barrel 2/	Taxpaid withdrawals 1/	
				Total	Per capita
	Million barrels	Million pounds	Pounds	Million barrels	Gallons
1960	94.5	2,697	28.5	88.9	15.4
1965	108.0	3,016	27.9	100.3	16.0
1970	134.7	3,721	27.6	122.6	18.7
1975	157.9	4,225	26.8	146.9	21.1
1976	160.7	4,158	25.9	148.8	21.2
1977	172.2	4,310	25.0	156.9	22.1
1978	171.6	4,392	25.6	157.3	22.0
1979	183.5	4,890	26.6	168.2	23.2
1980	188.4	5,039	26.7	168.8	23.1
1981 3/	194.5	5,160	26.5	176.6	23.9
1982	194.0	4,993	25.7	176.5	23.6
1983	195.7	4,825	24.7	178.0	23.6
1984	193.4	4,749	24.6	176.1	23.1
1985	193.8	4,673	24.1	174.7	22.7
1986	196.5	4,782	24.3	177.3	22.8

1/ IRS taxes paid on sales leaving a brewery. 2/ One barrel equals 31 gallons. 3/ Beginning 1981, fiscal year ends September 30.

The other major factor tempering the domestic demand for malting barley is the increasing popularity of light (low-calorie) beers which use less malt. These factors will result in a static demand for malting barley. Increased demand for U.S. malting barley will most likely result from expanding the export market for malt.

Food and seed uses showed little fluctuation over the last two decades. Food use of barley ranged narrowly between 6 and 8 million bushels a year, but dropped by one-third since 1972 on a per capita basis. Food and seed use over the past 5 years averaged less than 4 percent of total supply (table 4). Seed use declined from 1978-80 as acreage planted in barley declined. An upward trend emerged in the early 1980's due to expanded acreage but has again declined beginning in 1986.

Trends in the World Market

Only corn outranks barley as a leading coarse grain crop consumed and traded in the world. In the United States, barley ranks third in these categories behind corn and sorghum. World barley trade has tripled since 1960, yet still trailed the growth in both corn and sorghum. In 1985-87, barley averaged 30 percent of world coarse grain production and consumption, but was only one-seventh of trade. Europe and the USSR are by far the major producers and consumers of barley. Three nations--Saudi Arabia, the USSR, and Japan--account for half of world imports (table 6). Swings in barley import needs of only a few countries can have a major impact on world trade.

Barley trade is closely linked not only to overall coarse grain supply and demand conditions, but also to the supply of high-protein meals and nongrain substitutes, such as manioc. Approximately two-thirds of world barley use is for livestock feeding, an increasing percentage over the past two decades. Thus, much of the gain in world barley consumption has been in livestock feeding. World demand for beer and malt beverages is also expanding, but is satisfied mostly through trade in malt rather than sales of grain. Slightly over half of the malt exported is supplied by the European Community. Other major malt exporters include Australia, Czechoslovakia, and Canada.

Export competition for barley, however, cannot be assessed in isolation from other feed grains because of the ease of substitution among alternative feed grains and carbohydrate sources in livestock and poultry feeding. Barley faces many substitutes, including other feed grains, feed wheat, grain byproducts, manioc, and citrus pulp. Viewing barley export competition in this context, one can see that the United States faces not only barley competition from the EC, Canada, and Australia (fig. 3), but also from the EC (the major feed wheat exporter), Canada, Argentina, and Australia for wheat and other coarse grains. Exchange rates, transportation costs, debt problems, trade barriers, and domestic policies also affect the total volume and market shares among barley importers.

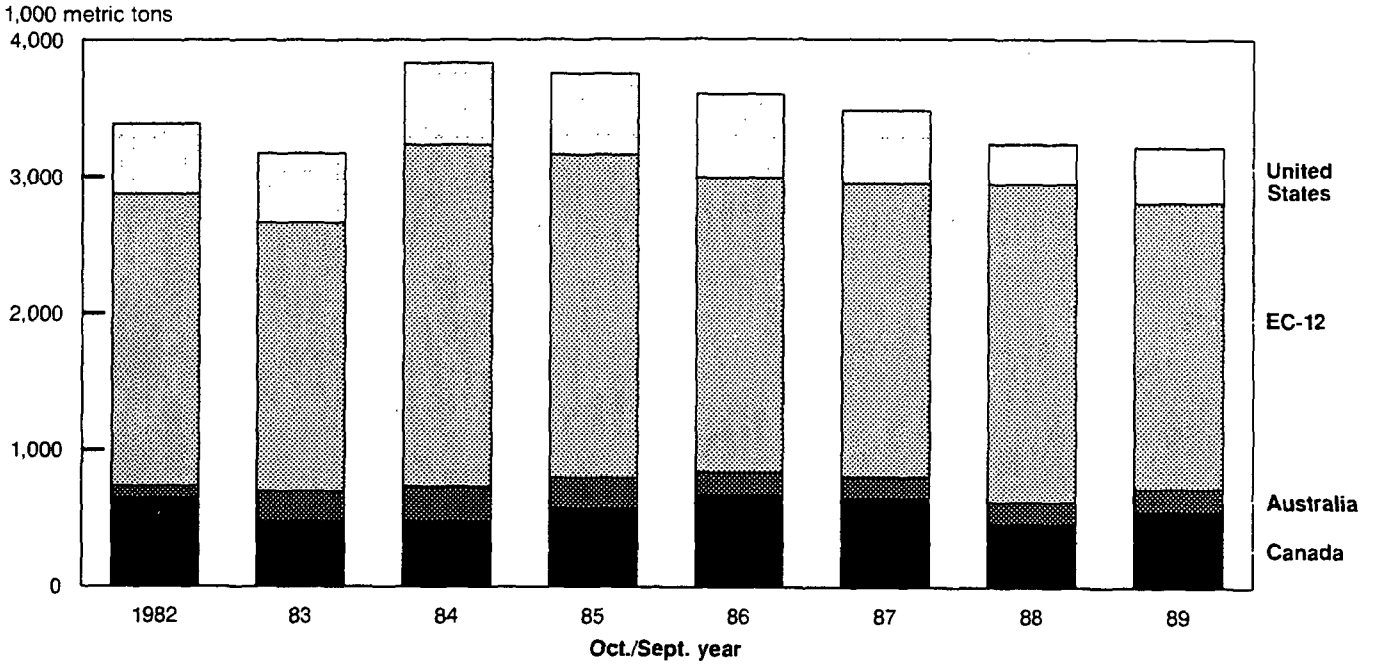
Table 6--World barley supply and use, 1985-88 1/

Item	1985	1986	1987	1988
		Million metric tons		
Exports:				
Canada	4.8	6.0	3.4	3.5
Australia	3.7	2.2	1.6	1.3
EC-12	7.3	6.2	6.9	9.5
Others	1.9	1.2	1.0	1.4
Total non-U.S.	17.6	15.6	13.0	15.7
United States	.8	3.0	2.9	1.3
World total	18.4	18.5	15.9	17.0
Imports:				
EC-12	.1	.1	.5	.4
USSR	2.9	3.0	2.4	3.4
Japan	1.5	1.2	1.3	1.2
East Europe	3.3	1.3	1.9	2.4
Saudi Arabia	6.6	9.0	4.5	4.0
Others	3.9	4.0	5.4	5.6
World total	18.4	18.5	15.9	17.0
Production:				
Canada	12.4	14.6	14.0	10.1
Australia	4.9	3.6	3.5	3.4
EC-12	51.5	46.8	46.8	50.6
USSR	46.5	53.9	58.4	44.5
China	6.2	5.6	6.0	6.3
East Europe	16.4	16.9	16.3	16.2
Others	27.2	27.7	24.2	28.8
Total non-U.S.	165.1	169.1	169.1	160.0
United States	12.9	13.3	11.5	6.3
World total	178.0	182.4	180.7	166.3
Utilization:				
EC-12	41.8	40.5	40.6	42.1
USSR	48.6	56.6	60.9	47.8
East Europe	18.6	18.9	18.1	18.9
Others	52.8	51.8	53.5	53.5
Total non-U.S.	161.8	167.9	173.1	162.3
United States	10.9	10.3	9.4	7.4
World total	172.7	178.1	182.5	169.8
Ending stocks:				
Total foreign	22.6	26.7	25.2	24.4
United States	7.1	7.3	7.0	4.3
World total	29.7	34.0	32.2	28.7

1/ Oct.-Sept. years. Source: World Grain Situation and Outlook, U.S. Department of Agriculture, Foreign Agricultural Service.

Figure 3

Barley production by major exporters



The gap between production and consumption for major exporters has been widening. The proliferation of import quotas and export subsidies to dispose of commodity surpluses has led to trade tension. The proportion of farm receipts for major barley exporters that come from government transfer programs has increased dramatically. Between 1982 and 1986, the level of global subsidies as a percentage of barley cash receipts plus net direct government payments (known as the producer subsidy equivalent) rose from 8 percent to a high of 50 percent.

Multilateral negotiations to reform the rules for international trade are now underway. The United States has proposed to eliminate all subsidies and barriers affecting trade over a 10-year period. The EC, Japan, and other nations have vigorously supported different changes. However, the General Agreement on Tariffs and Trade negotiators reached an accord in April 1989 to make a long-term "substantial progressive reduction" in trade subsidies and import barriers and to freeze agricultural supports at 1987-88 levels. A marketing loan program or expansion of the U.S. export enhancement program for wheat and feed grains would be required by the 1988 Omnibus Trade Act unless material progress is made in the GATT negotiations, although the President may decline to act if it would hamper negotiations.

European Community

The European Community (EC-12) has emerged in the last 6 years as the world's leading barley exporter. Higher yields in Spain (a recent EC member) and short feed grains supplies in other producing countries during 1988/89 sustained foreign demand for EC barley. The EC-12 will sell a record 59 percent of the world's trade in barley in 1988/89, up from 33 percent in 1977/78.

In the European Community, barley production and trade are strongly influenced by the Common Agricultural Policy (CAP) for grains, an intricate system of target prices, intervention (support) prices, and threshold (minimum import) prices. A variable levy is charged on barley imports to protect EC-12 producers from lower priced world supplies. Export refunds are paid to bridge the gap between the normally higher EC prices and world prices.

European consumers incur most of the program cost, but EC taxpayers have been required to carry a larger share. The value of EC price intervention to producers averaged 14 percent of receipts between 1982-86 and rose to a high of 39 percent in 1986. USDA calculations of the producer subsidy equivalent indicated a much lower level of policy transfers for barley than for other EC crops. EC policy transfers to barley producers were lower from 1982-86 (U.S.$4.40/ton) than the comparable U.S. and Canadian data (U.S.$31.96/ton and U.S.$25/ton).

Since EC currencies have been appreciating and world prices have declined precipitously since 1983/84, the EC has increased export subsidies and expanded market share. Swelling agricultural budgets in recent years have forced the EC to defray costs by attempting to discourage production, lowering guaranteed prices to farmers, and imposing a 3-percent producer tax (the co-responsibility levy) when grain production exceeds a ceiling amount. EC farmers exceeded this ceiling in 1988; however, higher world grain prices in 1988/89 reduced the cost of EC restitution payments, including barley. The EC reportedly allocated a 12-percent increase in funds for barley export subsidies in 1988/89 as sharper increases for wheat prices cut wheat subsidy expenses. Smaller crops are expected to reduce exportable supplies for 1989/90.

As a result of guaranteed support prices well above market-clearing levels, EC barley production rose from 16.3 million metric tons in 1967 to 51 million in 1988. The EC has evolved from net importer to net exporter of barley as of 1977. The larger production, lower domestic use (because of higher levels of wheat and nongrain feeding), and massive export subsidies have enabled the EC-12 to expand exports of surplus barley, mainly to Saudi Arabia, the USSR, Eastern Europe, and North Africa.

In more recent years, EC barley area has declined slightly as improved oilseed and wheat yields provided farmers greater

returns. However, EC barley area and exports may expand again in the next few years.

Canada

Barley is the second largest crop produced in Canada, accounting for half of coarse grain production, but it contributes only about 5 percent to farm cash receipts. Canada usually sows about 20 percent more barley than does the United States. Since 1986, Canada has outproduced the United States in barley. About 40 percent of Canadian barley is consumed domestically, almost all of it as feed. The rest is exported. Exports for 1989/90 are expected to rebound from the drought-reduced crop of 1988/89.

Canadian farmers can sell barley privately or they can deliver it to the Canadian Wheat Board (CWB), the sole agency for exporting barley in western Canada. If they choose the latter, farmers receive an initial payment from the board and can receive an additional payment after the conclusion of the marketing year, depending on export sales and world prices. Initial payments for 1988/89 rose 85 percent from a year earlier.

Several factors influence Canadian barley production: farmer preferences, farm location, CWB payments, and quotas. Western Canadian farmers prefer to grow wheat since it brings a greater return per acre, is less risky, and prices are generally more favorable than for barley. Barley area competes more with rapeseed than with wheat. Area has trended up for wheat, while barley and rapeseed area has fluctuated. Barley area will be greatly influenced by export demand, not only for coarse grains, but also for wheat and oilseeds. Farmers can plant as much grain as they want, but can deliver to the CWB only a specified quantity per quota-acre. Quotas are altered by the CWB in response to market demand. Initial CWB prices are set in line with world price expectations. Both quotas and initial prices exert a strong influence on production.

Barley export demand has been strong the past several years (partly due to a depreciating currency) and quotas have been large. The CWB has set ambitious export targets for grains and oilseeds; barley exports are likely to remain high for the next several years. Canada has long-term agreements with Brazil, China, Cuba, Japan, the USSR, West Germany, and Lebanon for wheat and feed grain sales. The CWB regularly provides export credit guarantees of up to 3 years for some nations' barley purchases.

One provision of the bilateral trade agreement between Canada and the United States is that Canada has agreed to eliminate import licenses for barley and other grains, contingent on equalization of support levels in both countries. The United States will likely remain a net importer of barley from Canada.

Australia

Barley is Australia's second largest crop in terms of volume and value. Area sown in barley has fluctuated fairly sharply since

1970, but has been declining since the record high in 1984/85. Australia provides no guaranteed minimum price for barley (unlike wheat), so some barley acreage has shifted to more profitable commodities including livestock and oilseeds. In any given year, price and weather conditions at planting influence the mix in sown area between barley and wheat, and to a lesser degree oats. Australian barley yields are substantially below those of the other exporters.

Domestic and export sales of barley are controlled by state marketing boards, the largest of which is the Australian Barley Board with responsibilities for South Australia and Victoria. Domestic barley use is relatively small, but increases during drought years when grain is used to supplement forage. With highly variable production, barley exports ranged from 600,000 tons in 1982/83 to 3.3 million tons the following year. Japan, Saudi Arabia, and Taiwan are Australia's largest customers. Although exports have been helped in recent years by a weak currency they nevertheless have declined since 1984 because of the drop in production.

Longer term developments in the Australian barley situation will be closely related to trends in wheat, oats, and sorghum production, the domestic and international livestock situation, and the world grain market. Canada and Australia export not only barley, but also other feed grains or feed wheat that compete with barley. While world demand is normally the major determinant of Australian production, domestic feed demand has started to increase because of increased demand by feed lots for the Japanese beef market. However, most cattle are still grazed. Australia exports a significant amount of malting barley to China and Taiwan and malt to South America.

Domestic wheat prices in Australia have been administered at levels that have sometimes been significantly above export prices and on other occasions below export prices. Since the prices are based on a formula that follows world prices they are usually in alignment. While it is possible that these arrangements have encouraged exports, the effect probably was not significant. In the case of coarse grains (primarily barley and sorghum), however, sales are handled by state marketing boards. Barley boards have pools which make payments to farmers based on returns which vary largely with export market conditions. These boards may also increase, to some degree, the variability in world prices by stabilizing internal prices from year to year.

Australia has long-term agreements with Egypt, China, Japan, and the USSR for wheat and feed grain sales. Australia provides the lowest level of producer support among major barley exporters, with average government transfers to receipts level (producer subsidy equivalent) of 3 percent.

Major Importers

Saudi Arabia has become the world's largest importer, surpassing the USSR in 1982/83. In 1986/87, Saudi Arabia accounted for

almost half of world barley trade. However, the Saudis have recently stopped paying generous subsidies to barley importers (occasionally exceeding the value of the commodity) to stop the accumulation of costly, unneeded stocks. This action is intended to promote higher domestic production, indicating that their future imports will be well below record 1986/87 levels. The Middle East accounts for about 40-50 percent of total world imports. Israel, Iran, and Iraq are also large importers.

Production in most of this region is highly variable because of weather. Turkey, normally a small exporter, is importing large amounts because of drought this year. Similarly, Syria and Iraq fluctuate from importers to exporters in many years. Programs to expand local output of meat, milk, and eggs are in place in many of these countries, bolstering the need for barley. Therefore, imports by these countries may continue to fluctuate because of varying domestic production.

Imports by North Africa depend mostly upon domestic production. Barley grown for grazing and as a feed grain is vital to the production of sheep in these countries. Most countries in the region are self-sufficient and import little, except when crops are poor. Harvested area has leveled off but yields have been highly variable, especially in Morocco where annual imports have fluctuated between 0 and 300,000 tons. Algeria is generally the largest importer in the region with 743,000 tons in 1987. Libyan imports are steady because of negligible production. North African imports are supplied occasionally by nontraditional exporters such as Turkey, Syria, and Morocco, which may have surpluses and need the foreign exchange.

The USSR is the world's largest producer but it is also the world's second largest importer of barley. The Soviets have accounted for about 15 percent of world imports in recent years. Although the USSR had a 13-million-metric-ton shortfall in 1988, they imported only an additional million tons of barley as part of their coarse grain/feed wheat needs. Canada has been a primary supplier; however, the EC supplied 91 percent of USSR import demand in 1987. The United States did not sell any barley to the Soviets during the 1980's.

Eastern Europe imports will rise to 2 million metric tons in 1988/89 because of poor weather. East Germany has been the largest importer in the region. Poland's imports are likely to rise somewhat because of the special aid recently received. The EC dominates trade with these countries.

Imports to the EC countries are nearly all intra-EC. A substantial portion of EC barley use is for malting. Although other non-EC nations, such as Cyprus and Switzerland, are major importers, most of their purchases are from EC countries.

Latin American barley production and use is relatively small, about 1-1.5 million tons. Consumption exceeds production, requiring imports of about 400,000 tons, mostly for malting. Little increase in feed barley imports is expected for the next

few years. However, there is significant potential for exports of U.S. malt or malting barley to this market.

Implications for U.S. Exports

Exports, mainly for feed, made up 23 percent of total use in 1987, recovering from 4 percent in 1985. U.S. barley exports have been extremely volatile, often hinging on the size of the U.S. corn crop and barley export subsidies. U.S. exports accounted for 13 percent of world barley trade in crop year 1987, down from nearly 30 percent in 1960 and 16 percent in 1970. Barley imports to the United States are expected to remain small, accounting for less than 3 percent of domestic use in most years. The export market is not as important to U.S. barley producers as to growers of other crops, such as corn, wheat, soybeans, and cotton. The United States exports barley to only about 15 countries each year, about the same as sorghum, compared with about 65 countries for corn and 80 countries for wheat. The United States sells about three-fourths of its total exports to only five customers and these vary from year to year (table 7).

The growth in barley trade during the 1980's has centered in the oil-rich, developing countries in the Middle East and the more developed countries in the rest of Asia. Asian imports of barley as a percentage of world imports have been increasing, nearing 60 percent in 1983/84. Since imports by these countries depend heavily upon income growth, economic conditions in these countries are crucial in determining their imports from the United States and other exporters. Growth in U.S. barley and other coarse grain exports to these and other countries will also depend on the continued use of export bonuses.

The United States has become a residual supplier of Japan's barley purchases. U.S. market share in Japan dropped from 31 percent in 1983 to 0-11 percent from 1984-88. The transport cost advantage of Australia and the relative supply position of Canada have nearly shut out American barley from Japan. Imports by Latin America and Western Europe could remain near current levels. North African imports are expected to increase, but Eastern Europe imports will not increase until their financial conditions improve.

With world trade expected to grow, U.S. export volume will increase slightly, but its market share will likely remain at the present level of 10-16 percent. Opportunities may exist for increased U.S. exports as developing countries attempt to improve diets through increased livestock production. However, imports by these countries are likely to be limited by heavy debt and low economic growth. Export subsidies are employed by exporters to maintain sales among financially stressed importers. Barley sales overseas will be harder to come by as corn prices are expected to drop relative to barley prices. The United States will continue to be the world's largest exporter of all coarse grains (table 8).

Table 7--U.S. barley exports, October-September years, 1984-87

Area	1984/85	1985/86	1986/87	1987/88
		1,000 metric tons 1/		
Western Hemisphere:				
Canada	30	0	1	2
Mexico	2	6	1	2
Colombia	107	50	0	0
Western Europe:				
EC-12	0	0	0	0
Cyprus	21	0	111	12
Eastern Europe:				
Bulgaria	60	0	0	152
Poland	0	0	72	116
Romania	0	0	111	0
Middle East:				
Jordan	18	0	30	22
Turkey	211	0	0	0
Israel	0	5	168	255
Iraq	244	0	0	253
Kuwait	65	0	0	0
Saudi Arabia	42	487	2,341	1,070
Africa:				
Algeria	0	0	36	671
Tunisia	0	0	0	151
Nigeria	33	0	15	4
Asia:				
Japan	130	121	0	68
Taiwan	179	82	51	0
All other	45	5	1	32
Total	1,187	756	2,938	2,810

1/ Includes products.

