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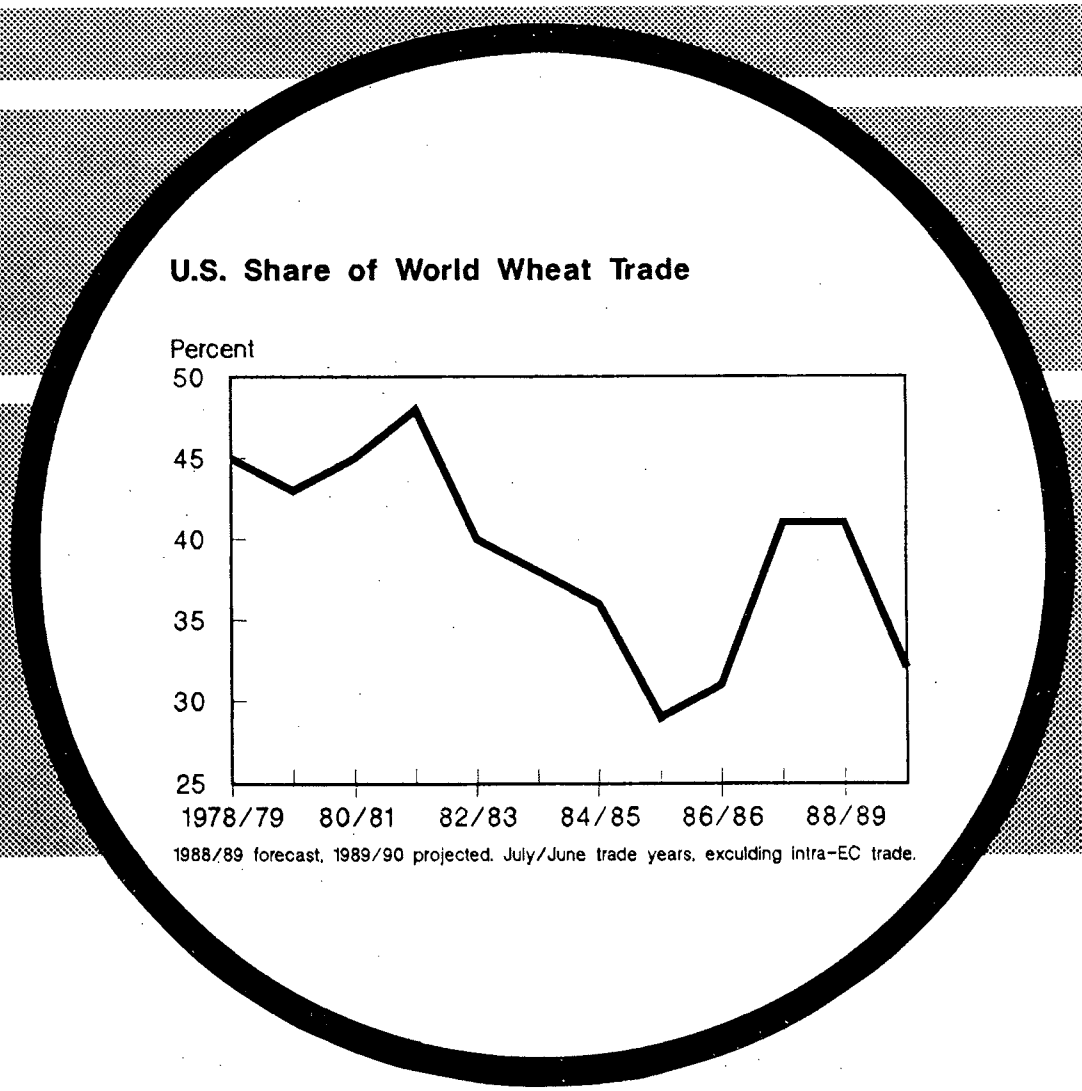
May 1989

Wheat

Situation and Outlook Report



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U.S. wheat production in 1989/90 is projected at 2,050 million bushels, 13 percent above last year's crop. Based on surveys taken around May 1 by USDA's National Agricultural Statistics Service, the winter wheat crop is forecast at 1,430 million bushels, the smallest since 1978.

Based on planing intentions and some replanting of winter wheat to spring wheat in Washington and Montana, the spring wheat crop (including durum) is projected at 620 million bushels. The projection, which assumes average yields and abandonment, is almost 2.5 times larger than last year's drought-reduced crop.

Hard red winter wheat production is forecast down more than 20 percent from last year and the lowest since 1978. Production has been particularly hard hit in the Southern Plains. Kansas, normally the largest producing State, may harvest nearly 40 percent less than last year, although plantings were up more than 20 percent. Plantings also were up in Texas, Oklahoma, Nebraska, and Colorado, but production declines of up to 32 percent are forecast for these States. Unusually dry conditions from last fall through April and widely fluctuating temperatures in late winter and early spring caused much larger than normal abandonment and reduced yields.

Hard red winter wheat supplies are forecast down 35 percent from 1988/89, and may be the lowest since 1953. Although 1988/89 domestic use and exports are forecast below a yearearlier, use will exceed output, and June 1, 1989, stocks are forecast at only 246 million bushels, the lowest since 1974/75.

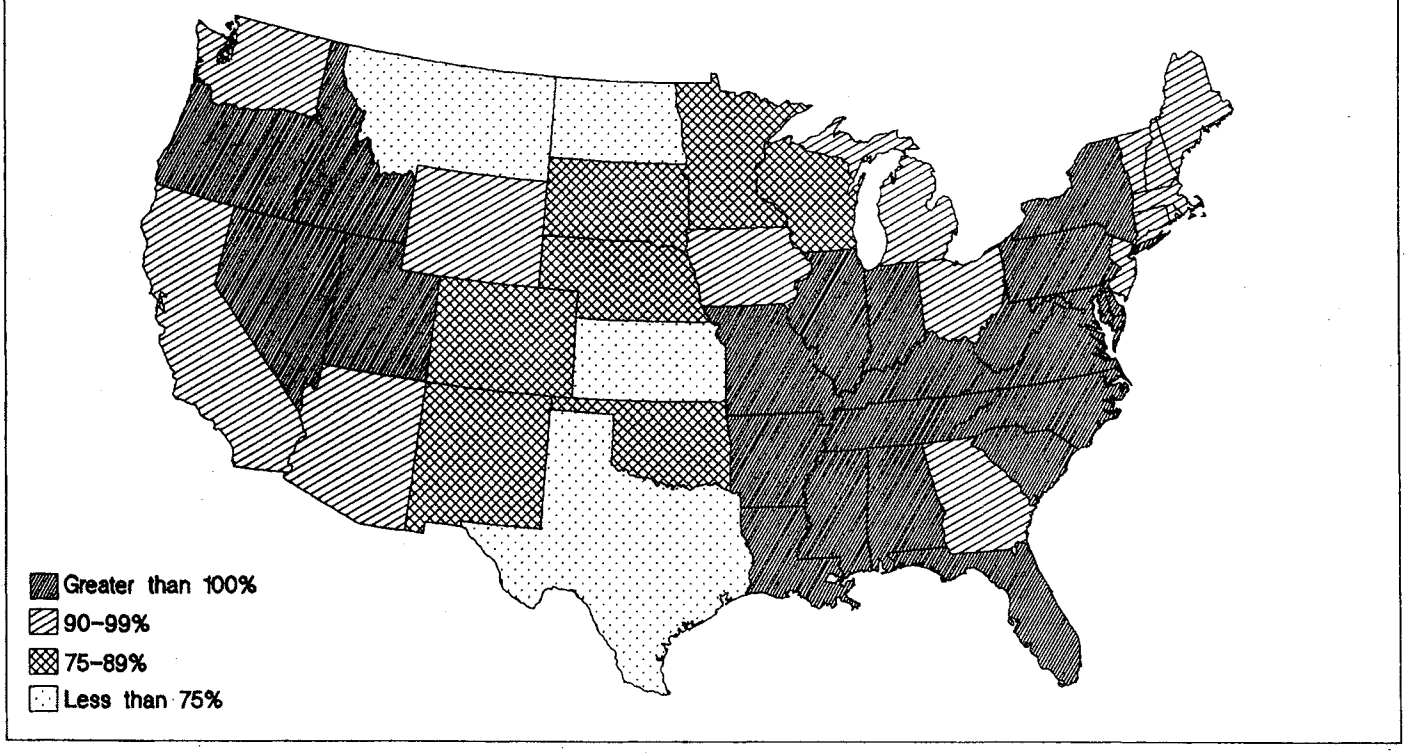
In contrast, above-average production is expected in the soft red winter areas of the Corn Belt and Southeast, and the soft red winter crop could be the largest since 1982/83. However, over 35 percent of area planted to winter white wheat in Washington is not expected to be harvested, reducing the winter white estimate to 182 million bushels.

The total 1989/90 U.S. wheat supply is projected at 2,665 million bushels, down almost 14 percent from a year earlier and more than 30 percent below 1987/88. The decline is due to the more than 50-percent drop in beginning stocks from June 1, 1988, to the 594 million bushels forecast this June 1.

Tighter U.S. supplies and larger foreign production may cause U.S. exports to drop more than 20 percent from this year to 31.5 million tons in 1989/90 (July/June). U.S. market share is projected to fall from 42 percent in 1988/89 to 32 percent because of larger supplies in competing countries.

Tight supplies and continued strong prices will characterize the world wheat market in 1989/90. Although world production is projected to climb 6 percent from 1988/89 to a record 533 million tons, consumption may slightly exceed production. Thus, global stocks may decline slightly, following a forecast 23-percent decline in 1988/89. The world stocks-to-use ratio is forecast at its lowest point in the last 30 years.

Figure 1
1989 Winter Wheat Yields as Percent of Trend Yield



Outlook for 1989/90

Production Prospects for 1989/90

U.S. wheat production in 1989/90 is projected at 2,050 million bushels, up 13 percent from last year's crop. Based on surveys taken around May 1 by USDA's National Agricultural Statistics Service, the winter wheat crop is forecast at 1,430 million bushels, the smallest since 1978 when 15 percent less land was sown to winter wheat and yield potentials were lower.

Based on planting intentions and some replanting of winter wheat to spring wheat in Washington and Montana, the spring wheat crop (including durum) is projected at 620 million bushels. The projection, which assumes average yields and abandonment, is almost 2.5 times larger than last year's drought-reduced crop.

Wheat prices averaged the highest since the 1980/81 crop year. The average farm price of wheat increased from $3.74 per bushel in September 1988 to over $4.00 in April 1989. With the earlier indications of a much larger crop, wheat prices had been expected to decline somewhat in 1989/90 but remain firm. However, with the reduced winter wheat crop the 1989/90 farm price is projected at $3.80-$4.20, compared with $3.74 in 1988/89.

As a result of reduced acreage reduction program (ARP) requirements and strong prices, the area seeded to winter wheat increased 12 percent from a year earlier, and farmers reported intentions to increase durum and other spring wheat seedings by about 17 percent. Spring wheat plantings may exceed the March planting intentions because the winter wheat acreage suffering from winterkill in Washington and Montana can be replanted to spring wheat and because damage to the winter wheat crop has improved spring wheat demand prospects.

Earlier indications were for 1989 wheat production to show a much larger increase from 1988's drought-reduced crop of 1.8 billion bushels. The ARP requirements were reduced from 27.5 to 10 percent of wheat base acres, thereby permitting a substantial increase in area planted.

Enrollment of wheat base acres in the Conservation Reserve Program somewhat limits the potential to increase wheat acreage by effectively limiting wheat base. For the 1988/89 crop, retirement of wheat base in the CRP reached about 7.1 million acres, and may approach 9.5 million acres in 1989/90.

Enrollment in the 1989 annual programs is estimated at 77 percent of the effective base, compared with 86 percent in 1988. ARP acres totaled 6.1 million, with another 3.4 enrolled in 0/92.

Winter Wheat Supplies Uncertain

Winter wheat seedings for the 1989 crop were over 54.7 million acres, the highest since 1985. In 1988 about 56 percent of winter wheat production was hard red winter (HRW), slightly less than 30 percent soft red winter (SRW) and the remainder white wheat. However, in 1989 HRW production is forecast to be only 49 percent of winter wheat production, SRW 39%, and the remainder white wheat. Throughout the winter and early spring there were indications of potential problems for the HRW crop.

Lack of soil moisture has been a concern for the HRW crop through much of the Southern Plains. Since last fall, rainfall has been well below normal in the Southern Plains. Kansas had one of its driest October-Aprils on record, with rainfall—including snow — averaging less than 5 inches. Rainfall in portions of Colorado, Nebraska, Oklahoma, and Texas was also well below normal. As a result the crop got off to a slow start.

To make matters worse, extreme cold swept through the region during the late winter, causing extensive winterkill from Washington and Montana to Texas. USDA forecasts of winter wheat production are based on surveys taken in late April and early May by NASS.

By contrast prospects are generally very good in those States that traditionally grow SRW. Above-average production is expected throughout the Corn Belt and Southeast. The SRW crop could be the largest since 1982/83.

Projections of winter white wheat production, at 182 million bushels, are considerably lower than might have been expected based on the acreage reported in the March *Prospective Plantings* report, trend yields, and average abandonment rates. Based on the March *Prospective Plantings* and the harvested acres reported in the May *Crop Production* report, over 35 percent of the area originally sown to winter wheat in Washington is not expected to be harvested. Much of this acreage was probably lost to winterkill.

Spring Wheat Production Expected To Increase

The *Prospective Plantings* report indicated that the area seeded to durum wheat in 1989 would expand almost 16 percent over 1988, while the area seeded to other spring wheat was indicated up 17 percent. Assuming average yields and abandonment, spring wheat production is expected to be almost 2.5 times the 250 million bushels in 1988. With timely rainfall a normal spring wheat crop is anticipated. However, the 1988 drought left low subsoil moisture in many States that was not replenished during the winter. Thus, timely rains will be critical.

Table 1-- All wheat: Supply and disappearance 1/

Year beginning June 1	1986	1987	1988 estimated	1989 projected
		Million Bushels		
Beginning stocks	1,905	1,821	1,261	594
Production	2,092	2,107	1,811	2,050
Imports	21	16	22	21
Supply, total	4,018	3,945	3,094	2,665
Domestic				
Food	696	719	730	735
Seed	84	85	100	105
Feed and residual	413	288	210	175
Domestic, total	1,193	1,092	1,040	1,015
Exports	1,004	1,592	1,460	1,150
Disappear., total	2,197	2,684	2,500	2,165
Ending stocks	1,821	1,261	594	500

Table 2-- Wheat by class: Supply and disappearance 1/

Year begining June 1	Hard winter	Hard spring	Soft red	White	Durum	Total
			Million bushels			
1987/88						
Beginning stocks	973	490	77	185	95	1,821
Production	1,021	431	348	216	93	2,107
Supply, total 2/	1,994	927	425	404	195	3,945
Domestic disappear.	522	270	190	60	50	1,092
Exports	905	255	160	210	62	1,592
Disappear., total	1,427	525	350	270	112	2,684
Ending stocks	567	402	75	134	83	1,261
1988/89 (estimated)						
Beginning stocks	567	402	75	134	83	1,261
Production	88	181	474	231	45	1,811
Supply, total 2/	1,447	590	548	369	139	3,094
Domestic disappear.	519	193	226	47	55	1,040
Exports	682	200	305	250	23	1,460
Disappear., total	1,201	393	531	297	78	2,500
Ending stocks	246	197	17	72	61	594

1/Includes flour and products in wheat equivalent. 2/Total supply includes imports.

Reports of widespread winterkill of winter wheat in Montana and Washington were followed with reports of reseeding to spring wheat, barley, and other spring-sown crops. Seedings of spring wheat in these States will likely will mean that these States will plant more than indicated in the *Prospective Plantings* report.

Crop Conditions Show Stressed HRW

The condition of the wheat crop as reported in the *Weekly Weather and Crop Bulletin* varied as the year progressed. The condition report is a subjective assessment of the crop, not estimates based on statistically sound surveys as are the forecasts made by NASS in the *Crop Production*. However, the weekly conditions reports may provide an indication of the vigor of the wheat plant.

The condition of the HRW crop deteriorated throughout April, but stabilized thereafter. In May 1988 almost 50 percent of the crop was rated as at least fair, compared to less than 20 percent in 1989. Prospects for the SRW crop are better, with about 90 percent of the crop rated as fair or better. The overall quality of the 1989 white winter wheat crop appears to have improved throughout the year. This apparent improvement may be deceiving in view of the high rate of abandonment of winter wheat acreage in Washington. The May 22 *Weekly Weather and Crop Bulletin* provided the first indication of the condition of the spring wheat crop. In the four States that reported conditions, 2 percent is rated excellent, 33 percent good, 49 percent fair, 13 percent poor, and 3 percent very poor.

Figure 2
HRW Crop Conditions

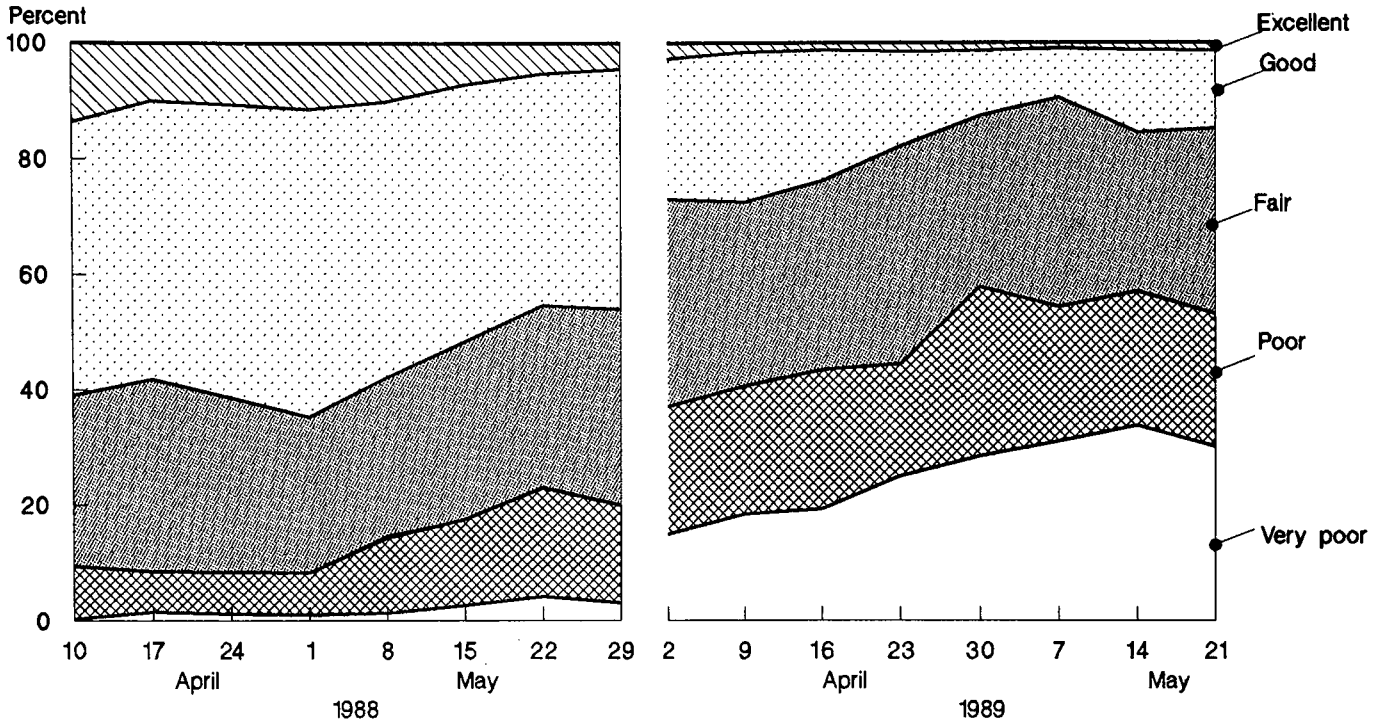


Figure 3
SRW Crop Conditions

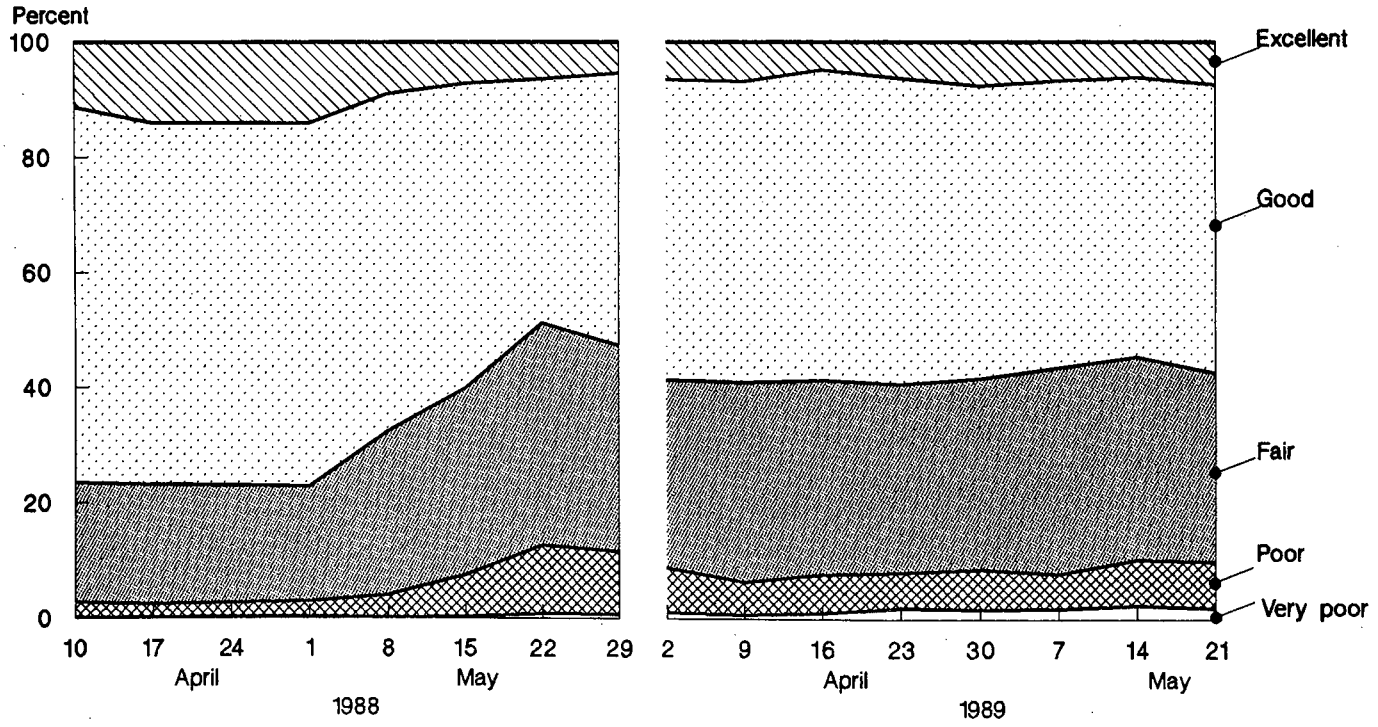
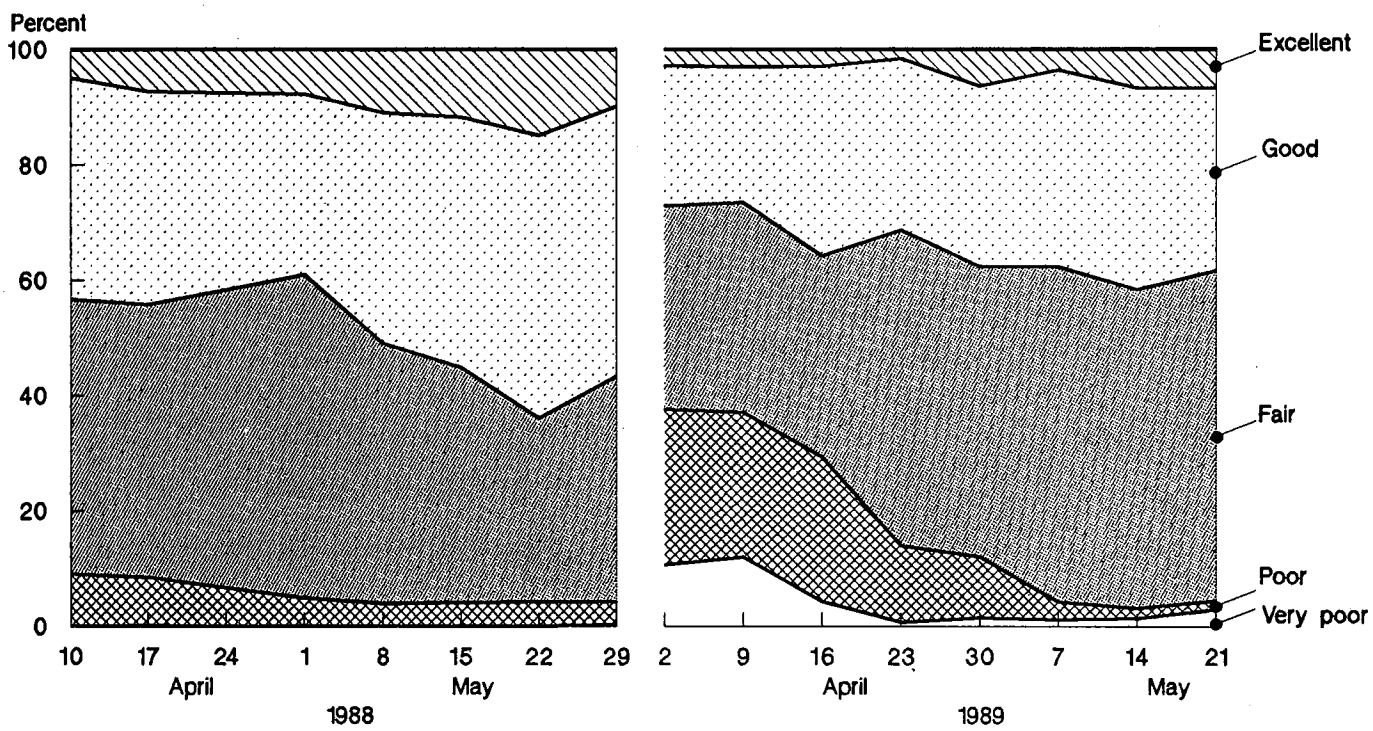


Figure 4
White Winter Wheat Crop Conditions



Drought Assistance Announced

In response to mounting concern over continued dryness in some States, the Secretary of Agriculture announced drought assistance for livestock and crop producers on April 26.

