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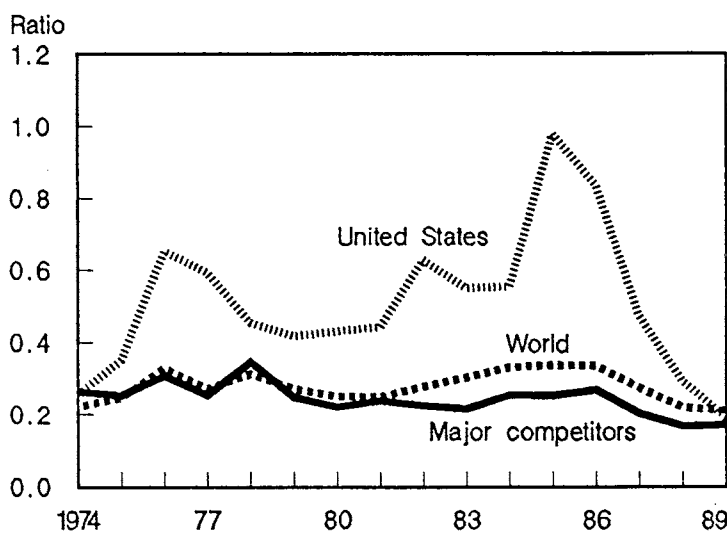
Situation and Outlook Report

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Ending Stocks-to-Use Ratio



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Summary

U.S. and world wheat supplies are the tightest since the early 1970s. For 1989/90, the U.S. stocks-to-use ratio is forecast to be the lowest since 1973/74. The stocks-to-use ratios for competitors and the entire world are at or near their recent historical lows. Many have expressed concerns that current low stocks will not be sufficient to buffer large production shortfalls. However, relatively high world prices and the lower acreage reduction requirements in the U.S. 1990 wheat program are expected to result in an increase in world production next year.

World wheat production in 1989/90 is forecast at a record 532 million tons, 6 percent above a year earlier. Consumption is forecast up only 1 percent from last year, but will still exceed production. Global ending stocks are projected down 3 percent to the lowest since 1981/82. While the United States accounts for much of the projected decline in world stocks, competitor stocks are also low.

With expanding production, the EC is expected to match last year's record wheat exports and maintain its world market share. Canada's output is up 50 percent from 1988/89's drought-reduced levels. Although Canada's exports are forecast up one-fourth, the lowest carryin since the 1950s will

keep Canadian exports well below 1987/88's record. Tight U.S. supplies and increased competitor production are resulting in lower U.S. exports—down 7 percent from 1988/89. The U.S. share of the world market is likely to decline from 39 percent in 1988/89 to 36 this season.

China is forecast to be the world's largest wheat producer (91 million tons) and importer (15 million tons) in 1989/90. In the Soviet Union, drought cut spring wheat production in the New Lands, but winter wheat yields are estimated to be record high, allowing the Soviet Union to increase 1988/89 production 5 percent to a forecast 89 million tons. Soviet imports are forecast down 25 percent.

Next year's U.S. crop is expected to be about the third largest on record. On September 13, 1989, USDA announced that producers would be offered the opportunity to plant up to 105 percent of their base. This action was taken to increase U.S. production in view of the tight U.S. and world supply and demand situation. U.S. farm prices for 1989/90 are forecast at \$3.85 to \$4.00 per bushel. Greater than expected export demand or problems with next year's crop would be the most likely causes of a sharp price runup in the second half of the marketing year.

Table 1--The Wheat Situation at a Glance

All wheat: supply and disappearance 1/						
Year beginning June 1	1985	1986	1987	1988 Estimated	1989 Projected	
Million bushels						
Beginning stocks	1,425	1,905	1,821	1,261	698	
Production	2,425	2,092	2,107	1,811	2,042	
Imports	16	21	16	23	21	
Supply, total	3,866	4,018	3,945	3,095	2,760	
Domestic						
Food	674	698	726	727	735	
Seed	93	84	85	103	107	
Feed and residual	279	411	281	143	200	
Domestic, total	1,046	1,193	1,092	973	1,042	
Exports	915	1,004	1,592	1,424	1,275	
Disappear., total	1,961	2,197	2,684	2,397	2,317	
Ending stocks	1,905	1,821	1,261	698	443	
Wheat by classes: supply and disappearance 1/						
Year beginning June 1	Hard red winter	Hard red spring	Soft red winter	White	Durum	Total
Million bushels						
1988/89 (Estimated)						
Beginning stocks	567	402	75	135	83	1,261
Production	880	181	474	231	45	1,811
Supply, total 2/	1,447	590	549	370	139	3,095
Domestic disappear.	512	173	189	39	59	973
Exports	634	200	320	250	20	1,424
Disappear., total	1,147	373	509	289	79	2,397
Ending stocks	300	217	39	81	60	698
1989/90 (Projected)						
Beginning stocks	300	217	39	81	60	698
Production	721	443	545	239	93	2,042
Supply, total 2/	1,022	667	585	324	163	2,760
Domestic disappear.	426	246	239	72	59	1,042
Exports	395	270	335	220	55	1,275
Disappear., total	821	516	574	292	114	2,317
Ending stocks	201	151	11	32	49	443

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

Outlook For 1989/90

International Wheat Situation and Outlook

World wheat production in 1989/90 is forecast at a record 532 million tons, 6 percent above 1988/89. While consumption is forecast up only around 1 percent, it will continue to exceed production. Thus global ending stocks are projected to drop 3 percent below 1988/89 to the lowest since 1981/82. While the United States will account for much of the decline in world stocks, low competitor stocks also are contributing to the tight international market and continued relatively high prices. Although prices remain relatively strong and imports by the USSR (the world's largest importer for many years) are forecast down, world trade is expected to nearly match 1988/89.

Foreign production is up almost 6 percent from 1988/89, with the largest gains in Canada, India, China, the Soviet Union, and Argentina. But gains in countries that were beset by adverse weather in 1988/89 are being partially offset by sharp declines in other regions. Production is forecast down in the Middle East (especially Turkey) and Brazil, keeping the import market strong. Australia's crop also is forecast down, tightening the world exportable supply.

In the Soviet Union, drought cut spring wheat production in the New Lands, but estimated winter wheat yields in the European USSR were likely a record, allowing the Soviet Union to increase total 1988/89 forecast production 5 percent to 89 million tons. However, many factors other than production appear to be involved in determining Soviet wheat imports, including tight world supplies and relatively high prices. Despite the larger crop, government procurements are below expectations, as ineffective incentives, fuel shortages, and transportation bottlenecks hinder State procurements of wheat. In addition, a new program designed to give farmers increased incentive to sell high quality wheat to the State does not appear to be working. While these factors would point to large Soviet imports, there is considerable public pressure to reduce wheat imports (see the special article on the USSR).

The Soviet Union is forecast to import 12 million tons of wheat, 25 percent below 1988/89, and the lowest in more than a decade. Moreover, as of early November, the Soviet Union had reportedly only purchased 2.5 million tons from all sources, and less than a million tons from the United States (purchased prior to the beginning of the new agreement year on October 1).

It is not clear when the Soviets will return to the world wheat market, although given the low level of State procurements, they will need to enter the market at some point. The U.S.-USSR long term grain agreement was recently adjusted to allow the Soviet Union to buy a maximum 16 million tons of grain without consultation between October 1, 1989, and September 30, 1990. As of November 2, the USSR had bought 8.1 million tons of U.S. corn, 144,000 tons of soybeans, 455,000 tons of soybean meal, but no wheat, despite an outstanding EEP wheat balance of 814,000 tons. However, under the terms of the agreement, the USSR is obligated to buy a minimum of 4 million tons of U.S. wheat by the end of September 1990.

In 1988/89 China's imports of 15.5 million tons matched those of the Soviet Union. China is forecast to be the world's largest wheat importer in 1989/90, with 15 million tons, only slightly less than a year earlier, despite sharply higher production. China's 1989/90 wheat crop is forecast up 5 percent to 91 million tons. However, despite larger wheat and rice crops, China's total grain crop (wheat, rice, coarse grains, potatoes, soybeans, and pulses) is expected to fall short of the government target of 410 million tons. In addition, wheat and rice stocks are estimated to be low and urban demand for wheat remains strong. At the same time, farmers are reportedly reluctant to sell grain to the Government because, in some places, they are being issued IOUs rather than cash (see the special article on China).

China came into the U.S. wheat market early in the trade year, buying 3.6 million tons of U.S. wheat by September 1 without Export Enhancement bonuses. Since then, China has resumed buying U.S. wheat under the EEP and reportedly has made substantial purchases from Argentina, the UK, and Canada.

Eastern European countries are not estimated to have produced as much wheat as a year ago. In 1988/89 Eastern Europe produced a record crop, cut imports, and nearly doubled exports from 1987/88. The 1989/90 crop is still large, particularly in East Germany, Czechoslovakia, and Poland. While imports are expected to decline slightly, exports are forecast down 29 percent.

In South Asia, India and Pakistan are both estimated to have produced record wheat crops in 1989/90 as farmers responded to price incentives and good weather. India is estimated to have harvested 53 million tons, exceeding last year's crop by nearly 8 million tons. However, government stocks were drawn down after the 1987 drought. Stocks remain very low because strong open market demand has slowed government procurements. During 1987/88 and 1988/89, the Government distributed food grain from stocks to make up for drought-induced shortages.

In 1988/89, India imported nearly 2 million tons of wheat to supplement domestic supplies and to begin rebuilding stocks. The Government has been more cautious regarding wheat imports than in the past, largely because of a very tight balance of payments position. No wheat has been imported so far in 1989/90. The Government must first determine whether the larger harvest and reduced offtake from government stocks normally associated with larger harvests, will leave enough wheat to rebuild stocks. However, with wheat and particularly rice stocks remaining precariously low, it appears likely that imports of both wheat and rice will appear in 1989/90.

Pakistan, on the other hand, will continue to import large quantities of wheat despite its record crop estimated for 1989/90. Production is forecast up 14 percent from 1988/89, but like India, stocks are very low. The Government is competing with private flour mills for grain and the mills are paying higher prices. As a result, government procurement targets are not being met. New wheat marketing policies introduced over the last 2 years have shifted the government role from subsidized sales through ration shops to open market sales at fixed prices. The new measures have stimulated private sector demand as well as demand for government stocks. Imports are expected to reach 1.6 million tons, a third less than in 1988/89.

Drought in the Middle East has cut production throughout the region. Turkey's production is estimated to have fallen 20 percent to 12 million tons. Wheat crops in Syria, Iraq, Israel, and Jordan are all estimated down. Regional imports will be up sharply in 1989/90.

In 1988/89 Turkey exported 1.8 million tons. This year's production shortfall is forcing Turkey to import as much as 3 million tons. Much of this wheat has already been purchased, including 764,000 tons of U.S. wheat, much of it with GSM-102 guaranteed credit.

Iran and Iraq have been increasing food grain imports since the end of the Iran/Iraq war. Both countries now have more foreign exchange available for food imports and are striving to improve the diets of their rapidly growing populations. Per capita consumption in both countries has increased over the last decade. However, Iraq's per capita consumption has been stagnant for the last 5 years. The next few years should see faster growth.

North African imports also are expected to increase in 1989/90. While production in the region is up slightly from 1988/89, output in Algeria and Tunisia remains well below 1987/88. However, Morocco's crop may be down from the 1988/89 record. Stocks remain very low despite production increases and North African imports are forecast up 2 percent to 14.3 million tons, much of which will be bought on credit from the EC or with U.S. GSM credit guarantees.

Durum wheat products are a staple in several North African countries. The EC was able to expand its market share in North Africa in 1988/89 because North American supplies were extremely tight and the EC had large surplus stocks. This year, EC supplies of durum are down and competition will be more intense as both Canadian and U.S. durum production rebounds from the drought. U.S. durum sales to North Africa currently exceed a year ago. Much of this recent durum activity has been under the EEP to Algeria.

In Latin America (excluding Argentina), production is forecast down 3 percent and imports are projected up 15 percent. However, policy changes and varying weather conditions have created divergent situations in major producing countries. Brazil's policies, for example, are leading to reduced production and greater imports. In Venezuela, austerity measures and import taxes are leading to reduced wheat consumption and a forecast 20-percent decline in imports.