Source: Foreign Agricultural Trade of the United States, Fiscal Year Supplement, U.S. Department of Agriculture, Economic Research Service.

Table 8--World coarse grain exports, crop years, 1984-88

Country or region	1984	1985	1986	1987	1988 1/
			Million metric tons		
United States	55.4	36.4	47.5	53.5	62.8
Canada	3.3	5.8	6.6	4.2	4.5
Australia	6.4	5.0	3.1	2.5	2.4
Argentina	10.6	9.7	5.0	5.3	3.0
South Africa	.2	1.5	2.6	.8	2.0
Thailand	3.5	4.0	2.8	.8	1.8
EC-12	8.5	8.1	6.7	8.5	11.8
China	5.7	7.1	4.1	4.1	5.0
Other	6.7	5.6	5.7	3.3	3.5
World total	100.4	83.2	84.1	83.1	96.6

1/ Preliminary.

Trends in Prices and Farm Returns

Barley farm prices, adjusted for inflation, in the last half-decade have been about 43 percent of the 1950-59 average, about 50 percent of the 1960-69 average, and about 70 percent of the average for the early 1980's. Prices during the 1950's were supported by relatively high loan rates. Loan rates were lowered in the 1960's to about 80 percent of 1950-59, on average, and farm prices dropped accordingly. A large price increase occurred for all grains in the early 1970's as export demand increased, causing farm prices to be much higher than loan rates. Barley farm prices in the 1970's averaged about 20 percent above those of a decade earlier, but they still fell short of the inflation-adjusted average for the 1950's (table 9).

Barley prices rose sharply in 1980 as a summer drought pushed feed grain prices up. However, during 1981-83, real prices dropped, due to large supplies and weak demand for grains. Nominal prices rose in 1983/84, reflecting higher corn prices.

Barley yields increased steadily from 29 bushels per acre during 1950-59 to an average of about 52 bushels during 1983-87, although yields appear to have plateaued since 1978. Market revenue per harvested acre has fallen both in nominal and constant (1982) dollars since the 1985 farm legislation.

Barley prices are influenced by those for corn and other grains. On a bushel-for-bushel basis, the feed energy value of barley relative to corn across all livestock classes has been reflected in the barley loan rate which is 81 percent of the corn loan rate. While barley is used year round, the first quarter of the

Table 9--Nominal and deflated U.S. barley farm prices, yields, and gross market revenue per acre, 1950-88

Crop year	Farm price		GNP deflator	Yield	Market revenue per harvested acre 1/	
	Nominal	1982$			Nominal	1982$
	Dollars/bu.		1982=100	Bushels	-- Dollars --	
1950-59	1.09	4.02	27.1	28.7	31.3	115.4
1960-69	.95	2.78	34.2	37.9	36.0	105.3
1970-79	1.88	3.26	57.7	44.4	83.5	144.7
1980-84	2.44	2.48	98.3	53.0	129.3	131.6
1985	1.98	1.79	110.9	51.0	101.0	91.1
1986	1.61	1.41	113.8	50.8	81.8	71.9
1987	1.62	1.38	117.4	52.7	85.4	72.7
1988	2.82	2.32	121.3	38.6	108.9	89.7

1/ Nominal or deflated price times yield per harvested acre.

barley crop year (June-August) is the largest quarter for barley feeding. This is a result of low-priced new-crop barley competing with higher priced old-crop corn during this quarter.

Barley competes with wheat and oats for cropland and as a livestock feed. The barley/wheat price ratio has been slightly below the 68-percent barley energy feed value relative to wheat (bushel-for-bushel basis) in recent years. Since 1982, the program acreage bases have been combined into a common oats and barley acreage base. The result has been to reduce oats acres harvested in favor of barley. There is evidence that other nonprogram crops (such as sunflowers) have lost acreage to barley as a result of the higher returns available through participation in the Government feed grain program. During the 1980's, the barley/oats price ratio per bushel was well below the 159-percent barley feeding value relative to oats. Tight oats supplies in 1988 lowered the ratio to 87 percent.

Malting barley usually sells at a substantial premium over feed barley, as indicated in table 10. The ratio jumped sharply in 1988 as a short crop in the Northern Plains made malting quality barley relatively scarce.

Costs and Returns

Cash production costs for barley have been trending downward for several years. Economic (full ownership) costs represent the average longrun costs required to keep land in production (table 11). The national average economic cost fell from $149 per planted acre in 1984 to $121 in 1987. The per unit cost is $2.58 per bushel or slightly below the 1987 target price of $2.60.

The net cashflow position of farmers is determined by subtracting cash expenses from gross receipts. The cash flow is used to pay

Table 10--Ratios of U.S. feed barley price to prices for corn, wheat, and oats; ratio of malting barley to feed barley price, 1960-88

Crop year	Barley/ corn 1/	Barley/ wheat 2/	Barley/ oats 2/	Malting/ feed price
		Ratio		
1960-69	0.82	0.61	1.53	1.16
1970-74	.81	.65	1.74	1.35
1975-79	.90	.69	1.60	1.37
1980-83	.86	.68	1.47	1.34
1985	.85	.62	1.54	1.12
1986	1.01	.63	1.26	1.18
1987	.85	.64	1.05	1.23
1988	.89	.61	.87	1.44

1/ U.S. average farm prices per bushel, June-September.
2/ U.S. average farm prices per bushel, crop year.

the fixed expenses associated with land, capital replacement, debt, and family living expenses. Regional returns to management have been highest in the Northwest and lowest in Southwest (due to high custom operations and irrigation costs). In addition, returns are higher for northern malting barley producers than for western feed barley producers due to the price premiums. In 1989, total cash expenses were expected to rise by 7 percent due to higher fertilizer prices.

Barley farmers' returns, while affected by prevailing economic conditions, also are influenced by the size of operation. Data from a special tabulation of the 1982 Census of Agriculture for the leading barley-producing States suggest that large barley farms are more cost efficient than small farms, although economies of scale are achieved once farms reach 500-999 acres. Total costs (including land, machinery depreciation and interest, production expenses, and operator's and family labor) per dollar of receipts declined as farm size increased up to the 500- to 999-acre size. Above 1,000 acres, total costs per dollar of receipts increased slightly. National aggregate barley returns are reported in table 12.

Table 11--U.S. barley production costs, 1984-88

Item	1984	1985	1986	1987	1988 1/
	Dollars per planted acre				
Variable cash expenses:					
Seed	6.48	6.08	4.41	4.09	4.15
Fertilizer	16.27	15.63	13.39	12.56	13.84
Lime and gypsum	.04	.03	.03	.04	.04
Chemicals	6.04	6.03	5.87	5.60	5.69
Custom operations	3.48	2.88	2.86	2.34	2.31
Fuel, lube, and electricity	10.18	10.88	7.27	7.66	7.76
Repairs	9.56	9.00	8.90	8.64	8.84
Hired labor	1.37	4.91	5.21	4.97	5.06
Purchased irrigation water	1.65	1.63	1.57	1.64	1.65
Miscellaneous	.70	.70	.67	.70	.73
Technical services	.12	.12	.13	.13	.14
Total variable cash expenses	55.89	57.89	50.31	48.37	50.21
Fixed cash expenses:					
General farm overhead	9.35	5.49	5.39	6.95	7.11
Taxes and insurance	8.91	9.00	9.31	9.41	10.24
Interest on operating loans	11.71	5.53	3.90	3.58	4.24
Interest on real estate	13.20	8.03	6.45	8.87	9.26
Total fixed cash expenses	43.17	28.05	25.05	28.81	30.84
Total cash expenses	99.06	85.94	75.36	77.18	81.05
Capital replacement	24.94	24.06	24.41	24.29	22.07
Economic (full ownership) costs:					
Variable cash expenses	55.89	57.89	50.31	48.37	50.21
General farm overhead	9.35	5.49	5.39	6.95	7.11
Taxes and insurance	8.91	9.00	9.31	9.41	10.24
Capital replacement	24.94	24.06	24.41	24.29	25.31
Allocated returns to owned inputs:					
Return to operator capital	1.65	1.30	.79	.83	.99
Return to other nonland capital	4.89	4.47	4.65	5.32	5.54
Net land return	30.77	21.15	18.59	20.31	25.77
Unpaid labor	9.15	5.54	5.88	5.60	5.80
Total economic costs	145.55	128.90	119.33	121.08	130.96

1/ Projected.

Source: Economic Indicators of the Farm Sector, Costs of Production, 1987 and Agricultural Outlook, AO-148, U.S. Department of Agriculture, Economic Research Service.

Table 12--Returns above cash expenses in U.S. barley production, selected crop years

Crop year	Farm value 1/	Direct payments 2/	Total income	Total cash expenses 3/	Returns above cash expenses 4/ Total	Per bushel Nominal	Per bushel $1982
	---------- Million dollars ----------					-- Dollars --	
1975	918	16	934	480	454	1.17	1.97
1980	1,033	25	1,058	710	348	.98	1.14
1984	1,360	57	1,417	683	734	1.22	1.14
1985	1,133	140	1,273	782	491	.83	.75
1986	994	213	1,207	704	503	.82	.72
1987	982	207	1,189	605	584	1.10	.94
1988	790	89	879	557	322	1.11	.91

1/ Barley production times all barley season average price received by farmers. 2/ The sum of deficiency, diversion, disaster, and storage payments. 3/ Costs per planted acre times acreage planted; costs of maintaining conserving use acreage is $20 an acre before 1981 and $25 afterwards times the acreage. 4/ The difference between total gross income and total variable costs; this difference was divided by quantity produced and deflated by the implicit price deflator (1982=1.0).

History of Barley Programs

The Nation's first agricultural policies were not commodity-specific but, rather, general legislation meant to assist farmers in settling the West. Disposal of public lands, development and regulation of the transportation and credit infrastructures, and grants to new agricultural research institutions were intended to encourage more food for a swelling population. The expansion of exports was necessary to pay for industrialization and for imports. The first plans to support specific commodities emerged after the collapse in farm prices following World War I.

Legislation and Programs, 1933-60

Prior to 1960, farm legislation and programs imposed no production controls on barley. However, because barley is a close substitute for other feed grains, periodic surplus stocks of corn weakened barley prices. To stabilize barley prices and to enhance farm income for barley growers, legislation provided price support for barley producers. However, barley price support levels as a percentage of the parity price were not as high as those of the basic commodities, such as corn. The Agricultural Adjustment Act of 1933 did not designate barley as a basic commodity. But in April 1934, the Jones-Connally Act expanded the list of basic commodities to include barley.

In response to drought in the summer of 1936 and to supplement the Soil Conservation and Domestic Allotment Act of 1936, the Agricultural Adjustment Act of 1938 sought to provide parity

prices and parity income for producers of cotton, wheat, corn, tobacco, and rice through acreage allotments and marketing quotas. Relief payments, financed by a tax levied on processors, assisted many farmers with their debts. However, these programs were relatively ineffective in supporting prices because acreage diverted from one crop were left free to be planted to others and price support was offered without production controls. The 1938 Agricultural Adjustment Act required farmers to hold acreage out of production to conserve soil as a condition to receive nonrecourse loans. Funding was to be from the U.S. Treasury, since the Supreme Court ruled in 1936 that the tax on processors was unconstitutional.

During 1938-40, price support through Commodity Credit Corporation (CCC) nonrecourse loans was extended to cover barley--one of the commodities for which loans were authorized--but use was left to the Secretary's discretion.

Price support was authorized in 1956 in response to a near doubling in barley carryover stocks in the early 1950's. Prices declined by 28 cents per bushel between 1952/53 and 1954/55. Support was at 76 percent of parity for the 1956 crop and no less than 70 percent of parity in 1957. Parity is the price per bushel necessary to purchase the same quantity of goods as in the 1910-14 period. The volume of barley placed under CCC loan reached a record 142 million bushels in the 1957 crop year. The high stocks levels continued into the 1960's.

The Agricultural Act of 1958 required that, beginning with the 1959 crop, support would be made available for oats, barley, rye, and sorghum at a price level determined to be fair and reasonable in relation to the level of support made available to corn. In effect, this requirement finally made support mandatory for barley.

Voluntary Feed Grain Programs in the 1960's

During the 1960's, barley was generally included in feed grain programs that included price support at no less than 65 percent of parity. Price support was extended to barley and, during this period, carryover stocks remained high. In the 1969/70 marketing year, carryover stocks reached a record 269 million bushels, 68 percent of total barley use. As was the case for other feed grain producers, participation in the voluntary acreage diversion program was a condition of eligibility for barley price support.

Price support payments and diversion payments were available to barley producers who participated in the voluntary feed grain programs, except in the 1967 and 1968 crop years when the Government wanted to slow the decline in production. For example, in 1965, barley producers participating in the program received a total price support of $0.96 per bushel: $0.16 per bushel price support payments and $0.80 loan rate. At the same time, corn producers participating in the voluntary feed grain program received a total price support of $1.25 per bushel: $0.20 per bushel price support payments and $1.05 loan rate. The

relationship between barley and corn price supports has generally been set according to the feed energy value of barley relative to corn, which on a bushel-for-bushel basis is considered to be 77 percent across all livestock classes.

During the 1960's, a payment-in-kind (PIK) from CCC stocks was authorized as a means to pay feed grain producers who participated in the diversion program. Most farmers in that PIK program authorized CCC to market their PIK certificates rather than take delivery of the commodity. The PIK was implemented because there was not sufficient market demand to absorb the increasing barley supply.

The quantity of barley placed under CCC loan was significantly larger in 1969 than in 1967 and 1968 when diversion and price support payments were not made available to barley producers since barley was not included in the feed grain programs. In 1969, 47 million bushels of barley were placed under CCC loan, the highest subsequent to the 54 million bushels placed under CCC loan in 1957.

Feed Grain Programs in the 1970's

The Agricultural Act of 1970 introduced set-asides that required farmers to take a specific percentage of cropland out of production and place it in conserving uses in order to qualify for price support. Participants were permitted to grow whatever they wished on the remaining land, except for the crops under marketing quotas.

The set-aside concept was designed to address farmer concerns about increased production of uncontrolled crops on land with allotments for controlled crops (corn, wheat, cotton, rice, peanuts, and tobacco). Increases in barley acreage occurred, for example, in the Midwest and Western States land idled from wheat production.

In addition, the 1970 Act imposed a $55,000 payment limitation per person, per crop. The limitation applied to all direct payments, but not CCC loans or purchases. The payment limit applied to total payments associated with corn, sorghum, and barley, if designated as a program crop. This stipulation limited the budgetary cost of the program.

Barley was a program crop under the set-asides of the 1970's, except in 1971. There were no set-asides from 1974-76. Barley price-supports (including loan rates) were set in relation to corn. The 1970 Act provided a total price support (including price support payments and loan rates) to corn farmers on one-half of their feed grain base. The price support was the higher of (1) $1.35 per bushel, or (2) 70 percent of the parity price for corn and the average market price for the first 5 months of the marketing year.

By the early 1970's, export demand for barley and many grain commodities was high because of worldwide crop shortages and

devaluation of the U.S. dollar. Barley stocks in Government warehouses were liquidated. As a result, barley farm prices reached a record in 1974/75 and remained relatively high in 1975/76.

The Agriculture and Consumer Protection Act of 1973 introduced target prices to protect farmers from sudden decreases in prices. The concept essentially shifted the focus of Federal farm programs from price support to income support. These payments are referred to as deficiency payments. Farmers received deficiency payments equal to the amount by which market prices fell below target prices. The per-unit payment rate equals the difference between the target price and either the national weighted average market price between June 1 and October 31 or the announced loan rate, whichever is higher. This payment rate is multiplied by individual farmers' program acreage times their program payment yields, excluding the years with the highest and lowest yields. Deficiency payments were not made to barley producers during 1974-76 since market prices exceeded the target levels.

Another feature in the 1973 Act introduced a disaster payments program which provided direct payments to producers unable to plant or who suffered low yields because of natural disaster. This program recognized that farmers' incomes depended on both price and yield per acre.

At this time, there was a great deal of concern about rising costs of producing farm commodities. While use of cost of production became controversial in the mid-1970's, the method was adopted in the Food and Agriculture Act of 1977. As a result, a national average cost of production was used as the basis for setting target prices. The annual adjustment was based on changes in the 2-year moving average per unit variable costs, machinery ownership costs, and general farm overhead costs.

Congress called for setting "fair and reasonable" target prices for other feed grains (including barley) in relation to corn. The same cost of production components for corn were used to set the target prices for other feed grains. As a result, the target prices for barley were higher than the target price for corn under the 1977 Act. This cost-based formula continued through 1981 and then reverted to the conventional feeding value relationship under the 1981 Act.

Replacement of the longstanding acreage allotments (derived from production patterns dating back to the 1950's) by a current planting concept represented a major change in the 1977 Act. Under the 1973 Act, barley farmers received deficiency payments based on their allotments, regardless of acres planted in barley. Under the 1977 Act, deficiency payments were to be based on the production from current plantings, adjusted by the program allocation factor.

Barley stocks were on the rise during the last year of the 1973 Act which raised the possibility that the CCC might end up

holding forfeited grain again. Recognizing the growing importance of exports to U.S. coarse grains and the need to protect livestock producers from unstable grain prices, Congress established the farmer-owned reserve (FOR) program under the 1977 Act. The FOR was designed to reduce price instability and control the cost of holding CCC inventories.

The FOR permits farmers who comply with any set-aside requirement to place grain into the reserve, normally after CCC loans mature. Under the program, farmers agree to store their grain in certified onfarm or commercial storage for 3 years or until the market triggers a specified release price. In return, they receive an advance payment for storing their grain (presently 26.5 cents a bushel for barley). Interest is waived on the loans after the first year of the contract. The FOR keeps barley stocks under the control of farmers and provides them an opportunity to reap gains from price increases. In addition, low-interest government loans were made available to cover construction costs of onfarm storage facilities.

Agriculture and Food Act of 1981

The Agriculture and Food Act of 1981 was a response to problems stemming from provisions of the 1977 Act. Use of cost of production to set and annually adjust target prices was discontinued. Changing yields introduced instability into the adjustment formula results. The adjustments lagged actual cost conditions during a period of rapid inflation.

To address these issues, the 1981 Act mandated specific loan and target price minimums for the 1982-85 corn crops, with minimum annual increases of nearly 6 percent to reflect anticipated inflation rates. The act further required that support rates for grain sorghum, oats, and, if designated by the Secretary, barley, be set in relation to corn.

Acreage controls via set-aside were not effective in achieving crop-specific acreage reduction. Therefore, the 1981 Act introduced acreage reduction programs (ARP) requiring a portion of a specific crop acreage base be diverted from production.

Strong export markets were expected to support farm prices while rapid inflation would continue to exert strong pressure on production costs. But, by the time the 1981 Act was signed, the feed grain market was weakening and it did not rebound again until after the 1983 PIK program for corn and sorghum was announced. Acreage reduction programs and a paid land diversion removed 1.1 million acres of cropland from barley production in 1983. Barley was not included in the PIK program. However, barley prices rose in response to tight supplies and strong prices of corn.

Food Security Act of 1985

The Food Security Act of 1985 addressed conditions created by the 1981 Act, which set high and rigid price supports without regard

for market conditions. As a result, many U.S. farm commodities lost their competitiveness in world markets. Major objectives for the 1985 Act were to expand exports, protect farm income, and eventually to reduce outlays for farm programs and Government intervention in the agricultural sector.

The 1985 Act lowered loan rates for wheat and corn at levels intended to encourage exports, not create excessive stocks. The rates were set to reflect production costs, supply and demand conditions, and world prices of wheat and feed grains. Loan levels for sorghum, barley, oats, and rye were to be set "fair and reasonable" in relation to corn and reflect relative feed values. Announced loan rates for barley declined 5 percent yearly from $1.56 per bushel in 1986 to $1.34 in 1989 (table 13).

The metabolizable energy feed values used by USDA in establishing support prices per bushel are presented below. These values are for major grains relative to corn, averaged across all livestock classes. Energy values on a bushel-for-bushel basis differ from those on a pound-for-pound basis because of the differences in bushel weights (for example, 48 pounds of barley per bushel and 56 pounds of corn per bushel). Actual test weight and nutrient values may vary from year-to-year from the tabular averages depending on geographic location and type of animal fed.

	Energy value	
	Pound for pound	Bushel for bushel
	Percent of corn	
Corn	100	100
Sorghum	95	95
Barley	95	81
Oats	90	51
Rye	85	85

Table 13--Barley program provisions, 1987-90

Provision	1987	1988	1989	1990
	Percent of base acres			
Acreage reduction program	20	20	10	10
Paid land diversion	15	10	0	0
	Dollars per bushel			
Target price	2.60	2.51	2.43	2.36
Basic loan rate	1.86	1.80	1.67	1.60
Announced loan rate	1.49	1.44	1.34	1.28
Deficiency payment rate	.79	0	.23 1/	--
Diversion payment rate	1.60	1.40	0	0

-- = Not available. 1/ Projected.

The statutory (basic) nonrecourse loan rate was set between 75-85 percent of the 5-year moving average of the market price, excluding the low- and high-price years. The law specified a maximum reduction of 5 percent in the basic loan rate for successive crop years. The Secretary of Agriculture has exercised his authority to further reduce the basic loan rate by up to 20 percent (Findley loan rates) to preserve U.S. competitiveness in international grain markets.