- ASCS county offices were asked to inform farmers of their eligibility to participate in the 0/92 program and receive minimum guaranteed deficiency payments of $.50 per bushel on program yields on up to 92 percent of the farm's permitted plantings. The land must be devoted to a conserving use after the designation as 0/92 acreage. Failed acreage qualifies as a conserving use.

- Requests for assessments of failed acreage are to be expedited. Under the failed acreage provisions, land may be replanted to another crop and earn any potential deficiency payments that may have been made with respect to the original crop. Deficiency payments cannot be earned on the second crop.

- Governors were informed that requests for emergency credit will be quickly processed by the Farmers Home Administration. The Secretary is authorized to institute an emergency credit and emergency loan program for counties that are substantially affected by natural disaster. One of these criteria must be met: at least a 30-percent reduction, countywide, from normal dollar value of all crops; at least a 30-percent reduction, countywide, of a single crop; qualifying losses suffered by one or more farmers who can not get credit elsewhere. Emergency loans cannot exceed the actual loss and are capped at $500,000 per loan. The interest rate is 4.5 percent. To qualify, the farmer must: have a 30-percent or greater loss; be a family-size operator; be unable to get credit elsewhere; and have Federal crop insurance on the damaged crop if it was available.

Domestic Supply Down Sharply for 1989/90

The U.S. wheat supply is projected at 2,665 million bushels, down almost 14 percent from a year earlier and more than 30 percent below the 1987/88 supply. This may be the lowest available supply since the 2,564 million bushels for 1975/76.

The decline in available supply is due to the more than 50-percent fall in carryin stocks from 1,261 million bushels in 1988/89 to 594 million forecast for 1989/90. Over half of the beginning stocks will be in the Farmer-Owned Reserve (FOR) and another almost one-third will be Commodity Credit Corporation (CCC) stocks. The remaining 109 million bushels of free stocks will be down over 400 million bushels. Only 10 million bushels of free stocks are forecast to be under 9-month loans, compared with 178 million a year ago. High wheat prices relative to the loan rate in 1988/89 discouraged placing 9-month loans and encouraged redeeming them.

Policies enacted in the 1985 Food Security Act to control production through acreage restrictions, reductions in the loan rate and the target price, and export promotion programs, especially the Export Enhancement Program, contributed to the decline in wheat supplies from the all-time high of over 4 billion bushels in 1986/87. The 1988 drought also contributed to the reduced supplies.

The 1988/89 ARP level was announced last summer, prior to harvest of the 1988 spring wheat crop. If 1989/90 winter wheat yields and abandonment had been average, available supplies could have been 400 million bushels greater than currently forecast.

Available supply will be augmented with imports of at least 20 million bushels in 1989/90. The majority of this wheat will be hard spring and durum wheat from Canada.

Domestic Use Forecast Down for Third Year

Food use accounts for most domestic disappearance, and is forecast to reach 735 million bushels in 1989/90. This represents population growth of less than one percent, and assumes no increase in per capita consumption. Per capita wheat food use grew in 1988/89, but growth is estimated at a slower rate than in the previous 2 years. In recent years, dietary shifts encouraged increased per capita wheat food use. In 1989/90, a second year of higher wheat prices may slow the growth in food use.

Seed use is forecast up 5 percent to 105 million bushels as a second year of high wheat prices, lower forecast prices for competing crops, and policy adjustments could result in increased planted area for harvest in 1990.

Feed and residual use is forecast down substantially to 175 million bushels. Wheat prices are likely to be high relative to coarse grains. Even during the summer, after the wheat harvest, but before the corn crop comes in, wheat prices are likely to remain too high to encourage much wheat feeding. The quality of the wheat crop, particularly east of the Mississippi, could be a factor. Much of the wheat that will be fed to livestock in 1989/90 is likely to be wheat that does not meet the quality standards for domestic milling or export. Extensive rain during harvest, or widespread weed problems, especially in the East, could lead to greater feeding. In 1984/85, the most recent year when SRW production was over 500 million bushels, SRW residual (includes feed use) was estimated at over 100 million.

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

The projected decline in feed and residual use more than offsets continued year-over-year increases in food and seed use, dropping total domestic use 2 percent. However, domestic use, at slightly above 1 billion bushels, remains much more stable than exports.

International Outlook for 1989/90

Tight supplies and continued high prices will characterize the world wheat market in 1989/90. Although world production is projected to climb 6 percent from 1988/89 to a record 533 million tons, global consumption is projected to slightly exceed production. This will likely lead to another decline in world stocks following the 23-percent decline in 1988/89. The 1989/90 stocks-to-use ratio is projected at its lowest point in 30 years.

Table 3--World wheat supply and distribution, 1985-1989 1/

Year	Carryin 2/	Production	Total exports	Total use 3/
		Million metric tons		
1985/86	164.1	500.1	85.0	496.2
1986/87	167.9	530.7	90.7	522.4
1987/88	176.1	503.7	105.5	533.5
1988/89 4/	146.3	501.8	98.3	535.4
1989/90 5/	112.0	532.6	97.4	535.1

1/ Data are based on an aggregate of differing local marketing years, but exports are on a July-June season. 2/ Stocks data are only for selected countries and exclude such major countries as the USSR and part of Eastern Europe for which stocks data are unavailable; aggregate stock levels have, however, been adjusted for estimated year-to-year changes in USSR grain stocks. 3/ For countries where stock data are unavailable, or for which no adjustments have been made for year-to-year changes, utilization estimates assume a constant stock level. 4/ Forecast. 5/ Projected.

Major competitors' production is projected 15 percent higher than in 1988/89 and the second highest on record. Competitor exportable supplies are expected to increase, but little stock rebuilding is forecast. A continued tight supply situation among competitors, together with reduced stocks in the United States, is likely to keep export prices high. U.S. average wheat prices between May 1 and May 19 (F.o.b. Gulf, hard red winter No. 2) were 38 percent above the May 1988 average. Prices could rise further if a significant crop shortfall occurs in any major importing or exporting country.

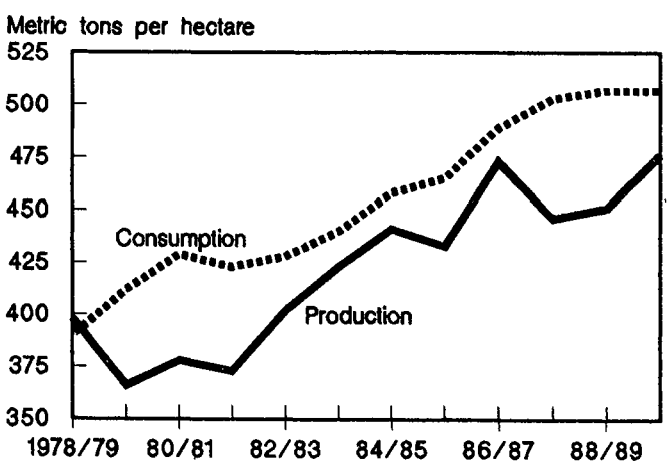
Wheat trade in 1989/90 (July-June, excluding intra-EC trade) is projected at 97.4 million tons, slightly below the 1988/89 forecast. The decline in world trade, larger competitor crops, and reduced U.S. supplies are projected to lower U.S. export volume 23 percent from the 1988/89 forecast of 40.9 million tons. The U.S. share of the smaller world market is projected to be 32 percent, compared with 41 to 42 percent in 1988/89 and in 1987/88, but above the market share in 1986/87 (31 percent) and 1985/86 (29 percent).

The Export Enhancement Program (EEP) is expected to continue to play a significant role in U.S. exports to targeted countries in 1989/90. While there had been a lull in new EEP initiatives, the recently announced 1.5-million-ton initiative to the Soviet Union demonstrated that the EEP will be used when deemed necessary. Despite the slowdown in new initiatives, as of May 19, 1989, 10 million tons of EEP remain available from previous initiatives, including nearly 1 million tons each for China and India.

Foreign Production To Hit Record, But Import Demand Remains Strong

The strong increase in foreign production and higher prices are expected to result in slightly lower import demand. However, foreign consumption continues to rise and stocks remain tight. The response of wheat imports to higher prices has so far been most notable in the decline in feed wheat imports in the Soviet Union and South Korea. In a number of other countries, including China and those in North Africa, the political cost of reducing imports and thereby potentially lowering per capita consumption, particularly in urban areas, may outweigh the current cost of grain imports, at least in the short run. Some countries, including developing economies with scarce foreign exchange reserves, may be forced to choose between wheat imports and imports of industrial or other consumer goods.

Figure 5
Foreign Wheat Production and Consumption



1988/89 forecast, 1989/90 projected.

The Soviet Union is projected to be the world's largest wheat producer, with a crop of 91.5 million tons, up 8 percent from 1988/89. The winter wheat crop to date benefited from favorable fall planting conditions, a mild winter, and early spring. Winterkill is estimated to have been about average. The spring wheat crop was reduced by drought in 1988/89. This year, planting conditions are much improved and yields are projected to rebound.

Soviet wheat imports are forecast down in 1989/90 due to a larger crop, and the relatively low price of coarse grain. Since 1983/84, the Soviet Union is estimated to have used an average of 40 million tons of wheat a year as livestock feed. In past years, some of the Soviet wheat imports, particularly from the EC, have been wheat for feed.

In 1989/90, coarse grain production in the Soviet Union is forecast up 8 percent. Forage area is expected to expand and the import price spread between wheat and coarse grains is expected to be large. Larger domestic feed supplies and relatively low import prices of coarse grains could keep Soviet feed wheat imports to a minimum. This could keep total Soviet wheat imports as low as 12 million tons, the lowest in a decade.

Table 4--World wheat production: Major exporters and importers, marketing years, 1985/86 - 1989/90

Country	1986/87	1987/88	1988/89f	1989/90p
	Million metric tons			
EXPORTERS				
United States	56.9	57.4	49.3	55.8
Major competitors	128.4	118.6	112.4	112.4
Canada	31.4	26.0	15.7	26.0
EC-12	72.0	71.4	74.7	78.5
Australia	16.1	12.4	14.4	15.0
Argentina	8.9	8.8	7.6	10.0
IMPORTERS				
USSR	92.3	83.3	84.4	91.5
E.Europe	39.1	39.7	45.1	40.2
N. Africa	7.6	7.6	8.3	7.6
Algeria	1.2	1.2	1.2	1.1
Morocco	3.8	2.4	4.0	3.0
Tunisia	0.5	1.4	0.2	0.3
Egypt	1.9	2.4	2.9	3.0
Asia	158.3	151.2	152.5	162.8
China	90.0	87.8	87.5	91.0
India	47.1	44.3	45.1	50.0
Pakistan	13.9	12.0	12.7	14.6
Middle East	26.7	24.3	28.0	25.2
Turkey	14.0	13.0	15.0	13.0
Iran	7.1	6.0	6.8	6.3
Iraq	1.0	0.7	1.2	0.9
Syria	1.9	1.7	1.8	1.5
Latin America				
Excl. Argentina	12.8	12.5	11.7	11.1
	5.6	6.1	5.8	4.5
SubSaharan Africa	3.9	4.7	5.1	4.6
S. Africa	2.3	3.1	3.3	2.9
Foreign total	473.7	446.3	451.9	476.8
World total	530.7	504.7	501.2	532.6

fForecast. pProjected.

China is projected to harvest a record wheat crop of 91 million tons, up 4 percent from 1988/89. Area is expected to rise 2 percent and yields are forecast up. Expectations of higher prices offered by the Government and the free market encouraged farmers to plant winter wheat. Although the autumn was dry, rains beginning in early 1989 improved prospects.

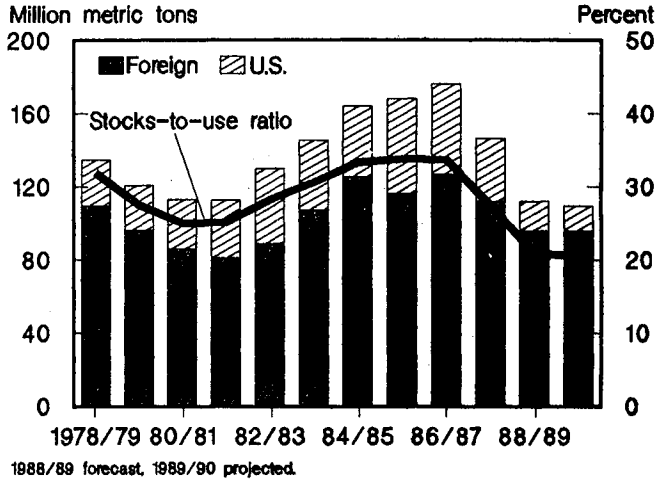
Despite record production, China is likely to continue importing large quantities of wheat. Demand continues to grow as the population expands and incomes rise. Concerns about inflation and maintaining urban consumption standards place pressure on the Government to meet demand. The current political unrest and economic discontent may be intensifying this pressure. China has slowed its import pace in recent months. It will likely return to the market and may import 16 million tons in 1989/90, despite the prospect of higher import prices.

North African countries must also balance the potential political cost of higher bread prices and reduced per capita consumption with the increasing price of wheat imports. Wheat demand far outstrips North African production capacity and the gap has been widening steadily. Production in the region is expected to be down 10 percent from the 1988/89 drought-reduced crop, largely due to the decline in Morocco, and imports are expected to rise. Egypt is forecast to produce a record crop. However, production in Algeria is down 8 percent from 1988/89. In addition, while Tunisia's crop looked promising in the fall, drought conditions since then have halved its production prospects to just over 300,000 tons. Morocco's crop has also been affected by weather.

The 1988/89 drought and higher import prices probably led to heavy stock drawdowns in several North African countries. With low reserves and continuing strong demand, Tunisia and Morocco are expected to increase imports and Egypt and Algeria are projected to maintain imports at their 1988/89 level. However, given tight foreign exchange reserves, most of the North African countries will continue to rely heavily on credit and seek the lowest price possible for their wheat imports.

Eastern Europe may boost imports by around 20 percent from 1988/89. Production is forecast down, particularly in Yugoslavia, Romania, and Bulgaria, keeping intra-Eastern European trade down. Yet, some countries, particularly Poland, will likely need to increase imports if they are to maintain average per capita consumption. Some of Eastern Europe's wheat imports are of low quality, and used most likely for feed. The region is expected to be an outlet for subsidized wheat exports from the EC in 1989/90. Also, if possible, Eastern European countries will reduce feeding of their domestically produced wheat and use more for food purposes, largely because their coarse grain crop is projected up 12 percent from 1988/89.

Figure 6
World Wheat Ending Stocks



1988/89 forecast, 1989/90 projected.

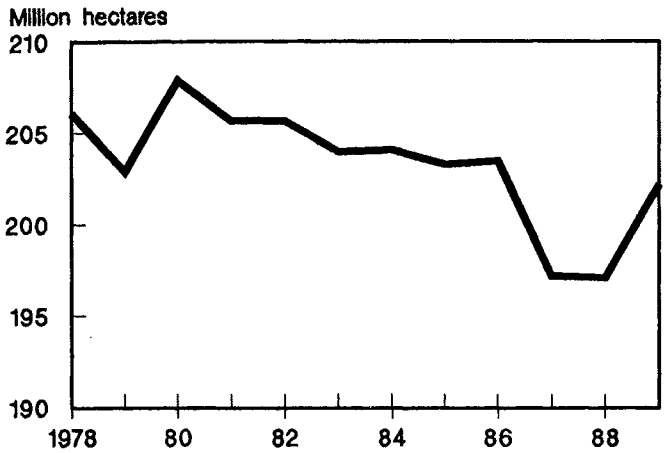
South Asia's production is expected to continue to rebound from the 1987/88 drought, but stocks are forecast to remain low. In 1988, India and Pakistan drew down their food grain stocks and each imported over 2 million tons of wheat. Domestic wheat prices stayed high throughout 1988. High prices and excellent weather are leading to a forecast record crop. As a result, India is projected to cut its wheat imports in half to 1 million tons, and Pakistan is likely to take 1.4 million tons, down 800,000 from 1988/89. India's level of stockbuilding will depend on the ability of the government to procure stocks and on the price of wheat imports.

In Bangladesh, a forecast near-record 1988/89 rice crop, a return to an average wheat crop after floods and cyclones in 1988, and increased food grain stocks could reduce import needs almost 20 percent to 1.8 million tons. Sri Lankan food grain production continues to be inhibited by drought and political unrest and imports are forecast to rise 8 percent to 700,000 tons.

Latin American import prospects are mixed. Improved crop prospects from 1988/89 are likely to reduce Mexico's imports to 400,000 tons, down from 1.1 million in 1988/89. Austerity measures and tight foreign exchange reserves are likely to keep imports down in Venezuela and Peru. Little expansion is expected in Ecuador and Colombia.

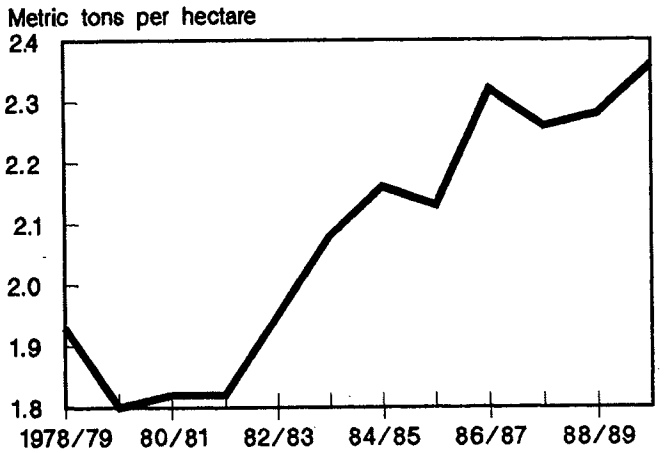
Budget austerity measures in Brazil are being directed towards reducing support for the agricultural sector. Unlike previous years, credit availability to wheat producers to date has been restricted and producers have no guarantee that the government will buy their crop, even though planting season has begun. Area is forecast to fall 20 percent. Input use is also likely to decline, which could lower yields.

Figure 7
Foreign Wheat Area



1988/89 forecast, 1989/90 projected.

Figure 8
Foreign Wheat Yields



1988/89 preliminary, 1989/90 projected.

Therefore, Brazil's production is forecast at 4.5 million tons, more than 20 percent below 1988/89. Brazil is projected to import 2 million tons of wheat, implying a potential decline in domestic use.

East Asian imports are forecast down slightly from 1988/89. Japan's imports are projected down slightly because of expanded production and an increase in imports of processed wheat products, such as crackers and flour based mixes. Taiwan's imports are not expected to exceed 1988/89 and South Korea is not likely to import much feed quality wheat.

Competitor Production Rebounds to Near Record But Stocks Remain Low

Favorable weather in Northern Europe, improved planting conditions in Canada, and prospects of high export prices in the Southern Hemisphere as farmers prepare to plant are contributing to a projected near-record competitor production. Strong export prices and reduced U.S. availability will encourage large competitor exports and discourage stock building.

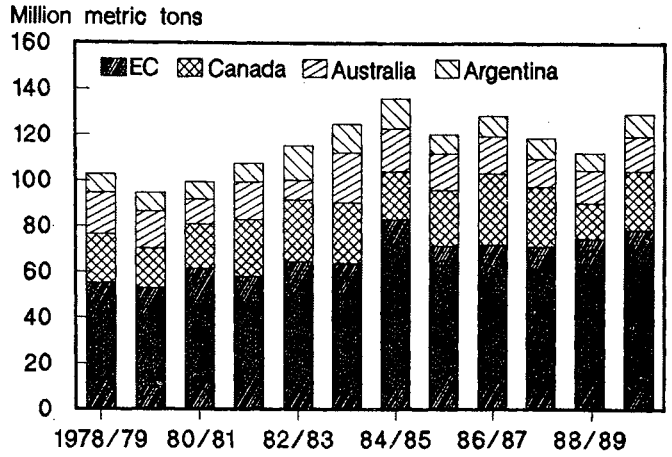
EC production is projected to expand 5 percent in 1989/90 to 78.5 million tons. While the price of wheat fell due to the increase in the coresponsibility levy and a decline in other payments, domestic wheat prices fell less than those of oilseeds and barley. Thus, some of the land planted to barley and oilseeds in 1988/89 was planted to wheat this year. Also, the EC has established a set-aside mechanism to idle agricultural area, but there are few incentives for farmers to set aside any land planted to grain, given the current price situation.

Yields as well as area are forecast up. Yields have been increasing an average of 3.3 percent per year since 1961. This year, potential yields, particularly in the United Kingdom, France, and West Germany, were enhanced by adequate moisture at planting, a mild winter, and favorable conditions continuing into the spring. However, dry conditions in Southern Europe may have lowered production prospects in Spain, Greece, and Italy. Also, weather conditions during harvest will have a large influence on final yields and the quality of the crop.

The EC drew down its stocks by a forecast 32 percent in 1988/89 to 10.5 million tons, the lowest since 1983/84, by exporting an estimated record 21 million tons of wheat. A similar level of exports is forecast in 1989/90, despite an increase in domestic use. The EC subsidizes its wheat exports. Relatively high world prices mean that subsidy levels will probably not have to be as high as they were 2 years ago when world wheat prices were much lower. The reduction in export subsidies should therefore reduce the overall drain on the EC budget. While the indicated 1989/90 budget allocation for wheat subsidies has been reduced 11 percent, the EC is expected to maintain its current policy of keeping wheat stocks down and exports high.