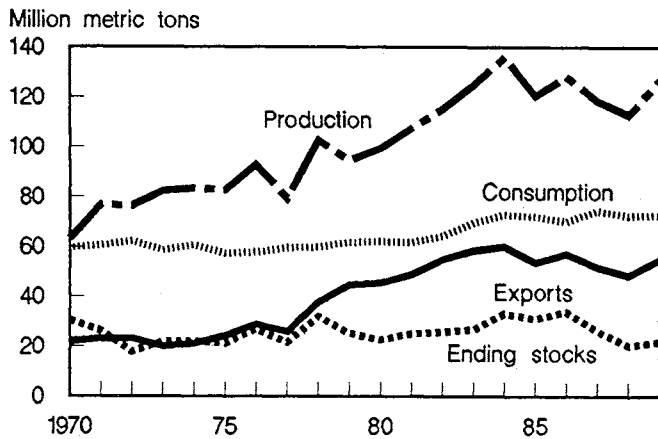
Brazil's production is forecast down 17 percent. Reduced credit availability and uncertainty regarding government support prices led to a decline in area. Lack of credit prevented farmers from buying as much fertilizer and other inputs, pulling down yields. Adverse weather during harvest also contributed to the decline. At the same time, retail price subsidies have risen recently and consumption is increasing. As a result, Brazil will need to import a forecast 2.5 million tons of wheat in 1989/90, up from less than a million in 1988/89.

Mexico's wheat production has recovered from last year's drought. Production is estimated up 22 percent and imports are likely to fall to 400,000 tons, less than half that of 1988/89. Production gains have slowed in recent years. Investment in the agricultural sector has been inadequate and input subsidies and price supports have been declining in recent years. Inadequate investment has a large impact on crops, such as wheat, that depend on irrigation. It is estimated that only 60 percent of existing irrigation systems are fully operational. Improving the existing system and expanding it would be very expensive. Yield growth achieved in recent years has also slowed.

Competitor Production Up But Exportable Supplies Remain Tight

High prices and favorable weather have stimulated production in several competing countries. However, competitor stocks remain low and exports are expected to exceed last year's by only 12 percent. Reduced stocks in Canada and the EC and a weather-reduced crop in Australia will limit the competitors' ability to expand 1989/90 exports much further. Additionally, there will be little stock rebuilding this year, leaving next year's competitor export availabilities largely dependent on production.

Figure 1
Major Competitors: Production, Consumption Exports and Ending Stocks



Competitors are EC-12, Canada, Australia, and Argentina.
 Exports excludes intra-EC-trade.

Canada has rebounded from last year's drought, producing an estimated 24 million tons, up 50 percent from 1988/89. However, high temperatures in July kept yields down and heavy rain at harvest may have reduced quality in several locations. With carryin stocks the lowest since the 1950s, Canadian exports are forecast to reach only 17 million tons, 26 percent above 1988/89, but almost 7 million tons below the 1987/88 record. Canada's ending stocks are forecast to increase only marginally.

Earlier this year, many analysts studying Argentina were concerned that hyperinflation and uncertainty over government policies would hold down area planted to wheat. Yields were expected to be below average because the tight credit situation and high interest rates would hamper farmers' ability to purchase inputs. However, planting was stimulated by excellent weather and assurances by the new Peronist Government that export taxes would be reduced. In addition, continued generally favorable weather is forecast to boost estimated yields to the third highest on record.

Argentina's production is forecast at 11 million tons, 36 percent above the drought-reduced 1988/89 crop. Exports are forecast up almost 80 percent to 6.4 million tons. To date, the new Government has followed through on its promise to reduce export taxes. Sales have been brisk, with large commitments already made to China, Iran, and Syria. In addition, Argentina has recently signed an agreement with Brazil to supply 1.7 million tons of wheat in calendar year 1990.

Australia, on the other hand, will suffer a decline in production and exports in 1989/90. Early season rains reduced planting in some major growing areas and retarded the root development of the wheat that did get planted. When a long dry spell hit as the crop was flowering and filling heads, the root system could not tap into the subsoil moisture reserves and the crop sustained significant damage. Australia's har-

vest, which has only just begun, is now forecast at 12.5 million tons, 11 percent below 1988/89. Exports in the July/June trade year are forecast at only 9.9 million tons, 8 percent below 1988/89. While Australia will likely be able to meet commitments to traditional customers, supplies will not be adequate for Australia to expand into other markets.

In contrast, the EC is forecast to expand production 6 percent, match last year's record exports of 21 million tons, and maintain its world market share at around 21 percent. In 1989/90, Northern Europe suffered a period of abnormally hot, dry weather. However, the winter wheat crop was able to draw on subsoil moisture. The dry spring and early summer was actually beneficial to the crop, improving the quality and protein content, especially in the United Kingdom. Normally, wheat from the United Kingdom does not match the milling quality of that from France and West Germany. The higher quality will allow more UK wheat to be exported to non-EC buyers.

As of November 14, the EC had issued export licenses covering 5.9 million tons of soft wheat, compared with 6.1 million tons issued at the same time a year ago. Durum export licenses are down sharply. As of October 31, the EC had issued export licenses covering 41,000 tons, compared with 942,000 tons a year ago. Durum production in 1989/90 is estimated to have fallen 8 percent from a year earlier largely because of dry weather in Italy. In addition, EC exporters are facing stronger competition, especially in North Africa, now that the United States and Canada have larger crops.

U.S. Exports To Fall, World Market Share Declines

Tight U.S. supplies and increased competition are expected to result in lower U.S. exports in 1989/90. Exports are forecast at 35 million tons, 7 percent below 1988/89. World market share is likely to decline from 39 percent in 1988/89 to 36 in 1989/90.

The United States is likely to maintain market share in some important markets despite reduced supplies. China, North Africa, Brazil, and Middle Eastern buyers such as Turkey and Iraq have all been active in the U.S. market since the beginning of the marketing year. Activity under the EEP has picked up this fall (see special article). In July, an initiative to Algeria was announced and there have been two initiatives announced (to the Philippines and Egypt) and 2.75 million tons of EEP sales between September 1 and November 15.

GSM-102 and 103 guarantee programs also will be important in maintaining market share in countries with limited foreign exchange reserves, such as those in North Africa and Latin America. In fiscal 1989, \$1.4 billion was allocated for GSM-102 credit guarantees for wheat and flour. Egypt, Iraq,

and Algeria were the major recipients, taking over 50 percent of the total. As of November 15, \$229 million had been allocated for wheat in fiscal 1990.

Public Law (P.L.) 480 commitments are expected to be met despite low stocks in 1989/90. The President has authorized the release of up to 2 million tons from the Food Security Reserve for overseas food aid in fiscal 1990. Of that, 1.5 million tons are expected to be used, while 500,000 tons will be used if needed. Initial wheat and flour allocations under P.L. 480 Title I/III total about 1.6 million tons, although this may change during the year as needs arise. In fiscal 1989, Title I/III wheat and flour sales were almost 2.7 million tons (grain equivalent).

What Will the Competitors Do Next Year?

World stocks will be low entering the year and import demand is not likely to decline. Even with normal weather around the world, growing consumption needs will limit stock rebuilding. If production expands as expected, wheat prices will decline but remain above the low levels of the mid-1980s. Three consecutive years of relatively high prices likely will stimulate production in countries where world prices are quickly transmitted to farmers, such as Argentina and, to a lesser extent, Australia and Canada.

However, factors other than the absolute price of wheat may play an important part in farmers' crop decisions. Government policies, prices of alternative commodities, and weather at planting all influence farmers' decisions.

In the EC, world wheat prices have virtually no impact on farmers' planting decisions because EC support prices provide a wedge between world prices and the relatively high EC farm price. High support prices, high yielding varieties, and intensive farm management practices have led to rapid growth in EC wheat production. In the mid-1970s, the EC-12 shifted from being a net wheat importer to a net exporter. Since then, much of the growth in competitor exports can be attributed to the EC.

Except for this year, production growth in the EC can be attributed much more to yield growth than area expansion. EC yields have been expanding at an average of 3.4 percent per year since 1970 and show no indication of slowing, especially because yields in the newer member countries of the Community (Spain, Portugal, and Greece) remain well below those of the other member countries.

The EC has attempted to restrain production through the introduction of a modest set-aside program and the imposition of a stabilizer mechanism that automatically reduces the next year's intervention prices by 3 percent when more than 160 million tons of grain are produced. In addition, an additional co-responsibility levy (tax) of 3 percent is imposed at

Figure 2
EC Production, Consumption, Exports and Ending Stocks

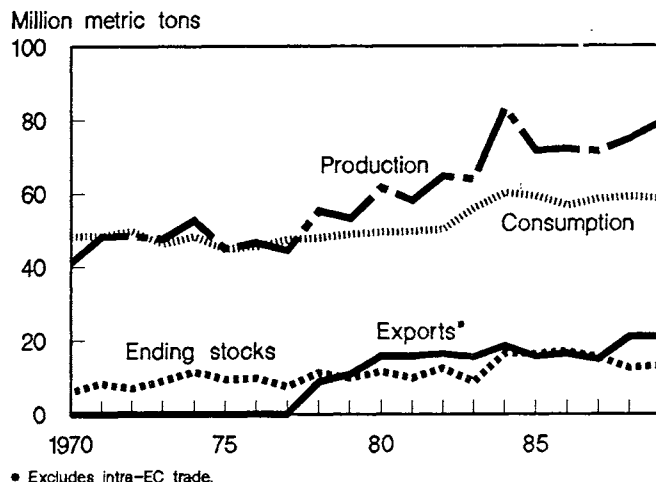
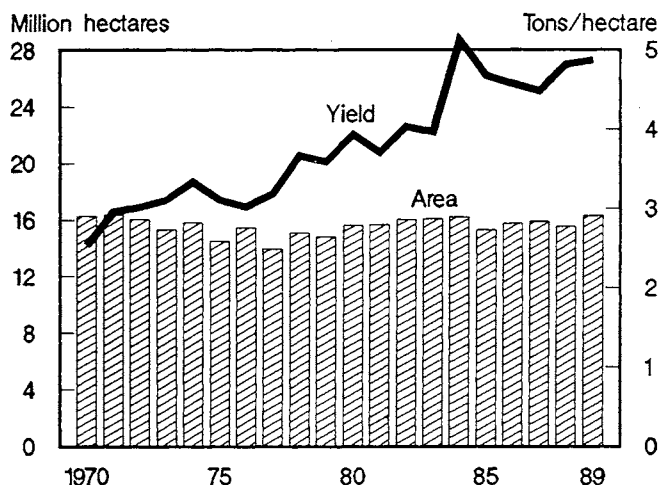


Figure 3
EC Area and Yield



the beginning of each marketing year, and is paid when the grain is marketed. This levy can be partially or fully refunded, depending on the size of the harvest. If the harvest is less than 3 percent above 160 million tons, the levy is partially refunded; and, if the harvest does not exceed 160 million tons, the levy is fully refunded.

Participation in the set-aside program has been minimal because incentives to enroll are very low and there have been delays in implementation. As of November 15, less than 1 percent of arable land in the EC had been enrolled. The automatic 3-percent cut in 1989/90 intervention prices was imposed and only 50 percent of the additional co-responsibility levy on the 1988 crop was refunded after the 1988 grain crop exceeded 160 million tons. But it did not dissuade farmers from producing even more wheat in 1989.

While wheat area rose an average of 1.5 percent annually between 1978 and 1984, it has been fluctuating between 15.3 and 16.3 million hectares since then. Even if the EC were to reduce area 1 to 2 percent for the next 10 years, yield growth alone would likely ensure continued average production at or above current levels. This production would then have to be stocked, exported, or consumed internally, probably as feed. Unless there is a dramatic reduction in the use of non-grain feed ingredients, feeding additional wheat, given limited growth in the EC livestock sector, would likely push more feed grains out onto the world market.

Next year, the EC Commission will again automatically reduce intervention prices by 3 percent because the 1989 EC grain crop once again exceeded 160 million tons. While the Commission has indicated that the additional co-responsibility levy will not be collected and that farmers who have already paid it will receive a full refund, it will be reimposed at the beginning of the 1990/91 crop year. This is not likely to discourage producers. The autumn weather in Northern Europe has been generally favorable and while it is too early to forecast the crop, there are few economic reasons to project a decline.