The 1985 Act and amendments by the 1987 Budget Reconciliation Act kept target prices frozen at the 1985 level for the first 2 years at $2.60 per bushel. They declined by 3 percent in 1988 and 5 percent in 1989 and 1990 to $2.36. Partial advance payments may be made at program sign-up with cash or with negotiable generic commodity certificates granting the holder title to any Government-owned stocks.

Participating producers are required to comply with acreage restrictions and soil conservation practices in exchange for deficiency payments. Under the ARP, feed grain producers uniformly may be required to reduce their crop acreage by up to 12.5 percent if the level of feed grain stocks exceeds 2 billion bushels. If stock levels exceed 2 billion bushels, USDA must announce an ARP between 12.5-20 percent for the 1987-90 crops.

The Secretary of Agriculture is permitted to offer additional payments to farmers who voluntarily set aside acreage in excess of the required level. For 1988, farmers could idle an additional 10 percent of their barley acreage and receive $1.40 per bushel for the production foregone on the diverted acreage. There was no paid land diversion for 1989 and there will be none for 1990.

Higher market prices in 1989 will push program participation below the 78 percent level of 1988. Participation rates have been much higher in malting barley States. The 1985 Act allows malting barley growers to be exempt from acreage reduction programs because the market is so different from feed barley. However, malting barley producers have not been exempt to date.

In previous years when acreage reduction programs were in effect for corn or wheat, acreage planted in barley tended to increase, particularly in the Northern Plains. After 1987, feed grain program participants may not plant barley acreage in excess of a given farm's barley base (limited cross compliance). However, producers with multiple farms will not be required to comply with planting restrictions on their other units to be eligible for program benefits (offsetting compliance).

Deficiency and diversion payments (with certain exemptions) to any person may not exceed $50,000 and total overall payments (excluding nonrecourse loans) may not exceed $250,000 per person. After 1988, no foreigner may receive payments unless they are actively engaged in the day-to-day operation of their farm.

After 1985, farmers were permitted to divert any portion, up to 50 percent, of their remaining acreage (after complying with set-aside requirements for barley) to conservation uses or specified nonprogram crops and still receive 92 percent of their barley deficiency payments on the underplanted acreage. This provision (known as 0/92) was expanded for 1988-90 by the 1987 Budget Reconciliation Act so that all of the permitted acreage is eligible. Farmers idled 4.6 percent of the 12.46-million-acre barley base under this provision in 1988.

The 1985 Act also established the conservation reserve program (CRP) in which producers may contract to retire highly erodible cropland for at least 10 years into approved conserving uses such as grassland or trees. In return, producers receive annual rental payments, in cash or commodity certificates, determined by USDA acceptance of bids on the land. Through 1989, 2.2 million acres of barley base have been enrolled in the CRP.

The Food Security Act modified the farmer-owned reserve. Experience with the FOR in the early 1980's indicated that using grain reserves to support farm income in the face of excess productive capacity resulted in large stock accumulation. This was especially true when market forces and other program provisions tended to encourage increased production and progressively lower real prices. In order to maintain the price stabilization feature of the FOR, release prices were realigned with long-term market prices to avoid excessive accumulation of grain reserves.

Trigger-release levels were previously established by the Secretary. Now, farmers may not redeem the loan until a 5-day average market price attains the higher of the target price or 140 percent of the loan rate. As of June 1987, the trigger-release price was lowered to equal the target price. When in release status, producers may redeem the grain using generic commodity certificates, leave the grain in the reserve and pay the interest charges, or forfeit the loan and surrender the grain.

The storage contract previously matured in 3-5 years but was changed to "not less than 3 years, with extensions as warranted by market conditions." A maximum of 15 percent and minimum of 7 percent of the estimated domestic and export use of barley was established for the FOR, although the Secretary of Agriculture has some discretion in raising the reserve levels. The Budget Reconciliation Act changed the trigger level to 450 million bushels of feed grain (instead of 7 percent of expected use). Entry of grain into the FOR is not permitted above this level.

Government-owned stocks are provided to exporters under the export enhancement program (EEP) to offset foreign subsidies. The 1985 Act designed EEP to help U.S. exporters compete in world markets, to confront subsidized exports of competitors, and to encourage trade negotiations. Exporters bid competitively to receive export bonuses in the form of generic certificates that can be exchanged for Government stocks in order to compete in

selected markets. Nearly all barley exports were shipped under EEP in 1986/87 and 1987/88.

Other Legislation

Current price-support programs protect producers against low prices but not against low yields and losses in market revenue. The 1981 Act specified that disaster payments would normally be made only when Federal crop insurance for reduced yields and prevented plantings is not available. However, if Federal crop insurance indemnity payments were insufficient to alleviate economic emergencies caused by natural disasters, additional disaster payments may be authorized. Crop insurance is available in nearly all areas but high premiums relative to benefits and the perceived risk of weather-related disasters have kept purchases of crop insurance low. Federal crop insurance covered 4.1 million acres of barley in 1988 or 42 percent of insurable acreage.

Severe losses associated with the 1988 drought, coupled with low crop insurance coverage, prompted Congress to pass the largest disaster relief measure in U.S. history. The Disaster Assistance Act of 1988 gave assistance payments to drought-stricken producers with losses in excess of 35 percent of historical yields.

Congress addressed uninsured revenue losses of the 1988 drought by varying direct payment rates based on the comparison of actual and program yields. Payment rates differed depending on the amount of crop loss and whether producers participated in the 1988 Federal commodity programs. Program participants who applied for assistance for losses between 35 and 75 percent of their crop received 65 percent of the 1988 target price on their payment yield minus the actual yield. Nonparticipants received 65 percent of the basic county loan rate. Farmers with losses above 75 percent receive 90 percent of the target price (participants) or loan rate (nonparticipants). Yields below 4 bushels per acre were declared complete losses.

The Disaster Assistance Act also provided that once the release price for the farmer-owned reserve was reached, producers could repay loans without penalty for the rest of 1988 even if market prices later drop below the release price. Donations or sales of up to 20 million bushels of discounted CCC-owned barley to affected livestock producers were also authorized.

The Disaster Assistance Act provided the first means test for Federal farm programs, making all persons with gross revenues above $2 million ineligible for disaster relief. All crop disaster payments were limited to $100,000 per person. Producers must obtain crop insurance for the 1989 crop to receive disaster payments if their losses exceeded 65 percent.

In response to foreign complaints about the low quality of U.S. grain and loss of export markets, Congress passed the Grain Quality Improvement Act (PL 99-641) in November 1986. The intent

of the legislation was to improve the quality of grain being exported and promote the marketing of U.S. grain to both domestic and foreign buyers. It amended the U.S. Grain Standards Act to better define descriptive terms to facilitate trade; provide more information to assist in determining grain storability; offer end-users means to measure end product yield and quality; and create market incentives for quality improvement. The most significant change prohibited the reintroduction of dust or foreign material into the grain stream once it has been removed. Grade standard changes for barley include revised reporting of dockage to the nearest 0.1 percent; elimination or replacement of some special grades; lowered tolerances for insects and animal filth; and availability (on request) of barley protein content data.

Effects of Barley Programs

Although directed at crop producers, farm programs also affect the incomes of livestock producers, processors and input suppliers, consumers, and taxpayers.

Crop Producers

Commodity programs are designed to maintain farm income and compensate farmers for the low grain prices they may sometimes receive from the market. However, by supporting farm incomes, the Government creates incentives for surplus production. These grain surpluses can be stored or sold to foreign buyers at below-market prices. Accumulated stocks may be expensive to store for long periods and may need to be released to hold down market prices and discourage overproduction. Excessive stocks can be minimized by restricting crop acreage through use of acreage reduction and paid land diversion programs or with exports.

The export enhancement program is targeted at competitors which subsidize and may help to increase farm prices, reduce deficiency and paid land diversion payments, and cut Government-owned surpluses and storage and interest costs. Other objectives of EEP include pressuring trading partners to engage in negotiations on the elimination of trade-distorting subsidies.

Whether additional exports have been stimulated above the level of commercial sales in the absence of EEP is fundamental in determining the cost-effectiveness of the program. The 1985 Act requires that reasonable precautions be taken to prevent resale of commodities and the displacement of usual U.S. marketings. The program is constrained to no-net-increase in budget outlays. If EEP exports merely displace commercial exports ton for ton, then release of bonus CCC stocks to the market would depress farm prices and increase farm program costs. When world grain stocks are low and prices are high, without additional exports, the cost of export bonuses may be more than the budgetary savings from lower deficiency, storage, and interest costs.

Generic commodity certificates have been used as a means to free up stocks under nonrecourse and reserve loans or owned by CCC. Stocks that would have remained off the market and accumulate storage expenses could be released, instead. Depending on local market conditions, farmers gain flexibility in marketing plus avoid the interest and storage costs normally incurred by crops under loan. The Government reduces budget outlays through fewer loan forfeitures, but the savings are offset by a lower market price, which increases deficiency payments.

An issue regarding the objective of the FOR is whether it is to be purely a price stability program or a price support tool as well. Studies of the farmer-owned reserve program suggest that release of FOR stocks has improved grain price stability only a little, but it has helped support market prices. The trigger release is currently fixed at the target price. When market price is near the FOR loan price, entry of stocks into the reserve is steady. However, when free stocks are low and market price approaches the target price, few FOR stocks will be released onto the market.

Thus, the target price acts as a price-support mechanism. Grain stocks are kept off the market and seldom returned when they are in greatest demand. Although farmers may exchange reserve stocks with generic certificates (PIK and roll), there is no incentive to redeem when cash prices are well above loan repayment levels. Farmers continue to receive interest waivers and storage payments on reserve stocks, which creates a constant expense to the Government. If grain stocks policy is to effectively stabilize market prices, a lower release price (or one that better adjusts to market conditions) for the FOR and CCC sales is necessary.

Size of Program Payments

Direct payments made under the barley program have been a significant portion of growers' net returns (table 14). Higher deficiency and diversion payments and lower market prices over the last several years have increased participation in the barley program. Participating base acreage rose from 44 percent in the 1984/85 marketing year to 84 percent in 1987/88. Idled acreage climbed from 0.5 million to 2.6 million during the same period. Greater enrollment increased Government payments for barley from $50 million in 1984/85 to $333 million in 1987/88. Government payments now account for as much as one-fourth of barley producers' farm income.

Export sales of barley under the export enhancement program through the 1988/89 marketing year totaled 6.5 million metric tons. EEP shipments accounted for almost all barley exports in the 1986/87 and 1987/88 marketing years and raised the U.S. share of world barley trade. In fact, barley accounts for almost all of the feed grain sales made under EEP. Offers have been made to 13 nations. The largest single purchaser of barley under the EEP has been Saudi Arabia, although Algeria, Israel, Poland, and Tunisia have also been major purchasers. EEP sales are forecast to decline.

Table 14--Market receipts and program payments received by barley farmers, crop years, 1983-88

Item	1983	1984	1985	1986	1987	1988 1/
			Million dollars			
Sales receipts 2/	1,257	1,356	1,133	994	982	790
Program payments:						
Deficiency payments	88	15	113	184	157	61
Diversion payments	14	16	0	19	8	--
Reserve storage payments	25	26	27	30	43	28
Disaster payments	0	0	0	1	0	0
Total	127	57	140	234	208	89
			Dollars			
Per bushel sales receipts:						
Nominal	2.47	2.29	1.98	1.61	1.81	2.79
Real 3/	2.38	2.13	1.79	1.41	1.54	2.30
Per bushel program payments:						
Nominal	.25	.10	.24	.38	.39	.31
Real 3/	.24	.09	.05	.07	.08	.25
			Ratio			
Ratio of program payments to sales receipts	.10	.04	.12	.24	.21	.11
Ratio of program payments to net returns 4/	.31	.08	.29	.42	.35	.28

-- = Not available.
1/ Preliminary.
2/ Barley production times season average price received by farmers.
3/ In 1982 dollars.
4/ Calculated from data in table 12; direct payments divided by total returns above cash expenses.

Table 15--Percentage distribution of 1982/83 barley deficiency and disaster payments, by size of farm

Total cropland acres	Participating producers		Participating acreage		Payments	
	Pct.	Cum. pct.	Pct.	Cum. pct.	Pct.	Cum. pct.
Less than 70	12.9	12.9	1.5	1.5	1.7	1.7
70-139	12.6	25.5	3.2	4.7	3.4	5.1
140-219	10.7	36.2	4.1	8.8	4.5	9.6
220-259	4.3	40.5	2.1	10.9	2.2	11.8
260-499	19.9	60.4	14.5	25.4	15.4	27.2
500-999	22.2	82.6	26.9	52.3	27.8	55.0
1,000-1,499	8.9	91.5	16.7	69.0	16.8	71.8
1,500-1,999	3.9	95.4	9.6	78.6	9.3	81.1
2,000-2,499	1.8	97.2	5.7	84.3	5.6	86.7
2,500 and over	2.8	100.0	15.7	100.0	13.3	100.0

Source: U.S. Senate Committee on the Budget. 1982 Farm Program Benefits: Participants Reap What They Sow.

Distribution of Program Payments

Since deficiency and diversion payments are made on a per-bushel basis, most barley program benefits go to the farms with the most

production. Larger farms, although fewer in number, received a larger share of the 1982 barley program benefits because they had the largest production (table 15).

The distribution of barley program payments by farm size, as measured by total cropland acres, shows that:

- o Half the participants, those with the smallest farms, received only 16 percent of total payments.
- o The largest 10 percent of the farms received 40 percent of total payments.
- o Large barley producers--cropland of over 1,500 acres--accounted for only 8.5 percent of participating producers but received 28 percent of total payments.
- o Small barley producers, with cropland of less than 500 acres (the average size of farms growing barley), accounted for 60 percent of participating producers but received only 27 percent of total payments.

Regions with a larger participation base received a larger share of program payments. Barley deficiency and disaster payments in 1987 were concentrated in the Plains (62 percent), the Northwest (20 percent), and the North Central region (12 percent) (table 16).

Barley producers participate in the Government feed grains program when they expect program payments, less the net revenue foregone by reducing acreage, to exceed the net receipts they would obtain solely from selling the grain on the market. This decision depends on the productivity of farmland, the fixed and variable costs of production, the target price, the percentage of acreage required to be idled, the expected return from the market, and each farmer's attitude toward accepting direct Government payments.

Table 16--Distribution of barley acreage base, and deficiency payments by region, 1987

Region	Farms	Base	Participation base	Share of national participation base	Participation rate	Deficiency payments	Share of payments
	Thousand	--1,000 acres--		----Percent----		Mil. dols.	Percent
North Central	37.8	1,242.2	1,061.7	9.8	85.5	37.1	12.1
Plains	117.0	7,686.3	6,933.6	61.5	90.2	189.5	61.6
Northwest	29.3	2,293.3	1,936.4	18.5	84.1	62.8	20.4
Southwest	12.4	823.5	443.3	6.6	53.8	13.6	4.4
South	26.4	276.4	136.2	2.2	49.3	2.9	.9
Northeast	16.0	173.1	69.0	1.4	39.8	1.8	.6
Total	237.8	12,504.9	10,580.1	100.0	84.6	307.9	100.0

Source: U.S. Department of Agriculture. News: Final Compliance Figures for 1987 Acreage Reduction Program, March 10, 1988.

The implication of the distribution of payments is that in order to achieve higher market prices through acreage reduction, payments must be made to the largest producers to induce their participation in the program. Given current program provisions, attempts to limit payments to the largest producers will curtail their participation and further reduce the effectiveness of supply management.

Effects on Barley Production and Price

Since passage of the Agricultural Act of 1961, the Federal Government has attempted to reduce surplus production of feed grains by offering voluntary diversion, set-aside, or acreage reduction programs. The 1961 Act originally covered only corn and sorghum; barley was added to the voluntary diversion program in 1962. The programs have continued since, except for 1967-68, 1971, 1974-77, and 1980-81.

Acreage restrictions are not as effective in reducing production as desired. Farmers' fixed costs are spread out over fewer acres which increases their cost of production. They typically idle their least productive farmland to satisfy program requirements. Farmers may then apply more inputs to the land they plant to maximize production on their permitted acreage. As a result, crop yields (and expenses) are larger and this partly offsets the decline in acreage (program slippage). The 1985 Food Security Act minimizes the yield effect since it has held the program yield constant.

Also, because the feed grain programs effectively set a price floor in the domestic market, those who do not participate in the program receive the same higher market price as program participants and they are free to expand their plantings. So limiting crop acreage and production has become progressively more expensive for the Government. Commodity programs also raise the market value of production assets, with land being the major farm asset.

While various acreage reduction programs have been used to discourage barley production, other parts of the farm program may encourage production. The disaster payments program offers free insurance against production risk for program participants. The program may have induced larger production of barley in less efficient areas. The disaster program was abolished in 1981 and is not available in areas where the Federal crop insurance program is offered. However, Congress has passed several successive comprehensive disaster assistance acts in this decade to protect farmers from yield losses.

The loan program protects participating farmers from downside price risk because the loan rate sets a floor to market prices. Thus, the program not only reduces price risk but raises expected prices to participants. The higher reserve loan rates set for 1980-82 offered even greater price protection. For example, participants in the farmer-owned reserve were eligible for a

$2.37-a-bushel reserve loan rate in 1982, which was 29 cents higher than the regular CCC loan rate. The high reserve loan provided the greatest incentive to participate in the acreage reduction program and to produce barley for the FOR program, not necessarily for the market. Stocks of barley in the FOR increased fourfold during the 1982/83 crop year (app. table 2). The reserve loan rate has been set at the regular loan rate since 1983 and, consequently, no stocks have been placed in the reserve since the 1985 crop. Since maturing reserve loans will not be extended, by the end of 1989/90 all outstanding FOR barley will probably be forfeited to the CCC.

Acreage reduction programs, coupled with operation of the FOR and the regular CCC loan programs, tend to keep prices higher than they would otherwise be in times of large barley stocks, such as 1982 and 1983. In 1978, set-aside and paid diversion increased U.S. barley prices by 8 percent. Considerably higher price effects of the acreage reduction and loan programs were reported for 1982 because of the larger volume of barley going into CCC and FOR stocks.

Livestock Producers

Government programs may strengthen farm prices for barley. However, the higher prices mean increased costs for the livestock sector which has been the primary outlet for barley and other feed grains. Consumers of red meat, poultry, milk, and eggs are also affected by farm programs.

Higher barley prices directly affect livestock producers by raising feed costs. This effect, however, is much less pronounced than that of corn programs since barley accounts for a much smaller portion of the feed grain ration.

The effects of barley programs on retail prices of red meat, poultry, milk, and eggs depend on farm-retail price spreads and the importance of barley in livestock and poultry production. In the Great Plains, for example, barley can replace sorghum as part of the feed grain ration in cattle feeding. In 1983, barley feed costs accounted for about 10 percent of total expenses of cattle feeding. A 10-percent increase in barley prices means expenses of custom feeding would be increased by only 1 percent. By the time cattle are marketed, the price effect would be even smaller. Given that the farmers' share of the retail price of beef was 57 percent in 1983, the retail price of beef would be about 0.6 percent higher as a result of a program which boosted barley prices by 10 percent.

Lower loan rates for barley and other feed grains under the 1985 Act have differently affected livestock feeders depending on their type of livestock. For example, it takes 7-8 weeks to produce a broiler chicken for slaughter. But, it requires 20 months before a feeder calf is ready for market. In the short run, all livestock feeders benefited because net returns increased as feed grain prices dropped. Beef, dairy, and hog producers will benefit more than poultry and cow-calf operators

in the long run because producer prices drop more slowly for animals with longer biological cycles. Expansion of livestock production will ultimately lower livestock producer returns to offset the benefit of lower feed grain prices.

Consumers

The relatively narrow farm-retail price spreads for beef, pork, and other livestock products suggest that more stable feed grain prices contribute to more stable retail prices for livestock products. During the early to mid-1970's, for example, livestock producers experienced fluctuating feed grain prices which made planning for short-term production decisions difficult and posed difficulties for long-term investment decisions. The growth in export demand in the early 1970's essentially emptied CCC stocks. Barley prices rose from $1.21 per bushel in 1972/73 to $2.14 in 1973/74, and then reached $2.81 in 1974/75 (app. table 2). Due to the inelastic demand for meat and poultry products and biological constraints on livestock supply response, livestock producers experienced a great deal of instability in feed costs which necessitated rapid adjustments in feeding volume during the period.

Consumers are better off under the lower barley price supports of the 1985 Act because retailers are able to keep retail prices for meats, dairy products, and malt beverages and food products from rising as much. The level of savings depends on the degree to which barley accounts for the total cost of a food product. For example, although beer uses barley malt as a primary ingredient, the cost of barley has a minor effect on the retail price of beer when all other manufacturing and marketing costs are considered.

After the reduction in feed grain loan rates, retail meat prices rose as farmers held back animals they would normally have marketed to enlarge beef and hog breeding herds. Retail poultry prices dropped much sooner because of their shorter production period. Dairy feeders also benefited from lower feed costs and higher returns, but because of the Government price support program for milk, retail prices for dairy products are unlikely to be affected. However, the 1988 drought strengthened feed grain prices. Consequently, higher retail beef and pork prices are expected in 1989.