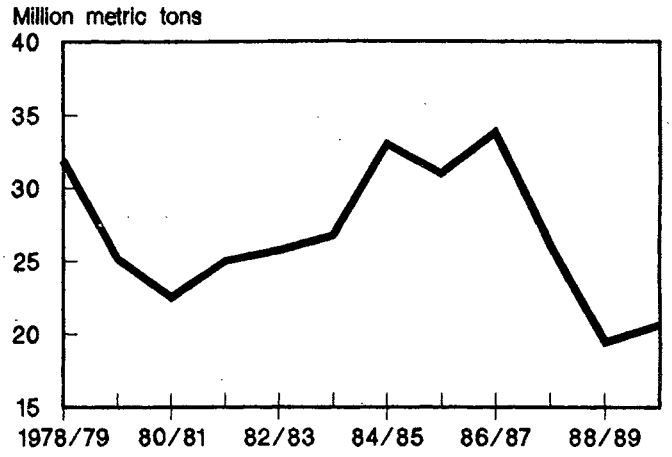
The EC has taken several measures to ensure strong exports in 1989/90. Unlike last year, the EC budget for export subsidies has already been allocated and is ready to use. Government intervention stocks will not be open until November and storage payments to producers have been reduced 12.5 percent. This means that producers cannot put their wheat into intervention stocks when supplies are most plentiful. The export market will provide the most attractive outlet for surplus supplies. The EC will be under strong internal pressure to push out wheat early in the marketing year to prevent this year's large crop from flooding the domestic market and dampening already nominally lower farm prices.

Figure 9
Major Competitor Production



1988/89 preliminary, 1989/90 forecast.

Figure 10
Major Competitors' Ending Stocks



1988/89 forecast, 1989/90 projected.

Wheat prospects in Canada are much improved over last year, when drought cut the crop by 40 percent. The March seeding intentions report indicated that farmers would expand planted area 3 percent over a year earlier, with durum up more than 11 percent. In April, Canada announced initial guaranteed prices for canola, wheat, and other grains. The price for No. 1 Canadian western red spring wheat is $70 above feed barley and $40 above malting barley. The increased price spread (wheat was $30 a ton above feed barley in 1988/89) is expected to lead to an even greater increase in area planted to wheat than the seeding intentions indicated. With a return to normal weather and average yields, harvested area may gain 6 percent and production could rebound to 26 million tons in 1989/90, more than 10 million tons above 1988/89.

However, Canada's wheat crop may remain vulnerable to drought in several regions. Winter snows and spring rains have generally left adequate surface soil moisture for planting, but subsoil moisture reserves are low in many areas. This means that unless there is an unusually wet May-June, the crop will not have the moisture reserves needed to withstand extended periods of hot, dry weather.

Like the EC, Canada is forecast to draw down stocks 15 percent in 1988/89 to their lowest in over 30 years as it takes advantage of high 1988/89 world wheat prices and exports as much wheat as possible. This aggressive marketing strategy is expected to continue in 1989/90. Canada is forecast to export 20 million tons of wheat in 1989/90 (July/June), more than 70 percent above 1988/89, but still below the 1987/88 record. This does not allow for any stock rebuilding.

Early planting conditions in Australia are excellent. This, combined with prospects of continued strong wheat prices, may encourage producers to increase area 10 percent or more. If this area is realized and there are average yields, output could reach 15 million tons, 4 percent over 1988/89. However, area expansion may continue to be muted because, for many producers, strong demand and high prices for wool, beef, and legumes make them attractive alternatives to wheat.

Australian exports are forecast down in 1988/89 (July/June) despite expanded production because of delayed sales and shipping which will push exports into the last quarter of Australia's 1988/89 (October/ September) marketing year. Heavy shipments between July and September with a large harvest in December and January are projected to result in 1989/90 (July/June) exports of 12 million tons, 20 percent above 1988/89.

Relatively high wheat prices and recent rains may also lead to area expansion in Argentina. A rebound in yields after the 1988/89 drought could bring production up one-third. However, great uncertainty accompanies the Argentine wheat forecast. Argentina is currently experiencing hyperinflation. Production credit is scarce and farm input sales have plummeted. The differential exchange rate for agricultural exports has been eliminated but export taxes have been reimposed.

It is uncertain how the sweeping electoral victory of the Peronist party will change policy affecting agriculture. The Peronist party has not been sympathetic to the agricultural sector in the past. Therefore, while higher world wheat prices are providing an incentive for Argentine producers to produce more wheat, it is still too early to forecast the size of the crop with much certainty.

Like Australia, Argentina's delayed sales and shipments, particularly to Brazil, have reduced the 1988/89 (July/June) export forecast and raised the 1989/90 export projection 8

Table 5--World wheat trade: Major exporters and importers, marketing years (June-June) 1985/86 - 1989/90

Country	1986/87	1987/88	1988/89f	1989/90p
	Million metric tons			
EXPORTERS				
United States	28.4	43.4	40.9	31.5
Major competitors	56.3	54.8	46.8	58.6
Canada	20.8	23.6	12.7	20.0
EC-12	16.4	15.3	21.0	21.0
Australia	14.8	12.2	10.0	12.0
Argentina	4.3	3.7	3.1	5.6
Others	6.0	7.2	10.6	7.3
Total foreign	62.3	62.0	57.4	65.9
IMPORTERS				
USSR	16.0	21.5	15.0	12.0
E.Europe	3.7	3.4	2.7	3.3
N. Africa	12.8	13.6	13.9	14.4
Algeria	3.4	3.8	4.3	4.3
Morocco	1.5	1.9	1.5	1.8
Tunisia	1.1	0.9	1.1	1.3
Egypt	6.0	6.4	6.4	6.4
Asia	26.8	35.5	37.8	36.0
China	8.5	15.0	16.0	16.0
India	0.0	0.4	2.0	1.0
Pakistan	0.4	0.6	2.2	1.4
Bangladesh	1.5	2.3	2.2	1.8
Sri Lanka	0.6	0.7	0.7	0.7
Japan	5.8	5.7	5.2	5.1
S.Korea	3.9	4.5	3.0	3.0
Taiwan	0.9	0.9	0.9	0.9
Middle East	9.4	10.7	9.4	10.9
Turkey	0.5	0.2	0.3	1.2
Iran	2.5	4.0	3.0	3.3
Iraq	2.8	2.7	2.6	2.7
Syria	0.6	0.8	0.6	0.8
Latin America (Excl. Argentina)	6.0	6.0	5.8	3.4
Brazil	2.8	2.0	1.0	2.0
Venezuela	1.2	1.2	1.0	1.0
Colombia	0.6	0.7	0.8	0.8
Chile	0.2	0.0	0.1	0.1
Mexico	0.5	0.8	1.1	0.4
SubSaharan Africa	5.0	4.6	4.4	4.2
S.Africa	0.2	0.0	0.0	0.0
Nigeria	1.0	0.2	0.3	0.2
Sudan	0.6	0.6	0.6	0.6
Ethiopia	0.6	0.9	0.7	0.7
World total	89.5	106.1	98.3	97.4

fForecast. pProjected.

percent from 1988/89 to 5.6 million tons. Nevertheless, Argentina holds little stocks, so the 1989/90 export forecast will largely be determined by the 1989/90 harvest.

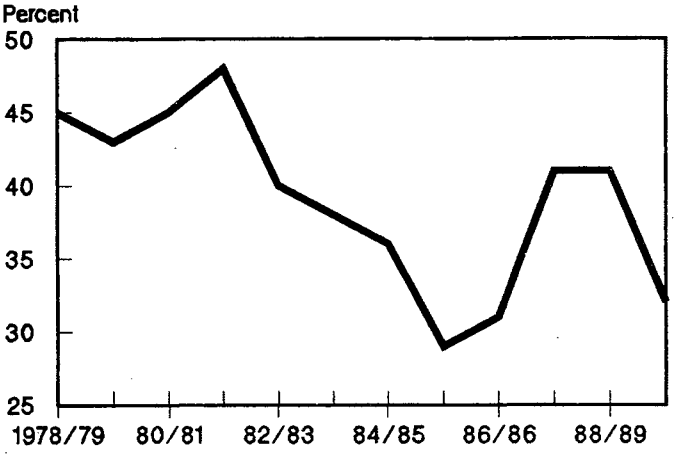
While the major competitors are likely to increase exports, the smaller exporters, except for Saudi Arabia, are not likely to maintain their 1988/89 export pace. Saudi Arabia is likely to continue to export 2 million tons or more of wheat per year, but Turkey's exports could plummet. In 1988/89, Turkey produced a record crop and was able to export an estimated 1.8 million tons. Drought has reduced Turkey's 1989/90 crop to a forecast 13 million tons, 13 percent below 1988/89. With carryin stocks at their lowest in 15 years, exports may fall to 100,000 tons, while imports could shoot up to 1.2 million tons, the highest in 30 years.

The crop shortfall in the southern tier of Eastern Europe may limit the region's exports. Also, South Africa may have less exportable supplies. In 1988/89, record area and yields produced a record crop and a large exportable surplus. A slight decline in area and a return to average yields is forecast to lower production and exports.

U.S. Exports To Plummet In 1989/90

The U.S. stock drawdown and the reduced winter wheat crop may limit U.S. wheat exports to 31.5 million tons in 1989/90 (July/June), down almost a quarter from the forecast for 1988/89. U.S. market share is projected to fall from 42 percent in 1988/89 to 32 percent as increased competitor supplies enter export markets when U.S. availability is limited.

Figure 11
U.S. Share of World Wheat Trade



1988/89 forecast, 1989/90 projected. July/June trade years, excluding intra-EC trade.

The United States may face strong price competition from the EC, Canada, and the Southern Hemisphere exporters. The EC will be pushing out its large crop soon after the U.S. winter wheat crop is harvested. A large spring crop will put the United States in direct competition with Canada for the durum and high protein hard wheats in major markets, such as North Africa.

In the past, Canada has exported about 50 percent of its wheat to China and the Soviet Union. Canada will likely seek to regain market share in those countries in 1989/90. Since the EC is projected to export 21 million tons in 1989/90, Canadian expansion may occur at the expense of U.S. exports.

U.S. Government programs will continue to play a strong role in keeping U.S. exports as high as possible given the current supply situation. While EEP initiatives have slowed in recent months, the recent 1.5-million-ton initiative to the Soviet Union is evidence that the program is still alive. The

EEP probably will continue to be used to market new-crop wheat and to pressure the EC in the negotiations under the General Agreement on Tariffs and Trade.

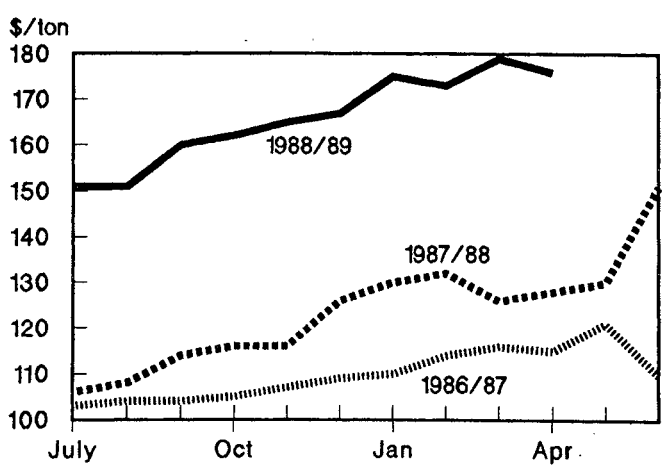
In addition to EEP, GSM-102 allocations are helping take the bite out of higher prices for many buyers to finance the higher price of wheat imports. As of April 14, GSM-102 allocations for wheat for fiscal 1989 (October/September) were 20 percent higher than a year earlier. The United States will continue to supply P.L. 480 wheat to developing countries, although tighter stocks and relatively high prices in fiscal 1990 may limit the amount of wheat which can be exported under the program.

While the U.S. export supply is projected to be limited by the 1989/90 crop outturn, several factors could further alter exports. With current low stocks, there is little cushion to offset a large production shortfall in a major importing or exporting country. Such a shortfall could then lead to higher prices as a means of rationing the reduced supply. For many countries, the political necessity of importing food grains would then need to be balanced against the economic consequences of draining foreign exchange reserves, increasing debt loads, and reducing imports of other commodities. Some developing countries may take the same risk Venezuela has in recent months and reduce imports and impose domestic austerity measures. Others, such as China, may simply pay the higher price for grain to help maintain political stability.

Projected U.S. Ending Stocks Lowest Since 1974/75

Despite a 335-million-bushel decline in total use, ending stocks are projected to decline from 1988/89's 594 million bushels to 500 million bushels on June 1, 1990. This implies a stocks-to-use ratio of 23 percent, the lowest level since 1973/74.

Figure 12
U.S. Wheat Export Prices



No. 2 HRW f.o.b. Gulf.

With a such a low projected stocks-to-use ratio, prices are likely to be extremely sensitive to changes in stock holding. As FOR stocks mature and are not replaced, the portion of stocks tied up in the FOR is likely to decline.

Prices Likely To Continue Increasing

With 1989/90 production falling short of expectations, prices are expected to increase to $3.80-$4.20 a bushel, up from an estimated $3.74 in 1988/89. If additional production shortfalls occur in the United States or elsewhere, more upward pressure could quickly be placed on prices.

Low forecast prices for other grains may limit wheat price increases to some extent. Season average prices for corn are forecast at $1.65-2.05 per bushel, or around $2.00 or 50 percent below wheat.

1988/89 Wheat Situation

Wheat Supplies Over 3 Billion Bushels in 1988/89

U.S. wheat supplies in 1988/89 were 3,094 million bushels - 41 percent from carryin stocks, 59 percent from production, and less than 1 percent imports. Beginning stocks were down more than 30 percent partially because of programs designed to reduce stocks and stimulate use; including the EEP, generic certificates, wheat auctions, and acreage reduction programs.

Production fell 14 percent, primarily due to severe drought in spring wheat areas. According to the Federal Grain Inspection Service, the quality of the 1988 wheat crop was better than in 1987, with more of the crop graded as number one, average protein higher, and moisture levels lower. Despite below-trend yields and reduced stocks, supply was significantly larger than the record total disappearance of 2.68 billion bushels in 1987/88.

International Situation

Diminishing world stocks, particularly in the United States, the EC, and Canada, are contributing to relatively high wheat export prices. Yearend sales and shipments are slackening. China has cancelled and delayed some shipments from Argentina and the United States. Brazil's budget to import over 1 million tons from Argentina was only approved in April, pushing exports into the 1989/90 (July/June) marketing year.

The U.S. export pace has also slowed with inspections averaging about 787,000 tons per week between March 3 and May 11, 1989, compared to approximately 991,000 tons per week during the same time a year ago. U.S. exports for the June-May marketing year are forecast at 39.7 million tons, 8 percent below a year ago.

Global trade in 1988/89 (July/June) is forecast at 98.3 million tons, down 7 percent from the previous year, due mainly to smaller Soviet imports. The 6.5-million-ton decline in prospective Soviet imports is being offset to some extent by China's expected record purchases, large imports by South Asian countries, and continuing demand in North Africa.

The EC and Canada have drawn down wheat stocks to take advantage of high export prices. Canada's 1988/89 exports are down drastically from a year ago due to the 1988 drought, and stocks are forecast down 16 percent to the lowest since the early 1950s. The EC will likely export a record 21 million tons, reducing its stocks to the lowest since 1983/84. Australia's and Argentina's export pace has slowed in recent months, so that a portion of their 1988/89 crop will be exported in the first quarter of the 1989/90 marketing year.

Reduced Canadian, Australian, and Argentine exports have helped keep the U.S. market share high. Nearly two-thirds of total U.S. wheat exports are expected to be made under the EEP in 1988/89, despite the recent slowdown in sales and initiatives. However, average monthly sales under EEP during January-May were 2.1 million tons, compared with 1.5 million during June-December 1988. Bonuses were lower, averaging $14.38 per ton during January-May versus $19.70 ton during June-December.

The volume of global and U.S. trade is often determined by demand from the Soviet Union and China. In 1988/89, Soviet demand for wheat was probably tempered to some extent by the relatively low price of coarse grains. So, while Soviet grain imports are forecast at 38.5 million tons in 1988/89, wheat imports are forecast to decline by 30 percent to 15 million tons. In 1988/89, the United States will make up about a third of the Soviet wheat imports, compared with more than 50 percent in 1987/88. China is forecast to import a record 16 million tons, nearly 50 percent from the United States, compared to 30 percent in 1987/88.

Total North African imports are forecast to reach 13.9 million tons. Drought increased the need for imports in Tunisia and Algeria. Egypt is not forecast to import more wheat than it did in 1987/88, but it had a harder time finding favorable credit terms to support its food grain imports. The United States may lose market share in North Africa in 1988/89 to the EC, especially for durum wheat.

The United States has supplied a large portion of South Asian imports in 1988/89. EEP sales to India, AID financing of wheat exports to Pakistan, and EEP and food aid to Bangladesh and Sri Lanka are helping the region recover from adverse weather and replenish diminished stocks. India is forecast to import 2 million tons, Pakistan 1.8 million, and Bangladesh 2.2 million tons in 1988/89.

East Asian imports are expected to be down 16 percent in 1988/89 due to a drop in South Korea's feed wheat imports. In Latin America, wheat imports are forecast down. Brazil is expected to cut imports in half due to its large 1988/89 crop and adequate stocks. Mexico, on the other hand, will likely import over 1 million tons of mostly U.S. wheat to supplement its drought-reduced crop.

Global ending stocks in 1988/89 are the lowest since 1977/78 and are forecast to fall even further in 1989/90. Exporters' stocks are forecast at their lowest since 1974/75, with only slight rebuilding forecast for 1989/90. The world stocks-to-use ratio, 21 percent, is the lowest since 1972/73, setting the stage for tight supplies and relatively high prices in 1989/90.

Domestic Use Forecast Down 5 Percent Despite Increased Food, Seed Use

Food use is forecast to reach 730 million bushels in 1988/89, up 1.5 percent. Population growth in the United States is less than 1 percent per year, so this modest growth represents an increase in per capita consumption despite higher wheat prices. Wheat ground into flour during the first 10 months of the marketing year was up 2 percent.

Seed use of wheat is forecast to increase from 85 million bushels in 1987/88 to 100 million in 1988/89. The seed use forecast assumes the area planted for harvest in 1989 as reported in *Prospective Plantings*. Area increased because the acreage reduction requirement was reduced from 27.5 percent to only 10 percent of base acres for 1989.

Feed and residual use is forecast down 27 percent to 210 million bushels. High wheat prices may have reduced feeding of wheat to livestock, but there are no data on feed use.

Wheat Stocks Reduced Sharply

Wheat stocks fell from 1.26 billion bushels on June 1, 1988, to a forecast 594 million by May 31, 1989. The largest change in inventory during the 1988/89 crop year was the decline in 9-month regular loans and uncommitted stocks. Outstanding 9-month loans fell from 14 percent of total 1988/89 carryin stocks to just 2 percent of yearend stocks. Likewise, forecast uncommitted stocks accounted for over 26 percent of carryin stocks, compared with 17 percent of forecast yearend stocks.

Stocks on December 1, 1989, totaled 1.7 billion bushels, about 60 percent of which were uncommitted stocks. With December-February total use of 494 million bushels, March 1 stocks fell to 1.22 billion bushels. Most of the decline was in uncommitted stocks, as 9-month loans, CCC inventory,

and FOR stocks fell only 61 million bushels during December-February.

Outstanding 9-month loans fell 46 million bushels during December-February as 11 million bushels in additional loans were offset by 55 million bushels in cash redemptions and 1.3 million bushels that were forfeited to the CCC (see appendix table 23). FOR loans fell just 6 million bushels due to 2 million bushels each of cash redemptions, forfeitures to the CCC, and certificate exchanges. CCC inventory fell just 10 million bushels as 3 million bushels in acquired collateral were offset by 9 million bushels in certificate exchanges and 4 million bushels for Government programs.

By May 31, 1989, wheat stocks are forecast to decline 629 million bushels from March 1 levels to end the year at 594 million. CCC inventory, 9-month loans and FOR socks are estimated to fall by 133 million bushels during March-May.

Outstanding 9-month loans are estimated to fall about 37 million bushels during March-May. Few loans are expected to be made during these months because the new crop won't come in until after June. Certificate exchanges for 9-month loan collateral are expected to be minimal during March-May because market prices are well above 9-month loan redemption rates. Most of the reduction in regular 9-month and extended loans then is expected to be due to cash repayments since they will be profitable.

FOR stocks are expected to fall 78 million bushels during March-May. Most of this reduction will be due to maturing loans that will either be paid off in cash, exchanged for commodity certificates, or forfeited to the CCC. Cash redemptions are expected, although market prices may remain below loan redemption rates for some FOR crop loans. Therefore, some of the reduction will come about due to collateral exchanges with commodity certificates, and the balance may be forfeited to the CCC. CCC inventory is estimated to fall 18 million bushels during March-May. Some collateral is expected to be acquired from maturing FOR loans. This accumulation, however, will be offset by commodity certificate exchanges and reductions due to Government programs.

The recent 5-day adjusted average market prices indicate that the FOR will not be triggered in 1988/89. However, average farm prices have been above $4.00 a bushel, so the possibility of triggering FOR release increases after June 1 when the target price falls to $4.10. In addition, loans covering 112 million bushels of wheat are expected to mature during the first 6-months of the 1989/90 marketing year. The possibility of triggering the FOR during the marketing year and the forthcoming loan maturities suggest that FOR stocks will fall significantly during the 1989/90 marketing year.

Table 6--Wheat supply, disappearance, and stocks, June-May

Item	1987/88	1988/89
	Million bushels	
Stocks, June 1	1,821	1,261
CCC inventory	830	283
Farmer-Owned Reserve 1/	632	467
Outstanding CCC loans	236	178
Uncomitted	123	333
Production	2,108	1,811
Imports	5	8
Total supply	3,933	3,081
Use, June-Aug.		
Food	179	179
Seed	1	1
Feed & residual	367	284
Exports	410	363
Total use	957	827
Stocks, Sept. 1	2,977	2,254
CCC inventory	799	250
Farmer-Owned Reserve 1/	598	391
Outstanding CCC loans	245	108
Uncomitted	1,335	1,505
Imports	5	6
Total supply	2,982	2,260
Use, Sept.-Nov.		
Food	191	194
Seed	58	66
Feed & residual	-77	-40
Exports	309	330
Total use	481	550
Stocks, Dec. 1	2,501	1,710
CCC inventory	755	213
Farmer-Owned Reserve 1/	553	383
Outstanding CCC loans	383	93
Uncomitted	809	1,021
Imports	2.7	4
Total supply	2,503	1,714
Use, Dec.-Feb.		
Food	169	169
Seed	3	3
Feed & residual	(5)	(41)
Exports	413	363
Total use	580	494
Stocks, March 1	1,924	1,220
CCC inventory	450	203
Farmer-Owned Reserve 1/	518	378
Outstanding CCC loans	294	47
Uncomitted	662	592
Imports	4	3
Total supply	1,927	1,223
Use, March-May 2/		
Food	180	188
Seed	23	30
Feed & residual	3	8
Exports	461	403
Total use	666	629
Stocks, June 1 2/	1,261	594
CCC inventory	283	185
Farmer-Owned Reserve 1/	467	300
Outstanding CCC loans	178	10
Uncomitted	333	99

1/Includes Special Producer Loan Program. 2/Preliminary

Wheat by Class

Shifting Demand Across Wheat Classes

Some classes of wheat can be readily substituted for each other in their most common end uses, while other wheat classes are tailor made for specific food products, and substitutability is limited. HRS can substitute for HRW readily in

bread flours, but is not suitable to replace SRW in cake or cracker flour. High-protein HRW can substitute for HRS, while low-protein HRW can trade off with SRW. White wheat is preferred by countries that do not routinely bleach their flour. Durum is particularly suited for some pasta products.