Continued relatively high prices are likely to stimulate plantings in Argentina and Australia. However, Southern Hemisphere producers are only now harvesting the 1989/90 crop and planting for the 1990/91 crop is many months away. Nevertheless, there may be a few indications as to how producers might react to market conditions.

Livestock production, especially sheep, and barley compete with wheat in Australia. For the last few years, wool production has been more profitable than wheat. However, wool prices have come down during the last year and may encourage some marginal shifting from pasture to wheat. Australia also has been expanding its feedlot operations, increasing domestic demand for feed. However, this year's wheat shortfall may keep domestic wheat prices high relative to those of barley, minimizing any potential area shifts to feed grains. The choice between wheat and barley may depend more on the weather at planting. Next year, if weather at planting is favorable, Australian farmers are likely to at least maintain area planted at the 1989/90 level and perhaps increase it.

In Argentina, much will depend on government policies. Export taxes on agricultural commodities still exist, although the Government has begun reducing them. Macroeconomic conditions will also play an important role in Argentine farmers' decisions. Credit availability, interest rates, exchange rates, and the general level of confidence in the existing Government can all work together to encourage or discourage production. Of course, weather at planting remains a significant factor. The planting weather in 1989/90 was the best in years, and many farmers chose to expand plantings despite considerable economic uncertainty.

There are few alternatives to growing wheat in the Canadian prairies. Spring wheat is the predominant crop, but weather and the relative prices of barley and canola factor into farmers' crop decisions. Canada's 1989/90 ending wheat stocks are expected to remain very low, only slightly above 1988/89, when they were the lowest since the early 1950s. In addition, dry weather prevented a full yield recovery from the 1987/88 drought. As a result, farm prices are likely to remain relatively high and, assuming normal weather at planting, planted area in 1990/91 could match or surpass 1989/90 and production could exceed it.

U.S. Wheat Supplies Keep Prices in Check

Almost halfway through the 1989/90 marketing year, the relationships between supply, demand, and prices have become clearer. Although U.S. wheat supplies are down 11 percent from last year and are the lowest since 1977/78, farm prices through the first 5 months of the marketing year averaged \$3.78 per bushel, compared with an average of \$3.54 over the same period in 1988/89. First-quarter exports and domestic use are estimated ahead of last year's pace, yet farm prices were below a year earlier in September and October.

Uncertainty about Soviet buying plans has had a price dampening effect. In addition, there currently does not seem to be a need to drive up prices to ration supply across various users. Next year's crop is expected to be about the third largest on record. Thus, carryover stocks are less important than during the early to mid-1970s when there was limited potential for a rapid expansion in wheat plantings. Greater than expected export demand or problems with next year's crop would be the most likely causes of a sharp price runup in the second half of the marketing year.

June-August Disappearance Strong

First-quarter (June-August) wheat disappearance was similar to the previous year with exports accounting for most of the marginal gain. The increase in food use was enough to offset the decline in the implied residual and feed disappearance. The unexpectedly small September 1 stocks imply a residual (includes feed) very nearly as large as a year before. The September 1 stocks and implied feed and residual disappearance surprised many analysts because the relative price of wheat and feed grains would argue for only the very lowest quality wheat moving into feed use. On the other hand, during the 1988 drought, there were several weeks where wheat was attractively priced relative to corn.

Quarterly Stocks

Stocks on September 1 amounted to 1,911 million bushels, up from the June 1 pre-harvest level of 698 million bushels. Still, September 1 stocks were 15 percent below last year's estimate.

Table 2--Wheat supply, disappearance, and stocks, June-Sep

Item	1988/89	1989/90
Million bushels		
Stocks, June 1	1,261	698
CCC inventory	283	190
Farmer-Owned Reserve 1/	467	287
Outstanding CCC loans	178	19
Uncommitted	333	202
Production	1,811	2,042
Imports	9	6
Total supply	3,081	2,745
Use, June-Aug.		
Food	181	191
Seed	1	1
Feed & residual	281	272
Exports	363	370
Total use	827	835
Stocks, Sept. 1	2,254	1,911
CCC inventory	250	168
Farmer-Owned Reserve 1/	391	211
Outstanding CCC loans	108	48
Uncommitted	1,505	1,483

1/Includes Special Producer Loan Program.

The 174-percent increase in total stocks between June 1 and September 1 has been realized mainly in uncommitted stocks, which increased over 600 percent. This seasonal rise is common. Many farmers (especially soft red winter producers) market a large portion of their crop in the first few months after harvest, and uncommitted stocks are gradually reduced through the year as cash selling continues.

Outstanding loans also increased, by 53 percent, between June 1 and September 1. But their absolute level—48 million bushels—is considerably smaller than in recent years. This is because the season average price is expected to be well above the \$2.06 loan rate throughout the year, making loan placement a relatively unattractive option for many farmers.

In contrast to the rise in uncommitted stocks and outstanding loans, CCC inventory fell 12 percent between June 1 and September 1 and FOR stocks fell 26 percent. The relatively high market prices have resulted in cash redemptions and certificate exchanges more than offsetting forfeitures to the CCC. In addition, shipments against the CCC's Food Security Reserve have occurred in recent months to meet P.L. 480 obligations, contributing further to the decline in CCC stocks. FOR loans have not been extended during 1989/90, so farmers have either redeemed their loans as they came due, the more common case, or forfeited them to the CCC (see Appendix table 4).

Uncommitted stocks on September 1 represent a higher proportion of total stocks than in recent years. Uncommitted stocks accounted for 78 percent of total stocks on September 1, 1989. But in 1987 and 1988, the percentages were substantially lower—45 percent and 67 percent, respectively. With the tight ending stocks-to-use ratio expected, uncommitted stockholding may continue to be strong given the possibility of sizable price increases later in the marketing year.

1989/90 Supplies Down More Than 10 Percent

Wheat area planted increased 17 percent, up over 11 million acres, but yields fell to the lowest since 1978, leaving production up a scant 230 million bushels.

Wheat production in 1989 suffered from dryness, sharp changes in temperature causing winterkill, blowing dust, high spring temperatures, and rain at harvest. Kansas, normally the largest producing State, had dramatic losses. Spring wheat yields rebounded from 1988's drought-reduced lows, but hot, dry weather during a critical period kept yields below average.

In Washington and Montana, large areas of winterkilled wheat were reseeded with spring wheat. The spring crops were by and large successful, limiting losses in those States. The reseeded caused the same land to show up in planted area twice, although it is clearly only harvested once. However, damaged fields that still had some wheat and were overseeded instead of reseeded do not count as planted twice.

Beginning stocks were 698 million bushels, down sharply from 1.26 billion a year earlier. The dramatically lower stocks more than offset the larger crop, resulting in a 11-percent drop in 1989/90 wheat supplies.

Wheat imports are forecast to decline slightly from 23 million bushels in 1988/89 to 21 million. With smaller price differences between U.S. and Canadian wheat, especially durum, there is less incentive to import wheat. However, many North-South trade opportunities may remain attractive as some millers find the distinct characteristics of Canadian wheat useful in blending.

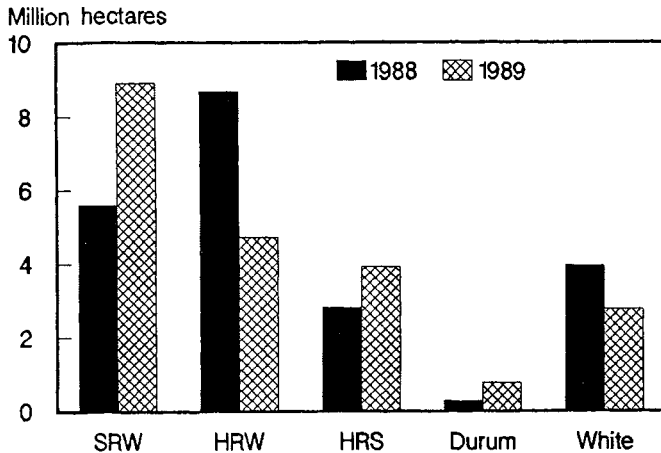
U.S. Exports Forecast Down

U.S. wheat exports (June/May) are forecast at 1,275 million bushels. Export sales (as measured by exports and outstanding sales in the *U.S. Export Sales* report) were running well ahead of 1988/89 early in the marketing year. The early strong performance can be attributed largely to China's heavy purchases of soft red winter wheat. By the end of October, China's SRW purchases totaled 4.2 million tons, equivalent to 26 percent of the 1989/90 soft red winter supply. In addition, China has also recently been buying hard red winter and spring wheat under the EEP.

The announcement of offers to sell under the EEP and subsequent sales to Egypt, Algeria, and the Philippines have buoyed the market somewhat. However, sales and exports have fallen below last year's pace, largely because of the lack of purchases by the Soviet Union. The Soviets have purchased less than a million tons this marketing year and it is unclear when they will begin purchasing U.S. wheat again.

Figure 4

U.S. Wheat Exports by Class



1/ Exports and outstanding sales as of Oct. 26th according to Export Sales.

The delay in Soviet purchases has dampened sales of hard red winter wheat. This, combined with the strong and early purchases of soft red winter, has narrowed the price gap between the two classes of wheat. Durum sales are also up sharply due to increased sales to Algeria (mostly under EEP) and the EC. Spring wheat sales also have rebounded from last year with increased purchases by China, Algeria, Ecuador, and Colombia.

Government programs continue to provide critical assistance to help buyers procure U.S. wheat. The EEP, GSM credit guarantee programs and food assistance programs are likely to help low income buyers and those with limited foreign exchange reserves buy U.S. wheat despite relatively high prices and limited U.S. stocks.

Domestic Demand Forecast Up

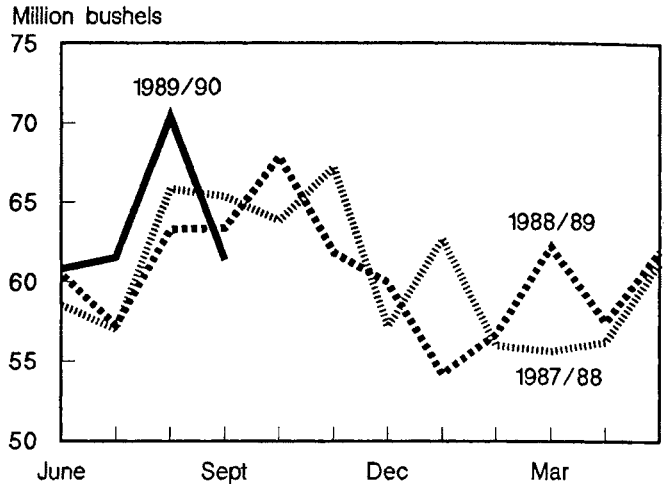
Domestic use is forecast up 7 percent in 1989/90 as all categories of domestic use may increase. Although up from 1988/89, domestic use is forecast below any of the previous 5 years.

Food use of wheat is calculated by adding mill grind and an estimate of non-flour food use (mostly breakfast cereal), then adjusting for the wheat equivalent of imports and exports of flour and selected products. Since complete and timely flour stocks data are not available, no attempt is made to adjust for changes in flour stocks. Wheat food use in 1989/90 is forecast up 1 percent to 735 million bushels, a record high for the eighth straight year. Food use tends to track population growth, and the stronger increases from 1984-87 slowed in 1988/89. The first months of 1989/90 may indicate a return to more normal food use growth.

Seed use is expected to increase in 1990 as planted area expands. More normal winterkill should keep reseeding below 1989, limiting the growth in seed use.

Figure 5

Wheat Food Use



Residual use (includes feeding) is forecast at 200 million bushels. The first-quarter residual was 272 million, but the second-quarter residual is negative more often than not. While the December 1 stocks report will provide additional information on the feed and residual disappearance, there will be considerable uncertainty about the residual until the 1989/90 end-of-year stocks are reported.

Ending Stocks Forecast Lowest Since 1974/75

May 31, 1990, wheat stocks are forecast at 443 million bushels, down 37 percent. Wheat in the FOR is forecast down 48 percent to 150 million bushels. As loans mature, they must either be redeemed or forfeited to the CCC. CCC inventory is forecast down 47 percent to 100 million bushels. The Food Security Reserve continues to be accessed to provide food aid shipments. Outstanding 9-month loans are also forecast down 47 percent. Market prices are high enough compared to the loan rate to discourage much wheat from moving under the 9-month loan program. Only 10 million bushels are forecast to remain under loan at year's end.