Processors and Input Suppliers

The farm program for barley producers has generally contributed to an adequate supply of barley for processors, such as makers of commercial feed and malt. Stocks-to-use ratios (a relative measure of supply conditions) have ranged from 25 to 68 percent for many years. If supplies become tight (a low ratio), as in 1952 and 1974, barley prices will rise, meaning processors will have to pay more. However, if stocks steadily accumulate, such as in 1968-69 and 1985-87, prices will fall, benefiting processors. Under certain conditions, shortages of malting barley may occur when feed barley is in adequate supply,

resulting in substantial price differentials between the two uses.

The 1985 Act cut barley loan rates and permitted producers to redeem their nonrecourse loans with generic certificates. Processors and handlers benefited in two ways. First, the certificates moved barley from Government stocks to commercial channels, allowing a greater supply of grain in the market. Grain elevators, shippers, and grain exporting companies profit from higher volumes of grain marketed. Second, lower loan rates and larger supplies reduced input costs to processors. Merchants of retail food products also benefit from low commodity prices because they may sell more food.

Policies to reduce barley acreage also affect a wide spectrum of farm input suppliers. Fewer acres planted means less seed, fertilizer, chemicals, and fuel are needed. To limit the economic impact of acreage reduction on farm communities, the 1985 legislation specifies that no more than 50 percent of the base acreage in any county may be set aside and no more than 25 percent may be placed in the long-term conservation reserve.

Taxpayers

Federal price and income support outlays for all program commodities rose from $7 billion to $26 billion from fiscal years 1984 to 1986. These outlays were a consequence of the widened gap between target prices and the lower loan rates. However, total farm program costs have declined to an estimated $12 billion in fiscal 1990 because of higher market prices and falling target prices. The net CCC outlays for barley in fiscal year 1987 accounted for about 1.5 percent of total CCC outlays for all crops. An analysis of direct Government payments to barley producers is presented in table 14.

Deficiency and diversion payments to barley producers grew from $31 million in 1984/85 marketing year to $162 million in 1987/88. Taxpayer costs in the future will depend on the size of subsequent barley crops and market demand, both of which may be affected by weather conditions and the effectiveness of policies to reduce acreage and stocks. Costs to taxpayers of these income supports are expected to drop from their high of $203 million in 1986/87 as target prices continue to decline.

Net expenditures for the CCC nonrecourse loan program for barley were $394.3 million in fiscal 1987 (app. table 3). This expense includes $36.7 million in storage and handling costs and $42.6 million in FOR storage payments.

Taxpayers also bear the cost of the export enhancement program and the conservation reserve. EEP sales of barley totalled 6.5 million metric tons from April 1986 through May 1989. The average bonus over the same period was $36.08 per metric ton, or $0.84 per bushel of barley sold under EEP. Average bonuses have fallen more recently to $11-12 per metric ton. Rental payments for the conservation reserve are distributed over a 10-year

period. By 1989, farmers had signed up 2.3 million acres of barley base.

Indirect Effects

Feed grain programs and subsidized credit have had some indirect effects on land values, resource use, and trade competition. Program benefits, particularly those associated with a base or allotment, are capitalized into the value of land. Landowners originally allocated a base or allotment benefit from an increase in both current income and wealth. Renters or tenants, who account for more than two-thirds of farmers growing barley, receive a share of the current income, but they also face increased rents because of higher land values. Subsequent landowners have to pay a higher price for land. This dilutes the program benefits, particularly in the longer run, and also increases the subsequent cost of entry for new farmers. The above effect became less pronounced when program participation was no longer tied to the historical allotment. Farmers with 2 years of production records can now request USDA to certify their base acreage for program participation. Barley producers expanded their base acreage from 7.5 million in 1978 to 10.5 million in 1982. Nevertheless, if loan rates are set above market prices, they support land prices to some extent.

Prior to 1986, price supports raised domestic prices above world market prices, which affected world trade by both lowering import demand and increasing export supplies. Direct payments to farmers stimulate domestic production and result in larger supplies of exportable commodities. These surpluses may be sold at subsidized rates to compete with nations following similar policies. Market distortions have multiplied as exporters act to offset rival governments' intervention.

Issues for the 1990's

Policymakers will be looking for ways to reduce budgetary costs of the agricultural programs. Reforms such as targeting deficiency payments and limiting other payments are likely subjects of debate. Decoupling is one alternative to using across-the-board cuts in target prices to achieve budget savings. The plan would eliminate the production requirement from income support payments in exchange for a set Federal payment.

Changes in the acreage reduction program to a general cropland set-aside will be sought to better balance the level of support among competing commodities. The triple base proposal will be discussed as a way to improve the flexibility of farmers to plant crops in high demand by the market but are discouraged because of the loss of base acreage. An equitable realignment of feed grain target prices would also become necessary. Should the barley-oats base acreage be permanently expanded into a feed grain base? Some groups have proposed a barley program separate from other feed grains because of the significant proportion of the crop used for malt.

The design of the Federal crop insurance program will be evaluated to minimize future outlays and improve the equity of disaster relief efforts. Policymakers may also consider a policy of guaranteeing a target farm revenue for more equitable protection of farm income from yield losses.

The stocks release mechanism of the farmer-owned reserve will be studied to determine if it is effectively fulfilling its role of price stabilization. CCC sales policy could be better coupled with reserve policy.

Has EEP succeeded in export expansion? The export enhancement program will be reexamined to determine its future in the light of multilateral trade negotiations and whether it is the most cost-effective policy tool for increasing exports.

How can the U.S. grain marketing system improve to better compete against foreign exporters? Policies designed to enhance grain quality, such as identifying varieties and categorizing their qualities and specifying minimum quality standards for CCC loans, may be discussed.

How will land use, yields, and farm income from barley be affected by low-input alternative farming? Environmental concerns, especially regarding rural water quality, will focus on ways to limit agricultural contaminants.

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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 like 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.

Advance recourse loans -- Price-support loans made early in a marketing year to enable farmers to hold their crops for later sale. Farmers must repay the recourse loan with interest and reclaim the crops used as collateral.

Agricultural inputs -- Components of agricultural production, such as land, labor, and the capital needed to acquire other inputs, including machinery, fertilizer, seed, and pesticides.

Agricultural Stabilization and Conservation Service (ASCS) -- A USDA agency responsible for administering farm price- and income-support programs and some conservation and forestry cost-sharing programs.

Basic commodities -- Six crops (corn, cotton, peanuts, rice, tobacco, and wheat) declared by legislation as price-supported commodities.

Bilateral trade agreement -- A trade agreement between any two nations. The agreement may be either preferential (the obligations and benefits apply only to the two countries involved) or most-favored-nation (the benefits and obligations negotiated between the two countries are extended to all or most other countries).

Carryover -- Existing supplies of a farm commodity at the beginning of a new harvest.

Cash-out option for generic certificates -- The original holder of a generic commodity certificate has the option of redeeming the certificate at its face value for cash from the Commodity Credit Corporation instead of exchanging it for commodities.

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 compliance provision -- Provision of the Food Security Act of 1985 that requires farmers with highly erodible cropland to begin implementing an approved conservation plan by 1990. The plan must be completed by 1995 for the farm operation to remain eligible for Federal program benefits.

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.

Cost of production -- An amount, measured in dollars, of all purchased inputs, allowances for management, and rent, that is necessary to produce farm products.

Crop acreage base -- A farm's average acreage of wheat, feed grains, cotton, or rice planted for harvest, plus land not planted because of acreage reduction or diversion programs during a period specified by law. Crop acreage bases are permanently

reduced by the portion of land placed in the conservation reserve program.

Crop failure -- Mainly acreage on which crops were not harvested because of weather, insects, and diseases, but includes some land not harvested due to lack of labor, low market prices, or other factors.

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

Cross compliance (full or strict) -- A requirement that a farmer participating in a program for one crop must also meet the program provisions for other major program crops which the farmer grows. Strict cross-compliance provisions have not been enforced since the 1960's.

Cross compliance (limited) -- A producer participating in one commodity program must not plant in excess of the crop acreage base on that farm for any of the other program commodities for which an acreage reduction program is in effect. Limited cross-compliance authority was implemented in the late 1970's and remains in effect under the Food Security Act of 1985.

Decoupling -- A farm policy concept which, by separating farm program payments from the amount of production, would represent an alternative to current policies. Farmers would make planting decisions based on market prices but receive income-support payments independent of production and marketing decisions.

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.

Emergency Feed Assistance Program -- Provides for the sale of Commodity Credit Corporation-owned grain at 75 percent of the

basic county loan rate to livestock producers whose feed harvest has suffered because of drought or excess moisture.

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 6 European nations, it has expanded to 12. The EC attempts to unify and integrate member economies by establishing a customs union and common economic policies, including the Common Agricultural Policy (CAP).

Exchange rate -- Number of units of one currency that can be exchanged for one unit of another currency at a given time.

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.

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.

Federal crop insurance -- A subsidized insurance program which provides farmers with a means for risk management and financial stability against crop production loss.

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

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.

Harvested acres -- Acres actually harvested for a particular crop. Usually somewhat smaller at the national level than planted acres because of abandonment due to weather damage or other disasters or market prices too low to cover harvesting costs.

Import barriers -- Quotas, tariffs, embargoes, and restrictive licensing used by a country to restrict the quantity or value of a good that may enter that country.

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

Inventory (CCC) -- The quantity of a commodity owned by the Commodity Credit Corporation (CCC) at any specified time.

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.

Marketing board -- A major form of government involvement by other countries to control the marketing of a commodity. These boards generally handle all export sales for the commodity; they may administer provisions to guarantee farmers a minimum price each year.

Marketing loan program -- A program authorized by the Food Security Act of 1985 that allows producers to repay nonrecourse price support loans at less than the announced loan rates

whenever the world price for the commodity is less than the loan rate. Under the act, the programs are mandatory for upland cotton and rice, and discretionary for wheat, feed grains, and soybeans. To date, the discretionary programs have not been implemented.

Marketing year -- Generally, the period from the beginning of a new harvest through marketing the following year.

Multilateral trade negotiations -- Discussions of trade issues involving three or more countries.

National Agricultural Statistics Service (NASS) -- Conducts surveys and publishes reports detailing data on production, stocks, prices, labor, weather, and otner information of interest to those associated with agriculture.

National farm program acreage -- The number of harvested acres of feed grains, wheat, upland cotton, and rice needed nationally to meet domestic and export use and to accomplish any desired increase or decrease in carryover levels.

Net farm income -- Measures the profit or loss associated with a given year's production; approximates the net value of agricultural production regardless of whether the commodities were sold, fed, or placed in inventory during the year.

Nonprogram crop -- Crops, such as potatoes, vegetables, fruits, and hay that are not included in Federal price support programs.

Nonrecourse loans -- The major price support instrument used by the Commodity Credit Corporation (CCC) to support the price of 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.

Normal crop acreage -- The acreage on a farm normally devoted to a group of designated crops. When a set-aside program is in effect, the total of the planted acreage of the designated crops and the set-aside acreage cannot exceed the normal crop acreage. Producers must comply to be eligible for commodity loan programs or deficiency payments.

Normal yield -- A term designating the average historical yield established for a particular farm or area.

Offsetting compliance -- Requires that a producer participating in a diversion or acreage reduction program must not offset that reduction by planting more than the acreage base for that crop on another farm under the same management control.

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.

Parity price -- Originally defined as the price which gives a unit of a commodity the same purchasing power today as it had in the 1910-14 base period. In 1948, the base prices used in the calculation were made dependent on the most recent 10-year average price for commodities.

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.

Payment limitation -- The maximum amount of commodity program benefits a person can receive. A $50,000 per person payment limitation was established in 1981 and applies to direct subsidy payments to wheat, feed grain, cotton, and rice producers. The law was amended in 1987 for the 1987 through 1990 crops to place a $250,000 limit on total program payments.

Permanent legislation -- Legislation that would be in force in the absence of all temporary amendments and temporarily suspended provisions. The Agricultural Adjustment Act of 1938 and the Agricultural Act of 1949 serve as the principal laws authorizing the major commodity programs.

Permitted acreage -- The maximum acreage of a crop which may be planted for harvest. The permitted acreage is computed by multiplying the crop acreage base by the acreage reduction program requirement (announced by the Commodity Credit Corporation each year) minus the diversion acreage (if applicable). For example, if a farm has a crop acreage base of 100 acres and a 10-percent acreage reduction (ARP) is required, the permitted acreage is 90 acres.

PIK and roll -- A procedure by which producers attempt to profit from situations in which certificate exchange values (posted county prices) are below nonrecourse loan rates. With this procedure, a producer places the eligible commodity under nonrecourse loan at the loan rate, and uses generic certificates to exchange the commodity out from under loan. If the posted county price is below the nonrecourse loan rate, then the producer is able to acquire the quantity placed under loan for less than the proceeds of the nonrecourse loan, in addition to saving interest and storage charges.

Price-support programs -- Government programs that aim to keep farm prices received by participating producers from falling below specific minimum prices.

Producer -- A person who, as owner, landlord, tenant, or sharecropper, is entitled to a share of the crops available for

marketing from the farm or a share of the proceeds from the sale of those commodities.

Producer subsidy equivalents (PSE's) -- An economic concept measuring the amount of the cash subsidy or tax needed to hold farmers' incomes at current levels if all government agricultural programs were removed.

Production controls -- Any Government program or policy intended to limit production. These have included acreage allotments, acreage reduction, set aside, and diverted acreage.

Production expenses -- Total cash outlays for production. Capital expenses are figured on annual depreciation rather than on yearly cash outlays for capital items.

Program allocation factor -- The ratio of the national program acreage (the estimated acreage needed to meet domestic consumption, export sales, and any desired change in domestic stocks) to the estimate of acreage harvested in the current year.

Program costs -- No single definition is applicable to all uses. Program costs may be (1) gross or net expenditures of the Commodity Credit Corporation on a commodity or all commodities during a fiscal year or other period; (2) the realized loss on disposition of a commodity, plus other related net costs during a fiscal year or other period; (3) the net costs attributed to a particular year's crop of a commodity during the marketing year for that commodity.

Program crops -- Federal support programs are available to producers of wheat, corn, barley, grain sorghum, oats, rye, extra long staple and upland cotton, rice, soybeans, tobacco, peanuts, and sugar.

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.

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.

Six-rowed barley -- The axis of the barley head has nodes throughout its length, alternating from side to side. For six-rowed barley, three kernels develop at each node, a central kernel and two lateral kernels.

Subsidy -- A direct or indirect benefit granted by a government for the production or distribution of a good.

Supply control -- The policy of changing the amount of acreage permitted to be planted to a commodity or the quantity of a

commodity allowed to be sold by a program participant; used to maintain a desired carryover or price level.

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).

Tariffs -- Taxes imposed on commodity imports by a government; may be either a fixed charge per unit of product imported (specific tariff) or a fixed percentage of value (ad valorem tariff).

Two-rowed barley -- Grown primarily in the Northwest and intermountain areas of the United States. They have medium sized, uniform, plump kernels with a thin hull. They are generally low in protein and high in starch with vigorous germination and intermediate enzymatic activity during malting. It is used by the brewing industry both by itself and for blending with midwestern six-rowed barley.

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.

World price -- Often refers to the cost, insurance, and freight (c.i.f.) price of a commodity at the principal port of a major importing country or area.

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 will make deficiency payments for a maximum of 92 percent of a farm's permitted acreage.

50/92 -- Allows cotton and rice growers who plant at least 50 percent of their permitted acreage to receive 92 percent of their deficiency payments under certain conditions. The Farm Disaster Assistance Act of 1987 also authorized 50/92 for wheat, feed grain, cotton, and rice producers who were affected by a natural disaster in 1987 and met certain criteria stated in the law.

Appendix table 1--Barley acreage, yield, and production, 1950-88

Year	Planted	Harvested	Diverted 1/	Yield	Production
	Million acres			Bushels per acre	Million bushels
1950	13.0	11.2	--	27.2	303.7
1951	10.8	9.4	--	27.3	257.2
1952	9.2	8.2	--	27.7	228.2
1953	9.6	8.7	--	28.4	246.7
1954	14.7	13.4	--	28.4	379.3
1955	16.3	14.5	--	27.8	403.1
1956	14.7	12.9	--	29.3	376.7
1957	16.4	14.9	--	29.8	442.8
1958	16.2	14.8	--	32.3	477.4
1959	16.8	14.9	--	28.3	420.2
1960	15.5	13.9	--	31.0	429.0
1961	15.6	12.8	--	30.6	392.4
1962	14.4	12.2	2.4	35.0	427.7
1963	13.5	11.2	2.7	35.0	392.8
1964	11.7	10.3	3.7	37.6	386.1
1965	10.1	9.2	3.7	42.9	393.1
1966	11.2	10.3	3.7	38.3	392.1
1967	10.1	9.2	--	40.5	373.7
1968	10.5	9.7	--	43.8	426.2
1969	10.3	9.6	4.4	44.7	427.1
1970	10.5	9.7	3.9	42.8	416.1
1971	11.1	10.1	--	45.8	462.4
1972	10.6	9.6	4.9	43.7	421.7
1973	11.0	10.3	1.4	40.5	417.4
1974	8.7	7.9	--	37.7	298.7
1975	9.4	8.6	--	44.0	379.2
1976	9.3	8.4	--	45.4	383.0
1977	10.8	9.7	--	44.0	427.8
1978	10.0	9.2	.8	49.2	454.8
1979	8.1	7.5	.7	50.9	383.2
1980	8.3	7.3	--	49.7	361.1
1981	9.6	9.0	--	49.7	473.5
1982	9.5	9.0	.4	57.2	515.9
1983	10.4	9.7	1.1	52.3	508.9
1984	12.0	11.2	.5	53.4	599.2
1985	13.2	11.6	.7	51.0	591.4
1986	13.1	12.0	1.8	50.8	610.5
1987	11.0	10.0	2.9	52.7	529.5
1988	9.7	7.5	2.8	38.6	290.5

-- = Aspect of program not in effect.
1/ Acreage idled under programs only.

Appendix table 2--Prices and ending stocks for barley, 1950-88

Crop year	Ending stocks CCC	FOR	Free	Total 1/	Farm price received	Support rate	Target price 3/	Direct payment 2/
	Million bushels				Dollars per bushel			
1950	20.4	--	93.6	114	1.19	1.10	--	--
1951	9.0	--	81.0	90	1.26	1.11	--	--
1952	1.7	--	64.3	66	1.37	1.22	--	--
1953	14.1	--	73.9	88	1.17	1.24	--	--
1954	73.5	--	80.5	154	1.09	1.15	--	--
1955	60.7	--	86.3	147	.92	.95	--	--
1956	68.3	--	79.7	148	.99	1.02	--	--
1957	85.5	--	111.5	197	.89	.94	--	--
1958	99.3	--	128.7	229	.90	.93	--	--
1959	71.1	--	119.9	191	.86	.77	--	--
1960	51.0	--	127.0	178	.84	.77	--	--
1961	29.0	--	120.0	149	.98	.93	--	--
1962	38.0	--	133.0	171	.92	.93	--	--
1963	28.7	--	133.3	162	.90	.82	0.96	0.14
1964	19.5	--	113.0	133	.95	.84	.96	.12
1965	11.0	--	122.2	133	1.02	.80	.96	.16
1966	6.2	--	142.1	148	1.06	.80	1.00	.20
1967	5.7	--	155.3	161	1.01	.90	--	--
1968	8.3	--	216.7	225	.92	.90	--	--
1969	47.3	--	221.3	269	.88	.83	1.03	.20
1970	24.2	--	159.8	184	.97	.83	1.03	.20
1971	37.1	--	170.9	208	.99	.81	--	--
1972	2.2	--	189.3	192	1.21	.86	1.15	.32
1973	.7	--	145.6	146	2.14	.86	1.27	.26/.12
1974	0	--	92.0	92	2.81	.90	1.13	0
1975	0	--	128.4	128	2.42	.90	1.13	0
1976	0	--	126.4	126	2.25	1.22	1.28	0
1977	0	24	149.0	173	1.78	1.63	2.15	.50
1978	2.5	40	183.5	228	1.92	1.63	2.25	.35
1979	3.2	23	166.0	192	2.27	1.71	2.40	.11
1980	3.4	12	121.6	137	2.79	1.83	2.55	0
1981	3.3	23	122.0	148	2.48	1.95	2.60	.11
1982	6.0	98	113.0	217	2.18	2.08	2.60	.40
1983	11.9	95	82.0	189	2.47	2.16	2.60	.21
1984	14.6	97	135.0	247	2.29	2.08	2.60	.26
1985	57.4	45	223.0	325	1.98	2.08	2.60	.52
1986	75.5	122	138.0	336	1.59	1.56	2.60	.99
1987	50.0	109	162.0	321	1.81	1.49	2.60	.79
1988	30.0	42	125.0	197	2.85	1.44	2.51	0

-- = Aspect of program not in effect.

1/ Total may not add due to rounding.
2/ Price support 1963-71; set-aside 1972-73 (1973: .26 for 10% set-aside; .12 for 0% set-aside); deficiency 1974-88.
3/ Support level 1963-73; target price 1974-88.

Source: U.S. Department of Agriculture, Agricultural Stabilization and Conservation Service.