With U.S. HRW production severely reduced this year, in contrast to 1988 when HRS production was devastated by drought, millers and bakers may be adjusting to shifts between these wheat classes. On an international level, more wheat products may have to be made with lower protein softer wheats.

Canadian wheat production may rebound strongly from the drought-ravaged crop of 1988/89. Canadian exports could increase over 70 percent. Canada is the United States' major competitor in the high-protein hard wheat market.

The EC is the largest competitor in the non-white soft wheat market (cakes, flat breads, and crackers) and in the low-protein end of the bread wheat market. EC wheat production is expected to increase in 1989. Like the United States, the EC exported from wheat stocks in 1988/89. Also like the United States, in 1989/90 the EC will have reduced stocks from which to draw exports. But, in stark contrast to the U.S. outlook, increased production should allow the EC to maintain record wheat exports in 1989/90.

World competition in the soft wheat market may be more intense in 1989/90. U.S. soft wheat supplies are projected to be much higher. China and South Asia both increased demand for soft wheat in 1988/89, but Asia's 1989/90 demand may decline, particularly for soft white wheat. With larger supplies and stable or declining demand, soft wheat may sell at a discount to hard wheat in 1989/90.

Millers may have to blend lower protein wheat and high-protein spring wheat to produce some of the flour normally produced from hard red winter. There are limits on how much substitutability is possible between wheat classes, so price differentials may be large, at least in the first months of 1989/90. Moreover, the relatively low price of feed grains may limit feed demand for soft wheat.

Exportable high-protein hard wheat supplies may be reduced, and premiums bolstered, as lower U.S. supplies more than offset increased Canadian production.

HRW Supplies May Be Lowest Since 1953

HRW production in 1988/89 was down modestly from a year earlier, and beginning stocks were down sharply. Lower supplies are moderating use, and both domestic use and exports are forecast down from 1987/88. However, use will still greatly exceed production. Thus, ending stocks, at only 246 million bushels, are forecast down 60 percent to the lowest since 1974/75.

In 1989, HRW production in the Southern Plains has been particularly damaged. Kansas, normally the largest wheat-producing State, had a dry planting season last fall, below-normal precipitation during the winter, a sudden drop in temperatures the first week in February, damaging dust storms in March, and temperatures above 100 degrees in April. Kansas's planted area increased more than 20 percent, but production is forecast to plummet almost 40 percent.

The surrounding States of Texas, Oklahoma, Colorado, and Nebraska also suffered. Total hard red winter production is forecast to decline more than 20 percent from 1988/89. Supplies in 1989/90 are likely to be less than a billion bushels, the lowest since 1953.

Domestic use and exports of HRW in 1989/90 are likely to repeat the pattern of 1988/89. Domestic use may decline as millers shift to other classes, and residual and feed use may decline due to higher prices and a smaller crop. However, HRW exports are likely to be most affected by lower supplies, and could slump to the lowest since 1971/72. Even with sharply reduced exports, HRW ending stocks are likely to be lower than 1989/90 beginning stocks, approaching recent historical lows.

White Wheat Supplies Tightening

Increasing exports over the last 3 years have gradually reduced white wheat stocks. In 1988/89 India and Pakistan moved into the U.S. white wheat market in a big way, taking over 40 percent of shipments through 11 months of the marketing year. White wheat prices have been high relative to other wheat classes (see appendix table 11). June 1, 1989, white wheat stocks are forecast at 72 million bushels, the lowest since 1978/79.

White winter wheat, grown predominantly in the Pacific Northwest, was damaged by cold in 1989, and some fields reportedly were reseeded or overseeded with spring wheat. Winter white production is forecast at 182 million bushels, down 12 percent from 1988, as higher plantings were only able to partially offset reduced yields and sharply higher abandonment. Winter wheat accounted for 90 percent of white wheat production in 1988, but that percentage is likely to fall in 1989.

In Washington, 2.1 million acres of winter wheat were planted. Based on the 1988 class percentage, about 1.9 million were planted to white wheat. However, according to the May *Crop Production* estimate, only 1.3 of the 2.1 will be harvested. Some of the winter-killed area has reportedly been planted to spring wheat, with tales of shortages of white wheat seed for spring planting. However, it is unlikely

that spring white wheat production can offset the lower winter production.

Reseeding of this magnitude may lead to problems at harvesttime in maintaining the segregation of wheat classes. This is a special problem in Washington where seed shortages reportedly led to importation of hard white spring wheat varieties from California and interseeding of spring wheat varieties in winter wheat fields.

Sharply reduced stocks and stable to slightly lower production could leave less than 300 million bushels of total white wheat supplies in 1989/90, the lowest since 1974/75. With reduced supplies, white wheat exports are likely to fall from the 250 million bushels forecast for 1988/89. Moreover, Pakistan and India are unlikely to import as heavily in 1989/90, so white wheat exports are likely to be directed to the more stable markets of Egypt, Japan, and Korea.

SRW Production Growing

SRW started 1988/89 as the only class of wheat in increased supply. Favorably dry harvest conditions helped maintain quality. However, demand was strong and SRW June 1 stocks are forecast at a minimal 17 million bushels. China's increased wheat imports were a major outlet for the larger 1988 SRW crop. Price discounts compared to other classes were a feature of the early season SRW market, but in the fall, as it became clear how strong demand was, SRW began to command price premiums over other wheat classes.

In 1989/90, SRW growing conditions have been generally favorable. Area planted increased an estimated 17 percent, with specially large increases in Corn Belt States with high average yields. Soft red is generally grown in States along and east of the Mississippi. Spring rains were generally ample, and conditions are particularly good in Illinois, Indiana, and Ohio. Good yields on more acres may push soft red production over 550 million bushels, up 17 percent and the third highest on record. However, excessive rain during harvest could lower quality.

The quality of the SRW crop will be important in determining how it will be used. Feed grain prices are likely to be lower than wheat prices this summer, especially if corn production prospects are good. SRW is more likely to be used as feed if it is garlicky or off grade. If harvest conditions are favorable, and the quality of the SRW crop is good, feeding may be less. However it is impossible to separate SRW feeding from the residual.

SRW exports were strong in 1988/89, highlighted by early season movement. Once again in 1989/90, SRW exports may be front loaded. SRW producers often move their wheat to make room in on-farm storage for summer crops, such as corn. The export business needs to be ready to absorb the increased production, or SRW prices could feel more downward pressure at harvest than other classes.

HRS Production Likely To Rebound

In 1988/89, spring wheat was devastated by drought in the Northern Plains, resulting in the lowest HRS crop since 1966. Subsoil moisture remains short in some areas, but surface moisture is improved from a year ago. Planting this spring lagged normal due to cool temperatures and excess wetness in some areas. Assuming average yields and the 16-percent increase in acreage implied by the *Prospective Plantings* report, production may rebound sharply from 181 million bushels in 1988/89. Favorable growing conditions could result in a near record crop.

HRS supplies in 1988/89 were less than 600 million bushels, and the lowest in more than a decade. Early in the marketing year, HRS price premiums were large and use is forecast down 25 percent from 1987/88 to 393 million bushels. Even with reduced domestic use and exports, stocks are forecast to be trimmed in half, to less than 200 million bushels for the first time since 1976/77.

In 1989/90 total HRS supply should increase despite lower beginning stocks, if a near-record crop is produced. Reduced competition from HRW could increase demand for HRS, causing domestic use and exports to rebound.

Durum Exports Down

Durum wheat production in 1988 was 43 million bushels, the lowest since 1961. However, beginning stocks of 83 million bushels would have barely allowed sufficient supply to cover the 112-million-bushel utilization in 1987/88. Durum prices increased dramatically during the spring and summer of 1988. U.S. durum prices became uncompetitive in the world market, and exports have fallen to a forecast 23 million bushels, down from 62 million a year earlier. Stocks on June 1, 1989, are forecast at 61 million bushels, down only 22 million from 1988.

The *Prospective Plantings* report indicated durum area in 1989 up 16 percent. Assuming average yields, production would exceed 100 million bushels. With 61 million bushels of carryin stocks, and continued imports of durum from Canada, total supply in 1989/90 may be much larger than in 1988/89.

More competitive prices and aggressive use of the EEP may be needed to recover a significant portion of the U.S. share of world durum trade. The EC is not likely to export as much durum as in 1988/89 because early season dryness may limit production prospects in Southern Europe and the large 1988/89 exports reduced durum stocks. However, Canada is likely to return as the dominant competitor in the world durum market if its production increases as projected.

Costs of Combining Dockage and Foreign Material in the Grading Standards for Wheat Exports

by

Stephanie Mercier and C. Edwin Young

Abstract: Over the last few decades, U.S. wheat farmers have found their product compared to that of their competitors and judged deficient by some importers, who claimed it contained excessive non-wheat material. One suggestion to remedying this problem is to combine dockage and foreign material in wheat grading standards. Estimates of the lost revenue due to this change in the export market only range from $18.7 to $19.9 million for treating the combined measure as a grade limit to $20.8-$22.2 million for treating it as a discount factor.

Keywords: Grain quality, grading standards, wheat dockage, foreign material, economic costs.

Introduction

The quality of U.S. export wheat has been a source of controversy for some time. Some importers have claimed that U.S. wheat quality is inferior to that of competing exporters because it contains excessive non-wheat material, defined below.

Related to this question is the separation of non-wheat substances by U.S. grading standards into dockage and foreign material (FM). Other major exporters do not officially make this distinction, creating some confusion for wheat importers. The U.S. Congress has expressed interest in this subject as well.

This paper summarizes a larger study designed to estimate economic costs to wheat producers, handlers, and exporters of combining dockage and foreign material as a single factor in assessing wheat quality (1). It considers using the combined measure as either a grading factor or a discount factor. The study was conducted by the Economic Research Service (ERS) in cooperation with the Federal Grain Inspection Service (FGIS), both of USDA.

FGIS samples all grains, including wheat, prior to export from the United States. The quality of the wheat is certified by FGIS based on tests of the sample. If the quality of the wheat does not meet the terms specified in the contract, the wheat cannot be exported without either cleaning or mixing with better quality wheat in order to meet the standard.

Dockage vs. Foreign Material

Dockage is defined as non-millable material, including wheat chaff and dust, weed seeds, grain other than wheat, sand, dirt, and any other material that can be removed readily with appropriate devices from a sample of wheat. Currently, dockage is distinguished from foreign material, which FGIS defines as non-wheat material that cannot be mechanically separated from the usable wheat within the sample because it has the same particle size as wheat.

The United States is the only major wheat producer that measures and reports dockage as a separate factor on official grade certificates for wheat. However, dockage is a non-grading factor and it is removed from the sample being inspected before other factors are measured. The grading factors, which include foreign material, minimum test weight, broken kernels, heat-damaged kernels, total damaged kernels, total defects, and amount of wheat of other classes, are the factors used to assign the appropriate grade used by FGIS to indicate grain quality.

The numbers shown in table A-1 indicate the limits which these factors may reach for a shiplot of wheat and still be graded at the higher grade (denoted by a lower number). For example, U.S. Grade No. 1 wheat must have a test weight in excess of 60 pounds, less than 0.2 percent heat-damaged kernels, and less than half a percent of foreign material, as well as meeting all other grade-determining factors.

Table A-1--Grading factors for wheat

U.S. grade	Min. test weight	Maximum limits for: Heat damaged kernels	Total damaged kernels	Foreign material	Shrunken, broken kernels	Total defects	Wheat of other classes
	Pounds	Percent					
No. 1	60.0	0.2	2.0	0.5	3.0	3.0	3.0
No. 2	58.0	0.2	4.0	1.0	5.0	5.0	5.0
No. 3	56.0	0.5	7.0	2.0	8.0	8.0	10.0
No. 4	54.0	1.0	10.0	3.0	12.0	12.0	10.0
No. 5	51.0	3.0	15.0	5.0	20.0	20.0	10.0

Note: U.S. Sample Grade shall be wheat which does not meet the requirements for any of the grades No. 1 to No. 5 inclusive, or which contains harmful or toxic substances or has any commercially objectionable odor.

These shiplots are measured by FGIS before the exporting firm is permitted to load the grain on ships at the export facilities. A grade certificate is issued by FGIS at this point, detailing the figures for all grade-determining factors, as well as other non-grading factors, such as dockage, which the export contract specifies. The marketing or inspection agencies of other major exporters report only one measure of non-millable material. Therefore, many importers are not familiar with dockage, and they have some difficulty in knowing how to measure or interpret the dockage content of U.S. wheat.

Domestic millers, on the other hand, have not complained about the reporting of dockage as a measure. The grain they purchase need not be graded so they assign discounts or premiums to factors (often end-use characteristics, such as protein and moisture content) to specify the quality they want. Some millers have explicitly stated a preference in having dockage and FM reported separately, because of the difference in the ease of removing them. If adopted, the combined grade factor would primarily affect our export markets, because domestic wheat is not usually sold solely on the basis of grade limit factors in the current market.

The domestic wheat industry has questioned the need for a standards change. Many industry sources view the proposed combined grade factor as reducing the amount of information available on inspection certificates, rather than as an adjustment that would necessarily lead to an improvement in the quality of wheat shipped. Such a modification would also run counter to other changes under consideration for corn and sorghum grading standards. For those grains, the change would consist of separating dockage and foreign material (or broken corn and foreign material) on the official certificate.

Whether dockage plus FM would be used as a grading factor for wheat or a discount factor, the costs of such a change would be borne primarily by producers and exporters, at least initially. Nearly all importers remove non-millable materials prior to milling wheat into flour to prevent damage to flour quality and milling equipment. Thus, they initially shoulder the cost of the lower quality wheat. However, much of the cost is transmitted back to the producers and exporters through discounts. Under the revised system, importers would still bear some costs since they would pay wheat prices for non-wheat material (the dockage and foreign material), though additional discounts for other deficiencies may still appear in contracts.

At present, dockage is measured by FGIS inspectors at U.S. export terminals and in random samples of the new crop each year. Dockage is reported along with moisture content and protein content. Starting in May 1987, dockage has been reported to the nearest tenth of a percent, rather than to the nearest half a percent as required previously.

Many importers specify permissible dockage levels and other non-grade factors in the contracts they negotiate with U.S. grain exporters. These importers include Taiwan, Japan, and the Philippines. Other major importers, such as the USSR and China, do not ordinarily specify dockage levels in their contracts. The proposed change would permit more uniform export contracts, and may encourage producers and exporters to seek ways to dispatch cleaner wheat, so that they may maintain or even expand the U.S. market share. The advantages of cleaner wheat may not be well understood by many U.S. wheat producers, handlers, and exporters, however, because the price incentive is not clear in the market.

Quality of U.S. Wheat

The data in this study account for all wheat shipped from U.S. ports from 1984 through early December 1988. The data indicate importer and major wheat class. This breakdown permits the examination of the effects of the new grading factor by class and to a lesser extent, by importing region.

Most wheat currently exported at least meets the standards for Grade U.S. No. 2 (designated Grade No. 2 or better in contracts). In general, exported wheat was as clean or

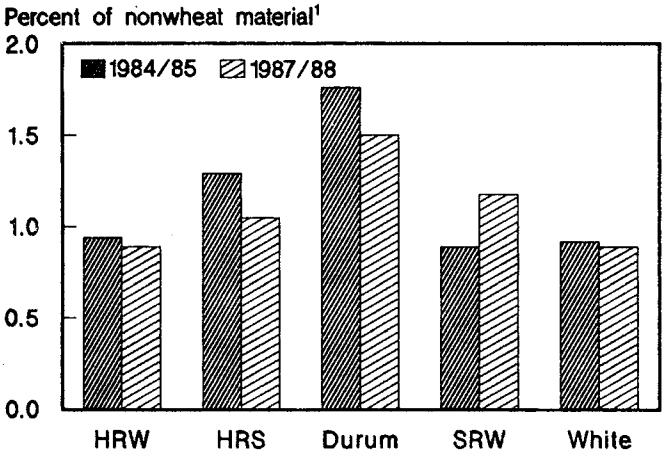
cleaner in 1987/88 than it was in 1984/85, except soft red winter wheat (SRW), which had much higher average FM and dockage in general after 1984 (figure A-1).

While the mean DKGFM (sum of dockage and FM are referred to in this study as DKGFM) declines between 1984/85 and 1987/88, more shiplots low in non-wheat material (even zero content) were seen in 1987/88 than for 1984/85. Excluding the shiplots with zero DKGFM in 1987/88, the shapes of the distributions are quite similar and do not have symmetric tails.

DKGFM is the factor that would be used if either of the proposals were adopted. Statistics that show percentage of non-wheat material in export shipments declining between 1984/85 and 1987/88 are illustrated by the frequency distribution diagrams for HRW wheat in figure A-2.

Figure A-1

U.S. Wheat Export Quality



1/ Dockage plus foreign material.

The breakdown of average DKGFM by class and percentage of wheat by class that would no longer be graded U.S. No. 2 for export are also shown as regraded in table A-2. Under the new grading factor, over the period 1984-88, half or more of the shiplots of the HRS, HRW, and white classes would still grade U.S. No. 2 or better (50, 65, and 69 percent respectively). On the other hand, at least 70 percent of SRW and durum classes would have been downgraded to U.S. No. 3 or lower.

Hard red winter was the major class of U.S. wheat exported over the last few decades. Table A-3 compares average FM and dockage in HRW for eight major importing regions as well as the volume and number of shiplots.

Table A-2--Dockage and foreign material in export shipments by wheat class 1/

Class of wheat	Measure	1984	1985-86	1987-88	1984-88
		---Percent---			
Hard red winter (HRW)	FM	0.30	0.32	0.28	0.29
	Dockage	0.64	0.65	0.61	0.62
	Regraded2/	35	44	31	35
	Shiplots (no.)	906	837	1862	3605
Hard red spring (HRS)	FM	0.40	0.23	0.24	0.31
	Dockage	0.89	0.79	0.82	0.85
	Regraded2/	75	48	52	50
	Shiplots (no.)	763	393	463	1619
Durum	FM	0.68	0.61	0.45	0.57
	Dockage	1.08	0.84	1.05	0.98
	Regraded2/	95	80	90	86
	Shiplots (no.)	250	331	315	896
Soft red winter (SRW)	FM	0.19	0.43	0.32	0.31
	Dockage	0.70	0.88	0.87	0.85
	Regraded2/	25	72	73	68
	Shiplots (no.)	340	794	1141	2275
White	FM	0.29	0.26	0.25	0.26
	Dockage	0.63	0.69	0.64	0.65
	Regraded2/	39	40	30	31
	Shiplots (no.)	434	491	839	1754

1/ FM and dockage are averages for all shiplots. 2/ Percent of shiplots that would not meet U.S. grade No. 2.

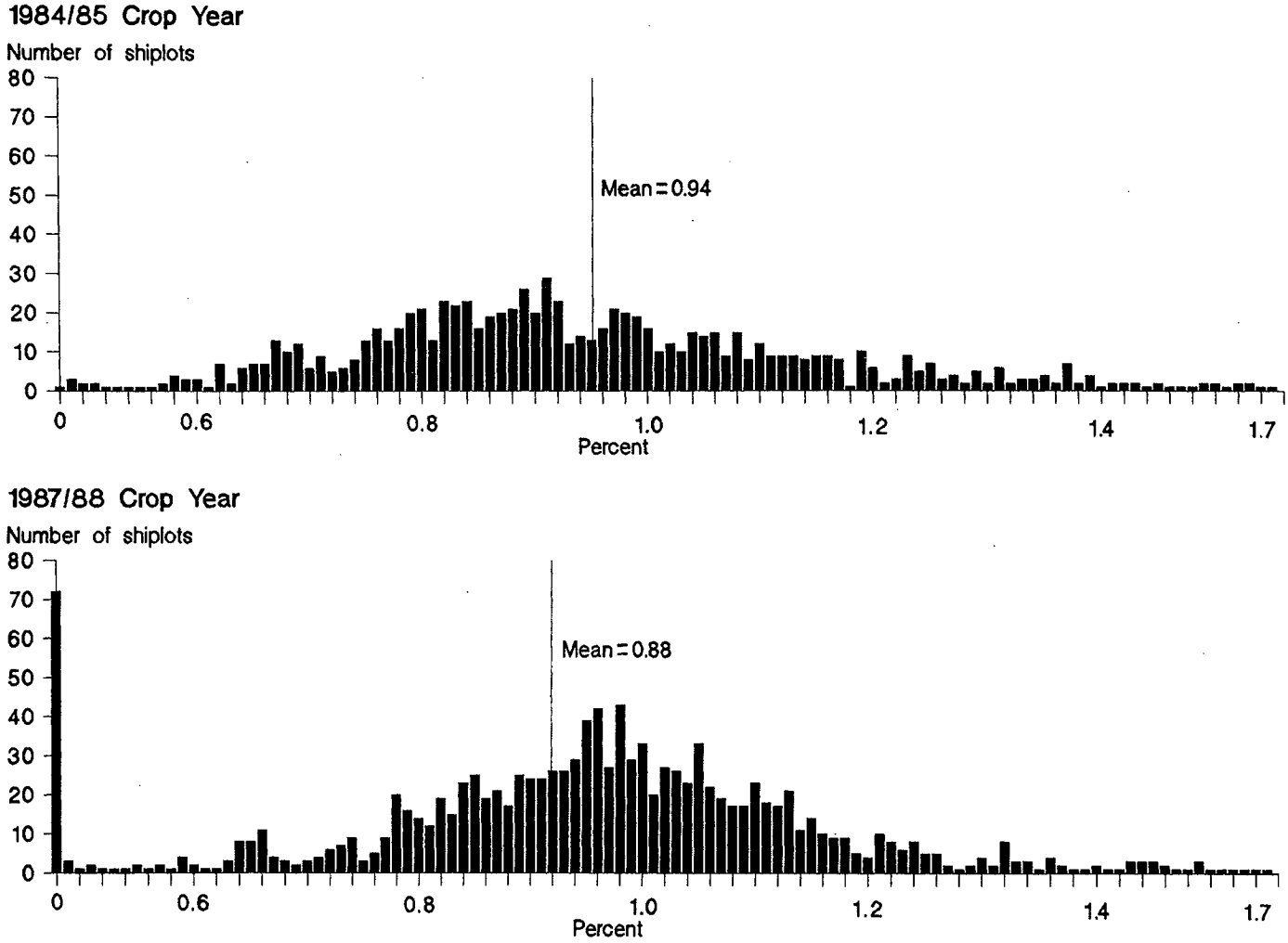
Table A-3--Foreign material and dockage in HRW exports by import regions

	FM	Dockage	Quantity	Shiplots
	Percent		1,000 met. tons	No.
Central America	0.21	0.48	1,732	278
Developed Asia1/	0.27	0.57	6,852	669
Developing Asia2/	0.28	0.62	5,986	262
Centrally planned economies3/	0.30	0.66	14,441	417
Mideast	0.30	0.64	4,691	139
South America	0.32	0.69	4,701	364
Africa	0.32	0.68	8,106	517

1/Includes Japan, South Korea, Taiwan, Hong Kong, and Singapore. 2/Includes lower income Asian countries, such as India, Laos, and Pakistan. 3/China, the USSR, and Eastern Europe.

Figure A-2

U.S. HRW Exports Generally Cleaner In 1987/88 Than 1984/85[1]



1/ Frequency distribution of sum of dockage and foreign meterial by number of shiplots.