Free stocks not under any loan program are forecast at 183 million bushels, down only 9 percent in 1989. These stocks were lowest in 1986, when total stocks were record high. As total stocks fall, individuals and corporations tend to carry more stocks to ensure minimal supplies or to speculate.

Season Average Prices Below \$4.00

Prices received by farmers are forecast to range from \$3.85 to \$4.00 in 1989/90, the highest since the record \$4.09 in 1974/75. The forecast ending stocks-to-use ratio of 19 percent would be the lowest since 1973/74, and might be expected to generate higher prices. However, the situation differs substantially from the early to mid-seventies. Rather than having to increase to levels that would draw additional

resources into agricultural production, returns to wheat production need only increase to levels that will draw resources into wheat and away from other agricultural activities.

Prospects for 1990

U.S. and world wheat supplies are the tightest since the early 1970s. For 1989/90, the U.S. stocks-to-use ratio is forecast at 19 percent, the lowest since 1973/74. The stocks-to-use ratios for competitors and for the world are at or near their recent historical lows. Many have expressed concerns that current low stocks are not sufficient to buffer large production shortfalls. However, the relatively high world prices and the lower acreage reduction requirements in the U.S. 1990 wheat program are expected to result in an increase in world production next year.

The 1990 wheat program, as announced May 31, 1989, established a 5-percent ARP. With the continuing expansion of the Conservation Reserve Program (9.1 million acres of wheat base were enrolled during the first eight signups), available wheat base acres are declining (fig. 7). The increased area in the CRP partially offsets the increase in wheat area resulting from lowering the ARP from 10 to 5 percent. Without a bumper crop in 1990, stock building most likely will be limited.

Modified Contracts Offered for 1990 Wheat Program

On September 13, 1989, USDA announced optional modified contracts for the 1990 wheat program that are expected to increase wheat production by 60 to 70 million bushels above what was projected to be produced under the original program. In announcing the change, the Secretary of Agriculture indicated that, "the action does not suggest that we expect another year of less than average yields, nor will it boost stocks significantly. But it will help restore stocks to safer levels. In view of the tight U.S. and world supply and demand situation we should give wheat producers the option to increase plantings if they wish to do so." Under modified contracts:

- _ Wheat producers now have the option to plant wheat on up to 105 percent of their base.
- _ For each acre of wheat planted in excess of 95 percent of the wheat base, the acreage used in determining deficiency payments will be reduced by one acre. The minimum acreage for payment will be 85 percent of the farm's wheat base if the producer plants the maximum acreage of 105 percent of the base.
- _ Producers may not build future wheat base acreage on the farm via the modified program.

Figure 6

Wheat: Farm Prices, Target Prices, and Loan Rates

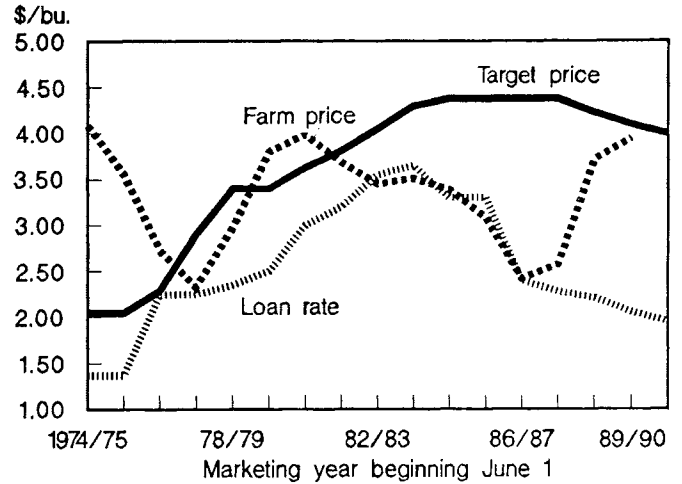
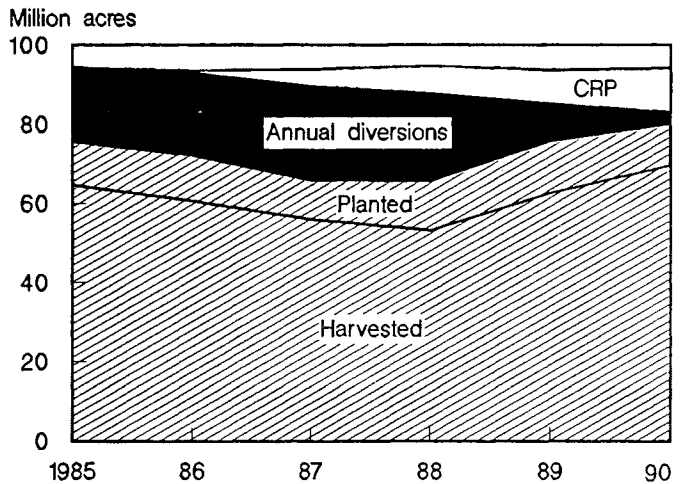


Figure 7

Wheat Acres



- _ If wheat plantings in excess of the wheat base cause plantings of other program crops to fall below the permitted acreages established for the other crops, from the standpoint of calculating base, the excess wheat acreage will be considered as planted to the other program crop.
- _ The 0/92 provision of the 1990 wheat program, the soybean and sunflower replacement option, and the transfer of wheat base to oats base are not applicable for producers choosing the modified contract. Producers may not credit other nonprogram crop acreage as acreage considered planted to wheat, if they expand wheat area to over 95 percent of base.

— Producers will continue to have the option of signing up for and complying with requirements of the 1990 wheat program as announced May 31. These requirements include a 5-percent acreage reduction program.

— The common program provision requirements, such as limited cross compliance, announced Aug. 7, are still in effect.

Will Farmers Participate?

The 1990 *Winter Wheat and Rye Seedings* report in January will provide the first indications of farmer participation with the modified contracts. Based on ERS costs and returns analyses, it appears that farmers are likely to increase their plantings up to at least 100 percent of base where farmers must only give up idled ARP acres. The incentive to expand wheat area beyond 100 percent of wheat base is less because many farmers would have to reduce plantings of other crops and would lose the incomes associated with these crops.

The actual extent of the expansion depends on factors such as: the productivity of idle land, the costs of maintaining ARP and 0/92 acres in conserving uses, the costs of planting ARP and 0/92 land, the expected profits of planting wheat on ARP and 0/92 land, the relative profitability of replacing other crop production with wheat, the expected foregone wheat deficiency payments, farmers' willingness to accept price risk associated with planting wheat without government payments, and the willingness and ability of farmers to adjust crop rotations. For example, a farmer who uses fallow acreage in his wheat rotation may be unwilling to plant the fallow acreage because of potential impacts on future wheat yields.

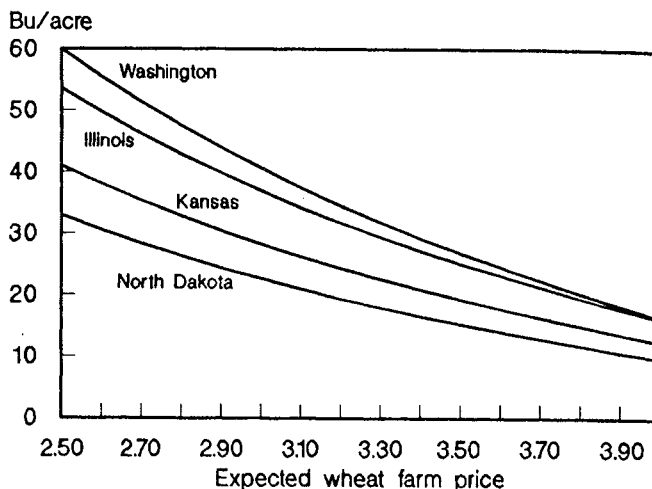
For a farmer to profitably plant more wheat acres under a modified contract, the revenue from planting an additional wheat acre must be above the cost of planting the additional acre. Minimum breakeven levels of expected revenue (combinations of price and yield) were computed for four States to illustrate the farm-level decision process for planting an additional acre of wheat under a 1990 wheat program modified contract (fig. 8). The analysis used State level cost and yield data (table 3) and illustrates the decision to plant up to 100 percent of base.

Table 3--Assumptions for estimating breakeven wheat yields and prices.

Item	State			
	WA	IL	KS	ND
Program yield (bu/ac)	56	46	35	29
Average variable production costs (\$/ac)	66	65	50	39
Additional costs of returning ARP land to production (\$/ac)	10	10	10	10
ARP maintenance costs (\$/ac)	10	10	10	10
Average yield (bu/ac)				
1987	56.7	59.0	37.0	29.5
1988	60.5	54.0	34.0	14.3
1989	50.2	59.0	24.0	23.5

Figure 8

Breakeven Expected Wheat Yields and Prices for Plantings on ARP Lands



Because a given market price affects both the market revenue and foregone deficiency payments, there is no one breakeven revenue for each state. While this analysis does not account for risk preferences and rotation considerations, it does provide an indication of the economic incentives to expand area. Breakeven expected net revenues for planting ARP and 0/92 land were computed using the following equation:

$$\text{YIELD} \times \text{PRICE} - \text{DEFLOSS} > \text{VARCOST} + \text{ADD} - \text{MAINTAIN}$$

Where: YIELD = Expected yield,

PRICE = Expected market price,

DEFLOSS = Foregone deficiency payments due to planting additional wheat area (program production times the difference between target price and market price),

VARCOST = Variable planting and harvesting costs,

ADD = Additional costs of planting wheat on land that is normally not tilled,

MAINTAIN = Costs of maintaining ARP land in conserving uses.

How do these breakeven revenues compare to farmers' expectations? ARP area is likely to be less productive than average, since farmers generally retire their least productive land first. If farmers expect yields to return to levels similar to those in 1987 and the average productivity of ARP land is 80 percent of average, they would have an economic incentive to expand wheat area onto ARP area in each of the four States, if wheat prices received by farmers are expected to

exceed \$3.00 per bushel. In making this sort of comparison, an individual farmer would substitute his yields, production costs, and prices received for the State averages. As price or yield expectations increase, the economic incentive to plant wheat on ARP area increases.

The incentive to expand wheat area beyond 100 percent of wheat base is less. The farmer must recoup lost net revenue on the additional acreage if it were normally planted to another crop. If the land were normally idle, the costs of returning it to production are likely higher than the \$10 per acre assumed above. Also, if the land is currently idle, it is most likely less productive or has some physical restrictions that increase production costs. Nevertheless, if producers expect higher prices, say \$3.50 per bushel, there is opportunity to profitably expand wheat area under the modified program.

Total Area and Production Likely To Increase

USDA estimates that 1990 harvested wheat acreage will rise 2.1 million acres because of the modified contracts to 69.6 million, resulting in an expected crop of around 2.6 billion bushels. Overall farm income from wheat is expected to increase slightly as a result of these modifications.

1990 Winter Wheat Crop Is Progressing

As of November 20, 1989, 91 percent of the winter wheat had emerged (*Weekly Weather and Crop Bulletin*). Crop conditions are deteriorating with about 50 percent of the crop rated as good to excellent, compared with 57 percent a week earlier and 54 percent a year ago. Crop conditions in Kansas, the top winter wheat State, are similar, although top-soil moisture is rated at short to adequate.

Wheat By Class

Marketing Pattern Starts Out Like Last Year

In 1988/89 soft red winter (SRW) wheat production was large, and early in the marketing year, prices were at a discount relative to other classes. However, as SRW supplies were reduced by strong exports, the price gap narrowed. Hard wheat prices were boosted by drought-induced production problems in hard red spring (HRS) areas during the summer, and it was not until later in the marketing year that disappearance of hard wheat accelerated. The same pattern is developing in 1989/90.

SRW production and early season exports have been even greater than the previous year. The 1989 winter wheat production problems were severest in the hard red winter (HRW) areas. HRS production was up but yields were below average. HRW exports are off to a sluggish start. SRW price discounts have narrowed, and demand is being

shifted to other classes of wheat. However, sales of hard wheat late in the marketing year are unlikely to be as strong as last year.

HRW Production, Supplies Lowest Since 1967/68

HRW production in 1989 is estimated to be the lowest in over two decades, down 18 percent from 1988's below-average crop despite an estimated sharp increase in planted area. Dryness, sharp drops in winter temperatures, blowing dust, and high spring temperatures reduced production in the Plains.