Appendix table 3--Program costs for barley

Fiscal year	Direct price support or deficiency 1/	Diversion 2/	Disaster	Exports	S/H/T/P/P 3/	Reseal loan or producer storage 4/	CCC loan operation: Total outlays	CCC loan operation: Total receipts	CCC loan operation: Net expenditures
					Million dollars				
1962	--	11.0 5/	--	3.2	7.2	3.9	62.8	78.2	-15.4
1963	--	37.0	--	- .2	6.5	2.6	79.7	23.2	56.5
1964	19.0	36.0	--	--	10.0	2.5	88.7	47.5	41.2
1965	13.0	40.1	--	--	6.9	2.3	75.0	32.9	42.1
1966	16.4	33.0	--	--	3.1	1.1	67.1	24.7	42.4
1967	21.0	15.7	--	--	1.6	.6	51.1	16.7	34.4
1968	--	--	--	--	.6	1.3	44.5	17.9	26.6
1969	--	9.0 5/	--	--	3.4	4.9	121.4	38.8	82.6
1970	24.0	13.0	--	--	12.8	9.7	105.7	26.5	79.2
1971	26.5	17.7	--	--	10.6	9.2	89.1	65.0	24.1
1972	--	--	--	--	12.0	6.6	97.3	76.0	21.3
1973	81.7	24.4	--	--	.5	7.9	150.3	75.7	74.6
1974	75.4	0	--	--	0	.8	90.8	45.1	45.7
1975	0	--	15.5	--	0	.1	21.8	9.2	12.6
1976	0	--	5.0	--	0	0	13.4	6.3	7.1
TQ 6/	0	--	1.6	--	0	0	7.1	1.5	5.6
1977	0	--	12.1	--	0	0	94.1	16.2	77.8
1978	91.1	4.3 5/	27.5	--	.2	8.5	242.7	64.9	177.8
1979	79.2	4.7	8.5	--	.7	7.3	175.7	79.2	96.5
1980	17.0	0	9.1	--	1.1	-1.2	80.1	106.7	-26.6
1981	0	--	30.6	--	1.4	1.5	120.2	70.6	49.6
1982	48.1	--	10.9	--	1.4	10.9	196.3	67.7	128.6
1983	87.7	13.7	0	--	3.4	13.7	299.0	31.2	267.8
1984	15.0	15.5	0	--	6.4	13.7	163.3	74.3	89.2
1985	113.0	0	0	--	10.8	27.0	368.3	32.5	335.8
1986 7/	183.6	0	0	-- 8/	28.3	29.6	620.4 9/	149.4 10/	471.0 11/
1987 7/	156.8	7.5	0	-- 8/	37.6	42.6	839.4 9/	445.1 10/	394.3 11/

-- = Aspect of program not in effect.

1/ Price support payments 1964-1974; deficiency payments began in 1975.

2/ 1963 was the first year that barley was eligible for diversion payments.

3/ Storage, handling, transportation, processing, and packaging costs.

4/ Reseal loan payments ended in 1977; producer storage payments began in 1978.

5/ Aspect of program was not in effect (payments made must have been advance payments).

6/ TQ is the transition quarter from July 1 to September 30, 1976, caused by the change in fiscal year starting dates.

7/ Certificate program began in 1986.

8/ The export enhancement program was first used for barley in 1986.
Annual EEP sales and average bonuses (commodity certificates awarded to exporters) through 1988 were:
1986: 2,885,680 metric tons with an average bonus of $37.79 per ton
1987: 2,761,620 metric tons with an average bonus of $41.57 per ton
1988: 801,557 metric tons with an average bonus of $11.05 per ton

9/ Includes all certificate outlays.

10/ Includes all certificate loan repayments, certificate sales, and certificate receipts.

11/ Not accounted for in net expenditures is the value of grain exchanged for certificates. The grain was valued at $116.6 million in 1986 and $117.2 million in 1987. Certificate outlays and receipts are included in total outlays and total receipts but no balance for no net expenditures.

Note: Any payment or receipt greater than -0.1 but less than 0.1 (mil $) recorded as 0.

Source: U.S. Department of Agriculture, Agricultural Stabilization and Conservation Service, Budget Office and World Production and Trade, U.S. Department of Agriculture, Foreign Agricultural Service.

Appendix table 4--Barley: Value comparisons, 1950-88

Crop year	Yield per harvested acre	Loan rate	Average price	Production	GNP deflator 1/	Loan value per acre		Market value per acre		Gross value of production	
						Nominal	Real	Nominal	Real	Nominal	Real
	Bushels	Dollars/bu.		Mil. bushel	Index	Dollars				Million dollars	
1950	27.2	1.10	1.19	303.8	23.9	29.96	125.35	32.41	135.60	361.52	1,512.64
1951	27.3	1.11	1.26	257.2	25.1	30.29	120.69	34.39	137.00	324.07	1,291.12
1952	27.7	1.22	1.37	228.2	25.5	33.80	132.56	37.96	148.86	312.63	1,226.02
1953	28.4	1.24	1.17	246.7	25.9	35.24	136.07	33.25	128.39	288.64	1,114.44
1954	28.4	1.15	1.09	379.3	26.3	32.62	124.05	30.92	117.58	413.44	1,572.00
1955	27.8	.95	.92	403.1	27.2	26.37	96.94	25.54	93.88	370.85	1,363.43
1956	29.3	1.02	.99	376.7	28.1	29.90	106.39	29.02	103.27	372.93	1,327.16
1957	29.8	.94	.89	442.8	29.1	27.99	96.18	26.50	91.06	394.09	1,354.27
1958	32.3	.93	.90	477.4	29.7	30.02	101.07	29.05	97.81	429.66	1,446.67
1959	28.3	.77	.86	420.2	30.4	21.76	71.58	24.30	79.95	361.37	1,188.72
1960	31.0	.77	.84	429.0	30.9	23.84	77.15	26.01	84.17	360.36	1,166.21
1961	30.6	.93	.98	392.4	31.2	28.5	91.34	30.03	96.25	384.55	1,232.54
1962	35.0	.93	.92	427.7	31.9	32.57	102.09	32.22	100.99	393.48	1,233.49
1963	35.0	.82	.90	392.8	32.4	28.67	88.48	31.46	97.11	353.52	1,091.11
1964	37.6	.84	.95	386.1	32.9	31.56	95.92	35.69	108.48	366.80	1,114.88
1965	42.9	.80	1.02	393.1	33.8	34.31	101.51	43.74	129.42	400.96	1,186.28
1966	38.3	.80	1.06	392.1	35.0	30.60	87.44	40.55	115.85	415.63	1,187.50
1967	40.5	.90	1.01	373.7	35.9	36.44	101.50	40.89	113.91	377.44	1,051.37
1968	43.8	.90	.92	426.2	37.7	39.40	104.50	40.27	106.83	392.10	1,040.06
1969	44.7	.83	.88	427.1	39.8	37.09	93.20	39.33	98.81	375.85	944.34
1970	42.8	.83	.97	416.1	42.0	35.56	84.67	41.56	98.85	403.62	960.99
1971	45.8	.81	.99	462.4	44.4	37.07	83.49	45.31	102.04	457.78	1,031.03
1972	43.7	.86	1.21	421.7	46.5	37.60	80.86	52.90	113.77	510.26	1,097.33
1973	40.5	.86	2.14	417.4	49.5	34.87	70.44	86.76	175.28	893.24	1,804.52
1974	37.7	.90	2.81	298.7	54.0	33.90	62.78	105.84	196.01	839.35	1,554.35
1975	44.0	.90	2.42	379.2	59.3	39.61	66.79	106.49	179.59	917.66	1,547.69
1976	45.4	1.22	2.25	383.0	63.1	55.37	87.75	102.12	161.83	861.75	1,365.69
1977	44.0	1.63	1.78	427.8	67.3	71.68	106.51	78.28	116.31	761.48	1,131.48
1978	49.2	1.63	1.92	454.8	72.2	80.16	111.03	94.42	130.78	873.22	1,209.44
1979	50.9	1.71	2.27	383.2	78.6	87.06	110.76	115.57	147.03	869.86	1,106.70
1980	49.7	1.83	2.79	361.1	85.7	91.02	106.21	138.77	161.93	1,007.47	1,175.58
1981	52.4	1.95	2.48	473.5	94.0	102.16	108.68	129.93	138.22	1,174.28	1,249.23
1982	57.2	2.08	2.18	515.9	100.0	119.06	119.06	124.78	124.78	1,124.66	1,124.66
1983	52.3	2.16	2.47	508.9	103.9	112.96	108.72	129.17	124.32	1,256.98	1,209.80
1984	53.4	2.08	2.29	599.2	107.7	110.97	103.04	122.18	113.44	1,356.32	1,274.06
1985	51.0	2.08	1.98	591.4	110.9	106.08	95.64	100.98	91.06	1,170.97	1,055.90
1986	50.8	1.56	1.61	610.5	113.8	79.25	69.64	81.79	71.87	993.91	873.38
1987	52.7	1.49	1.81	529.5	117.4	78.52	66.89	85.37	72.72	982.29	836.70
1988	38.2	1.44	2.79	290.5	121.3	55.58	45.82	108.85	89.74	810.50	668.17

1/ 1982 = 100

Appendix table 5--World production, consumption, exports, and ending stocks for barley, 1960-89

Crop year 1/	Production	Consumption	Exports 2/	Ending stocks	Stocks-to-use ratio
	Million metric tons				Percent
1960	82.3	83.1	6.3	12.1	14.5
1961	78.1	79.7	7.2	11.3	14.2
1962	92.0	89.9	5.2	13.5	15.0
1963	94.4	92.2	7.7	15.1	16.4
1964	102.5	97.7	7.3	20.2	20.5
1965	97.8	102.4	8.7	15.0	14.6
1966	108.5	106.7	6.9	16.5	15.4
1967	110.6	108.3	7.0	18.7	17.2
1968	120.3	115.8	7.2	22.1	19.1
1969	123.4	112.0	9.2	22.8	20.3
1970	126.0	130.1	11.4	18.8	14.5
1971	136.8	133.7	14.5	21.4	16.0
1972	137.6	138.4	12.2	20.5	14.5
1973	153.9	153.7	12.5	20.9	13.6
1974	157.0	155.9	11.3	22.2	14.2
1975	141.1	143.1	13.3	20.8	14.5
1976	174.8	171.6	13.9	23.9	13.9
1977	163.9	164.8	15.3	22.3	13.5
1978	183.4	177.2	15.3	26.9	15.2
1979	160.8	168.4	15.0	21.0	12.5
1980	163.2	163.6	17.1	20.1	12.3
1981	155.2	157.8	20.5	17.6	11.2
1982	166.8	161.8	17.4	22.6	14.0
1983	164.7	169.1	21.6	17.0	10.1
1984	174.8	168.0	23.0	24.1	14.3
1985	178.0	172.7	21.7	29.7	17.2
1986	182.4	178.1	24.2	34.0	19.1
1987	180.7	182.5	21.0	32.2	17.6
1988	166.4	169.8	23.3	28.5	16.9
1989 3/	165.8	169.2	--	23.5	13.9

1/ Based on aggregate of differing local marketing years. July/June before 1979/80, thereafter October/September.

2/ Includes intra-EC trade.

3/ Preliminary.

Source: World Grain Situation and Outlook. U.S. Department of Agriculture, Foreign Agricultural Service.

Appendix table 6--World production, trade, and ending stocks of barley, world and United States, 1960-89 1/

Crop year	Production			Exports			Ending stocks		
	World	United States	U.S. share	World	United States	U.S. share	World	United States	U.S. share
	Million bushels		Percent	Million bushels		Percent	Million bushels		Percent
1960	2,222	429	19.3	288	83	29.0	554	152	27.5
1961	3,589	392	10.9	333	82	24.6	521	123	23.7
1962	4,227	428	10.1	239	67	27.9	620	146	23.5
1963	4,337	393	9.1	354	72	20.2	693	132	19.0
1964	4,706	386	8.2	337	69	20.5	920	100	10.8
1965	4,491	393	8.8	400	76	18.9	689	133	19.3
1966	4,983	392	7.9	318	58	18.1	756	148	19.6
1967	5,081	374	7.4	323	34	10.6	857	161	18.8
1968	5,525	426	7.7	332	10	3.0	1,016	225	22.1
1969	5,670	427	7.5	422	8	2.0	1,045	269	25.7
1970	5,787	416	7.2	522	82	15.7	864	184	21.3
1971	6,283	462	7.4	665	38	5.8	981	208	21.2
1972	6,320	422	6.7	558	66	11.8	941	192	20.4
1973	7,067	417	5.9	576	90	15.7	960	146	15.2
1974	7,211	299	4.1	521	42	8.1	1,017	92	9.0
1975	6,483	379	5.8	613	24	3.9	953	128	13.4
1976	8,031	383	4.8	637	66	10.4	1,098	126	11.5
1977	7,527	428	5.7	701	57	8.1	1,023	173	16.9
1978	8,424	455	5.4	702	26	3.7	1,235	228	18.5
1979	7,384	383	5.2	690	55	8.0	966	192	19.9
1980	7,498	361	4.8	786	77	9.8	922	137	14.9
1981	7,128	474	6.6	944	100	10.6	808	148	18.3
1982	7,663	516	6.7	801	47	5.9	1,037	217	20.9
1983	7,565	509	6.7	992	91	9.2	781	189	24.4
1984	8,027	599	7.5	1,057	77	7.3	1,106	247	22.4
1985	8,175	591	7.2	845	22	2.6	1,364	325	23.8
1986	8,377	611	7.3	850	138	16.2	1,562	336	21.5
1987	8,299	530	6.4	730	126	17.3	1,479	321	21.7
1988	7,638	291	3.8	781	85	10.9	1,318	197	14.9
1989 2/	7,532	445	5.9	790	75	9.5	1,079	197	18.3

1/ Bushels converted by dividing metric tons by 0.021772.
2/ Preliminary.
Source: World Grain Situation and Outlook. U.S. Department of Agriculture, Foreign Agricultural Service.

Appendix table 7--World barley trade, stocks, and consumption, percent of U.S. exports and foreign consumption, 1960-89

Crop year	World trade to world consumption	World stocks to world consumption	U.S. exports to foreign consumption
		Percent	
1960	7.5	14.5	2.2
1961	9.1	14.2	2.2
1962	5.8	15.0	1.6
1963	8.4	16.4	1.7
1964	7.5	20.5	1.5
1965	8.5	14.6	1.6
1966	6.5	15.4	1.2
1967	6.5	17.2	.7
1968	6.2	19.1	.2
1969	8.2	20.3	.2
1970	8.7	14.5	1.4
1971	10.8	16.0	.6
1972	8.8	14.8	1.0
1973	8.2	13.6	1.3
1974	7.3	14.2	1.6
1975	9.3	14.5	.4
1976	8.1	13.9	.8
1977	9.3	13.5	.8
1978	8.6	15.2	.3
1979	8.9	12.5	.3
1980	10.5	12.3	1.0
1981	13.0	11.2	1.4
1982	10.8	14.0	.6
1983	12.8	10.0	1.2
1984	13.7	14.3	1.0
1985	10.7	17.2	.5
1986	10.4	19.1	1.8
1987	8.7	17.6	1.7
1988	10.0	16.9	.8
1989 1/	10.2	13.9	.8

1/ Preliminary.

Source: U.S. Department of Agriculture, Foreign Agricultural Service.

Appendix table 8--Barley production and exports, major foreign exporters and total foreign, 1960-89

Crop year	Canada		Australia		EC-12		Total foreign	
	Production	Exports	Production	Exports	Production	Exports 1/	Production	Exports
	Million bushels 2/							
1960	193	42	71	43	885	67	3,352	204
1961	113	38	43	19	901	116	3,197	251
1962	166	14	41	18	1,066	78	3,800	172
1963	221	42	45	13	1,155	127	3,944	282
1964	168	33	51	17	1,197	134	4,320	268
1965	218	34	44	17	1,249	147	4,098	324
1966	301	47	64	12	1,315	163	4,591	260
1967	253	38	38	11	1,549	183	4,707	288
1968	326	21	76	25	1,537	199	5,099	322
1969	371	69	78	31	1,606	227	5,243	413
1970	408	177	108	57	1,429	136	5,371	440
1971	602	224	141	81	1,688	250	5,821	626
1972	518	157	79	31	1,788	244	5,898	492
1973	470	119	110	54	1,829	262	6,649	486
1974	404	130	116	76	1,897	219	6,912	479
1975	437	191	146	102	1,845	263	6,104	589
1976	483	165	131	89	1,679	176	7,648	571
1977	542	154	109	51	2,076	366	7,099	644
1978	477	163	184	97	2,230	330	7,969	676
1979	389	176	170	98	2,120	314	7,001	635
1980	517	149	123	60	2,303	433	7,137	709
1981	630	263	158	84	2,027	405	6,655	844
1982	641	259	89	22	2,143	379	7,147	754
1983	469	242	225	174	1,968	340	7,056	901
1984	472	120	255	213	2,503	551	7,428	980
1985	569	165	224	168	2,365	335	7,582	808
1986	672	300	166	102	2,149	285	7,767	716
1987	641	203	160	76	2,149	317	7,767	597
1988	465	115	157	68	2,324	436	7,349	721
1989 3/	551	184	169	76	2,090	436	7,137	730

1/ Excludes intra-EC trade.
2/ Computed by dividing metric tons by 0.021772.
3/ Preliminary.

Source: U.S. Department of Agriculture, Foreign Agricultural Service.

Appendix table 9--Coefficients of variation for barley, United States, selected periods

Period	Planted acres	Yield	Production	Exports	Price received	Value of production
			Coefficient			
1950-88	0.2150	0.2276	0.2120	0.5012	0.4402	0.5105
1954-63	.0646	.0809	.0721	.2712	.0748	.0605
1964-73	.0464	.0615	.0597	.5157	.3149	.3237
1974-83	.0902	.1098	.1638	.4292	.1389	.1704
1954-58	.0495	.0526	.0932	.3077	.0779	.0571
1959-63	.0742	.0823	.0401	.2303	.0544	.0418
1964-68	.0591	.0601	.0438	.4751	.0508	.0438
1969-73	.0283	.0415	.0407	.5103	.3729	.3515
1974-78	.0738	.0841	.1366	.3858	.1639	.0567
1979-83	.1010	.0497	.1503	.2911	.0965	.1290
1984-88	.1253	.1234	.2563	.5271	.2462	.2168

1/ Coefficient of variation is a measure of variability which equals the standard deviation divided by the mean.

Appendix table 10--Barley: Average prices received by farmers, United States, by months, and loan rate, 1955-88 1/

Year begin June 1	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Average 2/	Loan rate
							Dollars per bushel							
1955	1.00	0.96	0.88	0.90	0.91	0.92	0.92	0.92	0.92	0.92	0.95	0.96	0.92	0.95
1956	.93	.95	.97	.96	.98	1.01	1.03	1.05	1.03	1.03	.98	.96	.99	1.02
1957	.88	.85	.83	.82	.83	.85	.86	.86	.87	.85	.86	.87	.89	.94
1958	.91	.92	.86	.86	.86	.89	.92	.91	.92	.90	.90	.90	.90	.93
1959	.88	.90	.83	.85	.87	.88	.86	.85	.86	.84	.84	.87	.86	.77
1960	.88	.85	.80	.82	.84	.79	.84	.82	.86	.85	.85	.88	.84	.77
1961	.87	.92	.95	.97	.99	1.00	1.01	1.03	1.04	1.03	1.01	1.02	.98	.93
1962	.98	.99	.90	.89	.89	.90	.92	.90	.91	.90	.89	.92	.92	.93
1963	.97	.96	.85	.85	.91	.94	.95	.92	.90	.90	.91	.92	.90	.82
1964	.96	.96	.88	.92	.94	.96	.98	.97	.99	.97	.97	1.01	.95	.84
1965	1.03	1.04	.99	.99	.99	1.02	1.04	1.04	1.08	1.06	1.03	1.06	1.02	.80
1966	1.08	1.06	1.05	1.07	1.07	1.07	1.07	1.05	1.04	1.02	1.02	1.05	1.06	.80
1967	1.06	1.06	1.01	.98	.99	.98	.99	.99	1.00	.97	.96	.99	1.01	.90
1968	.98	.93	.81	.88	.89	.90	.92	.92	.92	.90	.92	.98	.92	.90
1969	1.04	.95	.82	.86	.88	.90	.91	.89	.86	.83	.83	.90	.88	.83
1970	.94	.90	.85	.91	.93	.96	1.02	1.02	1.03	1.02	1.03	1.12	.97	.83
1971	1.15	1.07	.87	.92	.96	1.02	1.04	1.04	1.01	.98	.99	1.04	.99	.86
1972	1.09	1.04	.96	1.07	1.17	1.21	1.32	1.42	1.34	1.31	1.31	1.39	1.21	.86
1973	1.55	1.58	2.10	2.16	2.23	2.10	2.19	2.32	2.52	2.61	2.15	2.19	2.14	.86
1974	2.25	2.35	2.78	2.86	3.11	3.41	3.30	3.17	2.89	2.55	2.72	2.75	2.81	.90
1975	2.30	2.35	2.56	2.69	2.68	2.43	2.35	2.31	2.31	2.34	2.31	2.41	2.42	.90
1976	2.60	2.51	2.35	2.33	2.22	2.11	2.08	2.19	2.19	2.25	2.22	2.12	2.25	1.22
1977	1.93	1.53	1.53	1.69	1.63	1.82	1.79	1.90	1.98	1.90	1.93	2.15	1.78	1.63
1978	2.04	1.83	1.86	1.85	1.90	1.93	1.90	1.95	1.87	1.89	1.96	2.07	1.92	1.63
1979	2.30	2.22	2.23	2.33	2.32	2.40	2.32	2.27	2.23	2.18	2.15	2.21	2.27	1.71
1980	2.36	2.52	2.59	2.65	2.81	2.90	2.97	3.09	3.05	3.04	3.04	3.00	2.79	1.83
1981	2.94	2.41	2.37	2.44	2.38	2.49	2.48	2.50	2.40	2.40	2.42	2.53	2.48	1.95
1982	2.39	2.16	2.20	2.17	1.98	2.06	2.19	2.16	2.00	2.09	2.22	2.36	2.18	2.08
1983	2.32	2.20	2.34	2.46	2.53	2.55	2.55	2.55	2.47	2.50	2.54	2.78	2.47	2.16
1984	2.61	2.54	2.26	2.25	2.29	2.25	2.19	2.24	2.21	2.18	2.16	2.22	2.29	2.08
1985	2.14	2.05	1.98	1.88	1.96	2.05	2.07	2.05	1.95	1.88	1.85	1.73	1.98	2.08
1986	1.57	1.67	1.51	1.45	1.58	1.69	1.61	1.60	1.63	1.69	1.69	1.76	1.59	1.56
1987	1.75	1.84	2.00	1.87	1.73	1.88	1.83	1.77	1.74	1.64	1.74	1.79	1.81	1.49
1988	2.46	2.97	2.79	2.88	2.86	2.95	2.74	2.68	2.66	2.74	2.74	2.63	2.79	1.44

-- = Not available.