Among regions receiving at least 50 deliveries of U.S. HRW wheat during 1984-88, the cleanest loads went to Central American and developed Asian countries. It is widely believed that some Asian countries prefer to purchase cleaner wheat, even at a premium. Price data, however, were not available to confirm or refute this hypothesis. Shipments to South America and Africa contained more dockage and FM. These regions contain the world's poorest countries and receive most U.S. concessional wheat exports.

HRS wheat exports showed similar patterns (table A-4). The wheat with the lowest average FM was shipped to developed Asia. Shipments to developing Asia had a relatively high FM content, but low dockage. Shiplots to Europe, South and Central America had the highest percentage of non-millable material (FM and dockage). The discrepancy between HRW and HRS wheat for Central America results from Mexico buying the bulk of the HRW wheat destined for Central America and contracting for rather low dockage and FM. The HRS wheat went to other Central American nations without such strict requirements.

Table A-4--Foreign material and dockage for HRS exports by import regions

	FM	DKG	Quantity	Shiplots
	Percent		1000 met. tons	No.
Developed Asia1/	0.28	0.81	5,496	694
Developing Asia1/	0.29	0.84	3,073	247
Africa	0.34	0.70	1,205	103
South America	0.36	0.95	1,529	202
Central America	0.38	1.02	2,348	305
Europe	0.38	0.93	2,254	285

1/See table 2

Overall, U.S. wheat exports have become cleaner during the last 5 years (in terms of both dockage and FM). Most wheat exported from Canada is similar to the U.S. HRS class, and in data collected by U.S. Wheat Associates in 1987/88 it contained an average 0.15 percent FM and about 0.18 percent dockage (2). For the same year U.S. HRS contained an average 0.24 percent FM and an average 0.80 percent dockage.

Additionally, Australian prime hard wheat exported in 1987/88 (information also provided by U.S. Wheat Associates) contained an average of 0.05 percent FM and the average dockage content was 0.4 percent. The comparable figures for U.S. HRW wheat were 0.28 percent for FM and 0.61 percent for dockage. Even though U.S. wheat exports have become cleaner in recent years, they still contain more dockage and FM than exports from some competing countries.

Costs of the Alternatives

The costs of making DKGFM a grading factor and the costs of making DKGFM a discount factor were analyzed. For the first alternative cost scenario, wheat that has an DKGFM exceeding the current FM limit of 1.0 percent for grade U.S. No. 2 would be regraded, and costs from the resulting price differential were estimated. In this analysis, it is assumed that the combined DKGFM factor is the only grade-determining factor that forces the wheat to be regraded from U.S. No. 2 to No. 3. Thus, the price differential used may somewhat overestimate the quality differential that would result. In the second proposal, costs were estimated using current discount schedules. These results of cost estimations for both proposals represent the costs that would have been assessed in those years for dockage and FM. They do not project costs that would necessarily occur if the standards change were made. Adjustments would certainly be made to the prices and discounts, so these figures may be regarded as maximums.

DKGFM as a Grading Factor

For each shiplot the cost of the change was estimated as the difference in prices between the respective grades. This portion of the study used price data for lower grade (No. 3) wheat for all major classes. The representative price differentials prevailing in the market during the winter of 1989 were obtained from major grain trading firms (see table A-5).

If DKGFM became a grading factor, the existing price differentials would likely narrow because large volumes of wheat would be affected and because purchasers would take into account the fact that wheat's inherent quality was not altered by the change in standards.

Price differentials tend to increase when more grain of low quality appears on the market. The costs of altering the grading standards (not including any administrative costs) to include total dockage and foreign material as one grading standard given the price differentials between Grades 2 and 3 are shown in table A-6.

The costs of undertaking such a standard change would have increased more than 6 percent between the 1984/85 and the 1987/88 crop years. Estimated losses in revenue ranged from $18 to $20 million, with the costs of the two major export wheat classes, HRW and HRS, both increasing, entirely due to larger export volume in 1987/88 than in 1984/85 and not attributable to additional dockage and foreign material; 14 percent more wheat was exported in 1987/88. The price differentials during the 1984/85 crop year may have been somewhat higher than those now, because the FM and dockage were higher, so estimated costs for 1984 may be biased downward.

Table A-5--Price differentials between U.S. no. 2 and U.S. no. 3 grade wheat, all classes

Class	Differential
	$ per bu.
HRW	0.02
HRS	0.04
Durum	0.06
SRW	0.03
White	0.03

Source: Telephone survey of nine major grain trading firms in Gulf, Great Lakes, and Pacific regions in February 1989.

Table A-6--Costs of combining dockage and foreign material as a grading factor for all classes of export wheat

	1984/85		1987/88	
Class	Cost1/	Volume2/	Cost1/	Volume2/
	$ mil.	Mil. bu.	$mil.	Mil. bu.
HRW	4.46	223	5.27	263
HRS	6.87	171	7.79	194
Durum	4.42	73	3.59	60
SRW	1.35	44	1.96	65
White	2.85	95	1.32	44
All	18.71	606	19.93	626

1/Value lost due to shiplot being regraded as No. 3 for export. 2/Volume of shiplots affected by regrading.

DKGFM as a Discount Factor

Costs for combining dockage and foreign material as a discount factor were estimated by using current discount schedules for FM assessed by grain trading companies at export terminals (see table A-7).

Discounts used during autumn 1988 were obtained from the Kansas City Commodity Office of the Agricultural Stabilization and Conservation Service (ASCS). The most common schedules were used to evaluate the costs of discounting with the new grading factor.

Figure A-8
Relative Discount by Wheat Class

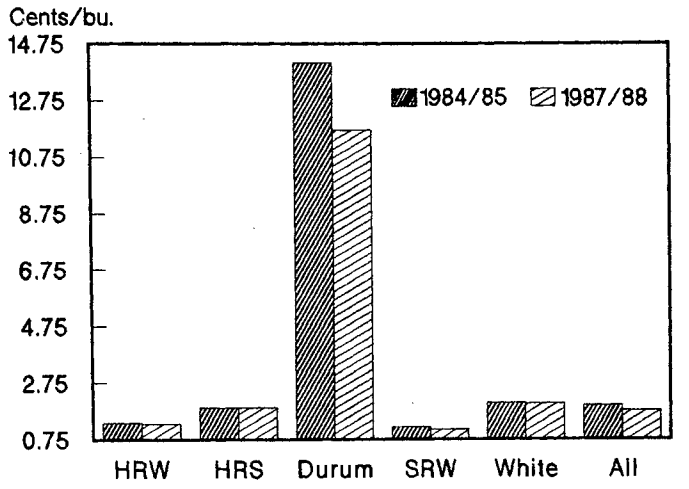


Table A-7--Foreign material discount schedule for wheat

Class	Discount	Tolerance Point1/
	$ per bu.	Percent
HRW	0.01 each 0.5 percent or fraction	0.5
HRS	0.01 each 0.5 percent or fraction	0.5
Durum	0.03 each 0.5 percent or fraction	0.5
SRW	0.01 each 0.5 percent or fraction	1.0
White	0.02 flat rate	1.0

Note: Cutoff levels for HRW, HRW, and durum wheat are below the grade limit, though discounts are applied.

1/FM below this percentage is a permissible level.

Table A-8--Relative costs of applying current market discounts for FM to new standards for U.S. wheat exports

Class	1984-85		1987-88	
	Cost1/	Volume	Cost1/	Volume
	$ mil.	Mill. bu.	$ mil.	Mill. bu.
HRW	9.29	693	11.34	871
HRS	3.89	209	4.75	253
Durum	5.21	37	4.57	39
SRW	0.52	44	0.72	65
White	1.93	95	0.88	44
All	20.85	1079	22.27	1271

1/Relative to discounts that would have been charged using this schedule for all shiplots in those years for foreign material only.

The costs of the change to use of the DKGFM factor were adjusted to account for discounts for only FM that would have been made in current markets. The corrections were minor for all wheat classes except durum, which at a cutoff level of 0.5 percent would have faced considerable average discounts for containing excessive foreign material in 1984/85 and 1987/88.

Changing to the proposed standard would have reduced gross export revenue between $20 and $22 million in the study years (table A-8). The volume of U.S. wheat exports that would have been discounted increased between 1984 and 1987. Overall wheat exports increased between 1984/85 and 1987/88, so the cost of imposing the new standard increased proportionally less than export volume (6.8 to 11.8 percent).

HRW wheat would have been hit most heavily in terms of total costs, because it is the dominant export class and because the discount toleration point established by the industry is lower (0.5 percent) than the grade limit. The second most heavily influenced class would have been durum in 1984/85 and HRS in 1987/88.

Durum is relatively more affected than any other class because of estimated discounting of $4-5 million (about half that of HRW) occurs on total shiplots of less than 40 million bushels (as opposed to 700-900 million bushels for HRW). Even though a lower volume was affected, the total discount assessed on durum in 1984/85 was somewhat higher than for 1987/88 because there were more shiplots with higher dockage content in 1984/85.

During the 2 years examined, the percentage of wheat that would have been discounted was fairly constant for HRW and HRS, but fluctuated for the other classes. For both SRW and durum wheat, the percentage of wheat that would experience deductions increased substantially between 1984 and 1987, while for white winter wheat the discounted shiplots would have declined. Nearly all shiplots of HRW, HRS, and durum would have been affected by discounts in these years, while less than half of the deliveries of SRW and white wheat would have been assessed.

Summary and Conclusions

The alternative grading standard which would include dockage and FM would cost from $18 to $22 million per year (table A-9). The foregone revenue as determined in the analysis depends on the year and the method utilized, and whether the factor was made a grading standard or simply treated as a discount. The reduced revenues constitute around 0.5 percent of total U.S. wheat export value.

Table A-9--Costs of combining dockage and foreign material as a grading standard for wheat

	1984/85	1987/88
	$ mil.	
Grading1/	18.71	19.93
Discount2/	20.85	22.27

1/Valued at 1989 price differentials. 2/Valued at 1987/88 crop year prices for each wheat class.

Most of the discounting practices and price differentials currently seen in the market probably would be adjusted to reflect the new grading environment. Further, many of these costs could be passed on to end users or producers. Under both of these scenarios, the blending practice that is common in the industry would continue, which is likely to decrease the costs of the standards change. These costs imply no inherent improvement in wheat quality, unless widespread cleaning is adopted. Another alternative would be to educate importers as to the distinction between dockage and foreign material in wheat, rather than eliminating the distinction altogether.

If the goal is to improve wheat quality, there may be more direct ways of accomplishing it, such as making both dockage and foreign material grading factors, rather than combining them. The factor limit for FM could be lowered (to 0.5 percent for U.S. Grade No. 2), a level that usually triggers discounts in the domestic market.

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Quantity of Wheat Placed Under Nonrecourse Loan

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Abstract: The quantity of wheat placed under nonrecourse loan is found to be negatively related to the ratio of market prices to the loan rate. However, there is a significant difference in response depending on whether the ratio is greater than one. Loan placements are also positively related to the quantity of wheat eligible for loan, the expected price of wheat, and generic certificate payments to wheat producers.

Keywords:Commodity Credit Corporation, nonrecourse loan, price support, wheat.

Providing price and income support to farmers has long been an objective of U.S. commodity programs. For more than 50 years, nonrecourse loans have provided farmers with a means of price and income support and a marketing tool. The quantity of various commodities placed under loan significantly affects market prices, supplies available for domestic and export use, Government budget outlays, and storage requirements. This article analyzes the quantity of wheat placed under nonrecourse loan.

Under the Commodity Credit Corporation (CCC) Charter Act of 1948 and the Agricultural Act of 1949, as amended, eligible wheat producers may obtain a nonrecourse loan at the announced county loan rate per bushel by pledging their current year's crop production as collateral. Grain pledged as collateral must be stored at the producer's expense in a CCC-approved facility either on or off the farm. Wheat producers have until March 31 (10 months into the marketing year) to enter into a loan agreement for their new crop. Eligibility for nonrecourse loans and other program benefits requires participation in the annual commodity program, including any announced acreage limitation program.

Wheat loans typically mature after 9 months. However, farmers may obtain their collateral at any time prior to maturity by repaying the loan principal plus accumulated interest to the CCC. The interest rate charged on price support loans represents the cost of funds to the CCC from the U.S. Treasury, and is typically around 2 percentage points below the prime rate charged by commercial banks. Interest charges accrue monthly from the time the loan is made.

Nonrecourse loans effectively support prices through the option to forfeit. Producers have an incentive to redeem their loans if the market price rises above the loan rate plus accrued interest charges. Otherwise, the CCC has no recourse except to assume ownership of the producers' collateral (wheat pledged for loan) as full settlement for the loan (hence, the name "nonrecourse" loan). Thus, the loan rate may serve as a price floor to individual producers who participate in the announced commodity program.

Nonrecourse loans also serve as a marketing tool that provides farmers with cash at harvesttime to satisfy immediate cash obligations while retaining control of their commodity. The cash obtained from nonrecourse loan payments allows producers to store their crop for sale later in the marketing season when prices are generally more favorable. This helps to even out marketings and ensure adequate supplies at more stable prices to consumers throughout the year. Nonrecourse loans also allow producers to delay marketing their crop until a new calendar year for tax purposes.

Determinants of How Much Wheat Is Placed Under Nonrecourse Loan

The decision to place wheat under nonrecourse loan depends on a farmer's immediate cash flow requirements at harvesttime, the amount of wheat eligible to be placed under loan, and short-term price expectations. A farmer's immediate cash flow requirements may be satisfied by selling the crop on the market, entering into a nonrecourse agreement using the crop as collateral, obtaining a loan from a private financial institution, or a combination of the three.

There are two primary sources of demand for a producer's harvest—the market and the CCC. Eligible wheat producers view the CCC as a guaranteed source of demand at a guaranteed price (the announced loan rate) for as much of their wheat as they wish to place under nonrecourse loan, subject to a $250,000 payment limitation on a combination of loan proceeds and deficiency and diversion payments. The amount demanded by the market, and the price offered, is less certain.

If market prices are below the announced loan rate, there may be an incentive to enter into a loan agreement with the CCC to satisfy immediate cash flow requirements. In general, the higher the market price at the time of the decision to enter into a loan agreement relative to the loan rate, the less attractive nonrecourse loans are compared with selling on the market to obtain cash.

The decision to place grain under nonrecourse loan is further complicated by price expectations over the marketing year. If market prices are below the loan rate, and are expected to remain relatively low throughout the marketing year a producer would likely enter into a loan agreement with the anticipation of forfeiting. However, even if market prices are above the loan rate, and are expected to remain above the loan rate plus storage and interest throughout the marketing year, there are still incentives to enter into a loan agreement. Proceeds from nonrecourse loans may be used for immediate cash flow requirements while a producer stores grain for redemption and sale at higher market prices later in the marketing year, or delays market sales until the next calendar year for tax purposes.

To be eligible for nonrecourse loans, producers must participate in any announced acreage limitation programs. Hence, the potential volume eligible to be placed under nonrecourse loan is acres harvested under Government programs multiplied by actual yields per harvested acre.

Studies of farmers' demand for commodity loans were conducted during the late 1970s (1, 2, 3). These studies typically found various measures of market prices, loan rates, price expectations, and production to be significant determinants of the amount of grain placed under loan. The studies also attempted to relate the demand for CCC loans to relative interest rates charged by CCC and private financial institutions, with varying degrees of success. The present article differs from previous work in that it allows for different price incentives depending on whether market prices are above or below the loan rate, it uses a measure of price expectations, it uses quantity eligible for loans instead of total production, and it allows for the influence of generic certificates on loan placements. This analysis did not find interest rates to be significant.

Model Specification and Estimation

Based on the hypothesized determinants of the annual quantity of wheat placed under nonrecourse loan, the following estimation equation is specified:

$$WTPSLM_t = F(WTPR5_t/WTLR_t, WTEQP_t, WTEPR_t) \quad [1]$$

where: $WTPSLM_t$ = Wheat, quantity of price support loans made in marketing year t, million bushels;

$WTPR5_t$ = Wheat, weighted average price received by farmers for the first 5 months of marketing year t, dollars per bushel;

$WTLR_t$ = Wheat, national average nonrecourse loan rate for marketing year t, dollars per bushel;

$WTEQP_t$ = Wheat, quantity produced that is eligible for the nonrecourse loan program for marketing year t, million bushels; and,

$WTEPR_t$ = Wheat, expected season average price received by farmers for marketing year t, dollars per bushel. $WTEPR_t$ is calculated as a 3-year moving average of the season average price received by producers.

Data for quantity of wheat placed under nonrecourse loan were obtained from monthly Grain Loan Activity reports from the Agricultural Stabilization and Conservation Service (ASCS). The analysis was based on annual observations for 1966-1987 (table B-1).

Table B-1--Data used in analysis of quantity of wheat placed under nonrecourse loan.

Mktg year	Price support loans made	DUM<1	DUM>1	Ratio of 5-month price to loan rate	Quantity eligible for loan	Expected price	DUM7134	Loan rate	5-month price
	Mil. bu.				Mil. bu.	$/bu.		$/bu.	$/bu.
1965	170.1	0	1	1.05600	1120.990	1.75	0	1.25	1.32
1966	132.5	0	1	1.34400	1078.103	1.52	0	1.25	1.68
1967	272.2	0	1	1.12800	1428.397	1.45	0	1.25	1.41
1968	444.5	1	0	0.96800	1386.273	1.46	0	1.25	1.21
1969	406.8	1	0	0.96000	1347.376	1.42	0	1.25	1.20
1970	251.5	0	1	1.04000	1202.794	1.29	0	1.25	1.30
1971	438.0	0	1	1.07200	597.891	1.27	1	1.25	1.34
1972	143.0	0	1	1.19200	582.837	1.31	0	1.25	1.49
1973	59.9	0	1	2.80800	536.321	1.48	1	1.25	3.51
1974	36.5	0	1	3.14599	1887.583	2.35	1	1.37	4.31
1975	47.8	0	1	2.64964	2230.588	3.27	0	1.37	3.63
1976	468.3	0	1	1.36889	2370.761	3.86	0	2.25	3.08
1977	582.1	1	0	0.93333	2253.115	3.46	0	2.25	2.10
1978	255.0	0	1	1.22553	1282.428	2.87	0	2.35	2.88
1979	180.5	0	1	1.53200	1202.969	2.68	0	2.50	3.83
1980	329.4	0	1	1.29667	2633.951	3.03	0	3.00	3.89
1981	445.8	0	1	1.14375	2963.158	3.55	0	3.20	3.66
1982	643.4	1	0	0.94085	1511.654	3.78	0	3.55	3.34
1983	630.3	1	0	0.96164	1302.972	3.71	0	3.65	3.51
1984	284.8	0	1	1.02424	1184.950	3.58	0	3.30	3.38
1985	842.8	1	0	0.90606	1455.465	3.49	0	3.30	2.99
1986	514.2	1	0	0.96667	1599.632	3.35	0	2.40	2.32
1987	472.3	0	1	1.06140	1819.496	2.98	0	2.28	2.42
1988*	106.2	0	1	1.60181	1577.943	2.71	0	2.21	3.54

* Preliminary as of April 18, 1989.

SOURCE: Agricultural Stabilization and Conservation Service.

The ratio $WTPR5_t/WTLR_t$ represents the price incentives to place wheat under nonrecourse loan. The weighted average price for the first 5 months of the marketing year is used as the relevant market price incentive because most wheat is placed under loan during these first 5 months. Values for $WTPR5_t$ for 1974 to the present are the same as those published by the National Agricultural Statistics Service (NASS) for use in determining deficiency payments. Values prior to 1974 were calculated using monthly percentages of total sales and monthly prices received by farmers published by NASS.

Grain tends to be placed under loan even if market prices are well above the loan rate. However, the incentive to place grain under loan will differ depending on whether the market price is above or below the loan rate. To allow for these different incentives, the estimation equation incorporated two price ratio variables, depending on whether $WTPR5_t/WTLR_t > 1$ or $WTPR5_t/WTLR_t \leq 1$. The coefficient for each price ratio variable is expected to be negative; that is, the greater the ratio $WTPR5_t/WTLR_t$, the lesser the quantity placed under loan, other things remaining constant.

It is expected that the greater the quantity eligible for loans, the greater the quantity that will be placed under loan. The amount of wheat eligible to be placed under loan is calculated as acres harvested in the Government acreage limitation program multiplied by actual national average yield per harvested acre. Acres planted in Government programs were obtained from annual program compliance reports issued by ASCS. Derivation of acres harvested in the program is based on the econometric relationship between planted and harvested acres in total, adjusted to reflect the assumption that participants abandon less wheat land than do nonparticipants.

$WTEPR_t$ represents the price farmers expect for the entire marketing year t. Prices are generally lower during the beginning months of the marketing year, when the decision is assumed to be made concerning entry into a price support loan agreement. If prices are expected to be higher later in the marketing year, more grain will be placed under loan in anticipation of higher prices in later months. Expected prices are calculated as a 3-year moving average of the season average price received by farmers. The coefficient on the expected price variable is hypothesized to be positive.

In addition to the above variables, the estimated equation includes a dummy variable equal to 1.0 for 1971, 1973, and 1974; and, equal to 0.0 otherwise. This variable adjusts for the unusually large 1-year jump in quantity placed under loan in 1971, when a relatively large proportion of eligible production was placed under loan because of record yields and low prices, and the unusually low quantity placed during 1973 and 1974 due to record high market prices.

Empirical Results

Initial estimates for the quantity of wheat placed under nonrecourse loan during 1966-1986 resulted in:

$$
\begin{aligned}
WTPSLM_t = {} & \underset{(2.996)}{3{,}539.129} * DUM{\leq}1 + \underset{(8.3098)}{315.5768} * DUM{>}1 \\
& \underset{(-2.763)}{-3{,}388.393} * (DUM{\leq}1 * WTPR5_t/WTLR_t) \\
& \underset{(-8.7863)}{-227.7945} * (DUM{>}1 * WTPR5_t/WTLR_t) + \underset{(2.40190)}{0.05561} * WTEQP_t \\
& + \underset{(3.92864)}{58.98323} * WTEPR_t + \underset{(4.3722)}{240.6595} * DUM7134 \qquad [2]
\end{aligned}
$$

$R^2(adj) = 0.929$ DW = 2.357 SEE = 58.141 Obs = 21 df = 13

where: DUM<1 = an intercept shifter; DUM<1= 1 when $WTPR5_t/WTLR_t \leq 1$, and DUM<1 = 0 when $WTPR5_t/WTLR_t > 1$;

DUM>1=an intercept shifter; DUM>1 = 1 when $WTPR5_t/WTLR_t > 1$, and DUM>1 = 0 when $WTPR5_t/WTLR_t \leq 1$;

DUM7134 = a dummy variable; DUM7134 = 1 for 1971, 1973, and 1974; DUM7134 = 0 otherwise;

and $WTPSLM_t$, $WTPR5_t$, $WTLR_t$, $WTEQP_t$, and $WTEPR_t$ are as defined. Numbers in parentheses are t-values. The equation was estimated using autoregressive least squares.

The coefficients in equation [2] all have the expected signs. All explanatory variables are statistically significant within a 95-percent confidence interval. The adjusted R^2 is relatively high (0.929) and the standard error of the estimate is relatively low (58.141).

Equation [2] was used to predict quantity of wheat placed under nonrecourse loan for 1987 using known values for each explanatory variable. The estimated quantity of wheat placed under loan for 1987 was 350.9 million bushels, compared with the actual value of 472.3 million bushels. The forecast error of 121.4 million bushels for 1987 may be attributed in part to the impact of generic certificates on the decision to place grain under loan. Producers who have received Government payments in the form of generic certificates or who have purchased certificates in the market may place their grain under loan and then exchange it for those certificates based on established procedures.

A common practice where certificates would affect loan activity was "quick PIK." Under this practice producers would place their wheat under loan and immediately

exchange certificates for the loan collateral. The value of the generic certificates were based on posted county prices (PCPs) established daily by USDA. Hence, a producer could obtain a price support loan and, in exchange for an amount of certificates valued at the local PCP, obtain the grain from under loan for sale on the market. The producer saves storage and interest costs plus profits on the difference between the loan rate and the PCP. Incentives for quick PIK decrease as PCPs rise above the loan rate.