June 1, 1989, stocks of HRW are estimated at 300 million bushels, down sharply from 567 million a year earlier, and the lowest since 1975. Beginning stocks were not large enough to prevent HRW prices from moving above competing classes when production declined.

Domestic use and exports of HRW are expected to decline in 1989/90. Food use may decline as some millers who shifted from HRS to HRW last year, switch back to HRS. Seed use is expected to increase a couple million bushels as area planted expands. Residual disappearance may fall dramatically.

Exports of HRW are forecast down 38 percent to 395 million bushels, identical to the recent low in 1985/86. As of November 2, according to *U.S. Export Sales*, HRW commitments were down 45 percent from a year ago. Narrowing price premiums should encourage HRW exports in the second half of the marketing year.

Ending stocks of HRW are forecast at 201 million bushels, the lowest since 1973/74. Though an historically low level, HRW stocks would still represent 45 percent of total wheat stocks, a fairly normal share.

Figure 9
HRW Production, Exports and Stocks

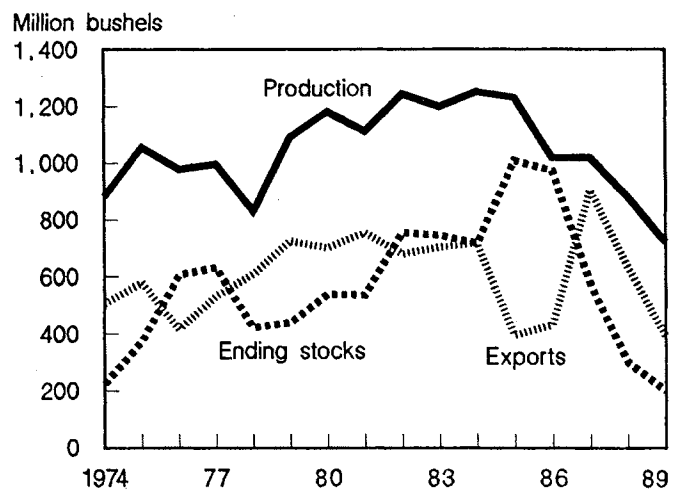
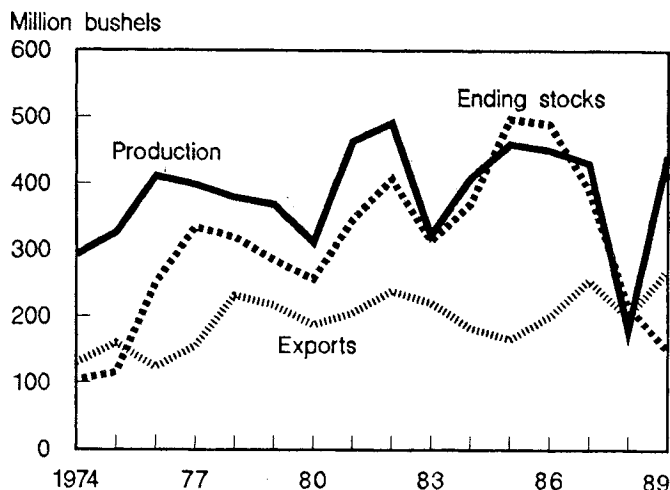


Figure 10

HRS Production, Exports and Stocks**HRS Supply Rebounds**

HRS production more than doubled in 1989. Although growing conditions were much more favorable than the previous year's devastating drought, yields were below average. Yield potential was limited by a hot, dry spell in July combined with short subsoil moisture.

Beginning stocks, however, were estimated down 46 percent to 217 million bushels, limiting the increase in supplies to 13 percent. Increased supplies have pushed HRS prices to a discount compared with HRW. This, in turn, has encouraged a rebound in domestic use and exports. Domestic use is forecast at 246 million bushels, up 42 percent from 1988/89, but still 9 percent below 1987/88.

HRS exports are forecast at a record 270 million bushels, up 35 percent from 1988/89. According to *U.S. Export Sales*, HRS export commitments as of November 2 were up 42 percent. Short supplies of HRW are likely to encourage disappearance of HRS.

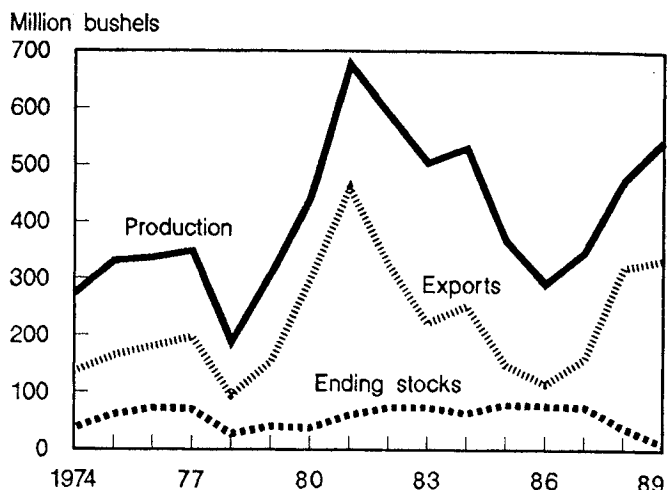
Despite increased supplies, ending stocks of HRS are forecast to decline to 151 million bushels because of strong use. These would be the lowest HRS stocks since 1975/76.

SRW Production and Exports Boom

SRW production in 1989 was 545 million bushels, up 15 percent to the third largest on record and 27 percent of total U.S. wheat production. Illinois reemerged as a major wheat producer.

Reduced beginning stocks limited the SRW supply increase to 7 percent. SRW producers marketed their crop rapidly, causing summer prices to fall compared with other classes of wheat. Both domestic use and exports are forecast up. Early season movement has been very rapid. Domestic use is sup-

Figure 11

SRW Production, Exports and Stocks

ported by increased residual disappearance indicated by the position of wheat in the September 1 stocks report.

The export pace through the first 5 months of the marketing year has been spectacular. According to *U.S. Export Sales*, SRW accumulated shipments as of November 2 were up 80 percent from the previous year. Supplies are not adequate to maintain such a flow of exports. Exports for the year are forecast up only 5 percent to 335 million bushels, which, if realized, would be the second largest on record.

Ending stocks of SRW are forecast at 11 million bushels. This would represent very low pipeline stocks needed to keep soft wheat mills going, and would include very little speculative holding of stocks. Given strong current demand, and the potential for further increases in SRW production in 1990, speculative holding of SRW likely will be limited.

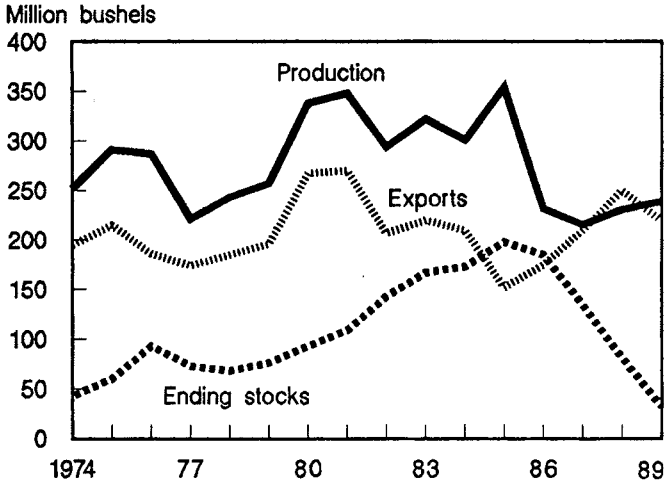
White Wheat Supplies Down in 1989/90

White wheat production increased slightly in 1989 to 239 million bushels. Although unusually low temperatures caused greater than normal winterkill in winter white wheat, increased planted area and the reseeding of some winterkilled wheat to white spring wheat maintained production. However, beginning stocks were estimated down to 81 million bushels, from 135 million a year earlier. The white wheat supply is estimated down 12 percent to 324 million bushels.

Total disappearance of white wheat is forecast nearly the same as in 1988/89. Larger domestic use is expected to make up for a forecast decline in exports. In 1988/89 domestic use dropped because the residual category was a significant negative number. No such statistical residual is forecast in 1989/90, causing forecast domestic use to rebound. Exports are forecast down 12 percent because India is not expected to import as much wheat as last year. According to

Figure 12

White Wheat Production, Exports and Stocks



U.S. Export Sales as of November 2, white wheat commitments were down almost 30 percent.

Ending stocks of white wheat are forecast at 32 million bushels, the lowest since 1973/74. Such low stocks could encourage additional planting for 1990.

Durum Supplies Increase

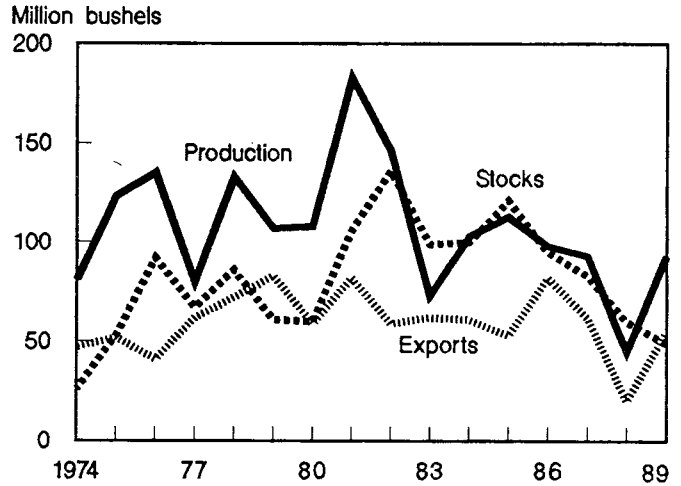
Durum production more than doubled in 1989 to 93 million bushels. Lower use in 1988/89 kept durum beginning stocks at 60 million bushels, down less than 30 percent, and still

large compared with 1988/89 use of only 79 million bushels. With a modest decline in imports of durum, total supply is forecast at 163 million bushels in 1989/90.

Durum use is forecast to rebound to 114 million bushels, due entirely to an increase in exports. This would reduce ending stocks to 49 million bushels, the lowest since 1973/74. Durum farm prices have been at a discount compared to HRS in North Dakota. HRS prices may be more directly supported by short HRW supplies, while durum prices are more dependent on durum supply and demand.

Figure 13

Durum Production, Exports and Stocks



Trade Liberalization in the World Wheat Market

Joy Harwood

Abstract: Negotiators in the Uruguay Round of negotiations under the General Agreement on Tariffs and Trade (GATT) have proposed policy reforms that could phase out government supports to agriculture that distort production, consumption, and trade. If complete multilateral trade reform occurs for wheat and all commodities, world wheat prices could rise considerably in the long run and patterns of production, consumption, and stockholding would change. The total volume of world wheat trade is unlikely to change substantially, but the countries that are now major market players would fare differently. Trade policy reform would likely enhance the U.S. position in world wheat trade since the most efficient producers would be expected to fare the best.

Keywords: Wheat, trade, policy reform, trade liberalization, GATT negotiations

Developing a framework for the reform of domestic and trade policies that affect agriculture is a priority at the Uruguay Round of GATT negotiations. This focus on trade reform has been in part prompted by the global recession of the early 1980's, the debt crisis, and other factors that cut world trade sharply in the mid-1980's. Budget costs soared as governments protected farmers from adjustments through policies supporting prices, incomes, and exports.

Such government policies contributed significantly to disarray in the world wheat market. The farm support policies of certain major exporters encouraged production, resulting in large stock buildups and in some cases, lower world prices. As world trade declined, these exporters expanded their use of export subsidies to maintain sales. To protect their own producers, importing countries increasingly relied on quotas, variable levies, and other forms of protection.

Escalating budget costs played an important role in the call for policy reform. In the United States, farm program costs rose from less than \$4 billion in fiscal 1981, to a peak of about \$26 billion in 1986, with direct payments to wheat farmers up from 1.5 billion in fiscal 1981 to \$3.4 billion in fiscal 1986 (November 1989 *Ag. Outlook*). The budget cost of farm subsidies and related supports in the European Community (EC), currently the world's second-largest wheat exporter after the United States, about doubled over the same period, reaching \$23 billion in 1986 (Paarlberg).