1/ Prices do not include an allowance for loans outstanding or government purchases.

2/ U.S. season average prices based on monthly prices weighted by monthly maketings.

Source: Agricultural Prices. U.S. Department of Agriculture, National Agricultural Statistics Service.

Appendix table 11--Average prices received by farmers, United States, 1979-88 1/

Year	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
Feed barley:						Dollars per bushel						
1979	2.38	2.22	2.21	2.29	2.20	2.18	2.23	2.14	2.24	2.16	2.09	2.21
1980	2.38	2.43	2.46	2.56	2.70	2.75	2.96	3.09	2.98	2.99	2.90	3.01
1981	2.98	2.36	2.23	2.32	2.30	2.29	2.29	2.41	2.28	2.29	2.35	2.58
1982	2.52	2.23	1.98	1.91	1.87	1.94	1.98	2.07	1.99	2.08	2.26	2.44
1983	2.52	2.31	2.23	2.41	2.45	2.51	2.52	2.58	2.47	2.54	2.55	2.86
1984	2.72	2.60	2.10	2.13	2.19	2.19	2.20	2.22	2.27	2.19	2.16	2.30
1985	2.26	2.05	1.75	1.74	1.85	1.90	2.03	2.00	1.90	1.83	1.85	1.81
1986	1.61	1.44	1.21	1.33	1.49	1.62	1.59	1.56	1.61	1.69	1.71	1.84
1987	1.79	1.59	1.54	1.57	1.65	1.68	1.63	1.65	1.64	1.59	1.73	1.76
1988	2.07	2.34	2.37	2.39	2.34	2.30	2.27	2.29	2.34	2.35	2.32	2.27
Malting barley:												
1979	2.18	2.22	2.24	2.40	2.44	2.53	2.39	2.30	2.23	2.20	2.19	2.21
1980	2.34	2.61	2.72	2.81	2.97	3.04	2.99	3.08	3.11	3.10	3.14	2.99
1981	2.86	2.48	2.58	2.66	2.49	2.68	2.63	2.70	2.55	2.50	2.48	2.42
1982	2.26	2.10	2.38	2.58	2.22	2.26	2.39	2.32	2.00	2.09	2.13	2.18
1983	2.05	2.06	2.50	2.69	2.72	2.61	2.61	2.50	2.47	2.46	2.54	2.53
1984	2.52	2.48	2.50	2.52	2.52	2.39	2.18	2.29	2.11	2.17	2.17	2.10
1985	2.02	2.13	2.49	2.33	2.24	2.32	2.19	2.13	1.99	1.93	1.85	1.66
1986	1.52	2.07	2.23	1.85	1.83	1.78	1.65	1.70	1.69	1.69	1.65	1.66
1987	1.68	2.04	2.55	2.39	1.88	2.07	2.01	2.15	1.80	1.69	1.75	1.79
1988	2.80	3.26	3.38	3.47	3.41	3.34	3.27	3.24	3.22	3.22	3.16	3.04

-- = Not available.

1/ Prices do not include allowances for loans outstanding or government purchases.

Source: Agricultural Prices. U.S. Department of Agriculture, National Agricultural Statistics Service.

Appendix table 12--Barley, No. 3 or better malting, 65% or better plump, Minneapolis, average monthly cash prices, 1962-88

Year	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Average
						Dollars per bushel							
1962	1.25	1.26	1.21	1.19	1.22	1.23	1.20	1.19	1.22	1.22	1.25	1.28	1.23
1963	1.28	1.23	1.15	1.19	1.24	1.24	1.21	1.21	1.21	1.21	1.26	1.27	1.22
1964	1.28	1.25	1.21	1.25	1.30	1.30	1.30	1.30	1.35	1.36	1.39	1.43	1.31
1965	1.44	1.38	1.28	1.32	1.34	1.40	1.37	1.39	1.41	1.39	1.36	1.36	1.37
1966	1.34	1.32	1.38	1.42	1.45	1.43	1.41	1.36	1.36	1.37	1.36	1.38	1.38
1967	1.37	1.34	1.32	1.27	1.28	1.27	1.23	1.26	1.26	1.26	1.26	1.27	1.28
1968	1.23	1.13	1.07	1.23	1.24	1.23	1.20	1.20	1.23	1.22	1.21	1.24	1.20
1969	1.18	1.13	1.04	1.10	1.10	1.10	1.10	1.09	1.09	1.11	1.12	1.16	1.11
1970	1.18	1.15	1.16	1.21	1.22	1.23	1.25	1.27	1.31	1.30	1.30	1.31	1.24
1971	1.30	1.25	1.10	1.11	1.17	1.17	1.17	1.20	1.19	1.19	1.19	1.20	1.19
1972	1.22	1.22	1.21	1.26	1.34	1.34	1.45	1.59	1.58	1.61	1.64	1.66	1.43
1973	1.74	1.82	2.45	2.64	2.64	2.62	2.64	2.76	3.27	3.57	2.98	2.94	2.67
1974	3.11	3.38	3.77	4.00	4.42	4.78	4.65	4.62	4.45	4.15	4.34	4.28	4.16
1975	3.97	3.83	3.65	3.93	3.83	3.56	3.35	3.24	3.21	3.22	3.17	3.22	3.52
1976	3.55	3.59	3.37	3.24	3.21	3.00	2.95	3.00	2.91	2.98	2.91	2.83	3.13
1977	2.38	2.02	1.92	2.15	2.25	2.36	2.32	2.26	2.33	2.32	2.44	2.51	2.27
1978	2.39	2.13	2.19	2.27	2.26	2.47	2.40	2.30	2.33	2.46	2.59	2.73	2.38
1979	2.80	2.82	2.67	3.10	3.18	3.06	2.93	2.87	2.81	2.69	2.73	2.82	2.87
1980	2.99	3.36	3.27	3.63	3.80	3.88	3.77	3.75	3.83	3.71	3.84	3.80	3.64
1981	3.34	2.95	3.15	3.05	3.02	3.07	2.92	3.00	3.14	2.99	2.98	3.05	3.06
1982	2.93	2.63	2.48	2.37	2.42	2.45	2.37	2.38	2.42	2.45	2.68	2.76	2.53
1983	2.60	2.54	2.76	2.90	2.96	2.95	2.77	2.85	2.76	2.91	3.04	3.06	2.84
1984	3.04	2.86	2.48	2.44	2.43	2.43	2.36	2.46	2.47	2.51	2.52	2.55	2.55
1985	2.46	2.25	2.03	2.15	2.10	2.27	2.29	2.28	2.20	2.34	2.40	2.07	2.24
1986	1.84	1.75	1.61	1.76	1.93	2.02	1.88	1.81	1.92	2.01	2.05	2.12	1.89
1987	2.07	1.93	1.73	1.98	2.08	2.05	2.01	2.02	2.15	2.08	2.11	2.24	2.04
1988	3.61	3.87	4.25	4.40	4.39	4.14	3.82	4.14	4.19	4.33	4.29	3.84	4.11

Source: Feed Situation and Outlook Report. U.S. Department of Agriculture, Economic Research Service.

Appendix table 13--Barley, No. 2 feed, Minneapolis, average monthly cash prices, 1959-88 1/, 2/

Year	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Average
						Dollars per bushel							
1959	1.08	1.10	1.04	1.02	1.00	1.03	1.00	1.01	0.99	0.99	1.00	1.03	1.02
1960	.99	.93	.95	.90	.95	.90	.91	.92	.95	.95	1.01	1.03	.95
1961	1.02	1.23	1.21	1.22	1.30	1.28	1.26	1.30	1.23	1.22	1.20	1.15	1.22
1962	1.15	1.09	1.01	1.01	1.04	1.07	1.06	1.05	1.06	1.07	1.07	1.09	1.06
1963	1.06	.96	.92	.99	.98	.96	.97	1.00	.96	.96	1.01	1.03	.98
1964	1.01	.97	.96	1.08	1.09	1.10	1.09	1.12	1.15	1.15	1.18	1.22	1.09
1965	1.21	1.12	1.12	1.16	1.19	1.20	1.20	1.23	1.29	1.28	1.23	1.21	1.20
1966	1.20	1.20	1.19	1.22	1.23	1.23	1.22	1.21	1.18	1.20	1.21	1.24	1.21
1967	1.23	1.20	1.16	1.14	1.14	1.13	1.12	1.16	1.15	1.13	1.12	1.14	1.15
1968	1.10	.99	.92	1.02	1.04	1.02	.98	.99	1.02	1.02	1.04	1.06	1.02
1969	1.02	.98	.87	.94	.95	.96	.96	.95	.95	1.00	1.03	1.08	.97
1970	1.08	1.01	1.00	1.08	1.09	1.08	1.13	1.16	1.22	1.15	1.13	1.15	1.11
1971	1.08	1.00	.95	.99	1.04	1.04	1.04	1.07	1.07	1.05	1.06	1.08	1.04
1972	1.05	.96	.98	1.11	1.16	1.14	1.27	1.34	1.20	1.19	1.25	1.36	1.17
1973	1.51	1.67	2.12	2.12	2.02	1.80	2.12	2.34	2.51	2.32	1.74	2.10	2.03
1974	2.36	2.36	2.69	2.48	3.07	3.17	2.89	2.82	2.59	2.26	2.24	2.05	2.58
1975	1.67	2.04	2.77	3.00	2.83	2.42	2.23	2.11	2.26	2.38	2.39	2.50	2.38
1976	2.62	2.45	2.48	2.68	2.46	2.21	2.05	2.20	2.35	2.29	2.28	2.13	2.35
1977	1.76	1.63	1.50	1.58	1.66	1.65	1.65	1.65	1.65	1.66	1.91	1.90	1.68
1978	1.84	1.71	1.68	1.77	1.81	1.88	1.79	1.71	1.69	1.86	1.89	1.96	1.80
1979	2.16	2.39	2.15	2.22	2.34	2.11	2.15	2.09	2.04	2.06	2.12	2.09	2.16
1980	2.15	2.48	2.39	2.43	2.77	3.03	2.75	2.81	2.90	2.63	2.51	2.39	2.60
1981	2.09	2.26	2.35	2.21	2.26	2.31	2.06	2.20	2.27	2.16	2.16	2.24	2.21
1982	2.12	1.85	1.72	1.69	1.54	1.58	1.59	1.63	1.72	1.73	2.01	1.95	1.76
1983	1.96	1.95	2.42	2.61	2.60	2.53	2.39	2.55	2.56	2.65	2.74	2.77	2.48
1984	2.59	2.18	2.13	2.05	2.10	2.06	1.88	1.98	1.99	1.97	2.05	2.05	2.09
1985	1.90	1.66	1.46	1.40	1.41	1.49	1.60	1.57	--	--	--	1.31	1.53
1986	1.23	1.16	1.13	1.27	1.50	1.63	1.23	--	--	1.64	1.76	1.86	1.44
1987	1.73	1.59	1.60	1.76	1.78	1.82	1.74	1.72	1.77	1.88	1.94	1.98	1.78
1988	2.41	2.31	2.08	2.24	2.32	2.27	2.14	2.24	2.33	2.49	2.52	2.41	2.31

-- = Not available.

1/ Prior to June 1977 reported as Barley, No. 3 or better.

2/ Reporting point changed from Minneapolis to Duluth in March 1987.

Source: Feed Situation and Outlook Report. U.S. Department of Agriculture, Economic Research Service.

Appendix table 14--Barley, No. 2 Western, Portland, average monthly cash prices, 1970-88

Year	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Average
						Dollars per bushel							
1970	0.97	0.91	0.98	1.12	1.14	1.16	1.21	1.25	1.29	1.26	1.29	1.35	1.16
1971	1.30	1.12	.99	1.04	1.06	1.17	1.20	1.20	1.23	1.24	1.22	1.22	1.17
1972	1.16	1.22	1.34	1.41	1.52	1.58	1.66	1.91	1.83	1.79	1.73	1.84	1.58
1973	2.01	2.31	2.58	2.61	2.63	2.70	2.63	2.85	2.93	2.93	2.36	2.39	2.58
1974	2.51	2.79	3.14	3.23	3.41	3.68	3.56	3.18	2.82	2.47	2.75	2.68	3.02
1975	2.47	2.04	2.77	3.01	2.82	2.46	2.38	2.45	2.56	2.56	2.44	2.50	2.54
1976	2.65	2.70	2.55	2.61	2.49	2.28	2.28	2.50	2.63	2.34	2.36	2.41	2.48
1977	2.19	2.10	1.96	2.00	1.97	2.04	2.13	2.19	2.20	2.24	2.39	2.41	2.15
1978	2.41	2.24	2.22	2.02	1.94	1.97	2.05	2.08	1.98	2.04	2.09	2.14	2.10
1979	2.47	2.89	2.76	2.75	2.69	2.57	2.67	2.68	2.79	2.67	2.63	2.71	2.69
1980	2.78	3.03	2.88	2.93	3.34	3.56	3.63	3.68	3.71	3.58	3.48	3.50	3.34
1981	3.21	2.83	2.76	2.73	2.67	2.73	2.73	2.97	2.94	2.91	2.99	3.01	2.87
1982	2.82	2.54	2.56	2.46	2.22	2.49	2.40	2.45	2.44	2.49	2.61	2.73	2.52
1983	2.60	2.48	2.70	2.91	2.98	3.02	3.00	3.13	2.90	2.91	3.13	3.17	2.91
1984	3.05	2.59	2.57	2.53	2.58	2.62	2.65	2.58	2.56	2.49	2.46	2.44	2.59
1985	2.37	2.26	2.13	2.06	2.17	2.31	2.47	2.37	2.16	2.15	2.17	2.16	2.22
1986	1.98	1.79	1.75	1.73	1.97	2.01	1.86	2.00	2.12	2.09	2.11	2.17	1.97
1987	2.04	1.96	2.04	2.04	2.11	2.13	2.16	2.15	2.14	2.10	2.07	2.14	2.09
1988	2.67	2.80	2.72	2.66	2.65	2.77	2.75	2.75	--	--	--	--	--

-- = Not available.

Source: Feed Situation and Outlook Report. U.S. Department of Agriculture, Economic Research Service.

Appendix table 15--Barley, No. 2 Western, Stockton, average monthly cash prices, 1970-87

Year	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Average
						Dollars per bushel							
1970	1.12	1.15	1.19	1.26	1.31	1.38	1.43	1.45	1.45	1.45	1.55	1.55	1.36
1971	1.34	1.41	1.37	1.34	1.38	1.45	1.46	1.49	1.51	1.56	1.55	1.45	1.34
1972	1.39	1.39	1.44	1.49	1.56	1.60	1.79	1.82	1.82	1.80	1.73	1.81	1.64
1973	2.07	2.21	2.76	2.75	2.79	2.73	2.83	2.97	3.08	3.04	2.63	2.40	2.69
1974	2.60	2.79	3.30	3.28	3.51	3.62	2.57	3.31	2.90	2.78	2.89	2.75	3.02
1975	2.44	2.57	2.86	2.93	2.88	2.79	2.82	2.86	2.90	2.86	2.76	2.73	2.78
1976	2.77	2.84	2.70	2.68	2.60	2.54	2.49	2.54	2.64	2.59	2.48	2.45	2.61
1977	2.23	2.15	1.99	2.01	2.09	2.31	2.43	2.48	2.45	2.51	2.62	2.57	2.32
1978	2.61	2.57	2.44	2.43	2.47	2.60	2.65	2.63	2.54	2.50	2.51	2.57	2.55
1979	2.67	2.90	2.82	2.83	3.00	3.08	3.19	3.18	3.15	3.09	3.02	2.96	2.99
1980	2.86	3.19	3.34	3.37	3.59	3.84	3.93	3.94	3.89	3.79	3.74	3.61	3.59
1981	3.34	3.43	3.24	3.19	3.28	3.34	3.28	3.26	3.20	3.09	3.16	3.17	3.25
1982	3.08	3.02	2.88	2.68	2.64	2.70	2.82	2.83	2.91	3.00	3.22	3.28	2.92
1983	3.14	3.19	3.24	3.35	3.41	3.48	3.48	3.56	3.52	3.52	3.58	3.38	3.40
1984	3.36	3.24	2.98	2.98	3.06	3.12	3.14	3.14	3.10	3.04	2.97	2.89	3.08
1985	2.75	2.71	2.66	2.58	2.64	2.76	2.82	2.76	2.58	2.54	2.61	2.52	2.66
1986	2.19	2.03	2.00	2.08	2.18	2.15	2.16	2.17	2.19	2.14	2.25	2.44	2.17
1987	2.35	2.29	2.21	2.34	2.43	2.52	2.53	2.62	2.60	2.44	2.38	2.42	2.43

Source: Feed Situation and Outlook Report. U.S. Department of Agriculture, Economic Research Service.

Appendix table 16--Barley, No. 2 Western, Los Angeles, average monthly cash prices, 1970-87

Year	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Average
						Dollars per bushel							
1970	1.21	1.20	1.23	1.36	1.37	1.43	1.45	1.46	1.47	1.46	1.57	1.54	1.40
1971	1.51	1.47	1.43	1.38	1.36	1.47	1.51	1.54	1.57	1.53	1.51	1.46	1.48
1972	1.42	1.42	1.50	1.58	1.60	1.73	1.88	1.89	1.87	1.85	1.79	1.89	1.70
1973	2.07	2.25	2.77	2.65	2.74	2.72	2.83	3.02	3.16	3.05	2.60	2.50	2.70
1974	2.60	2.83	3.30	3.33	3.59	3.65	3.55	3.33	2.92	2.83	2.92	2.82	3.14
1975	2.56	2.70	3.02	2.99	2.90	2.74	2.80	2.83	2.88	2.84	2.74	2.77	2.81
1976	2.81	2.82	2.66	2.65	2.53	2.47	2.46	2.56	2.65	2.60	2.60	2.48	2.61
1977	2.33	2.17	2.04	2.08	2.13	2.32	2.44	2.46	2.43	2.52	2.66	2.58	2.35
1978	2.64	2.46	2.40	2.44	2.51	2.55	2.57	2.59	2.55	2.50	2.51	2.59	2.53
1979	2.70	2.84	2.82	2.89	3.02	3.05	3.13	3.03	3.09	3.04	2.94	2.97	2.96
1980	2.97	3.22	3.29	3.32	3.51	3.81	3.93	3.91	3.80	3.72	3.72	3.63	3.57
1981	3.48	3.39	3.25	3.28	3.27	3.34	3.27	3.32	3.20	3.10	3.15	3.14	3.27
1982	3.09	3.00	2.88	2.77	2.80	2.83	2.93	2.90	2.94	2.98	3.24	3.24	2.97
1983	3.06	3.16	3.28	3.48	3.46	3.57	3.57	3.62	3.50	3.55	3.58	3.52	3.45
1984	3.40	3.20	3.12	3.13	3.23	3.24	3.22	3.19	3.18	3.02	3.01	2.96	3.16
1985	2.77	2.75	2.70	2.66	2.75	2.88	2.99	2.88	2.81	2.81	2.76	2.52	2.38
1986	2.34	2.21	2.22	2.25	2.43	2.44	2.36	2.45	2.43	2.42	2.44	2.52	2.38
1987	2.44	2.35	2.40	--	2.51	2.56	2.50	2.60	2.58	2.54	2.50	2.50	2.29

-- = Not available.

Source: Feed Situation and Outlook Report. U.S. Department of Agriculture, Economic Research Service.