Annual payments to wheat producers in the form of generic certificates were used as a proxy for the impact of generic certificates on the decision to place grain under loan. Certificate payments to wheat producers were $1,857 million in crop year 1986 ($858 million of which were made during the June-October period when most loan activity for wheat occurs) and $2,354 million in 1987. Reestimating equation [2] with the additional explanatory variable for 1966-1987 resulted in:

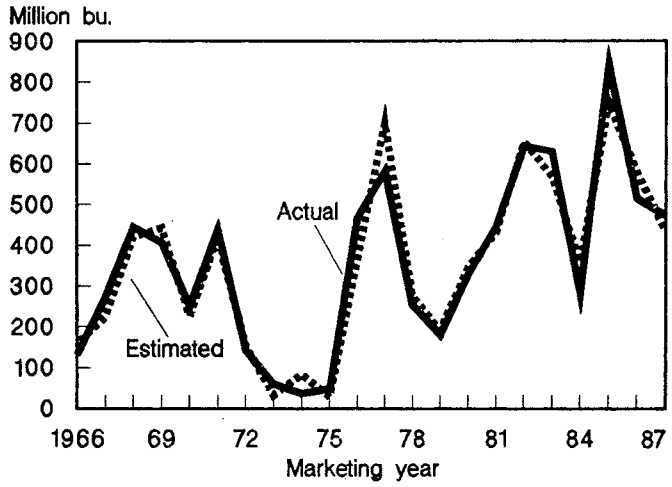
$$WTPSLM_t = \underset{(2.896)}{3{,}442.651} * DUM_{\leq 1} + \underset{(8.5462)}{316.0562} * DUM_{>1} - \underset{(-2.666)}{3{,}291.241} * (DUM_{\leq 1} * WTPR5_t/WTLR_t) - \underset{(-8.9280)}{228.4984} * (DUM_{>1} * WTPR5_t/WTLR_t) + \underset{(2.47498)}{0.05642} * WTEQP_t + \underset{(3.95225)}{58.85944} * WTEPR_t + \underset{(4.3880)}{241.2835} * DUM7134 + \underset{(1.58696)}{0.03531} * WTCERT_t \quad [3]$$

$R^2(adj) = 0.926$ DW = 2.336 SEE = 58.516 Obs = 22 df = 13

where $WTCERT_t$ stands for payments to wheat producers in the form of generic certificates, million dollars; and, all other variables are as defined. Numbers in parentheses are t-values. Equation [3] was estimated using autoregressive least squares.

The coefficients in equation [3] all have the expected signs. All explanatory variables are statistically significant within a 95-percent confidence interval except $WTCERT_t$. Since certificates are generic, meaning they may be exchanged for any commodity, a certificate payment to wheat producers does not necessarily mean that those certificates will be used to exchange for wheat under loan. However, it is likely that if market prices are close to the loan rate and wheat farmers receive generic certificates, they may place more grain under loan. Certificate payments appear to be a reasonable proxy for the incentive to place wheat under loan because of certificate exchanges. A plot of actual versus estimated values for the quantity of wheat placed under price support loan, based on data for 1966-1987, appears in figure B-1.

Figure B-1
Price Support Loans Made for Wheat



Elasticities evaluated at the mean of the 1966-1987 period indicate a significantly different response to the ratio of market prices during the first 5 months of the marketing year to the loan rate depending on whether the ratio is less than or greater than one. Only nonzero values for $WTPR5_t/WTLR_t$ were used to derive the mean elasticity over 1966-1987. If $WTPR5_t/WTLR_t \leq 1.0$, a 1-percent increase in this ratio was estimated to result in a 8.709-percent decrease (31.2 million bushels) in the quantity of wheat placed under loan.

If $WTPR5_t/WTLR_t > 1.0$, a 1-percent increase in the ratio would result in a 0.979-percent decrease (3.5 million bushels) in wheat placed under loan, other things remaining the same. If evaluated at the 1987 value for each variable, the elasticity of loans made with respect to the ratio of wheat price to the loan rate (which was greater than one for 1987) was estimated to be -0.514. If evaluated at the 1986 value for each variable, when the ratio of market price to loan rate was less than one, the estimated elasticity is -6.187.

The mean elasticities of quantity of wheat placed under nonrecourse loan with respect to the amount eligible, expected wheat price, and certificate payments are 0.242, 0.427, and 0.158. Hence, a 1-percent increase in eligible quantity, expected price, or certificate payments, other things remaining the same, was estimated to increase loans made by 0.867 million bushels, 1.530 million bushels, or 0.566 million bushels. Based on 1987 values for each variable, these elasticities were estimated to be 0.217, 0.371, and 0.176.

Conclusions

The results of this analysis appear to be a promising means of estimating the quantity of wheat placed under nonrecourse loan. The ratio of market prices during the first 5 months of the marketing year to the loan rate, the volume eligible for

loan, the expected wheat price, and generic certificate payments to wheat producers explain more than 92 percent of the variation in wheat loan placements during 1966-1987. Work is under way to develop estimation procedures for the quantity of other eligible commodities placed under loan.

The volume of various commodities placed under loan is only the first step in a long CCC loan activity process that may extend for over 5 years. Once a farmer enters into a loan agreement, crucial decisions must be made by both farmers and policymakers concerning whether to redeem the loan or forfeit the collateral to the CCC, whether loans will be extended past the usual 9-month loan period, whether to enter the farmer-owned reserve (FOR), and, once in the FOR, whether to redeem, extend, or forfeit reserve loans. An understanding of the entire loan activity process is important. However, data deficiencies and frequent changes in regulations make it difficult to construct a complete and consistent model of CCC loan activity.

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List of Appendix Tables

Appendix table 1--Wheat: Marketing year supply, disappearance, area, and price, 1983/84-1989/90

Item	1983/84	1984/85	1985/86	1986/87	1987/88	1988/89 (Estimated)	1989/90 (Projected)
				Million acres			
Area:							
Planted	76.4	79.2	75.6	72.1	65.8	65.5	74.3
Harvested	61.4	66.9	64.7	60.7	56.0	53.2	NA
Set aside and diverted	29.8	18.3	18.8	21.0	23.9	22.5	9.5
Acreage reduction	8.7	9.1	11.9	15.8	20.2	19.2	6.1
Diverted	3.5	5.6	6.9	3.9	0.0	0.0	0.0
PIK; 0-92 1/	17.6	3.6	---	1.3	3.7	3.3	3.4
Conservation Reserve Program	---	---	---	0.6	4.2	7.1	7/ 9.5
National base acreage	90.9	94.0	94.0	92.2	91.8	91.9	91.1
				Bushels per acre			
Yield/harvested acre	39.4	38.8	37.5	34.4	37.7	34.1	NA
				Million bushels			
Supply:							
June 1 stocks	1,515	1,399	1,425	1,905	1,821	1,261	594
Production	2,420	2,595	2,425	2,092	2,107	1,811	2,050
Imports 2/	4	9	16	21	16	22	21
Total supply	3,939	4,003	3,866	4,018	3,945	3,094	2,665
				Million bushels			
Disappearance:							
Food	642	651	674	696	719	730	735
Seed	100	98	93	84	85	100	105
Feed and residual 3/	369	405	279	413	288	210	175
Total domestic	1,111	1,154	1,046	1,193	1,092	1,040	1,015
Exports 2/	1,429	1,424	915	1,004	1,592	1,460	1,150
Total disappearance	2,540	2,578	1,961	2,197	2,684	2,500	2,165
				Million bushels			
Ending stocks:							
May 31	1399	1425	1905	1821	1261	594	500
Farmer-owned reserve	611	654	433	463	467	300	100
Special program 4/	---	3	163	169	0	0	0
CCC inventory 5/	188	378	602	830	283	185	100
Outstanding loans 6/	379	175	678	236	178	10	9
Other	221	215	29	123	333	99	291
				$/bushel			
Prices:							
Received by farmers	3.51	3.39	3.08	2.42	2.57	3.74	4.00
Loan rate	3.65	3.30	3.30	2.40	2.28	2.21	2.06
Target	4.30	4.38	4.38	4.38	4.38	4.23	4.10
				$ million			
Value of production	8,533	8,757	7,374	5,044	5,415	6,774	8,200

--- = Not applicable.
NA = Not available.
1/ PIK - 1983/84-1985/86; 0-92 - 1986/87-1989/90. 2/ Imports and exports include flour and other products expressed in wheat equivalent. 3/ Residual approximates feed use and includes negligible quantities used for alcoholic beverages. 4/ Projected amount of free-stock carryover in the special producer storage loan program. 5/ From 1981/82 on, includes 147 million bushels (2 million tons) in Food Security Reserve. 6/ Projected amount of free-stock carryover under 9-month loan. 7/ Through the 7th sign up, 8.4 million acres of wheat base have been enrolled in CRP.

Appendix table 2--Wheat: Area, yield, and production by major States, 1982-1989

State	1982	1983	1984	1985	1986	1987	1988	1989 1/
Area harvested (million acres):								
Arkansas	1.9	1.5	1.4	0.6	0.8	0.8	1.1	1.3
Colorado	3.0	3.1	3.3	3.5	3.0	2.6	2.4	2.1
Idaho	1.5	1.3	1.3	1.4	1.3	1.1	1.2	0.8
Illinois	1.5	1.4	1.6	0.8	0.8	1.0	1.3	1.6
Kansas	13.1	10.8	11.2	11.4	10.2	9.9	9.5	9.2
Minnesota	3.2	2.1	2.6	2.7	2.8	2.5	2.3	0.1
Missouri	2.2	1.9	2.1	1.3	0.6	0.8	1.6	1.9
Montana	5.4	4.5	4.6	4.0	4.8	4.7	3.8	1.5
Nebraska	2.9	2.3	2.3	2.3	2.0	2.0	2.0	2.2
N. Dakota	10.3	7.2	8.7	8.9	9.4	9.1	7.2	0.1
Oklahoma	6.9	4.3	5.3	5.5	5.2	4.8	4.8	5.4
Oregon	1.2	1.1	1.1	1.1	1.0	0.8	0.8	0.8
S. Dakota	3.6	2.7	3.7	3.8	3.8	3.5	2.6	1.4
Texas	6.0	4.6	5.0	5.9	4.8	3.6	3.2	2.9
Washington	2.8	2.7	2.6	2.7	2.4	2.0	2.1	1.3
Yield (bu/acre):								
Arkansas	0.0	39.0	44.0	32.0	41.0	41.0	53.0	47.0
Colorado	28.7	39.9	35.3	0.0	32.6	38.1	33.8	32.0
Idaho	62.8	70.3	63.6	53.4	62.4	75.0	65.7	68.0
Illinois	45.0	46.0	44.0	49.0	44.0	59.0	54.0	55.0
Kansas	0.0	41.5	38.5	38.0	33.0	37.0	34.0	22.0
Minnesota	39.8	36.9	47.3	0.0	36.8	40.7	23.0	31.0
Missouri	34.0	38.0	41.0	39.0	33.0	46.0	50.0	47.0
Montana	0.0	30.7	22.6	12.7	29.1	32.2	15.7	20.0
Nebraska	35.0	43.0	36.0	39.0	38.0	44.0	36.0	33.0
N. Dakota	31.5	26.9	32.8	36.4	31.2	29.5	14.3	20.0
Oklahoma	0.0	35.0	36.0	30.0	29.0	27.0	36.0	26.0
Oregon	52.9	60.4	61.8	52.6	57.0	65.3	68.6	68.0
S. Dakota	27.4	32.9	0.0	29.6	28.3	30.2	14.4	23.0
Texas	24.0	35.0	30.0	0.0	25.0	28.0	28.0	21.0
Washington	48.9	0.0	61.4	47.7	48.5	56.7	60.5	53.0
Production (million bushels):								
Arkansas	2/ 72.2	58.5	61.6	18.2	33.4	34.4	56.7	61.1
Colorado	85.0	122.1	115.3	2/ 139.3	96.4	97.4	79.5	67.2
Idaho	94.8	91.7	81.4	72.0	81.8	85.5	75.5	53.7
Illinois	67.5	64.4	70.4	36.8	36.1	56.1	67.5	85.3
Kansas	2/ 458.5	448.2	431.2	433.2	336.6	366.3	323.0	202.4
Minnesota	126.8	79.0	120.7	2/ 142.4	103.7	102.6	51.7	3.7
Missouri	74.8	70.3	84.1	49.9	18.8	35.4	77.5	89.3
Montana	2/ 180.3	136.9	104.7	50.2	138.5	151.2	60.0	30.0
Nebraska	101.5	98.9	81.0	89.7	76.0	85.8	72.0	71.0
N. Dakota	324.8	194.1	284.2	323.3	292.3	269.1	103.4	1.4
Oklahoma	2/ 227.7	150.5	190.8	165.0	150.8	129.6	172.8	140.4
Oregon	63.5	65.6	68.9	56.0	58.4	52.9	51.8	51.0
S. Dakota	98.5	89.7	2/ 126.0	111.2	108.7	106.7	38.0	32.2
Texas	144.0	161.0	150.0	2/ 187.2	120.0	100.8	89.6	60.9
Washington	138.9	2/ 172.6	160.4	128.3	116.9	114.3	124.6	68.9

1/ Indicated -winter wheat only. 2/ Record production.

Appendix table 3--Wheat classes: Estimated acreage, yield, and production, 1978-1989

Year	Planted acreage	Harvested acreage	Yield	Production
	---Million acres---		Bu./acre	Million bushels
Hard red winter:				
1978	36.5	28.5	29.1	829.9
1979	38.2	31.3	34.9	1091.6
1980	40.7	35.8	33.0	1181.3
1981	43.4	37.9	29.3	1112.1
1982	43.2	37.0	33.6	1243.6
1983	41.3	30.2	39.7	1197.8
1984	43.6	34.1	36.7	1250.6
1985	42.5	34.5	35.7	1230.1
1986	39.4	31.5	32.3	1017.8
1987	36.3	28.6	35.7	1020.8
1988	34.4	26.8	32.8	880.0
1989 1/	37.6	NA	NA	NA
Hard red spring:				
1978	13.5	13.2	28.8	379.7
1979	14.2	14.0	26.3	368.8
1980	16.3	13.6	22.9	311.4
1981	16.1	15.8	29.4	463.8
1982	15.5	15.2	32.4	492.7
1983	11.1	10.7	30.2	322.7
1984	12.0	11.7	34.9	408.8
1985	14.0	13.1	35.1	460.2
1986	14.6	14.1	32.0	451.4
1987	13.3	13.0	33.0	430.6
1988	12.4	10.1	17.9	181.0
1989 1/	15.2	NA	NA	NA
Durum:				
1978	4.1	4.0	33.3	133.3
1979	4.0	3.9	27.4	106.7
1980	5.5	4.8	22.6	108.4
1981	5.8	5.7	32.1	183.0
1982	4.3	4.2	34.7	145.9
1983	2.6	2.5	29.2	73.0
1984	3.3	3.2	32.3	103.4
1985	3.2	3.1	36.3	112.5
1986	3.0	2.9	34.0	97.9
1987	3.3	3.3	28.2	92.6
1988	3.3	2.8	15.7	45.0
1989 1/	3.9	NA	NA	NA
Soft red winter:				
1978	6.2	5.5	34.3	188.9
1979	8.4	7.6	40.7	309.6
1980	11.7	10.6	41.7	441.8
1981	16.7	15.3	44.3	678.0
1982	17.2	15.8	37.3	588.9
1983	15.6	12.8	39.4	504.2
1984	14.5	12.6	42.2	531.4
1985	10.6	9.1	40.5	368.4
1986	10.1	7.7	38.0	292.5
1987	9.0	7.6	45.9	347.7
1988	10.9	9.6	49.3	474.0
1989 1/	13.2	NA	NA	NA
White: 2/				
1978	5.7	5.3	46.0	243.7
1979	6.6	5.6	46.0	257.4
1980	6.6	6.3	53.7	338.0
1981	6.2	6.0	58.1	348.5
1982	6.0	5.7	51.6	294.0
1983	5.9	5.3	60.8	322.0
1984	5.8	5.3	56.7	300.6
1985	5.3	4.9	51.8	253.9
1986	4.9	4.5	51.6	232.0
1987	3.9	3.5	61.7	215.8
1988	4.1	3.8	61.1	231.0
1989 1/	4.5	NA	NA	NA

NA = Not available.
1/ Based on Perspective Plantings. 2/ Winter and spring

Source: National Agricultural Statistics Service; and Economic Research Service (estimates), USDA.

Appendix table 4--Wheat: Quarterly supply and disappearance, 1982/83-1988/89 1/

Year and periods beginning June 1	Supply				Disappearance						Ending stocks		
					Domestic use								
	Beginning stocks	Production	Imports 2/	Total	Food	Seed	Feed 3/	Total	Exports 2/	Total disappearance	Govt. owned	Privately owned 4/	Total
	Million bushels												
1982/83:													
June-Aug.	1,159.4	2,765.0	1.2	3,925.6	152.9	1.0	131.3	285.2	411.1	696.3	193.3	3,036.0	3,229.3
Sept.-Nov.	3,229.3	----	3.0	3,232.3	159.5	74.0	18.8	252.3	337.2	589.5	189.7	2,453.1	2,642.8
Dec.-Feb.	2,642.8	----	2.6	2,645.4	152.4	3.0	24.2	179.6	393.8	573.4	184.6	1,887.4	2,072.0
Mar.-May	2,072.0	----	0.8	2,072.8	151.6	19.0	20.5	191.1	366.6	557.7	192.0	1,323.1	1,515.1
Mkt. year	1,159.4	2,765.0	7.6	3,932.0	616.4	97.0	194.8	908.2	1,508.7	2,416.9	192.0	1,323.1	1,515.1
1983/84:													
June-Aug.	1,515.1	2,419.8	1.1	3,936.0	158.7	1.0	196.5	356.2	346.7	702.9	365.0	2,868.1	3,233.1
Sept.-Nov.	3,233.1	----	0.9	3,234.0	163.1	75.0	100.5	338.6	359.7	698.3	375.8	2,159.9	2,535.7
Dec.-Feb.	2,535.7	----	1.0	2,536.7	166.8	3.0	46.4	216.2	369.0	585.2	313.8	1,637.7	1,951.5
Mar.-May	1,951.5	----	1.0	1,952.5	154.0	21.0	25.7	200.7	353.2	553.9	188.0	1,210.6	1,398.6
Mkt. year	1,515.1	2,419.8	4.0	3,938.9	642.6	100.0	369.1	1,111.7	1,428.6	2,540.3	188.0	1,210.6	1,398.6
1984/85:													
June-Aug.	1,398.6	2,594.8	4.6	3,998.0	157.8	1.0	279.9	438.7	399.2	837.9	278.1	2,882.0	3,160.1
Sept.-Nov.	3,160.1	----	1.8	3,161.9	168.5	69.0	99.9	337.4	486.0	823.4	359.4	1,979.1	2,338.5
Dec.-Feb.	2,338.5	----	1.2	2,339.7	164.2	4.0	35.5	203.7	335.2	538.9	375.7	1,414.7	1,800.8
Mar.-May	1,800.8	----	1.8	1,802.6	160.5	24.0	(10.8)	173.7	203.7	377.4	377.6	1,047.6	1,425.2
Mkt. year	1,398.6	2,594.8	9.4	4,002.8	651.0	98.0	404.5	1,153.5	1,424.1	2,577.6	377.6	1,047.6	1,425.2
1985/86:													
June-Aug.	1,425.2	2,425.1	3.5	3,853.8	165.8	1.0	234.4	401.2	249.1	650.3	406.7	2,796.8	3,203.5
Sept.-Nov.	3,203.5	----	5.1	3,208.6	185.6	63.0	63.7	312.3	252.9	565.2	517.1	2,126.3	2,643.4
Dec.-Feb.	2,643.4	----	2.7	2,646.1	162.2	4.0	(0.3)	165.9	224.4	390.3	526.3	1,729.5	2,255.8
Mar.-May	2,255.8	----	4.7	2,260.5	160.8	25.0	(19.3)	166.5	189.0	355.5	601.7	1,303.3	1,905.0
Mkt. year	1,425.2	2,425.1	16.0	3,866.3	674.4	93.0	278.5	1,045.9	915.4	1,961.3	601.7	1,303.3	1,905.0
1986/87:													
June-Aug.	1,905.0	2,091.6	4.3	4,000.9	169.0	1.0	353.8	523.8	320.6	844.4	793.8	2,362.7	3,156.5
Sept.-Nov.	3,156.5	---	3.6	3,160.1	185.9	57.0	(19.7)	223.2	263.4	486.6	863.9	1,809.6	2,673.5
Dec.-Feb.	2,673.5	---	5.9	2,679.4	166.8	3.0	56.5	226.3	202.7	429.0	905.3	1,345.1	2,250.4
Mar.-May	2,250.4	---	7.3	2,257.7	174.3	23.0	22.7	220.0	216.8	436.8	830.1	990.8	1,820.9
Mkt. year	1,905.0	2,091.6	21.1	4,017.7	696.0	84.0	413.3	1,193.3	1,003.5	2,196.8	830.1	990.8	1,820.9
1987/88:													
June-Aug.	1,820.9	2,107.5	5.1	3,933.4	179.3	1.0	366.8	547.1	409.9	957.0	798.8	2,189.7	2,976.5
Sept.-Nov.	2,976.5	---	5.1	2,981.5	191.1	58.0	(76.6)	172.5	308.5	481.0	755.4	1,750.5	2,500.6
Dec.-Feb.	2,500.6	---	2.7	2,503.3	168.6	3.0	(5.0)	166.6	413.1	579.7	450.1	1,473.4	1,923.5
Mar.-May	1,923.5	---	3.5	1,927.0	180.0	23.0	2.6	205.6	460.6	666.2	283.0	977.8	1,260.8
Mkt. year	1,820.9	2,107.5	16.3	3,944.7	719.0	85.0	287.8	1,091.8	1,592.1	2,683.9	283.0	977.8	1,260.8
1988/89:													
June-Aug.	1,260.8	1,811.3	8.6	3,080.7	179.2	1.0	283.6	463.8	363.4	827.2	250.0	2,003.6	2,253.6
Sept.-Nov.	2,253.6	---	6.4	2,260.0	194.4	66.0	(40.4)	220.0	330.1	550.1	213.0	1,496.9	1,709.9
Dec.-Feb.	1,709.9	---	4.0	1,713.9	168.6	3.0	(41.1)	130.5	363.1	493.6	NA	NA	1,220.3
Mar.-May 5/	1,220.3	---	3.0	1,223.3	187.8	30.0	8.0	225.8	403.4	629.2	NA	NA	594.1
Mkt. year 5/	1,260.8	1,811.3	22.0	3,094.1	730.0	100.0	210.0	1,040.0	1,460.0	2,500.0	150.0	444.1	594.1

--- = Not applicable.
NA = Not available.
1/ Totals may not add because of rounding. 2/ Imports and exports include flour and other products expressed in wheat equivalent.
3/ Residual; approximates feed use and includes negligible quantities used for distilled spirits. 4/ Includes outstanding and reserve loans.
5/ Forecasts.