GATT participants have vowed to go beyond their traditional emphasis on trade policies and to focus on the reform of support programs that distort trade. Policy reform should have a large impact on world wheat trade, which accounts for about 17 percent of world agricultural trade volume. Since the negotiations began, production cutbacks and droughts in key producing areas have reduced stocks and increased prices. But structural problems in agriculture persist—and likely will be reasserted before long.

Domestic Policies Can Be Trade Barriers

Trade barriers are common in the world wheat market. They are linked in complex ways to domestic farm policies and help alter production and consumption signals. Domestic policies include price and income supports, and production subsidies. Trade policies include export subsidies, import quotas, variable import levies, and import licenses.

Trade measures are often used to ensure the effectiveness of domestic policies and/or forestall painful adjustments by farmers. In the EC, relatively high wheat support prices are an integral part of the Common Agricultural Policy (CAP). Variable levies, a type of import tax, are necessary to prevent foreign wheat from entering the EC at prices that would undercut those received by EC farmers. Without a trade barrier such as the variable levy, the CAP would have to change radically.

Domestic farm policies can also affect the development of trade policies. For instance, relatively high U.S. target prices and loan rates in the early-to-mid 1980's led to greater U.S. and foreign wheat production, U.S. export losses, and stock accumulation by mid-decade. The Export Enhancement Program, built into the 1985 Food Security Act, provides a means for the United States to match other countries' export subsidies and helps reduce surpluses.

Domestic and trade policies can effectively relocate production and alter consumption, shifting output from efficient producers who can compete with little protection to less efficient producers who often may need protection to survive. Producers who are guaranteed high and stable prices, despite surpluses or shortages, hold an artificial advantage. The most extreme cases of economic protection among the major wheat traders can be traced to Japan and the EC.

Policies can also destabilize world market prices. With the link between world and domestic wheat prices muted or broken, wider swings in world prices are necessary to adjust supply and demand to market shocks. Developing countries that are not self-sufficient, as well as free-trading exporters, confront substantial instability in world wheat prices. But, the developing countries have also been major beneficiaries of export subsidies and other related policies.

Some policies help offset the effects of instability. For instance, the U.S. loan rate-target price system has often contributed to excess stocks which, in turn, require supply controls such as acreage reduction programs. However, U.S. stocks have also helped ameliorate shocks such as the Soviet entry into the world wheat market as a major importer in the mid-1970's and likely reduced the escalation in prices to less than what would have occurred under "free market" conditions.

Levels of Support Vary Widely Among Countries

An analysis of producer subsidy equivalents (PSE's), a measure of government support, indicates that support levels vary widely among the major wheat exporters.^{1/} Between 1982 and 1986, the EC, United States, and Canada offered the highest levels of protection to their wheat producers. Australia had a much lower PSE (table A-1). Argentina had

Table A-1--Producer and consumer subsidy equivalents (PSE'S and CSE'S) for wheat, 1982-1986 averages for selected countries

	PSE	CSE
Exporters:		
European Community		
Durum	38.4	-28.2
Soft	47.1	-14.8
U.S.	36.5	-2.0
Canada	30.4	-2.7
Australia	6.8	n.a.
Argentina	4.8	9.1
Importers:		
Japan	97.8	-31.5
Taiwan	64.8	-9.2
Brazil	63.4	n.a.
South Korea	59.9	17.2
Mexico	18.8	n.a.
South Africa	18.3	21.9
India	-35.3	20.8
Nigeria	-18.7	217.3

n.a.=Not available.
Source: USDA, ERS. Estimates of Producer and Consumer Subsidy Equivalents. Staff Report No. AGES880127. April 1988.

a small positive PSE for 1982-86, even though export taxes and an overvalued exchange rate in some years produced a negative PSE.

Major wheat importers, including Japan and Taiwan, provided levels of producer support that exceeded the exporters' support. These importers' support policies for wheat are designed to divert resources from high-cost production of surplus rice. High support levels are often facilitated by state trading operations and strict border measures.

Consumer subsidies (CSE's)^{2/} are often inversely related to PSE's, particularly in countries where border measures are important. In Japan and the EC, where consumers are implicitly taxed through high border levies, producer support was relatively high. In contrast, the high levels of consumer support found in India and Nigeria were paired with relatively high producer taxation.

Although the policies used for producer assistance vary widely, many similarities appear among countries when support measures are expressed in general categories (table A-2). Price and income support policies are by far the most commonly used mechanisms to support wheat producers in all countries except Argentina. The costs of these policy tools range from 43 percent of total producer support in Canada to nearly 100 percent in the EC.

Many countries also rely to a moderate extent on input subsidies, marketing subsidies, and long-term research. Input subsidies are particularly important in Australia (for fertilizer, interest, and taxes), Japan (structural programs, farm pension plans), and the United States (FmHA loans, crop insurance). Canada relies on transportation subsidies for nearly half of its support to wheat producers. Long-term research accounts for nearly 20 percent of Australia's support.

Table A-2--Policies used for wheat producer assistance, 1982-1986 average

Policy	Australia	Canada	EC	Japan	U.S.
	--percent--				
Price/income support	65	43	100	87	73
Input subsidies	13	3	0	13	16
Marketing subsidies	3	41	0	0	2
Long-term research	19	6	1/	0	4
Other	0	7	0	0	5
Total	100	100	100	100	100

1/Negligible.

Source: Calculated from: USDA, ERS. Estimates of Producer and Consumer Subsidy Equivalents. Staff Report No. AGES880127. April 1988.

Framework for Policy Reform

At the Uruguay Round's midterm review in April 1989, negotiators agreed on a framework for both long- and short-term reform. Short-term measures are designed to freeze support and protection levels in 1989, with unspecified reductions targeted for 1990. For the long term, participants agreed upon addressing "substantial progressive reductions" in agricultural support. GATT participants were invited to develop proposals for reform by December 1989.

U.S. Proposal

The U.S.' October 1989 proposal for long term reform addresses import access, export competition, internal support, and phytosanitary measures. Under the U.S. proposal, all non-tariff import barriers would be converted to tariffs, and, along with pre-existing tariffs, would be reduced to zero or low levels over 10 years. Export subsidies would be phased out over 5 years. The proposal lists 11 specific practices, based on the GATT subsidies code, that it would ban. The proposal breaks down internal supports into three categories ranging from "red light" practices that would be phased out over 10 years (including administered price policies, transportation subsidies, and other policies that lead to excess production and distort trade) to "green light" policies that would be permitted (such as disaster relief and conservation programs).

If negotiators eventually agree to eliminate government supports that distort production and trade in agricultural commodities, the world wheat market would change substantially. The effects of policy reform would, however, depend on several factors including: the objectives and terms of reform; the nature of policies pursued during the transition; and the baseline at the time of reform.

Policy Assumptions

In this study, policy reform refers to the complete elimination of policies that alter the levels and locations of output and consumption, and the direction of trade flows, in the industrialized economies over the long run.^{3/} All domestic and trade policies that affect trade flows and prices would be phased out, including: tariffs; export assistance; quantitative trade restrictions (prohibitions, quotas); and income and price supports (loan rates, target prices, and deficiency payments). These assumptions are hypothetical and do not reflect a particular position taken by any country. Developing countries would be afforded some form of preferential treatment in this scenario. It is assumed that the Soviet Union and China do not initiate reforms as part of the phase-down of support, but instead react to policy reform by other countries. This definition is similar to the long term objectives stated in the GATT April midterm review, which called for the:

"substantial progressive reductions in agricultural support and protection...correcting and preventing restrictions and distortions in world agricultural markets".

Government support to agriculture need not be eliminated completely. Policies and programs that do not affect production, consumption, and trade would be permitted. Such policies include: income supports that are not directly linked to production, marketing, or consumption; environmental and conservation programs; disaster relief; domestic food relief; and food stockpiles.

Although policy reform would likely produce net benefits worldwide, it could entail significant costs for inefficient producers and those who have difficulty adjusting to any resulting fall in prices or rise in price variability. As a result, it is assumed that short-term measures in line with those recommended by the April midterm review would be employed to ease the transition. Domestic supports and trade barriers would be frozen and gradually reduced. Government stocks would be released gradually.

The Effects of Policy Reform on the World Wheat Market

Economic theory indicates that the elimination of government programs would produce net benefits to society through increased efficiencies and improved resource use. Production would shift to those areas that can deliver to consumers at the lowest costs. In any one country, the most efficient farmers would fare the best. Consumption shifts likely would not be as large as production shifts because consumers are less responsive than producers are to changes in price.

Economic theory is unclear as to whether world wheat trade would rise or fall after substantial trade reform. The result depends on whether importers or exporters protect their producers more. As those importers with domestic prices initially above world prices remove protection, their domestic prices would fall, production decline, and imports increase. These forces would push up world prices. At the same time, despite higher world prices, some exporting countries' production would also decline as subsidies are removed and domestic prices fall toward world prices, reducing export surpluses. If production declines were larger in the major wheat-exporting countries than in importing countries, world trade could contract rather than expand.

Although economic theory is ambiguous concerning the direction of change, empirical studies indicate that trade volume will likely fall. Estimated changes in world trade volume, which vary depending on the base year of the model and the model assumptions, include a decline of 1 percent (Tyers and Anderson) and a decline of 20 percent (Roningen and Dixit). Even if world trade falls, exports from all of the

Table A-3--Predicted effects on world wheat prices of IME trade liberalization

Study	Base	Period	Percent change from base	Countries liberalizing
IIASA 1/	1980	2000	18	OECD
Tyers & Anderson 2/	1980-82	1980-82	10	IME
		1988-90	-5	IME
		1995	25	IME
Tyers & Anderson 3/	1980-82	1985	2	IME
		1985	9	Global
OECD 4/	1979-81		-1	OECD
Roningen & Dixit 5/	1984	1985	7	IME
Roningen & Dixit 6/	1986/87	1986/87	36.7	IME
Horridge, Pearce, & Walker 7/	1986	1987	7	GATT members

1/ Parikh, et al.; 2/ Tyers and Anderson, 1987; 3/ Tyers and Anderson, 1986; 4/ OECD, 1987; 5/ Roningen and Dixit, 1987; 6/ Roningen and Dixit, 1989; 7/ Horridge, Pearce, and Walker, 1988.

current major wheat exporting countries need not fall. For instance, if EC production declines, countries such as the United States and Argentina could expand their exports.

Most studies suggest that average wheat export prices would increase, as exporters reduce their production and importers look more to the world market (table A-3). World export price estimates are projected to range from a decline of 5 percent to an increase of 37 percent. While the world price is expected to rise, the removal of high internal supports would likely reduce wheat prices paid by consumers and received by producers in countries with relatively high protection, such as the EC and Japan.

Some research suggests that after policy reform, a world supply or demand shock would result in a smaller world price movement than under the current regime. This argument is based on the concept that, with the removal of trade barriers, a greater number of producers and consumers would share in adjusting to market shocks, easing the burden on those most vulnerable to change. A variety of studies support this claim. Tyers and Anderson, for example, indicate that the coefficient of variation for wheat export prices should fall from 45 percent before policy reform to 30 percent afterwards.

Government stock reductions by the major exporting countries could offset such effects and lead to an overall increase in price instability. Stockholding countries, such as the

United States and the EC, might reduce their stocks with the elimination of support programs linked to the direct or indirect acquisition of surpluses (such as the elimination of the U.S. CCC loan and FOR programs). If world stocks were lower, market shocks (such as uncertain actions by the Soviet Union or yield uncertainties caused by the weather) could have a greater impact on prices.

Several factors are more certain. Compared with other commodities, wheat price variability is quite high and would continue to be so, even after reform. And in some countries, domestic prices, formerly insulated, could become more unstable.

Adjustments by Major Export Competitors

Among the major wheat exporters, gains from policy reform depend on the existing levels of domestic protection and different countries' comparative advantages. A country's share of the world wheat market after reform depends on the level of other countries' wheat production, the competitiveness of that country's delivered prices, and whether producers in that country find wheat more profitable than other crops. This section presents a qualitative analysis of trade reform issues, and provides an alternative perspective to the modeling approach.

For the EC—where the wheat sector is among the most heavily protected—policy reform could translate into market losses for wheat producers. Two arguments are used by those who support this claim:

One argument suggests that EC producers, faced with lower farm prices, would shift away from heavy input use in the production of high-yielding, short-straw varieties of wheat. If input use declines, yields also would decline, and with acreage constant or changing marginally, production would fall.