Appendix table 17--Barley, No. 2 Western, Fresno, average monthly cash prices, 1970-86

Year	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Average
						Dollars per bushel							
1970	1.14	1.30	1.24	1.32	1.37	1.42	1.49	1.49	1.49	1.50	1.57	1.57	1.41
1971	1.42	1.46	1.44	1.39	1.43	1.49	1.53	1.56	1.56	1.57	1.57	1.50	1.49
1972	1.44	1.44	1.50	1.50	1.60	1.66	1.84	1.87	1.86	1.79	1.81	1.75	1.68
1973	1.98	2.16	2.82	2.75	2.80	2.75	2.83	2.97	3.13	3.07	2.60	2.42	2.69
1974	2.58	2.79	3.39	3.35	3.56	3.64	3.64	3.38	2.94	2.93	2.93	2.76	3.16
1975	2.41	2.61	2.92	2.93	2.96	2.82	2.85	2.89	2.92	2.86	2.75	2.74	2.80
1976	2.77	2.83	2.74	2.69	2.62	2.55	2.52	2.51	2.62	2.60	2.50	2.48	2.62
1977	2.24	2.02	2.01	2.02	2.08	2.32	2.43	2.47	2.42	2.51	2.58	2.60	2.31
1978	2.62	2.59	2.50	2.49	2.52	2.61	2.66	2.67	2.60	2.55	2.54	2.59	2.58
1979	2.69	2.92	2.86	2.87	3.03	3.09	3.20	3.21	3.15	3.09	3.02	3.02	3.01
1980	2.84	3.22	3.38	3.35	3.61	3.83	3.89	3.94	3.88	3.81	3.72	3.39	3.57
1981	3.33	3.41	3.28	3.26	3.33	3.36	3.32	3.31	3.23	3.09	3.14	3.15	3.27
1982	3.02	3.00	2.76	2.72	2.70	2.82	2.95	2.95	2.98	3.02	3.22	3.21	2.95
1983	3.05	3.18	3.24	3.53	3.50	3.61	3.58	3.61	3.53	3.61	3.62	3.36	3.45
1984	3.28	3.21	3.09	3.02	3.11	3.19	3.19	3.25	3.20	3.09	3.07	2.90	3.14
1985	2.76	2.75	2.75	2.74	2.68	2.84	2.90	2.89	2.67	2.62	2.69	2.48	2.73
1986	2.28	2.18	2.10	2.16	2.31	2.36	2.31	2.32	2.39	2.38	2.42	2.47	2.31

Source: Feed Situation and Outlook Report. U.S. Department of Agriculture, Economic Research Service.

Appendix table 18--Acres planted in barley for major producing States, selected years

State	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988
						1,000 acres					
North Dakota	1,996	2,220	1,850	2,150	2,000	2,600	2,950	3,500	3,600	3,000	2,600
Montana	1,800	1,360	1,180	1,400	1,650	1,950	2,320	2,350	2,400	2,300	1,800
Idaho	737	860	900	1,110	1,150	1,050	1,370	1,280	1,140	840	880
Minnesota	607	900	900	1,050	900	1,000	1,050	1,200	1,200	1,200	1,250
Washington	436	399	450	800	850	800	1,000	1,200	920	660	580
California	1,264	1,220	800	740	700	560	540	500	470	400	360
South Dakota	389	560	590	650	560	580	610	780	930	870	700
Oregon	440	200	170	220	260	280	290	360	375	250	225
Colorado	340	245	265	284	225	232	350	360	390	230	185
Wyoming	140	140	145	145	155	160	170	170	168	157	150
U.S. total	10,476	9,373	8,320	9,618	9,549	10,422	11,957	13,156	13,059	11,046	9,676

Appendix table 19--Acres harvested in barley for major producing States, selected years

State	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988
						1,000 acres					
North Dakota	1,938	2,100	1,500	2,100	1,950	2,520	2,900	3,350	3,450	2,900	2,000
Montana	1,714	1,300	1,050	1,320	1,560	1,850	2,110	1,500	2,180	2,100	1,250
Idaho	725	840	880	1,080	1,100	1,030	1,340	1,240	1,110	820	850
Minnesota	582	805	815	1,030	880	820	950	1,075	1,000	870	850
Washington	414	380	430	760	810	850	980	1,180	900	645	560
California	1,130	1,060	712	640	620	490	460	420	400	300	280
South Dakota	368	532	460	590	545	550	595	720	855	850	450
Oregon	395	177	155	205	250	270	280	350	365	220	200
Colorado	310	230	245	270	215	220	325	340	350	220	175
Wyoming	126	127	133	134	144	152	160	160	160	148	140
U.S. total	9,712	8,617	7,260	9,038	9,013	9,731	11,231	11,603	12,007	10,070	7,535

Source: Feed Situaton and Outlook Yearbook (Feb. 1989), and Barley: Background for 1985 Farm Legislation (AIB-447, 1984). U.S. Department of Agriculture, Economic Research Service. And Crop Production (various annual summaries). U.S. Department of Agriculture, National Agricultural Statistics Service.

Appendix table 20--Percentage of acres of feed and malting barley planted in major producing States, selected years

State	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987
					Percent					
North Dakota:										
Feed	8.0	16.9	18.1	9.7	16.4	20.1	20.0	17.5	23.6	22.3
Malting	92.0	83.1	81.9	90.3	83.6	79.9	80.0	82.5	76.4	77.7
Montana:										
Feed	63.9	61.6	54.9	55.5	62.6	63.8	62.0	48.5	45.1	73.9
Malting	36.1	38.4	45.1	44.5	37.4	36.2	38.0	51.5	54.9	26.1
Idaho:										
Feed	60.0	51.4	55.0	68.5	59.3	64.0	70.9	38.5	66.7	68.1
Malting	40.0	48.6	45.0	31.5	40.7	36.0	29.1	61.5	33.3	31.9
Minnesota:										
Feed	9.1	10.9	4.0	7.0	7.0	9.0	8.0	5.0	8.0	5.0
Malting	90.9	89.1	96.0	93.0	93.0	91.0	92.0	95.0	92.0	95.0
Washington:										
Feed	79.1	89.3	97.5	97.9	88.7	90.6	90.7	86.7	91.4	95.0
Malting	20.9	10.7	2.5	2.1	11.3	9.4	9.3	13.3	8.6	5.0
California:										
Feed	91.8	98.8	97.9	94.9	96.7	95.0	98.7	98.6	--	--
Malting	8.2	1.2	2.1	5.1	3.3	5.0	1.3	1.4	--	--
South Dakota:										
Feed	47.3	42.9	31.0	24.9	24.6	30.3	28.9	40.7	--	35.6
Malting	52.7	57.1	69.0	75.1	75.4	69.7	71.1	59.3	--	64.4

-- = Survey not conducted.

Note: Malting varieties planted include only those recommended by the American Malting Barley Association for malting and brewing. Not all barley harvested from a recommended variety meets malting specifications. Some nonrecommended varieties produce barley that meets specifications.

Source: American Malting Barley Association and U.S. Department of Agriculture, National Agricultural Statistics Service.

Appendix table 21--Yield per harvested acre of barley in major producing States, 1970-1987

State	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988
						Bushels per acre					
North Dakota	34	38	32	48	53	46	53	55	51	48	21
Montana	38	39	42	43	49	42	28	20	39	45	24
Idaho	57	50	67	59	69	65	66	58	65	75	60
Minnesota	37	38	43	56	58	53	65	66	55	57	32
Washington	48	53	75	58	61	64	65	48	50	55	62
California	52	57	62	63	62	60	63	59	59	51	61
South Dakota	33	31	33	34	43	42	51	45	42	40	18
Oregon	46	51	65	60	62	61	62	55	57	70	74
Colorado	47	53	65	62	74	75	62	64	60	66	67
Wyoming	50	59	65	67	65	66	65	66	67	70	62
U.S. average	43	44	50	52	57	52	53	51	51	53	39

Appendix table 22--Bushels produced in barley in major producing States, selected years

State	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988
						Million bushels					
North Dakota	66	80	48	101	103	115	154	184	176	139	42
Montana	65	51	44	57	76	78	59	30	85	95	30
Idaho	41	42	59	64	76	67	88	72	72	62	51
Minnesota	22	31	35	58	51	43	62	71	55	50	27
Washington	20	20	32	44	38	29	29	25	24	18	35
California	59	60	44	40	49	54	64	57	45	35	17
South Dakota	12	16	15	20	23	23	30	32	36	34	8
Oregon	18	9	10	12	16	16	17	19	21	15	15
Colorado	15	12	16	17	16	17	20	22	21	15	12
Wyoming	6	7	9	9	9	10	10	11	11	10	9
U.S. total	416	379	361	474	516	509	599	591	611	530	291

Source: Feed Situaton and Outlook Yearbook, (Feb. 1989), and Barley: Background for 1985 Farm Legislation, (AIB-477, 1984), U.S. Department of Agriculture, Economic Research Service. And Crop Production (various annual summaries), U.S. Department of Agriculture, National Agricultural Statistics Service.

Appendix table 23--Provisions of barley programs, 1961-90

Provision	1961	1962	1963	1964
Parity price ($/bu) 1/	1.25	1.26	1.25	1.23
Support price ($/bu)	--	--	0.96	0.96
Payment rate ($/bu)	--	--	0.14	0.12
Payment ($)	--	--	2/ 0.14*Yld*Plt	2/ 0.12*Yld*Plt
Target price ($/bu)	--	--	--	--
Deficiency payment: 3/				
Advance payment ($/bu)	--	--	--	--
Final payment ($/bu)	--	--	--	--
Allocation factor (%) 4/	--	--	--	--
Nonrecourse loan:				
Basic rate ($/bu) 5/	6/ 0.93	6/ 0.93	0.82	0.84
Effective rate ($/bu) 7/	--	--	--	--
CCC domestic sales price 8/:	--	--	--	--
Legislated minimum ($/bu) 9/	0.98+CC	0.98+CC	1.01+CC	1.01+CC
Actual ($/bu) 10/	--	--	--	--
Farmer-owned reserve:	--	--	--	--
Loan level ($/bu)	--	--	--	--
Release level ($/bu)	--	--	--	--
Call level ($/bu)	--	--	--	--
Storage payment ($/bu)	--	--	--	--
Immediate entry	--	--	--	--
Feed grain ceiling (mil bu)	--	--	--	--
Feed grain floor (mil bu)	--	--	--	--
Acreage diversion (%)	--	20	20	20-40
Payment rate ($/bu)	--	50% of loan rate	20% of support	20% of support
Payment ($)	--	11/ .465*Yld*Div	2/ .192*Yld*Div	2/ .192*Yld*Div
Optional diversion (%)	--	0-20	0-20	0-10
Payment rate ($/bu)	--	60% of loan rate	50% of support	50% of support
Payment ($)	--	11/ .558*Yld*Div	2/ .48*Yld*Div	2/ .48*Yld*Div
Set-aside (%)	--	--	--	--
Payment rate ($/bu)	--	--	--	--
Payment ($)	--	--	--	--
Set-aside alternate (%)	--	--	--	--
Payment rate	--	--	--	--
Payment ($)	--	--	--	--
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/	14/ Yes	15/ Yes	No	No
Offsetting compliance 16/	No	No	No	Yes
Normal crop acreage 17/	--	--	--	--
National base acres (mil)				
Feed grain	107.9	123.3	132.4	132.5
Barley	--	16.1	17.9	17.9
Barley-oat	--	--	--	--
Barley base in CRP	--	--	--	--

See footnotes at end of table.

Continued--

Appendix table 23--Provisions of barley programs, 1961-90--Continued

Provision	1961	1962	1963	1964
National allotment acres (mil)				
Feed grain	--	--	--	--
Barley	--	--	--	--
National program acres (mil)				
Feed grain	--	--	--	--
Barley	--	--	--	--
National program yield (bu/ac)	--	--	31.3	31.9
Disaster program: 18/				
Prevented plantings payment ($/bu)	--	19/	19/	19/
Low yield criterion (%)	--	--	--	--
Low yield payment ($/bu)	--	19/	19/	19/
Payment limitation ($)	--	--	--	--
Advanced payment (%)	--	20/ 50	21/ 50	21/ 50
Support payment limitation ($)	--	--	--	--

See footnotes at end of table.

Continued--

Appendix table 23--Provisions of barley programs, 1961-90--Continued

Provision	1965	1966	1967	1968
Parity price ($/bu) 1/	1.25	1.28	1.31	1.35
Support price ($/bu)	0.96	1.00	--	--
Payment rate ($/bu)	0.16	0.2	--	--
Payment ($)	22/ 0.16*Yld*Plt	22/ .20*Yld*Plt	--	--
Target price ($/bu)	--	--	--	--
Deficiency payment: 3/				
Advance payment ($/bu)	--	--	--	--
Final payment ($/bu)	--	--	--	--
Allocation factor (%) 4/	--	--	--	--
Nonrecourse loan:				
Basic rate ($/bu) 5/	0.80	0.80	0.90	0.90
Effective rate ($/bu) 7/	--	--	--	--
CCC domestic sales price: 8/	--	--	--	--
Legislated minimum ($/bu) 9/	1.01+CC	1.05+CC	0.95+CC	0.95+CC
Actual ($/bu) 10/	--	--	--	--
Farmer-owned reserve:	--	--	--	--
Loan level ($/bu)	--	--	--	--
Release level ($/bu)	--	--	--	--
Call level ($/bu)	--	--	--	--
Storage payment ($/bu)	--	--	--	--
Immediate entry	--	--	--	--
Feed grain ceiling (mil bu)	--	--	--	--
Feed grain floor (mil bu)	--	--	--	--
Acreage diversion (%)	20-40	20	--	--
Payment rate ($/bu)	20% of support	--	--	--
Payment ($)	2/ .192*Yld*Div	--	--	--
Optional diversion (%)	0-10	0-30	--	--
Payment rate ($/bu)	50% of support	50% of support	--	--
Payment ($)	2/ .48*Yld*Div	2/ .50*Yld*Div	--	--
Set-aside (%)	--	--	--	--
Payment rate ($/bu)	--	--	--	--
Payment ($)	--	--	--	--
Set-aside alternate (%)	--	--	--	--
Payment rate ($/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	24/ No
Offsetting compliance 16/	Yes	Yes	Yes	Yes
Normal crop acreage 17/	--	--	--	--
National base acres (mil)				
Feed grain	132.7	133.2	114.9	115.1
Barley	18.0	18.0	--	--
Barley-oat	--	--	--	--
Barley base in CRP	--	--	--	--

See footnotes at end of table.

Continued--

Appendix table 23--Provisions of barley programs, 1961-90--Continued

Provision	1965	1966	1967	1968
National allotment acres (mil)				
Feed grain	--	--	--	--
Barley	--	--	--	--
National program acres (mil)				
Feed grain	--	--	--	--
Barley	--	--	--	--
National program yield (bu/ac)	31.8	38.0	--	--
Disaster program: 18/				
Prevented plantings payment ($/bu)	19/	19/	--	--
Low yield criterion (%)	--	--	--	--
Low yield payment ($/bu)	19/	19/	--	--
Payment limitation ($)	--	--	--	--
Advanced payment (%)	21/ 50	21/ 50	--	--
Support payment limitation ($)	--	--	--	--

See footnotes at end of table.

Continued--

Appendix table 23--Provisions of barley programs, 1961-90--Continued

Provision	1969	1970	1971	1972
Parity price ($/bu) 1/	1.42	1.45	1.51	1.56
Support price ($/bu)	1.03	1.03	--	1.15
Payment rate ($/bu)	0.20	0.20	--	--
Payment ($)	23/ 22/.20*Yld*Plt	23/ 22/ .20*Yld*Plt	--	--
Target price ($/bu)	--	--	--	--
Deficiency payment: 3/				
Advance payment ($/bu)	--	--	--	--
Final payment ($/bu)	--	--	--	--
Allocation factor (%) 4/	--	--	--	--
Nonrecourse loan:				
Basic rate ($/bu) 5/	0.83	0.83	0.81	0.86
Effective rate ($/bu) 7/	--	--	--	--
CCC domestic sales price: 8/	--	--	--	--
Legislated minimum ($/bu) 9/	1.08+CC	1.08+CC	0.85+CC	1.00+CC
Actual ($/bu) 10/	1.24	1.24	1.26	1.51
Farmer-owned reserve:				
Loan level ($/bu)	--	--	--	--
Release level ($/bu)	--	--	--	--
Call level ($/bu)	--	--	--	--
Storage payment ($/bu)	--	--	--	--
Immediate entry	--	--	--	--
Feed grain ceiling (mil bu)	--	--	--	--
Feed grain floor (mil bu)	--	--	--	--
Acreage diversion (%)	20	20	--	--
Payment rate ($/bu)	--	--	--	--
Payment ($)	--	--	--	--
Optional diversion (%)	0-30	0-30	--	--
Payment rate ($/bu)	45% of support	40% of support	--	--
Payment ($)	.464*Yld*Div	.412*Yld*Div	--	--
Set-aside (%)	--	--	--	--
Payment rate ($/bu)	--	--	--	--
Payment ($)	--	--	--	--
Set-aside alternate (%)	--	--	--	--
Payment rate ($/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/	25/ No	25/ No	No	No
Offsetting compliance 16/	Yes	Yes	Yes	Yes
Normal crop acreage 17/	--	--	--	--
National base acres (mil)				
Feed grain	133.1	132.9	28/ 112.1	28/ 129.9
Barley	18.0	18.0	--	28/ 17.5
Barley-oat	--	--	--	--
Barley base in CRP	--	--	--	--

See footnotes at end of table.

Continued--

Appendix table 23--Provisions of barley programs, 1961-90--Continued

Provision	1969	1970	1971	1972
National allotment acres (mil)				
Feed grain	--	--	--	--
Barley	--	--	--	--
National program acres (mil)				
Feed grain	--	--	--	--
Barley	--	--	--	--
National program yield (bu/ac)	41.0	42.0	--	42.0
Disaster program: 18/				
Prevented plantings payment ($/bu)	19/	19/	--	--
Low yield criterion (%)	--	--	--	--
Low yield payment ($/bu)	19/	19/	--	--
Payment limitation ($)	--	--	--	--
Advanced payment (%)	50	No	--	--
Support payment limitation ($)	--	--	30/ 55,000	30/ 55,000

See footnotes at end of table.

Continued--

Appendix table 23--Provisions of barley programs, 1961-90--Continued

Provision	1973	1974	1975	1976
Parity price ($/bu) 1/	1.78	2.09	2.51	2.78
Support price ($/bu)	1.27	--	--	--
Payment rate ($/bu)	--	--	--	--
Payment ($)	--	--	--	--
Target price ($/bu)	--	1.13	1.13	1.28
Deficiency payment: 3/				
Advance payment ($/bu)	--	--	--	--
Final payment ($/bu)	--	0.00	0.00	0.00
Allocation factor (%) 4/	--	--	--	--
Nonrecourse loan:				
Basic rate ($/bu) 5/	0.86	0.90	0.90	1.22
Effective rate ($/bu) 7/	--	--	--	--
CCC domestic sales price: 8/				
Legislated minimum ($/bu) 9/	1.00+CC	1.04+Adj+CC	1.30+Adj+CC	1.47+Adj+CC
Actual ($/bu) 10/	2.49	3.14	3.05	None
Farmer-owned reserve:				
Loan level ($/bu)	--	--	--	--
Release level ($/bu)	--	--	--	--
Call level ($/bu)	--	--	--	--
Storage payment ($/bu)	--	--	--	--
Immediate entry	--	--	--	--
Feed grain ceiling (mil bu)	--	--	--	--
Feed grain floor (mil bu)	--	--	--	--
Acreage diversion (%)	--	--	--	--
Payment rate ($/bu)	--	--	--	--
Payment ($)	--	--	--	--
Optional diversion (%)	--	--	--	--
Payment rate ($/bu)	--	--	--	--
Payment ($)	--	--	--	--
Set-aside (%)	10	None	None	None
Payment rate ($/bu)	26/ 0.26	Def	Def	Def
Payment ($)	0.26*Yld*Bas/2	0.00*Yld*Alt	0.00*Yld*Alt	0.00*Yld*Alt
Set-aside alternate (%)	27/ 0	--	--	--
Payment rate ($/bu)	0.12	--	--	--
Payment ($)	0.12*Yld*Bas/2	--	--	--
Set-aside voluntary (%)	--	--	--	--
Payment rate ($/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	No	No	No
Cross compliance 13/	No	No	No	No
Offsetting compliance 16/	Yes	Yes	Yes	No
Normal crop acreage 17/	--	--	--	--
National base acres (mil)				
Feed grain	28/ 130.1	--	--	--
Barley	28/ 17.3	--	--	--
Barley-oat	--	--	--	--
Barley base in CRP	--	--	--	--

See footnotes at end of table.

Continued--

Appendix table 23--Provisions of barley programs, 1961-90--Continued

Provision	1973	1974	1975	1976
National allotment acres (mil)				
Feed grain	--	29/ 89.0	29/ 89.0	29/ 89.0
Barley	--	29/ 11.7	29/ 11.7	29/ 11.7
National program acres (mil)				
Feed grain	--	--	--	--
Barley	--	--	--	--
National program yield (bu/ac)	44.0	46.0	45.5	44.0
Disaster program: 18/				
Prevented plantings payment ($/bu)	--	0.38	0.38	0.42
Low yield criterion (%)	--	66.7	66.7	less than normal
Low yield payment ($/bu)	--	0.38	0.38	0.42 on the short fall
Payment limitation ($)	--	--	--	--
Advanced payment (%)	50	--	--	--
Support payment limitation ($)	30/ 55,000	31/ 20,000	31/ 20,000	31/ 20,000

See footnotes at end of table.