Appendix table 5--Wheat classes: Marketing year supply and disappearance, 1982/83-1988/89 1/

Year beginning June 1	Supply			Disappearance			Ending stocks
	Beginning stocks	Production	Total 2/	Domestic use	Exports	Total	May 31
	Million bushels						
1982/83:							
Hard winter	538	1,243	1,781	348	679	1,027	754
Hard spring	346	492	842	195	239	434	408
Soft red	60	590	650	251	325	576	74
White	109	294	403	53	207	260	143
Durum	106	146	256	61	59	120	136
All classes	1,159	2,765	3,932	908	1,509	2,417	1,515
1983/84:							
Hard winter	754	1,198	1,952	503	704	1,207	745
Hard spring	408	323	732	197	221	418	314
Soft red	74	504	578	282	222	504	74
White	143	322	465	78	220	298	167
Durum	136	73	212	51	62	113	99
All classes	1,515	2,420	3,939	1,111	1,429	2,540	1,399
1984/85:							
Hard winter	745	1,251	1,996	562	717	1,279	717
Hard spring	314	409	728	174	183	357	371
Soft red	74	531	605	288	253	541	64
White	167	301	469	86	210	296	173
Durum	99	103	205	44	61	105	100
All classes	1,399	2,595	4,003	1,154	1,424	2,578	1,425
1985/86:							
Hard winter	717	1,230	1,947	543	395	938	1,009
Hard spring	371	460	841	177	166	343	498
Soft red	64	368	432	204	149	353	79
White	173	254	429	79	152	231	198
Durum	100	113	217	43	53	96	121
All classes	1,425	2,425	3,866	1,046	915	1,961	1,905
1986/87:							
Hard winter	1,009	1,018	2,027	622	432	1,054	973
Hard spring	498	451	956	266	200	466	490
Soft red	79	292	371	179	115	294	77
White	198	232	437	77	175	252	185
Durum	121	98	226	49	82	131	95
All classes	1,905	2,091	4,018	1,193	1,004	2,197	1,821
1987/88 :							
Hard winter	973	1,021	1,994	522	905	1,427	567
Hard spring	490	431	927	270	255	525	402
Soft red	77	348	425	190	160	350	75
White	185	216	404	60	210	270	134
Durum	95	93	195	50	62	112	83
All classes	1,821	2,107	3,945	1,092	1,592	2,684	1,261
1988/89 3/:							
Hard winter	567	880	1,447	519	682	1,201	246
Hard spring	402	181	590	193	200	393	197
Soft red	75	474	548	226	305	531	17
White	134	231	369	47	250	297	72
Durum	83	45	139	55	23	78	61
All classes	1,261	1,811	3,094	1,040	1,460	2,500	594

1/ Data, except production, are approximations and totals may not add because of rounding. Imports and exports include flour and products in wheat equivalent. 2/ Total supply includes imports. 3/ Estimated.

Appendix table 6--Wheat: Status of price support loans on specified dates, 1980/81-1988/89

Crop year	Total stocks	Total CCC inventory	Outstanding CCC loans	Farmer-Owned Reserve 1/	Free stocks 2/
			Million bushels		
1980/81:					
Jun. 1	902.0	187.8	99.3	259.9	355.0
Sept.1	2,714.0	202.1	96.7	211.0	2,204.2
Dec. 1	2,092.3	202.9	128.2	210.5	1,550.7
Mar. 1	1,522.8	203.2	114.3	303.8	901.5
1981/82:					
Jun. 1	989.1	199.7	54.6	359.6	375.2
Sept.1	3,056.0	195.4	147.0	398.6	2,315.0
Dec. 1	2,338.4	190.6	195.4	459.1	1,493.3
Mar. 1	1,777.6	190.2	182.2	515.2	890.0
1982/83:					
Jun. 1	1,159.4	190.3	112.0	560.4	296.7
Sept.1	3,229.3	193.3	77.5	763.3	2,195.2
Dec. 1	2,642.8	189.7	105.6	986.3	1,361.2
Mar. 1	2,072.0	184.6	92.5	1,117.1	677.8
1983/84:					
Jun. 1	1,515.1	192.0	65.2	1,060.6	197.3
Sept.1	3,233.1	365.0	294.1	824.8	1,749.2
Dec. 1	2,535.7	375.8	396.0	736.6	1,027.3
Mar. 1	1,951.5	313.8	443.9	610.7	583.1
1984/85:					
Jun. 1	1,398.6	188.0	379.1	611.2	220.3
Sept.1	3,160.1	278.1	254.9	657.9	1,969.2
Dec. 1	2,338.5	359.4	247.2	674.9	1,057.0
Mar. 1	1,800.8	375.7	218.4	673.8	532.9
1985/86:					
Jun. 1	1,425.2	377.6	175.0	657.1	215.5
Sept.1	3,203.5	406.7	493.7	689.5	1,613.6
Dec. 1	2,643.4	517.1	734.9	653.7	737.7
Mar. 1	2,255.8	526.3	770.8	633.1	325.6
1986/87:					
Jun. 1	1,905.0	601.7	677.7	596.4	29.2
Sept.1	3,156.5	793.8	455.8	629.9	1,277.0
Dec. 1	2,673.5	863.9	527.6	657.7	624.3
Mar. 1	2,250.4	905.3	419.8	662.6	262.7
1987/88:					
Jun. 1	1,820.9	830.1	235.6	631.8	123.4
Sept.1	2,976.5	798.8	245.1	597.5	1,335.1
Dec. 1	2,500.6	755.4	383.1	553.4	808.7
Mar. 1	1,923.5	450.1	293.8	517.9	661.7
1988/89:					
Jun. 1	1,260.8	283.0	177.5	466.8	333.5
Sept.1	2,253.6	250.0	108.1	391.0	1,504.5
Dec. 1	1,709.9	213.0	93.0	383.4	1,020.5
Mar. 1	1,220.3	203.2	46.9	377.9	592.3
1989/90 3/:					
Jun. 1	594.0	185.0	10.0	300.0	99.0

1/ Includes any quantity in the special producer storage loan program. 2/ Excludes outstanding CCC 9-month loans. 3/ Forecast.

Source: Agricultural Stabilization and Conservation Service, USDA.

Appendix table 7--U.S. wheat exports: Grain, flour, and products, by month, 1980/81-1988/89

Year	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Total
						Thousand bushels 1/							
						Wheat (grain only)							
1980/81	96,193	123,598	141,415	137,325	116,948	112,199	132,048	129,981	124,397	128,770	127,652	78,030	1,448,558
1981/82	124,521	138,168	145,428	194,148	156,993	127,495	137,757	124,163	138,719	159,078	148,181	116,496	1,711,147
1982/83	156,914	117,914	124,336	130,992	98,520	94,638	88,457	143,141	146,594	131,134	112,451	96,235	1,441,326
1983/84	113,506	116,701	87,823	119,263	114,810	102,880	128,887	118,357	111,096	118,713	97,132	112,813	1,341,981
1984/85	105,356	133,276	146,187	242,694	137,290	97,283	131,941	106,430	85,493	57,924	67,811	56,588	1,368,272
1985/86	84,264	63,930	86,862	72,206	85,650	82,384	61,857	69,656	70,869	67,393	56,438	46,399	847,905
1986/87	79,416	104,457	114,691	98,059	84,459	59,289	51,043	65,240	67,764	65,529	65,426	64,603	919,980
1987/88	119,769	158,648	112,758	119,945	101,679	71,166	113,402	139,900	143,333	149,148	152,830	147,667	1,530,245
1988/89	121,812	111,498	107,418	127,408	93,494	93,309	100,155	115,846	127,165	141,828			
						Flour (grain equivalent) 2/							
1980/81	4,230	2,082	5,057	3,774	2,785	2,165	1,739	2,658	5,217	6,353	7,347	4,803	48,209
1981/82	5,794	2,779	3,438	2,496	668	411	902	1,767	8,068	5,775	6,955	5,983	45,036
1982/83	4,577	1,364	3,488	2,508	3,904	2,483	999	3,998	8,865	6,532	10,530	7,521	56,769
1983/84	9,611	8,198	7,849	8,801	8,473	3,504	1,245	2,301	3,337	7,438	7,311	8,149	76,217
1984/85	6,828	4,136	1,288	1,693	3,260	1,778	948	403	6,422	5,778	6,563	4,022	43,118
1985/86	3,640	3,072	1,638	3,213	1,303	2,909	8,497	3,756	5,561	5,172	6,582	2,382	47,724
1986/87	5,108	4,795	8,831	4,731	6,002	8,488	6,415	6,681	3,677	6,174	6,735	6,789	74,425
1987/88	5,450	6,816	4,749	4,085	3,418	6,722	4,316	7,269	3,460	823	2,463	5,496	55,066
1988/89	7,036	8,293	6,015	2,402	7,909	4,270	8,527	4,178	6,515	6,841			
						Wheat products (grain equivalent) 3/							
1980/81	912	1,222	711	1,849	1,284	1,005	1,230	890	1,010	1,114	4,433	1,406	17,067
1981/82	1,827	1,150	1,009	1,037	1,171	1,406	572	1,211	1,875	351	2,246	692	14,547
1982/83	971	465	1,073	984	529	2,604	472	796	492	586	630	935	10,537
1983/84	633	1,075	1,300	578	502	904	1,346	600	1,789	780	363	503	10,373
1984/85	881	670	587	1,076	429	497	824	1,831	935	916	1,956	2,164	12,765
1985/86	1,984	2,472	1,258	2,097	1,683	1,476	1,542	1,449	1,170	1,103	1,590	1,903	19,726
1986/87	1,052	1,563	685	1,149	896	370	642	670	611	447	542	463	9,091
1987/88	447	751	549	234	364	901	743	423	277	551	1,133	462	6,835
1988/89	421	424	449	490	673	154	564	20	20	59			
						Total wheat, flour, and products							
1980/81	101,335	126,902	147,183	142,949	121,017	115,369	135,017	133,529	130,624	136,238	139,432	84,239	1,513,834
1981/82	132,142	142,097	149,875	197,681	158,832	129,312	139,231	127,141	148,662	165,204	157,382	123,171	1,770,730
1982/83	162,462	119,743	128,897	134,485	102,952	99,726	89,928	147,935	155,950	138,252	123,611	104,691	1,508,632
1983/84	123,750	125,974	96,972	128,642	123,785	107,288	131,478	121,258	116,222	126,931	104,806	121,465	1,428,571
1984/85	113,065	138,082	148,062	245,463	140,979	99,558	133,713	108,664	92,851	64,618	76,330	62,774	1,424,159
1985/86	89,888	69,472	89,757	77,516	88,635	86,770	71,896	74,861	77,599	73,667	64,609	50,684	915,355
1986/87	85,576	110,815	124,207	103,943	91,357	68,147	58,100	72,591	72,052	72,150	72,703	71,854	1,003,496
1987/88	125,666	166,215	118,056	124,263	105,461	78,789	118,461	147,592	147,070	150,522	156,426	153,625	1,592,146
1988/89	129,269	120,215	113,881	130,299	102,076	97,734	109,246	120,044	133,700	148,727			

1/ Totals may not add because of independent rounding. 2/ Includes meal and groats, and durum. 3/ Includes macaroni, rolled wheat, and bulgar.

Appendix table 8--Wheat flour: Supply and disappearance, United States, 1960-1988

Calendar year	Wheat ground	Millfeed production	Flour production 1/	Flour and product imports 2/	Total supply	Exports		Domestic disappearance	Total population July 1	Per capita disappearance
						Flour	Products 2/			
	-----1,000----- bu.	tons	----------1,000 cwt.----------						Million	Pounds
1960	582,719	4,827	255,596	141	255,737	42,135	58	213,544	180.7	118
1961	591,999	4,858	260,709	131	260,840	43,528	42	217,270	183.7	118
1962	595,353	4,876	262,403	132	262,535	47,719	22	214,794	186.5	115
1963	589,245	4,794	260,291	136	260,427	44,498	19	215,910	189.2	114
1964	591,654	2,890	261,905	142	262,047	42,328	26	219,693	191.8	115
1965	564,724	4,645	250,591	145	250,736	30,597	194	219,945	194.2	113
1966	568,673	4,619	253,176	179	253,355	33,091	178	220,086	196.5	112
1967	549,801	4,423	245,390	222	245,612	21,056	16	224,540	198.6	113
1968	569,649	4,511	254,310	233	254,543	28,068	133	226,342	200.6	113
1969	567,956	4,458	254,194	274	254,468	26,333	158	227,977	202.6	113
1970	563,714	4,409	253,094	325	253,419	26,054	14	227,351	205.1	111
1971	555,092	4,279	249,810	341	250,151	20,685	15	229,451	207.7	110
1972	557,801	4,303	250,441	477	250,918	20,335	19	230,564	209.9	110
1973	567,287	4,395	254,661	550	255,211	16,107	26	239,078	211.9	113
1974	562,962	4,483	251,097	665	251,762	14,453	33	237,276	213.9	111
1975	582,675	4,701	258,985	621	259,606	12,364	22	247,220	216.0	114
1976	618,284	4,920	275,077	604	275,681	16,064	44	259,573	218.0	119
1977	618,125	4,787	275,784	604	276,388	22,053	37	254,298	220.2	115
1978	621,321	4,860	277,950	773	278,723	22,170	43	256,510	222.6	115
1979	636,375	4,945	284,051	823	284,874	20,927	86	263,861	225.1	117
1980	628,559	4,866	282,655	904	283,559	17,378	54	266,127	227.8	117
1981	634,381	5,045	283,966	1,166	285,132	18,655	84	266,393	230.1	116
1982	653,206	5,228	290,907	1,496	292,403	20,926	154	271,323	232.5	117
1983	689,951	5,655	311,587	1,590	313,177	37,315	150	275,712	234.8	118
1984	674,665	5,426	299,832	2,005	301,837	21,752	160	279,925	237.0	118
1985	700,151	5,556	313,815	2,074	315,879	20,766	141	294,972	239.3	123
1986	737,537	5,799	326,316	2,175	328,491	30,031	123	298,337	241.6	123
1987	760,459	6,135	338,484	2,633	341,117	31,005	142	309,970	243.9	127
1988 3/	760,256	6,131	339,516	2,696	342,212	27,955	182	314,075	246.1	128

1/ Commercial production of wheat flour, whole wheat, industrial, and durum flour and farina reported by Bureau of Census. Production prior to 1970 includes estimate for noncommercial wheat milled. 2/ Imports and exports of macaroni and noodle products (flour equivalent). 3/ Preliminary.

Appendix table 9--Wheat and flour price relationships at milling centers, annual and by periods, 1982/83-1988/89

Year and period	At Kansas City					At Minneapolis				
	Cost of wheat to produce 100 lb. of flour 1/	Wholesale price of				Cost of wheat to produce 100 lb. of flour 1/	Wholesale price of			
		Bakery flour per 100 lb. 2/	Byprod-ucts obtained 100 lb. flour 3/	Total products			Bakery flour per 100 lb. 2/	Byprod-ucts obtained 100 lb. flour 3/	Total products	
				Actual	Over cost of wheat				Actual	Over cost of wheat
	Dollars									
1982/83:										
June-Sept.	9.24	10.14	1.39	11.53	2.29	9.31	10.43	1.25	11.68	2.37
Oct.-Dec.	9.22	10.06	1.58	11.64	2.42	9.22	10.43	1.29	11.72	2.50
Jan.-Mar.	9.60	10.40	1.47	11.87	2.27	9.15	10.41	1.10	11.51	2.36
Apr.-May	9.77	10.26	1.65	11.91	2.14	10.11	10.88	1.40	12.28	2.17
Mkt. year	9.46	10.22	1.52	11.74	2.28	9.45	10.54	1.26	11.80	2.35
1983/84:										
June-Sept.	9.54	10.36	1.72	12.08	2.54	9.97	11.17	1.47	12.64	2.67
Oct.-Dec.	9.48	10.00	2.16	12.16	2.68	9.76	10.79	1.90	12.69	2.93
Jan.-Mar.	9.22	9.52	1.83	11.35	2.13	9.56	10.28	1.49	11.77	2.21
Apr.-May	9.57	10.06	1.62	11.17	2.11	10.08	10.74	1.49	12.23	2.15
Mkt. year	9.45	9.99	1.83	11.69	2.37	9.80	10.75	1.59	12.34	2.54
1984/85:										
June-Sept.	9.21	9.78	1.47	11.26	2.05	9.64	10.31	1.21	11.52	1.89
Oct.-Dec.	9.05	9.85	1.47	11.32	2.27	9.16	10.56	1.11	11.67	2.50
Jan.-Mar.	8.77	9.90	1.16	11.06	2.29	9.09	11.27	0.83	12.11	3.01
Apr.-May	8.62	9.58	1.16	10.74	2.12	9.34	11.22	0.88	12.11	2.77
Mkt. year	8.96	9.78	1.32	11.09	2.13	9.27	10.84	1.01	11.85	2.58
1985/86:										
June-Sept.	7.99	8.94	1.10	10.04	2.05	8.60	10.96	0.77	11.73	3.13
Oct.-Dec.	8.37	9.07	1.38	10.45	2.08	9.24	11.65	1.09	12.70	3.50
Jan.-Mar.	8.37	9.38	1.10	10.48	2.11	9.02	11.95	0.83	12.78	3.76
Apr.-May	8.38	9.73	1.21	10.94	2.56	9.35	11.05	0.95	12.00	2.65
Mkt. year	8.28	9.28	1.19	10.47	2.20	9.05	11.39	0.90	12.29	3.25
1986/87:										
June-Aug.	6.19	7.90	0.79	8.69	2.50	6.86	9.70	0.62	10.32	3.46
Sept.-Nov.	6.27	8.18	0.85	9.03	2.76	6.78	9.52	0.64	10.16	3.38
Dec.-Feb.	6.70	7.97	0.99	8.96	2.26	7.03	8.55	0.66	9.21	2.18
Mar.-May	7.00	8.18	0.74	8.92	1.92	7.30	9.10	0.58	9.68	2.38
Mkt. year	6.54	8.06	0.84	8.90	2.36	7.00	9.22	0.63	9.85	2.85
1987/88:										
June-Aug.	6.62	7.85	0.72	8.57	1.95	6.80	8.63	0.51	9.14	2.34
Sept.-Nov.	7.04	7.85	1.19	9.04	2.00	7.07	8.98	0.90	9.88	2.81
Dec.-Feb.	7.51	7.97	1.53	9.50	1.99	7.36	9.77	1.18	10.95	3.59
Mar.-May	7.43	8.18	1.12	9.30	1.87	7.50	10.17	0.98	11.15	3.65
Mkt. year	7.15	7.96	1.14	9.10	1.95	7.18	9.39	0.89	10.28	3.10
1988/89:										
June-Aug.	8.83	9.57	1.57	11.13	2.30	9.72	11.00	1.48	12.48	2.76
Sept.-Nov.	9.34	9.88	1.76	11.64	2.30	9.78	9.80	1.67	11.47	1.69
Dec.-Feb.	9.93	10.37	1.81	12.18	2.24	9.96	10.05	1.70	11.75	1.79

1/ Based on 73-percent extraction rate, cost of 2.28 bushels: At Kansas City, No. 1 hard winter, 13-percent protein; and at Minneapolis, No. 1 dark northern spring, 14-percent protein. 2/ Quoted as mid-month bakers' standard patent at Kansas City and spring standard patent at Minneapolis, bulk basis. 3/ Assumed 50-50 millfeed distribution between bran and shorts or middlings, bulk basis.

Source: Compiled from reports of Agricultural Marketing Service and Department of Labor.

Appendix table 10--Wheat farm prices for leading classes and major feed grains in U.S. regions, 1983/84-1988/1989

Crop year	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.1/	May	Average	Loan rate
							$/bushel							
							Central and So. Plains 2/							
Wheat (hard winter):														
1983/84	3.49	3.34	3.54	3.59	3.56	3.49	3.45	3.48	3.41	3.48	3.62	3.63	3.51	3.56
1984/85	3.46	3.30	3.42	3.45	3.43	3.41	3.36	3.34	3.34	3.34	3.39	3.25	3.37	3.23
1985/86	3.06	2.90	2.85	3.00	3.07	3.21	3.24	3.16	3.10	3.21	3.33	2.92	3.09	3.23
1986/87	2.38	2.19	2.23	2.26	2.25	2.39	2.43	2.45	2.50	2.49	2.52	2.60	2.39	2.35
1987/88	2.39	2.26	2.29	2.42	2.51	2.58	2.65	2.68	2.74	2.71	2.72	2.91	2.57	NA
1988/89	3.30	3.36	3.42	3.62	3.72	3.74	3.90	3.90	3.89	4.04	3.96			
Sorghum:														
1983/84	3.02	3.00	3.14	3.14	3.02	3.02	2.97	2.96	2.87	2.94	3.02	3.10	3.02	2.68
1984/85	3.01	2.89	2.77	2.57	2.49	2.48	2.51	2.52	2.51	2.59	2.68	2.76	2.65	3.32
1985/86	2.71	2.58	2.24	2.06	2.05	2.13	2.25	2.23	2.16	2.25	2.36	2.33	2.28	3.32
1986/87	2.16	1.97	1.67	1.50	1.54	1.51	1.51	1.51	1.47	1.53	1.61	1.71	1.64	3.24
1987/88	1.73	1.62	1.53	1.52	1.58	1.67	1.69	1.70	1.81	1.83	1.82	1.82	1.69	NA
1988/89	2.57	2.78	2.59	2.61	2.55	2.44	2.45	2.48	2.47	2.52	2.49			
							Corn Belt 3/							
Wheat (soft red winter):														
1983/84	3.25	3.25	3.54	3.49	3.36	3.33	3.43	3.46	3.26	3.38	3.54	3.44	3.40	3.66
1984/85	3.26	3.22	3.29	3.29	3.29	3.40	3.42	3.44	3.39	3.42	3.44	3.19	3.34	3.28
1985/86	3.01	2.94	2.74	2.66	2.77	3.10	3.22	3.18	3.24	3.37	3.42	2.87	3.04	3.28
1986/87	2.40	2.30	2.28	2.27	2.57	2.65	2.73	2.71	2.77	2.85	2.75	2.65	2.58	2.36
1987/88	2.42	2.37	2.41	2.51	2.66	2.74	2.90	3.02	3.07	2.85	2.96	3.08	2.75	NA
1988/89	3.33	3.39	3.53	3.67	3.84	3.93	4.06	4.13	3.99	4.12	3.92			
Corn:														
1983/84	3.39	3.43	3.81	3.68	3.46	3.54	3.52	3.48	3.45	3.56	3.74	3.75	3.57	2.87
1984/85	3.80	3.66	3.50	3.17	2.83	2.76	2.76	2.84	2.85	2.91	2.95	2.91	3.08	2.76
1985/86	2.89	2.85	2.65	2.38	2.21	2.38	2.47	2.48	2.49	2.48	2.50	2.59	2.53	2.76
1986/87	2.56	2.19	1.84	1.54	1.46	1.56	1.61	1.59	1.57	1.60	1.67	1.85	1.76	1.94
1987/88	1.88	1.74	1.61	1.62	1.68	1.79	1.82	1.95	2.02	2.05	2.10	2.18	1.87	NA
1988/89	2.75	3.08	2.98	2.91	2.78	2.73	2.79	2.87	2.79	2.87	2.79			
							Northern Plains 4/							
Wheat (other spring):														
1983/84	3.81	3.80	3.78	3.69	3.68	3.66	3.59	3.62	3.59	3.68	3.78	3.87	3.71	3.68
1984/85	3.86	3.69	3.52	3.49	3.47	3.46	3.41	3.45	3.46	3.49	3.57	3.56	3.54	3.34
1985/86	3.50	3.30	3.05	3.18	3.36	3.49	3.58	3.51	3.47	3.51	3.57	3.48	3.41	3.34
1986/87	2.81	2.41	2.38	2.34	2.30	2.51	2.59	2.69	2.66	2.63	2.65	2.69	2.55	2.44
1987/88	2.50	2.36	2.37	2.55	2.62	2.65	2.70	2.76	2.77	2.74	2.78	2.98	2.65	NA
1988/89	3.30	3.62	3.67	3.79	3.83	3.74	3.81	3.92	3.94	3.99	3.99			
Wheat (durum):														
1983/84	4.01	3.96	4.11	4.07	4.04	3.97	3.83	3.84	3.67	3.88	3.91	4.07	3.98	3.68
1984/85	3.96	3.73	3.84	3.78	3.75	3.77	3.69	3.63	3.61	3.55	3.60	3.55	3.75	3.34
1985/86	3.53	3.34	3.18	3.08	3.01	3.07	3.16	3.17	3.17	3.21	3.29	3.41	3.22	3.34
1986/87	3.30	2.38	2.24	2.29	2.36	2.54	2.64	2.88	2.93	3.05	3.12	3.14	2.49	2.44
1987/88	3.15	3.06	2.87	3.19	3.30	3.33	3.20	3.21	3.29	2.93	3.22	3.47	3.19	NA
1988/89	4.61	5.18	5.28	5.21	4.99	4.93	4.72	4.29	4.43	4.44	4.30			
							Pacific Northwest 5/							
Wheat (white):														
1983/84	3.78	3.61	3.68	3.70	3.62	3.59	3.51	3.49	3.31	3.48	3.57	3.64	3.58	3.75
1984/85	3.71	3.26	3.32	3.31	3.38	3.38	3.35	3.43	3.45	3.53	3.57	3.54	3.44	3.43
1985/86	3.35	2.97	3.05	3.16	3.29	3.39	3.44	3.40	3.41	3.52	3.60	3.49	3.34	3.43
1986/87	2.97	2.44	2.36	2.35	2.40	2.48	2.56	2.61	2.69	2.69	2.74	2.73	2.58	2.50
1987/88	2.60	2.54	2.48	2.57	2.70	2.62	2.73	2.88	2.89	2.79	2.95	3.09	2.74	NA
1988/89	3.44	3.72	3.80	3.97	4.13	4.19	4.31	4.48	4.56	4.37	4.21			
Barley:														
1983/84	3.06	2.97	3.19	3.33	3.35	3.38	3.48	3.45	3.36	3.39	3.58	3.42	3.33	2.81
1984/85	3.50	3.15	2.98	2.98	2.92	2.98	3.02	3.00	2.98	2.99	2.95	2.87	3.03	2.74
1985/86	2.68	2.73	2.63	2.55	2.52	2.69	2.77	2.73	2.65	2.53	2.48	2.54	2.62	2.74
1986/87	2.19	2.14	2.31	2.19	2.29	2.24	2.26	2.29	2.35	2.28	2.32	2.37	2.27	1.67
1987/88	2.43	2.64	2.53	2.48	2.36	2.45	2.53	2.56	2.55	2.25	2.29	2.43	2.46	NA
1988/89	2.94	3.15	3.30	3.13	3.06	3.27	3.20	3.23	3.06	3.25	3.21			
							U.S. average 6/							
Wheat:														
1983/84	3.50	3.34	3.61	3.65	3.60	3.54	3.48	3.50	3.40	3.49	3.63	3.66	3.51	3.65
1984/85	3.46	3.29	3.43	3.43	3.43	3.45	3.38	3.38	3.38	3.38	3.33	3.30	3.39	3.30
1985/86	3.09	2.93	2.89	3.01	3.10	3.22	3.25	3.19	3.16	3.28	3.37	3.01	3.08	3.30
1986/87	2.47	2.25	2.26	2.28	2.30	2.43	2.49	2.53	2.58	2.57	2.63	2.66	2.42	2.40
1987/88	2.44	2.32	2.36	2.53	2.62	2.69	2.70	2.75	2.79	2.74	2.79	2.99	2.57	2.28
1988/89	3.37	3.50	3.61	3.74	3.84	3.88	3.94	4.01	4.03	4.07	4.03		3.70	2.21