The second argument suggests that a sizable amount of marginal land would no longer be planted, reducing EC wheat production. Some estimates place the EC's marginal land—lower yielding acreage more suitable for less intensive uses but currently used for wheat production—at as high as 30 percent.

Not all studies agree that EC wheat production will fall. Tyers and Anderson, modeling the world wheat sector, indicate that EC output would increase by 3 percent after policy reform (table A-4). Wheat production increases in their model because wheat prices fall relatively less than the prices of alternative commodities. In contrast, the SWOPSIM 4/ model indicates that EC wheat production could decline 16 percent after policy reform.

Table A-5--Wheat production costs in principal exporting countries 1987 U.S. dollars per metric ton

Wheat production costs	United States				Argentina	Canada	United Kingdom	Australia
	Central Plains	Northern Plains	Southern Plains	Lake States/ CornBelt				
Total variable	47.66	64.71	82.14	67.02	44.34	63.67	82.64	56.53
Total fixed	91.13	92.14	91.61	83.71	42.33	115.59	64.23	102.56
Total production	138.79	156.85	173.75	150.74	86.67	179.26	146.87	159.09
Total production costs minus land charge	111.90	132.97	147.70	122.33	70.34	137.39	117.78	125.07
Avg. Yield 1980-85 (metric tons/hectone)	2.2	2.1	1.7	2.8	1.8	1.9	6.4	1.3

Source: Barkema and Drabenstott

world wheat market after policy reform depends largely on relative commodity prices and costs of production. Although the nature of relative prices after policy reform is a difficult issue, cost of production data provide an indication of potential U.S. competitiveness in the world wheat market.

On balance, U.S. wheat production costs are competitive with most other major exporters (table A-5). But the United States can not claim an outright cost advantage. An analysis of relative costs indicates that, in some years, Argentina—a country that uses almost no commercial fertilizer—has had total wheat production costs that are almost 35 to 50 percent lower than in other major exporting countries (Barkema and Drabenstott).

An analysis of “average” production costs among countries or regions is, however, tenuous. The United States produces much larger volumes of wheat than all other major exporters except the EC. With U.S. production at levels nearer those of export competitors, U.S. average production costs for wheat could be substantially lower. This is because high-cost production, often made possible by high domestic supports, would likely be the first to be eliminated.

Empirical evidence supports this concept. Data from USDA for 1974, 1981, and 1986 suggest that the variable production costs of a large part of each crop are below the average variable costs of most other countries (Barkema and Drabenstott; Glaze and Ali). However, regional differences in comparative advantage would be important in determining the final production mix and level of average output cost. For instance, overall average variable costs might not decline if areas with the lowest-cost wheat production were the first to leave wheat for the production of other, more profitable crops.

Comparisons of production costs also should recognize that costs differ according to a variety of factors. Production costs in any year vary widely from farm to farm within a region or country because of differences in yield potential, technology, and management expertise. Some of a country's total crop is produced at a cost above the country's or

region's average production cost, and some is always produced at a cost well below the average (Barkema and Drabenstott).

Policy reform may affect production costs and alter relative country rankings. If the prices received by producers decline so that production within certain regions declines markedly, resources will move out of agriculture. Changes in land values in affected areas, in particular, could have a large effect on the costs of production.

The United States has certain advantages to which many other countries may not have access. Much of the United States' current competitiveness in world trade stems from its unmatched research capabilities and its well-developed transportation, marketing, and distribution system.

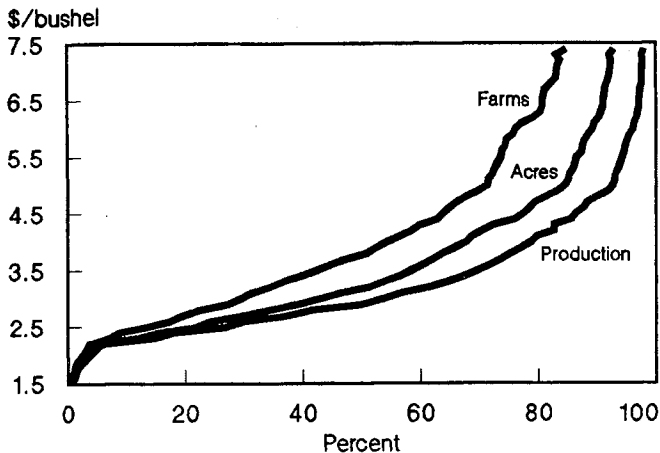
Effects on U.S. Production

Depending on relative prices and average variable costs, U.S. wheat output would likely rise somewhat in the short run as the acreage reduction program is eliminated. But the amount of U.S. land reentering production might be higher in the short run than in the long run. Over the long run, some of this land would likely be removed from production by those producers who could not cover their total costs or absorb any increased variability in returns.

Conflicting forces affect the level of wheat production that would prevail after policy reform. If a substantial amount of cropland reentered production, average U.S. wheat yields would fall because operators usually idle less productive land. The increase in wheat production because of this factor may be relatively small. At the same time, some land with fairly low productivity, now profitable in wheat production because of government supports, might be taken out of production. Hence, U.S. wheat production could either rise or fall, with the precise change depending on the relative prices of alternative commodities compared with production costs in different areas of the country.

Figure A-1

Cumulative Distributions for Wheat By Total Economic Costs per Bushel, 1986



Planted acre basis.

Several factors indicate that the cultivation of less productive land may not increase as much as suggested by some empirical evidence. Information developed from USDA's Farm-level Budget Generator indicates that about 10 percent of all U.S. wheat in 1986 was produced at a total economic cost of \$4.50 or more per bushel (figure A-1). Without a price rise to at least \$4.50, consistent, year-to-year production at this economic cost would not be feasible over the long run without government support or subsidization from other aspects of the producer's operation.

This figure must be interpreted carefully. Those farmers who produced wheat at an economic cost of \$4.50 or more per bushel in 1986 would not likely face costs that high in all years. Some producers in the high-cost portion of the curve may have faced abnormal circumstances in 1986. Many of these producers would likely be on a lower-cost portion of the curve under "normal" conditions. Policy reform would likely have less of an impact on these producers than on those that consistently produce wheat at a cost of \$4.50 or more per bushel.

Overall, the effect of production costs on the structure of farming depends on the relative efficiency of different farm sizes. The 10 percent of U.S. wheat produced at an economic cost of \$4.50 or more per bushel in 1986 appeared on about 35 percent of U.S. farms, indicating that larger farms are frequently more efficient than smaller farms. If U.S. wheat prices rise somewhat (with a rise in export demand, for instance), but programs no longer provide support, then the larger producers (those that appear to have lower costs) may in the long run acquire ownership of smaller, higher-cost farms—those with heavy debt loads, or those who find it difficult to cope with any rise in price variability. In addition, the more efficient farms may find it profitable to bring set-aside acreage back into production with a modest price rise, an activity quite unlikely on many high-cost farms.

An analysis of cash expenses indicates that these changes would likely evolve slowly over time. Seventy-five percent of all U.S. wheat farms producing over 90 percent of U.S. wheat produced at a total cash cost of \$2.75 per bushel or less in 1986. With season average prices at levels of the late 1980's, farmers producing at \$2.75 or less per bushel would be able to cover their cash costs. But the long-run situation would likely favor the lower cost, more efficient producers described previously.

Effects on Asset Values

Adjustments in the U.S. wheat sector would likely affect asset values. U.S. farm incomes may fall somewhat and become more variable in the short run if government support to agriculture is completely removed. This is because any increase in cash receipts caused by a rise in world wheat prices likely would be offset by a fall in direct government payments to wheat producers. This situation would likely cause land prices to fall. But a significant rise in export demand over the long run would help offset any land value declines and could potentially result in an increase in incomes. In addition, decoupled payments could be used to maintain producer incomes at current levels.

Although lower land prices in the short run suggest that individuals who would like to farm would find it easier to enter agriculture, that would not likely be the case. With greater income variability and the possibility of lower incomes, particularly over the short run, potential farmers, particularly those with limited capital, would likely be discouraged from entry.

Intercommodity Relationships

Price and yield relationships among commodities are important in determining the final wheat production mix. In the Southern Great Plains, hard red winter production competes primarily with soybeans, sorghum, sunflowers, oats, and cattle. Hard red spring and durum production in the Northern Great Plains competes primarily with barley, sunflowers, corn, and cattle. The changing mix of these commodities in U.S. agriculture depends on the comparative advantage the United States has in the production of each with respect to the rest of the world.

The potential decline in EC wheat exports has important implications for the regional distribution of U.S. wheat production. The EC exports a class of wheat that is priced on world markets similarly to soft red winter, a low-protein wheat grown in widespread areas east of the Mississippi River, that is usually the United States' lowest-priced wheat. If the United States supplies former EC markets, it will likely expand its soft red winter production.

Soft red winter wheat production competes for land with a variety of other crops. States in the eastern Corn Belt (Illinois, Indiana, Ohio), where large quantities of soft red winter wheat are now grown, may have a greater advantage in corn and soybean production under policy reform. The Southeastern States, many of which are also major soft red winter wheat producers, may have a greater comparative advantage in other crops after policy reform.

If U.S. hard wheat prices were high relative to average costs, output in the Great Plains would likely increase as additional land comes back into production. On the other hand, if prices do not cover costs, areas in which farmers have few alternatives would be hurt badly. The effect could be particularly strong in the Southern and Northern Plains, where costs are relatively high (see table A-5).

Over much of the Plains, wheat production, supplemented by cattle grazing, is a mainstay. If wheat production declined substantially in these areas, the structure of farming would likely change dramatically. Farm numbers may decline if other income-earning prospects are weak. If this were to happen, labor would move out of affected areas, land values would fall, and input industries would decline.

Transition Policies

Several policy tools might be implemented to ease structural transitions. Farmers may be assisted by decoupled payments, for instance, which are not tied to production. Such payments are similar to the trade adjustment assistance that workers in other industries can currently receive if they are materially injured by international trade. Alternatively, a revenue insurance program, in which farmers pay an insurance premium to receive benefits when farm revenues fall below some trigger level, could be implemented.

These types of programs would support producer incomes without distorting production and consumption locations. They have the potential to offset much of the income variability discussed earlier and to allow many farmers to remain profitably in wheat production.

The United States has been moving toward a more market-oriented policy for the major grains. The Food Security Act of 1985 includes features that increase the market's influence on producers' decisions. Target prices and loan rates have fallen, program yields have been frozen, and it is more difficult to increase the number of acres eligible for program payments.

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FOOTNOTES

^{1/} A PSE is defined as the level of subsidy that would be necessary to compensate producers for the removal of government programs for a particular commodity. PSE's are often measured as the total value of policy transfers to producers as a percent of total producer agricultural returns (cash receipts plus direct Government payments).

^{2/} A CSE measures the level of subsidy that would have to be paid to consumers to compensate them for the removal of agricultural policies. It is measured as the ratio between the value of policy transfer to consumers and total consumer expenditures for a commodity. A positive CSE represents consumer support, while negative values refer to consumer taxation.

^{3/} The industrial market economies include: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Greece, Italy, Ireland, Japan, Luxembourg, Portugal, the Netherlands, New Zealand, Norway, Spain, Sweden, the United Kingdom, the United States, Switzerland, and West Germany. In this report, Argentina is also assumed to participate in multilateral policy reform.

^{4/} "SWOPSIM" is an acronym for "Static World Policy Simulation Model."

^{5/} Producer prices in the text discussion refer to season average prices received by farmers and do not reflect incentive prices that include government payments.

A Review and Analysis of the EEP for Wheat 1/

Karen Z. Ackerman and Mark E. Smith

Abstract: The Export Enhancement Program (EEP) is the major export promotion program authorized by the Food Security Act of 1985. The program is designed to help U.S. exporters compete in world markets, to confront subsidized exports of competitors (especially the European Community), and to encourage trade negotiations. This analysis concerns the targeting and effectiveness of the program for wheat, the major commodity sold under the program. The program grew from its announcement in 1984/85 through 1987/88 when 44 countries were targeted for wheat. Since the program does not operate in isolation of other influences on the world wheat market, its effectiveness varies as other conditions change. Findings indicate that the program boosted U.S. wheat exports the most during 1986/87, when supplies were excessive, and was less effective in 1987/88.