Continued--

Appendix table 23--Provisions of barley programs, 1961-90--Continued

Provision	1977	1978	1979	1980
Parity price ($/bu) 1/	3.03	3.24	3.92	4.09
Support price ($/bu)	--	--	--	--
Payment rate ($/bu)	--	--	--	--
Payment ($)	--	--	--	--
Target price ($/bu)	2.15	2.25	2.40	32/ 2.55/2.29
Deficiency payment: 3/				
Advance payment ($/bu)	--	--	--	--
Final payment ($/bu)	0.50	0.35	0.11	0.00
Allocation factor (%) 4/	--	82.4	100	100
Nonrecourse loan:				
Basic rate ($/bu) 5/	1.63	1.63	33/ 1.63/1.71	1.83
Effective rate ($/bu) 7/	--	--	--	--
CCC domestic sales price: 8/				
Legislated minimum ($/bu) 9/	2.47+Adj+CC	2.45	2.57	2.78
Actual ($/bu) 10/	None	None	None	None
Farmer-owned reserve:				
Loan level ($/bu)	1.63	1.63	33/ 1.63/1.71	34/ 1.83/1.95
Release level ($/bu)	2.04	2.04	33/ 2.04/2.14	2.29
Call level ($/bu)	2.28	2.28	33/ 2.28/2.48	2.65
Storage payment ($/bu)	0.25	0.25	0.25	0.25
Immediate entry	No	No	No	No
Feed grain ceiling (mil bu)	No	No	No	No
Feed grain floor (mil bu)	No	No	No	No
Acreage diversion (%)	--	--	--	--
Payment rate ($/bu)	--	--	--	--
Payment ($)	--	--	--	--
Optional diversion (%)	--	35/ 10	--	--
Payment rate ($/bu)	--	0.12	--	--
Payment ($)	--	0.12*Yld*Plt	--	--
Set-aside (%)	None	35/ 10	35/ 20	None
Payment rate ($/bu)	Def	AF*Def	AF*Def	AF*Def
Payment ($)	0.50*Yld*Alt	0.288*Yld*Plt	0.11*Yld*Plt	0.00*Yld*Plt
Set-aside alternate (%)	--	36/ 20	36/ 30	37/ 0
Payment rate ($/bu)	--	Def	Def	Def
Payment ($)	--	0.35*Yld*Plt	0.11*Yld*Plt	.00*Yld*Plt
Set-aside voluntary (%)	--	--	--	--
Payment rate ($/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/	No	No	No	No
Cross compliance 13/	No	38/ Yes	38/ Yes	No
Offsetting compliance 16/	No	39/ Yes	39/ Yes	No
Normal crop acreage 17/	--	Yes	Yes	Yes
National base acres (mil)				
Feed grain	--	--	--	--
Barley	--	--	--	--
Barley-oat	--	--	--	--
Barley base in CRP	--	--	--	--

See footnotes at end of table.

Continued--

Appendix table 23--Provisions of barley programs, 1961-90--Continued

Provision	1977	1978	1979	1980
National allotment acres (mil)				
Feed grain	29/ 89.0	--	--	--
Barley	29/ 11.7	--	--	--
National program acres (mil)				
Feed grain	--	40/ 88.7/97.4	40/ 83.4/97.4	40/ 103.9/105.2
Barley	--	40/ 7.4/ 7.5	40/ 6.5/ 7.8	40/ 7.9/ 8.3
National program yield (bu/ac)	44.5	47.6	48.3	49.3
Disaster program: 18/				
Prevented plantings payment ($/bu)	0.72	0.75 on 75% normal yield	0.80 on 75% normal yield	32/ 0.85/ 0.76 on 75% normal yield
Low yield criterion (%)	less than normal	60% of normal	60% of normal	60% of normal
Low yield payment ($/bu)	0.72 on the short fall	1.13 on the short fall	1.20 on the short fall	32/ 1.28/1.15 on the short fall
Payment limitation ($)	--	--	--	41/ 100,000
Advanced payment (%)	--	--	--	--
Support payment limitation ($)	31/ 20,000	42/ 40,000	42/ 45,000	43/ 50,000

See footnotes at end of table.

Continued--

Appendix table 23--Provisions of barley programs, 1961-90--Continued

Provision	1981	1982	1983	1984
Parity price ($/bu) 1/	4.54	4.76	4.87	5.00
Support price ($/bu)	--	--	--	--
Payment rate ($/bu)	--	--	--	--
Payment ($)	--	--	--	--
Target price ($/bu)	2.60	2.60	2.60	2.60
Deficiency payment: 3/				
Advance payment ($/bu)	--	0.00	0.20	--
Final payment ($/bu)	0.11	0.40	0.21	0.26
Allocation factor (%) 4/	100	44/ NA	44/ NA	44/ NA
Nonrecourse loan:				
Basic rate ($/bu) 5/	1.95	2.08	2.16	2.08
Effective rate ($/bu) 7/	--	--	--	--
CCC domestic sales price: 8/				
Legislated minimum ($/bu) 9/	2.68	2.92	2.92	2.92
Actual ($/bu) 10/	None	3.34	3.05	3.33
Farmer-owned reserve:				
Loan level ($/bu)	45/ 2.07	46/ 2.37	47/ 2.16	2.08
Release level ($/bu)	45/ 2.55	46/ 2.65	47/ 2.65	2.65
Call level ($/bu)	45/ 2.55	--	--	--
Storage payment ($/bu)	0.265	0.265	0.265	0.265
Immediate entry	No	No	No	No
Feed grain ceiling (mil bu)	No	No	No	Could be
Feed grain floor (mil bu)	No	No	No	No
Acreage diversion (%)	--	--	--	--
Payment rate ($/bu)	--	--	--	--
Payment ($)	--	--	--	--
Optional diversion (%)	--	--	10	--
Payment rate ($/bu)	--	--	1.00	--
Payment ($)	--	--	1.00*Yld*Div	--
Set-aside (%)	None	--	--	--
Payment rate ($/bu)	AF*Def	--	--	--
Payment ($)	0.11*Yld*Plt	--	--	--
Set-aside alternate (%)	37/0	--	--	--
Payment rate ($/bu)	Def	--	--	--
Payment ($)	0.11*Yld*Plt	--	--	--
Set-aside voluntary (%)	--	--	--	--
Payment rate ($/bu)	--	--	--	--
Payment ($)	--	--	--	--
Acreage reduction (%)	--	10	10	10
Payment rate ($/bu)	--	Def	Def	Def
Payment ($)	--	0.40*Yld*Plt	0.21*Yld*Prg	0.26*Yld*Prg
Acreage reduction voluntary (%)				
Payment rate ($/bu)	--	--	--	--
Payment ($)	--	--	--	--
PIK acreage diversion (%)	--	--	42/	--
Payment rate (bu)	--	--	--	--
Payment (bu)	--	--	--	--
Compliance restrictions:				
Soil conserving base 12/	No	No	No	No
Cross compliance 13/	No	No	No	No
Offsetting compliance 16/	No	No	No	No
Normal crop acreage 17/	Yes	44/ NA	44/ NA	44/ NA
National base acres (mil)				
Feed grain	--	119.9	120.5	120.6
Barley	--	10.5	10.2	11.6
Barley-oat	--	20.8	--	21.4
Barley base in CRP	--	--	--	--

See footnotes at end of table.

Continued--

Appendix table 23--Provisions of barley programs, 1961-90--Continued

Provision	1981	1982	1983	1984
National allotment acres (mil)				
Feed grain	--	--	--	--
Barley	--	--	--	--
National program acres (mil)				
Feed grain	40/ 115.2/105.0	44/ NA	44/ NA	44/ NA
Barley	40/ 9.7/10.2	44/ NA	44/ NA	44/ NA
National program yield (bu/ac)	50.2	46.0	49.0	50.0
Disaster program: 18/				
Prevented plantings payment ($/bu)	0.87 on 75% normal yield	50/ 0.87	50/ 0.87	50/
Low yield criterion (%)	60% of normal	--	--	--
Low yield payment ($/bu)	1.30 on the short fall	50/ 1.30	50/ 1.30	50/
Payment limitation ($)	41/ 100,000	41/ 100,000	41/ 100,000	41/ 100,000
Advanced payment (%)	--	No	50	No
Support payment limitation ($)	43/ 50,000	43/ 50,000	51/ 50,000	52/ 50,000

See footnotes at end of table.

Continued--

Appendix table 23--Provisions of barley programs, 1961-90--Continued

Provision	1985	1986 54/	1987	1988
Parity price ($/bu) 1/	4.78	4.45	4.40	4.49
Support price ($/bu)	--	--	--	--
Payment rate ($/bu)	--	--	--	--
Payment ($)	--	--	--	--
Target price ($/bu)	2.60	2.60	2.60	2.51
Deficiency payment: 3/				
Advance payment ($/bu)	0.22	0.38	0.444	0.304
Final payment ($/bu)	0.52	1.04	1.44	0.76
Allocation factor (%) 4/	44/ NA	44/ NA	44/ NA	44/ NA
Nonrecourse loan:				
Basic rate ($/bu) 5/	2.08	1.95	1.86	1.80
Effective rate ($/bu) 7/	--	1.56	1.49	1.44
CCC domestic sales price: 8/				
Legislated minimum ($/bu) 9/	2.92	2.92	2.86	2.76
Actual ($/bu) 10/	3.33	3.32	3.56	3.27
Farmer-owned reserve:				
Loan level ($/bu)	2.08	1.56	1.49	1.44
Release level ($/bu)	2.65	2.65	2.60	2.51
Call level ($/bu)	--	--	--	--
Storage payment ($/bu)	0.265	0.265	0.265	0.265
Immediate entry	No	No	No	55/ No
Feed grain ceiling (mil bu)	48/ Could be	56/ Yes	56/ Yes	Yes
Feed grain floor (mil bu)	No	No	No	No
Acreage diversion (%)	--	2.5	--	--
Payment rate ($/bu)	--	0.57	1.60	1.40
Payment ($)	--	0.57*Yld*Div	--	--
Optional diversion (%)	--	--	15	10
Payment rate ($/bu)	--	--	1.60	1.40
Payment ($)	--	--	1.60*Yld*Div	1.40*Yld*Div
Set-aside (%)	--	--	--	--
Payment rate ($/bu)	--	--	--	--
Payment ($)	--	--	--	--
Set-aside alternate (%)	--	--	--	--
Payment rate ($/bu)	--	--	--	--
Payment ($)	--	--	--	--
Set-aside voluntary (%)	--	--	--	--
Payment rate ($/bu)	--	--	--	--
Payment ($)	--	--	--	--
Acreage reduction (%)	10	17.5	20	20
Payment rate ($/bu)	Def	Def	Def	Def
Payment ($)	0.52*Yld*Plt	1.04*Yld*Plt	Def*Yld*Plt	Def*Yld*Plt
Acreage reduction voluntary (%)	--	57/ 50-92 rule	57/ 50-92 rule	58/ 0-92 rule
Payment rate ($/bu)	--	Def	Def	Def
Payment ($)	--	0.92*1.04*Yld*Base	0.92*Def*Yld*Pmt	0.92*Def*Yld*Pmt
PIK acreage diversion (%)	--	--	--	--
Payment rate (bu)	--	--	--	--
Payment (bu)	--	--	--	--
Compliance restrictions:				
Soil conserving base 12/	No	No	No	No
Cross compliance 13/	No	No	59/ Limited	59/ Limited
Offsetting compliance 16/	No	No	No	No
Normal crop acreage 17/	44/ NA	44/ NA	44/ NA	44/ NA
National base acres (mil)				
Feed grain	126.2	122.3	119.8	120.1
Barley	13.3	12.4	12.5	12.5
Barley-oat	22.7	21.9	20.9	--
Barley base in CRP	--	0.1	1.1	1.9

See footnotes at end of table.

Continued--

Appendix table 23--Provisions of barley programs, 1961-90--Continued

Provision	1985	1986 54/	1987	1988
National allotment acres (mil)				
Feed grain	--	--	--	--
Barley	--	--	--	--
National program acres (mil)				
Feed grain	44/ NA	44/ NA	44/ NA	44/ NA
Barley	44/ NA	44/ NA	44/ NA	44/ NA
National program yield (bu/ac)	49.0	60/ 49.0	60/ 49.0	60/ 49.0
Disaster program: 18/				
Prevented plantings payment ($/bu)	50/	50/	50/	50/
Low yield criterion (%)	--	--	--	--
Low yield payment ($/bu)	50/	50/	50/	50/
Payment limitation ($)	41/ 100,000	41/ 100,000	61/ Yes	61/ Yes
Advanced payment (%)	50	62/ 40/100	63/ 40/50	64/ 40/100
Support payment limitation ($)	53/ 50,000	66/ 50,000	67/ 50,000	67/ 50,000

See footnotes at end of table.

Continued--

Appendix table 23--Provisions of barley programs, 1961-90--Continued

Provision	1989	1990
Parity price ($/bu) 1/	--	--
Support price ($/bu)	--	--
Payment rate ($/bu)		
Payment ($)	--	--
Target price ($/bu)	2.43	2.36
Deficiency payment: 3/		
Advance payment ($/bu)	0.092	--
Final payment ($/bu)	0.23	--
Allocation factor (%) 4/	44/ NA	44/ NA
Nonrecourse loan:		
Basic rate ($/bu) 5/	1.68	1.60
Effective rate ($/bu) 7/	1.34	1.28
CCC domestic sales price: 8/		
Legislated minimum ($/bu) 9/	2.67	2.60
Actual ($/bu) 10/	3.18	--
Farmer-owned reserve:		
Loan level ($/bu)	1.34	1.28
Release level ($/bu)	2.43	2.36
Call level ($/bu)	--	--
Storage payment ($/bu)	0.265	0.265
Immediate entry	55/ No	--
Feed grain ceiling (mil bu)	Yes	--
Feed grain floor (mil bu)	No	--
Acreage diversion (%)	--	--
Payment rate ($/bu)	--	--
Payment ($)	--	--
Optional diversion (%)	--	--
Payment rate ($/bu)	--	--
Payment ($)	--	--
Set-aside (%)	--	--
Payment rate ($/bu)	--	--
Payment ($)	--	--
Set-aside alternate (%)	--	--
Payment rate ($/bu)	--	--
Payment ($)	--	--
Set-aside voluntary (%)	--	--
Payment rate ($/bu)	--	--
Payment ($)	--	--
Acreage reduction (%)	10	10
Payment rate ($/bu)	Def	--
Payment ($)	Def*Yld*Plt	--
Acreage reduction voluntary (%)	58/ 0-92 rule	58/ 0-92 rule
Payment rate ($/bu)	Def	--
Payment ($)	0.92*Def*Yld*Pmt	--
PIK acreage diversion (%)	--	--
Payment rate (bu)	--	--
Payment (bu)	--	--
Compliance restrictions:		
Soil conserving base 12/	No	No
Cross compliance 13/	59/ Limited	59/ Limited
Offsetting compliance 16/	No	No
Normal crop acreage 17/	44/ NA	44/ NA
National base acres (mil)		
Feed grain	119.1	--
Barley	12.3	--
Barley-oat	--	--
Barley base in CRP	2.2	--

See footnotes at end of table.

Continued--

Appendix table 23--Provisions of barley programs, 1961-90--Continued

Provision	1989	1990
National allotment acres (mil)		
Feed grain	--	--
Barley		
National program acres (mil)		
Feed grain	44/ NA	44/ NA
Barley	44/ NA	44/ NA
National program yield (bu/ac)	60/ 49.0	--
Disaster program: 18/		
Prevented plantings payment ($/bu)	50/	50/
Low yield criterion (%)	--	--
Low yield payment ($/bu)	50/	50/
Payment limitation ($)	61/ Yes	61/ Yes
Advanced payment (%)	65/ 40	40
Support payment limitation ($)	67/ 50,000	67/ 50,000

Footnotes for Appendix table 23--Provisions of barley programs, 1961-90

1/ Average parity price of barley for May.
2/ Paid either in the form of a certificate that may be redeemed in grain or as a sight-draft cashable at any bank.
3/ 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.
4/ The allocation factor, ranging from 80 to 100, is determined by dividing national program acres by number of acres harvested.
5/ 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.
6/ Limited to normal production on permitted acres.
7/ This is the loan rate after adjustment by the Secretary as authorized by the 1985 Act in order to make U.S. feed grains competitive in export markets.
8/ Sales made at fixed prices or through competitive bids.
9/ In any event, the CCC can not sell stockholdings for less than the going market price.
10/ Simple average of actual sales.
11/ Paid in the form of negotiable certificates for which participants can receive either grain or the cash equivalent of the grain as the CCC acts as their marketing agent.
12/ Producers must maintain a soil conserving base in addition to planting diverted acres to conserving use.
13/ Producers must be in compliance with feed grain program requirements on other farms they own or have an interest in.
14/ Producers must comply with the corn-sorghum program.
15/ Producers must not exceed the farm's corn and sorghum base.
16/ Producers must be in compliance with feed grain program requirements on other farms they own or have an interest in.
17/ 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 the farm plus acres set-aside cannot exceed a farm's normal crop acreage.
18/ Bad weather or unavoidable hazard.
19/ Price support income is assured regardless of drought, hail, excess moisture, or other crop damage.
20/ At signup, producers may be paid 50 percent of the total payment for which they will become eligible by complying with the program.
21 At signup, producers may be paid 50 percent of the estimated total diversion payment.
22/ Payment on planted acreage, not to exceed 50 percent of total feed grain base.
23/ Participants who plant at least 90 percent of their maximum acreage eligible for price support payment will be considered as having planted their entire acreage eligible for payment.
24/ Eligibility for price support does not require participation in the feed grain program unless producers want to establish a barley base so they can substitute wheat on their barley acreage.
25/ Producers who comply with the wheat and feed grain programs may substitute wheat for feed grains or feed grains for wheat within the total acreages permitted under both programs.
26/ The reported figure represents a preliminary payment. The total payment is determined by the difference between the support price and the average price received by farmers over the first 5 months of the marketing year. If the preliminary payment is greater than the total payment as finally determined, no refund is required.
27/ Producers who elect not to set aside but do not increase feed grain acreage above 1972 levels are eligible for program benefits at a lower level of support payment.
28/ Once set-aside and conserving base requirements are met, producers can plant any crop (excluding marketing quota crops) on the remaining acres. If less than 45 percent of the feed grain base is planted to feed grains or authorized substitute crops (wheat and soybeans), this could result in loss of base (not to exceed 20 percent in any one year). After 3 consecutive years of zero planting, the base will be removed.
29/ Any nonconserving crop, excluding marketing quota crops, may be substituted for feed grain in plantings. The feed grain allotment does not restrict the acreage of feed grains or substitute crop that farmers may produce on their land. It is used only to determine payments to producers in the event they are due. Failure to plant at least 90 percent of the farm allotment to feed grains or substitute crop will result in loss of allotment not to exceed 20 percent in any one year. After 3 consecutive years of zero planting, the allotment will be removed.
30/ Applies to total amount of feed grain program and public access payments a person can receive, but not to loans or purchases.
31/ Applies to total amount of payments a person can receive under a combination of feed grain, wheat, and upland cotton programs, but not to payments for public access, loans, and purchases.
32/ Target price for farmers who plant within their normal crop acreage is $2.35, otherwise is $2.05.
33/ Announced before (Reserve I)/announced following the suspension of exports to the Soviet Union (Reserve II).
34/ Announced before (Reserve II)/announced following passage of Agricultural Act of 1980 on December 3, 1980 (Reserve III).

35/ Set-aside and diversion based off of current plantings.

36/ By voluntarily reducing current year plantings of corn by the specified percentage of previous years' plantings in addition to setting aside the program level of current year plantings, the farmers will be guaranteed 100 percent target price coverage. That is, their program payment would not be reduced by the allocation factor.

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

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

39/ Off-setting 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.

40/ Preliminary/final announced national program acres.

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

42/ Total amount of payments a person can receive under a combination of feed grain, wheat, 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.

43/ Total amount of deficiency payments a person can receive under a combination of feed grain, wheat, 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.

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

45/ For grains entered after October 6 (Reserve IV).

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

47/ For grains entered during 1983 marketing year (Reserve V).

48/ If a cap is imposed, it cannot be less than 1 million bushels of feed grains.

49/ In 1983, the feed grain PIK program option was not made available to barley acreage.

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

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

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

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

54/ All cash payments subject to reduction of 4.3 percent, Gramm-Rudmann-Hollings Act.

55/ When 9-month loans mature, entry into the farmer-owned reserve will be permitted only if reserve quantities of grain fall below 450 million bushels and farm prices do not exceed 140 percent of the current loan rate.

56/ If the quantity of feed grains in the farmer-owned reserve exceeds 7 percent of the established feed grain usage for the crop year, entry of the feed grain crop into the reserve will not be permitted.

57/ 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.

58/ 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.

59/ 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 those crops. Oats and extra long staple cotton are not subject to limited cross-compliance requirements.

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

61/ 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) any 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.

62/ 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.

63/ 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.

64/ 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.

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

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66/ Total deficiency and diversion payments a person can receive under a combination of the feed grain, wheat, 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.

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

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

UNITED STATES DEPARTMENT OF AGRICULTURE
ECONOMIC RESEARCH SERVICE
1301 NEW YORK AVENUE, NW.
WASHINGTON, DC 20005-4788