NA = Not available.
1/ April 1989 data are preliminary. 2/ Kansas, Nebraska, Texas, Oklahoma, and Arkansas. 3/ Ohio, Indiana, Illinois, and Missouri. 4/ Wheat prices by class represent averages for the entire United States. 5/ Washington, Oregon, and Idaho. 6/ Season average prices do not include an allowance for unredeemed loans and purchases beginning 1979/80.

Source: National Agricultural Statistics Service & Economic Research Service, USDA.

Appendix table 11--Wheat cash prices for leading classes at major markets, 1983/84-1988/89

Year	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Simple average
						$/bushel							
Kansas City, no.1 hard red winter (ordinary protein):													
1983/84	3.92	3.71	3.88	3.90	3.84	3.82	3.85	3.81	3.71	3.85	3.93	3.89	3.84
1984/85	3.80	3.67	3.80	3.89	3.86	3.85	3.76	3.76	3.74	3.67	3.62	3.42	3.74
1985/86	3.38	3.17	3.03	3.07	3.15	3.35	3.42	3.32	3.30	3.36	3.45	3.40	3.28
1986/87	2.80	2.50	2.48	2.53	2.60	2.68	2.68	2.70	2.80	2.90	2.90	3.02	2.72
1987/88	2.70	2.59	2.65	2.78	2.90	2.90	3.10	3.20	3.28	3.10	3.14	3.20	2.96
1988/89	3.79	3.78	3.78	4.05	4.13	4.18	4.25	4.40	4.37	4.32	4.46		
Kansas City, no.1 hard red winter (13% protein):													
1983/84	4.22	4.15	4.16	4.21	4.20	4.17	4.11	4.06	3.95	4.12	4.22	4.17	4.14
1984/85	4.15	3.99	3.98	4.03	4.01	3.99	3.91	3.87	3.87	3.80	3.84	3.72	3.93
1985/86	3.72	3.53	3.36	3.41	3.50	3.70	3.81	3.69	3.65	3.67	3.70	3.65	3.62
1986/87	2.90	2.70	2.55	2.66	2.75	2.84	2.89	2.95	2.98	3.00	3.05	3.17	2.87
1987/88	2.95	2.86	2.90	3.01	3.10	3.15	3.20	3.30	3.38	3.21	3.26	3.31	3.14
1988/89	3.92	3.85	3.85	4.08	3.98	4.23	4.26	4.41	4.40	4.55	4.50		
Chicago, no. 2 soft red winter:													
1983/84	3.53	3.59	3.71	3.62	3.56	3.42	3.55	3.47	3.34	3.57	3.65	3.65	3.56
1984/85	3.51	3.44	3.49	3.47	3.51	3.62	3.49	3.51	3.55	3.58	3.63	3.34	3.51
1985/86	3.27	3.09	2.87	2.83	3.04	3.33	3.46	3.34	3.37	3.40	3.39	3.25	3.22
1986/87	2.52	2.58	2.44	2.36	2.57	2.73	2.76	2.87	2.91	3.11	3.16	3.08	2.76
1987/88	2.63	2.54	2.61	2.77	2.82	2.80	3.00	3.23	3.23	2.94	3.02	3.13	2.89
1988/89	3.56	3.52	3.61	3.84	4.07	4.09	4.25	4.39	4.30	4.31	4.04		
St. Louis, no. 2 soft red winter:													
1983/84	3.46	3.51	3.79	3.70	3.62	3.58	3.67	3.62	3.46	3.71	3.82	3.51	3.62
1984/85	3.45	3.44	3.50	3.52	3.60	3.72	3.67	3.69	3.65	3.67	3.65	3.24	3.57
1985/86	3.29	3.07	2.84	2.85	3.10	3.42	3.58	3.48	3.49	3.64	3.66	2.74	3.26
1986/87	2.61	2.60	2.54	2.55	2.88	3.05	3.06	3.08	3.05	3.09	2.88	3.03	2.87
1987/88	2.63	2.58	2.59	2.77	2.95	2.97	3.22	3.24	3.18	2.98	3.10	3.20	2.95
1988/89	3.50	3.56	3.73	3.94	4.13	4.22	4.33	4.46	4.30	4.39	4.22		
Toledo, no. 2 soft red winter:													
1983/84	3.42	3.48	3.69	3.54	3.43	3.37	3.46	3.43	3.26	3.50	3.61	3.60	3.48
1984/85	3.50	3.44	3.44	3.44	3.43	3.53	3.43	3.52	3.56	3.54	3.58	3.30	3.48
1985/86	3.22	3.02	2.77	2.74	2.90	3.18	3.39	3.32	3.34	3.47	3.30	3.22	3.16
1986/87	2.58	2.55	2.45	2.33	2.61	2.75	2.81	2.92	2.93	3.06	2.99	3.07	2.75
1987/88	2.60	2.55	2.54	2.69	2.86	2.82	3.10	3.21	3.20	2.92	2.99	3.07	2.88
1988/89	3.63	3.63	3.73	3.93	4.02	4.06	4.26	4.37	4.24	4.26	4.02		
Toledo, no. 2 soft white:													
1983/84	3.42	3.51	3.71	3.56	3.42	3.36	3.46	3.43	3.25	3.50	3.62	3.49	3.48
1984/85	3.35	3.37	3.42	3.42	3.41	3.51	3.41	3.50	3.53	3.48	3.48	3.18	3.42
1985/86	3.13	3.02	2.89	2.89	3.12	3.30	3.42	3.26	3.26	3.31	2.89	2.93	3.12
1986/87	2.50	2.52	2.48	2.29	2.54	2.69	2.73	2.80	2.84	2.87	2.79	2.89	2.66
1987/88	2.63	2.57	2.69	2.81	2.88	2.95	3.14	3.28	3.27	2.96	3.02	3.09	2.94
1988/89	3.62	3.61	2.82	3.87	3.94	3.95	4.11	4.22	4.02	4.06	3.80		
Portland, no. 1 soft white:													
1983/84	4.15	4.08	4.06	4.12	4.03	3.90	3.81	3.79	3.69	3.73	4.03	4.05	3.95
1984/85	4.03	3.73	3.74	3.70	3.73	3.78	3.76	3.77	3.83	3.93	3.94	3.91	3.82
1985/86	3.73	3.57	3.45	3.57	3.72	3.77	3.80	3.75	3.74	3.85	3.88	3.78	3.72
1986/87	3.03	2.75	2.68	2.70	2.78	2.84	2.86	2.93	3.07	3.07	2.99	3.09	2.90
1987/88	2.87	2.79	2.73	2.94	3.08	2.97	3.05	3.26	3.21	3.10	3.32	3.36	3.06
1988/89	3.79	4.05	4.15	4.39	4.46	4.68	4.81	4.98	4.97	4.81	4.63		
Minneapolis, no. 1 dark no. spring (ordinary protein):													
1983/84	4.15	4.07	4.21	4.30	4.33	4.23	4.20	4.15	4.06	4.20	4.28	4.39	4.21
1984/85	4.40	4.21	3.72	3.57	3.64	3.64	3.48	3.47	3.52	3.55	3.64	3.55	3.70
1985/86	3.54	3.29	2.87	2.97	3.01	3.42	3.45	3.38	3.32	3.33	3.42	3.05	3.25
1986/87	2.51	2.17	2.39	2.64	2.70	2.81	2.77	2.82	2.65	2.61	2.60	2.76	2.62
1987/88	2.66	2.52	2.60	2.74	2.85	2.81	2.96	3.12	3.26	3.05	3.19	3.30	2.92
1988/89	4.17	3.96	4.09	4.16	4.17	4.09	4.20	4.42	4.37	4.46	4.45		
Minneapolis, no. 1 dark no. spring (14% protein):													
1983/84	4.39	4.38	4.34	4.33	4.33	4.25	4.21	4.17	4.08	4.24	4.37	4.45	4.30
1984/85	4.45	4.34	4.07	3.97	4.03	4.02	3.92	3.90	3.92	3.94	4.36	4.02	4.06
1985/86	3.99	3.77	3.56	3.76	3.91	4.09	4.16	3.97	3.90	4.00	4.17	4.03	3.94
1986/87	3.17	3.00	2.86	2.85	2.98	3.09	3.04	3.08	3.13	3.19	3.17	3.24	3.07
1987/88	3.07	2.94	2.94	3.04	3.15	3.11	3.13	3.24	3.32	3.15	3.30	3.42	3.15
1988/89	4.32	4.23	4.24	4.32	4.33	4.22	4.26	4.44	4.40	4.56	4.47		
Minneapolis, no. 1 hard amber durum:													
1983/84	4.76	4.74	5.04	5.10	4.99	4.91	4.82	4.81	4.69	4.70	4.74	4.71	4.83
1984/85	4.68	4.57	4.65	4.43	4.47	4.46	4.43	4.34	3.37	4.33	4.36	4.32	4.44
1985/86	4.16	4.05	3.99	4.07	4.03	4.08	4.09	4.01	4.01	3.99	9.07	4.24	4.07
1986/87	3.79	3.08	3.04	3.21	3.31	3.49	3.60	3.68	3.78	3.89	3.93	4.03	3.57
1987/88	3.91	3.66	3.80	4.30	4.31	4.33	4.22	4.19	4.22	4.02	4.21	4.39	4.13
1988/89	6.13	6.30	5.85	5.84	5.70	5.56	5.17	5.20	5.33	5.30	5.02		

Source: Grain and Feed Market News, Agricultural Marketing Service, USDA.

Appendix table 12--Domestic and foreign wheat prices, 1980-1989

Year and month	United States				Foreign		
	Farm 1/	Kansas City 2/	Gulf Ports 3/	Rotterdam 4/	Argentina 5/	Canada 6/	Australia 7/
	$/metric ton						
Calendar year:							
1980	143	159	176	213	203	192	176
1981	142	160	176	210	190	194	175
1982	129	147	161	187	166	165	160
1983	132	145	158	185	138	169	161
1984	127	140	153	180	135	166	153
1985	117	125	137	169	106	173	141
1986	99	107	117	148	88	161	120
1987	84	104	114	141	89	134	115
1988	122	134	146	165	125	177	150
1987:							
January	93	100	110	141	82	136	110
February	95	103	114	145	92	138	112
March	94	107	116	140	90	139	115
April	97	107	115	138	88	134	115
May	98	111	120	146	88	136	119
June	90	100	110	144	86	130	111
July	85	95	106	134	84	126	107
August	87	97	108	134	84	124	109
September	93	103	114	139	89	130	115
October	96	105	116	139	95	134	118
November	99	105	116	140	95	134	118
December	99	114	126	148	95	142	126
1988:							
January	101	118	130	158	94	148	127
February	103	120	132	155	106	151	135
March	101	114	126	149	107	143	131
April	103	115	128	156	108	145	133
May	110	118	130	159	107	152	131
June	124	140	151	191	125	166	158
July	129	139	151	200	141	209	157
August	133	139	151	193	140	206	154
September	137	148	160	190	152	202	160
October	141	152	162	190	147	202	169
November	143	154	165	185	152	202	171
December	145	156	167	189	NQ	206	173
1989:							
January	147	162	175	205	NQ	213	179
February	148	161	173	207	NQ	212	178
March	150	166	179	192	NQ	210	183
April	148	164	176	192	NQ	207	179

NQ = No quotes.
1/ Hard red winter wheat. 2/ No.1, hard winter, ordinary protein. 3/ No. 2, hard winter, ordinary protein, f.o.b. vessel. 4/ U.S., no. 2 dark northern spring, 14 percent, c.i.f. 5/ f.o.b. Buenos Aires. 6/ No. 1, Canadian western red spring, 13.5 percent, in-store, St. Lawrence. 7/ Australian standard wheat, f.o.b.

Appendix table 13--Wheat and wheat flour: World trade, production, stocks, and use, 1984/85-1989/90 1/

Country or region	1984/85	1985/86	1986/87	1987/88	1988/89 as of May 11	1989/90 Projected
			Million metric tons			
Exports:						
Canada	19.4	16.8	20.8	23.6	12.7	20.0
Australia	15.8	16.0	14.8	12.2	10.0	12.0
Argentina	8.0	6.1	4.3	3.7	3.1	5.6
EC-12	18.5	15.6	16.4	15.3	21.0	21.0
USSR	0.5	0.5	0.5	0.5	0.5	1.0
All others	8.2	4.9	5.5	6.7	10.1	6.3
Total non-U.S.	70.4	60.0	62.3	62.0	57.4	65.9
U.S. 2/	38.1	25.0	28.4	43.4	40.9	31.5
World total	108.5	85.0	90.7	105.5	98.3	97.4
Imports:						
EC-12	3.4	2.8	2.4	2.2	2.2	2.2
USSR	28.1	15.7	16.0	21.5	15.0	12.0
Japan	5.6	5.5	5.8	5.7	5.2	5.1
E. Europe	2.6	3.4	3.7	3.4	2.7	3.3
China	7.4	6.6	8.5	15.0	16.0	16.0
All others	61.4	50.9	54.3	57.7	57.2	58.8
World total	108.5	85.0	90.7	105.5	98.3	97.4
Production: 3/						
Canada	21.2	24.3	31.4	26.0	15.7	26.0
Australia	18.7	16.2	16.1	12.4	14.5	15.0
Argentina	13.2	8.5	8.9	8.8	7.6	10.0
EC-12	83.1	71.6	72.0	71.4	74.7	78.5
USSR 3/	68.6	78.1	92.3	83.3	84.4	91.5
E. Europe	42.1	37.1	39.1	39.8	45.1	40.2
China	87.8	85.8	90.0	87.8	87.5	91.0
India	45.5	44.1	47.1	44.3	45.1	50.0
All other foreign	61.1	68.4	76.8	72.5	77.3	74.6
U.S.	70.6	66.0	56.9	57.4	49.3	55.8
World total	511.9	500.1	530.7	503.7	501.2	532.6
Utilization: 4/						
U.S.	31.4	28.5	32.5	29.7	28.3	27.6
USSR 5/	91.2	91.6	102.8	101.5	100.9	102.5
China	92.2	100.4	101.5	104.8	106.0	107.0
All other foreign	275.2	275.7	285.6	297.5	300.2	298.0
World total	490.0	496.2	522.4	533.5	535.4	535.1
Stocks, ending: 6/	164.0	167.9	176.1	146.3	112.0	109.5

1/ July-June years. 2/ Includes transshipments through Canadian ports; excludes products other than flour. 3/ Production data include all harvests occurring within the July-June year shown, except that small grain crops from the early harvesting Northern Hemisphere areas are moved forward; i.e., the May 1984 harvests in areas such as India, North Africa, and southern United States are actually included in 1984/85 accounting period, which begins July 1, 1984. 4/ Utilization data are based on an aggregate of differing local marketing years. For countries for which stock data are not available (excluding the USSR), utilization estimates represent apparent utilization, i.e., they are inclusive of annual stock level adjustments. 5/ "Bunker weight" basis; not discounted for excess moisture and foreign material. 6/ Stocks data are based on an aggregate of differing local marketing years and should not be construed as representing world stock levels at a fixed point in time. Stocks data are not available for all countries and exclude those such as China and part of Eastern Europe; the world stock levels have been adjusted for estimated year-to-year changes in USSR grain stocks, but do not purport to include the entire absolute level of USSR stocks.

Source: World Grain Situation and Outlook, Foreign Agricultural Service, USDA.

Appendix table 14--Quarterly Government stock activity for wheat, 1987/88-1988/89

	1987/88				1988/89			
	June-Aug.	Sept.-Nov.	Dec.-Feb.	March-May	June-Aug.	Sept.-Nov.	Dec.-Feb.	March-May
	Million bushels							
9-month loans:								
Carryin outstanding	235.0	245.1	383.1	301.1	117.0	108.1	93.0	46.9
Loans made	104.0	293.7	63.5	13.0	60.1	34.2	10.8	NA
Certificate exchange	33.2	124.0	24.4	11.0	5.8	0.7	0.5	NA
Cash redemption	45.3	11.4	110.5	118.7	118.2	47.2	55.1	NA
CCC collateral acquired	15.4	20.3	10.6	7.4	5.0	1.4	1.3	NA
Reserve conversion	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA
Carryout outstanding	245.1	383.1	301.1	117.0	108.1	93.0	46.9	10.0
FOR loans:								
Carryin FOR	631.0	597.5	553.4	519.8	466.8	391.0	383.4	377.9
Reserve conversion	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA
Cash redemption	2.0	4.2	0.0	8.3	0.0	0.4	1.5	NA
CCC collateral acquired	17.0	27.4	21.6	23.1	23.2	3.5	2.0	NA
Certificate exchange	14.5	12.5	12.0	21.6	52.6	3.7	2.0	NA
Carryout FOR	597.5	553.4	519.8	466.8	391.0	383.4	377.9	300.0
CCC owned:								
Carryin CCC	830.1	798.8	755.4	450.1	283.0	250.0	213.0	203.2
CCC collateral acquired	32.4	47.7	32.2	30.5	28.2	4.9	3.3	NA
Certificate exchange	47.9	69.4	302.8	158.9	20.2	23.6	9.0	NA
Other 1/	15.8	21.7	34.7	38.7	41.0	18.3	4.1	NA
Carryout CCC	798.8	755.4	450.1	283.0	250.0	213.0	203.2	185.0

NA = Not available.
1/ Includes PL480 exchanges for Title II, off-grade sales, domestic programs, section 416 export programs, and residual errors.

Appendix table 15--Rye: Supply, disappearance, area, and price, 1981/82-1989/90

Item	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88	1988/89 (prel.)	1989/90 (proj.)
					Million acres				
Area:									
Planted	2,566	2,533	2,707	2,971	2,563	2,384	2,498	2,444	2,217
Harvested	685	677	896	981	717	677	683	607	665
					Bushels per acre				
Yield/harvested acre	26.6	28.9	30.3	33.1	28.8	28.8	29.0	24.8	30.0
					Million bushels				
Supply:									
Beginning stocks	4.0	3.0	5.8	11.3	19.8	21.9	18.6	18.9	11.9
Production	18.2	19.5	27.1	32.5	20.6	19.5	19.8	15.0	20.0
Imports	0.4	3.0	1.6	0.6	2.2	1.0	1.2	0.5	0.7
Total supply	22.6	25.6	34.5	44.4	42.6	42.4	39.6	34.5	32.6
Disappearance:									
Food	3.5	3.3	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Feed and residual	8.1	9.6	11.9	14.6	11.2	14.1	10.9	11.5	13.0
Seed	4.3	4.3	4.7	4.1	3.8	3.7	3.8	3.6	3.8
Industry	2.2	2.3	2.1	2.0	2.1	2.0	2.0	2.0	2.0
Total domestic	18.1	19.5	22.2	24.2	20.6	23.3	20.2	20.6	22.3
Exports	1.5	0.2	1.0	0.4	0.2	0.5	0.5	2.0	0.8
Total disappearance	19.6	19.7	23.2	24.6	20.8	23.8	20.7	22.6	23.1
Ending stocks	3.0	5.8	11.3	19.8	21.9	18.6	18.9	11.9	9.5
					$/bushel				
Prices:									
Loan rate	2.04	2.17	2.25	2.17	2.17	1.63	1.55	1.50	1.50
Season average price	3.00	2.40	2.17	2.08	2.03	1.49	1.63	2.49	1.85
					$1,000				
Value of production	54,004	47,460	60,074	68,828	43,251	29,159	32,289	37,027	37,000

Appendix table 16--Rye: Production by major States, 1980-1988

State	1980	1981	1982	1983	1984	1985	1986	1987	1988
					1,000 bushels				
Georgia	1,995	2,730	1,470	1,470	1,760	2,070	1,785	1,540	1,890
Indiana	182	234	260	270	336	308	280	297	330
Michigan	504	448	522	600	588	651	713	640	650
Minnesota	1,900	2,883	3,300	4,960	6,650	3,300	1,600	1,200	920
Nebraska	666	924	1,269	1,265	1,392	1,242	1,035	1,150	1,375
N. Jersey	216	261	319	390	261	320	310	232	310
N. York	288	288	341	416	429	420	429	300	396
N. Carolina	420	400	525	440	550	665	595	720	910
N. Dakota	1,050	2,170	2,400	4,320	5,400	2,640	4,250	5,115	1,350
Oklahoma	816	680	736	780	704	828	840	360	720
Pennsylvania	434	363	408	578	578	740	630	630	792
S. Carolina	616	726	621	320	546	532	391	528	720
S. Dakota	4,030	3,220	4,680	8,740	10,800	4,440	4,440	5,040	2,250
Virginia	325	364	364	312	378	312	364	435	560

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