Keywords: EEP, wheat, competition, European Community, export programs.

The Export Enhancement Program (EEP) was announced by Secretary of Agriculture John Block on May 15, 1985. The EEP was developed in an environment of sharply lower U.S. agricultural exports, subsidized competition, high Commodity Credit Corporation (CCC) stocks, and concern over the welfare of the farm sector. From 1981 through 1985, high and inflexible loan rates, reduced demand from major importers, and a sharply appreciating dollar had contributed to a nearly 30-percent decline in U.S. agricultural export volume.

As the 1984/1985 wheat marketing year (June/May) drew to a close, policymakers looked to the EEP as a means to bolster export competitiveness. The EEP was designed to make U.S. exports more competitive by reducing the export price of selected U.S. commodities sold to targeted markets. Under the EEP, exporters were issued certificates redeemable for commodities in CCC inventories, enabling them to match the prices of subsidizing competitors.

In June 1985, shortly after the EEP was announced, four criteria to be used as guidelines for the operation of the EEP were published in the *Federal Register*. These four interrelated criteria were: targeting, additionality, cost effectiveness, and budget neutrality. Two of the criteria—targeting and additionality—were analyzed by ERS economists. As defined in the *Federal Register* notice of June 1985, EEP sales were to be targeted on specific market opportunities, especially those that challenge competitors who subsidize their exports. EEP sales also were expected to increase U.S. agricultural exports above what would have occurred in the absence of the program.

Wheat has been the major commodity selected for EEP sales, accounting for over 80 percent of the value of all commodities sold under the program and close to 70 percent of

the value of the bonuses awarded. Over 70 million tons of wheat have been offered to 44 countries since May 1985, resulting in sales of more than 60 million tons of wheat.

Targeting and Growth of EEP Wheat Sales

The first four countries targeted for wheat sales under the EEP in 1985/86 were Algeria, Morocco, Egypt, and Yemen (see table B-1). The European Community (EC) had been active in Algeria and Morocco in the previous year. The EC had not exported wheat to Egypt in 1984/85, the final year of the U.S. blended export credit program. 2/ The United States and Australia had been the major exporters to Egypt and Yemen.

In the 1985/86 trade year (July/June), U.S. wheat exports fell from 38 million tons to 25 million. The United States increased its wheat exports to some countries that had been offered wheat under the EEP, such as Algeria. Increased exports to other countries targeted under the EEP were not reflected in 1985/86 exports due to lags between offers, accepted bids, and actual shipments. EEP shipments accounted for an estimated 12 percent of total U.S. wheat exports. While the United States matched EC subsidies in the North African markets in 1985/86, U.S. exports declined to the Soviet Union and China, which were not offered wheat under the EEP until the following year. The U.S. share of the world market in the 1985/86 trade year (July/June) declined from 36 percent to 29 percent, while the EC, Australia, and Canada all increased their shares of the world wheat market.

Table B-1--Wheat sales under EEP and average bonuses by marketing year

Country	1985/86		1986/87		1987/88		1988/89		Total	
	Sales (mts)	Average Bonus (\$/mt)	Sales (mts)	Average Bonus (\$/mt)	Sales (mts)	Average Bonus (\$/mt)	Sales (mts)	Average Bonus (\$/mt)	Sales (mts)	Average Bonus (\$/mt)
North Africa and the Middle East:	3,269,100	27.65	5,138,000	35.38	6,820,000	34.21	5,024,750	18.47	20,251,850	29.54
Algeria	1,000,000	34.18	890,000	44.05	2,151,000	35.54	1,159,000	19.18	5,200,000	33.09
Egypt	697,500	22.59	1,435,000	32.02	1,887,000	33.47	2,045,750	19.23	6,065,250	27.07
Iraq	0	0	440,000	23.88	782,000	28.08	770,000	14.05	1,992,000	21.73
Jordan	75,000	28.23	300,000	34.89	0	0	140,000	19.37	515,000	29.70
Morocco	890,000	25.50	1,200,000	41.96	1,350,000	37.10	760,000	20.69	4,200,000	33.04
Tunisia	50,000	26.91	550,000	24.32	475,000	36.66	0	0	1,075,000	29.89
Turkey	506,600	26.18	248,000	40.18	0	0	50,000	10.45	804,600	29.52
Yemen	50,000	20.98	75,000	26.00	175,000	24.23	100,000	14.48	400,000	21.72
Eastern Europe and the Soviet Union:	20,000	33.81	5,093,050	40.09	10,633,800	33.19	4,612,000	20.85	20,358,850	32.11
Bulgaria	0	0	0	0	150,000	37.68	0	0	150,000	37.68
Poland	0	0	500,000	41.38	1,475,000	39.79	0	0	1,975,000	40.19
Yugoslavia	20,000	33.81	593,050	29.37	204,000	32.68	12,000	9.92	829,050	30.01
USSR	0	0	4,000,000	41.52	8,804,800	32.01	4,600,000	20.88	17,404,800	31.25
China	0	0	1,000,000	43.98	4,940,000	37.92	6,350,000	19.20	12,990,000	27.95
Asia:	152,400	22.05	210,000	35.74	2,289,500	25.80	2,703,000	14.14	5,354,900	20.20
Bangladesh	0	0	0	0	294,500	29.96	498,000	18.29	792,500	22.63
India	0	0	0	0	1,000,000	24.48	1,000,000	18.08	2,000,000	21.28
Philippines	152,400	22.05	0	0	845,000	24.38	855,000	8.01	1,852,400	16.63
Sri Lanka	0	0	210,000	35.74	150,000	34.50	350,000	11.99	710,000	23.77
Sub-Saharan Africa:	20,000	25.25	302,500	38.24	222,600	33.75	248,750	20.40	793,850	31.06
Benin	0	0	30,000	27.00	0	0	0	0	30,000	27.00
Senegal	0	0	100,000	46.48	0	0	0	0	100,000	46.48
West African Countries	0	0	79,500	40.34	128,600	34.73	160,150	24.48	368,250	31.48
Zaire	20,000	25.25	93,000	31.21	94,000	32.41	88,600	13.02	295,600	25.73
Latin America:	0	0	0	0	526,000	31.67	1,187,075	21.65	1,713,075	24.73
Brazil	0	0	0	0	66,000	24.27	0	0	66,000	24.27
Colombia	0	0	0	0	260,000	30.52	195,000	14.07	521,000	23.47
Mexico	0	0	0	0	200,000	35.62	992,075	23.14	1,192,075	25.23
Western Europe:	0	0	0	0	89,800	31.96	79,500	8.45	169,300	20.92
Canary Islands	0	0	0	0	7,300	33.60	8,000	15.06	15,300	23.91
Finland	0	0	0	0	82,500	31.82	63,500	6.46	146,000	20.77
World total	3,461,500	27.43	11,743,550	37.41	25,521,700	33.68	20,205,075	18.83	60,931,825	29.12

Source: Calculated from ERS database of EEP press releases.

In the 1986/87 marketing year, the EEP for wheat was expanded to the Soviet Union, China, and additional Middle Eastern, African, and Eastern European countries. Shipments under the EEP topped 6 million tons, about 25 percent of 1986/87 U.S. wheat exports. Wheat exports to the Soviet Union increased very slightly, but decreased to China as EEP wheat sales to those countries announced in the spring of 1987 were not shipped until after the beginning of the 1987/88 marketing year. U.S. exporters increased wheat sales to Algeria and Morocco, at the expense of the EC. As the EC lost market share in some North African markets, it moved into other markets such as Brazil and Colombia. The U.S. share of the world wheat market increased slightly.

The 1987/88 marketing year was characterized by a large volume of EEP offers and sales. An estimated 28 million tons of wheat were shipped under the EEP in 1987/88, accounting for over 60 percent of U.S. wheat exports in that year. U.S. wheat exports increased by over 50 percent from 1986/87, and the U.S. share of the world market topped 40 percent for the first time since 1982. A few countries such as Brazil, Colombia, India, and Mexico were offered wheat under the EEP for the first time in 1987/88, and many countries had their offers renewed.

Over half of the wheat sold under the EEP in 1987/88 went to the Soviet Union and China. The two countries accounted for 35 percent of total world wheat imports in 1987/88. The U.S. share of the Soviet wheat market increased to 57 percent from 5 percent in the 1986/87 trade year, while the U.S. share of the Chinese wheat market increased to 30 percent from 3 percent.

Activity under the EEP declined in 1988/89 as U.S. wheat exports fell in the wake of the 1988 drought. Sales under the EEP declined 20 percent from a year earlier. However, U.S. exporters continued to make large sales under the EEP to North African and Middle Eastern countries, China, and the Soviet Union.

In 1989/90, U.S. wheat production is 13 percent higher than last year's drought-stricken crop, but still below 1987/88 production. Adverse weather conditions cut the winter wheat crop sharply, and spring wheat yields were reduced by a period of hot, dry weather. The small crop and low carryin have reduced U.S. exportable supplies. At the same time, wheat output from competing exporters, especially Canada, will be higher.

EEP Bonuses for Wheat

EEP bonuses have provided significant price subsidies to help exporters compete with subsidized competitors. The average bonus for the 4 marketing years has been the equivalent of 25 percent of the U.S. f.o.b. wheat price at Gulf ports. The U.S. f.o.b. price at Gulf ports is for sales of hard red win-

ter wheat only, while the monthly EEP bonuses are averages of the bonuses for sales made under the EEP of all varieties of wheat. Table B-2 shows the ratio of bonus to a representative export price since 1985. The ratio has ranged from a high of 40 percent in December 1986 to a low of 2.1 percent in July 1989. Overall, about \$1.8 billion in commodity certificates have been awarded for EEP wheat sales.

The size and range of EEP bonuses over time are generally affected by the differential between U.S. and EC export prices, which in turn is affected by U.S. and EC policy changes, macroeconomic factors, and exportable supplies available on world markets. As of October 1989, the monthly average EEP bonus has ranged from a high of \$45.27 per ton in October 1985 to a low of \$3.57 per ton in July 1989 (figure B-1).

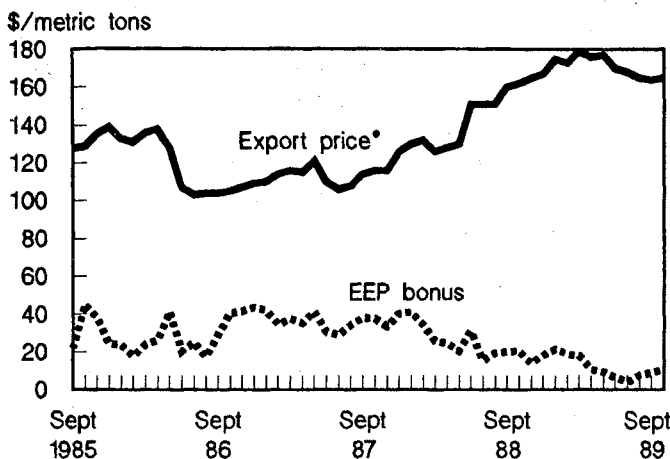
Table B-2--U.S. wheat export prices and EEP bonuses

Marketing year	US export Price (NO.2 HRW, FOB Gulf) (\$/MT)	Average EEP bonus* (all wheat classes)	Bonus as a % of Representative Export price (%)
1985/86	June	134	n.a.
	July	130	n.a.
	August	125	n.a.
	Sept	128	22.15
	Oct	129	45.27
	Nov	135	38.32
	Dec	139	24.05
	Jan	133	23.79
	Feb	131	17.69
	March	136	23.83
	Apr	138	26.22
	May	128	41.21
	Avg: 9/85-5/86	133	29.17
1986/87	June	107	20.12
	July	103	24.98
	Aug	104	17.35
	Sept	104	29.17
	Oct	105	40.51
	Nov	107	41.38
	Dec	109	43.60
	Jan	110	41.93
	Feb	114	34.46
	Mar	116	37.46
	Apr	115	35.37
	May	121	41.30
	Avg 86/87	110	33.97
1987/88	June	110	30.45
	July	106	28.90
	Aug	108	34.30
	Sept	114	38.04
	Oct	116	37.62
	Nov	116	33.53
	Dec	126	40.35
	Jan	130	41.01
	Feb	132	34.39
	Mar	126	25.73
	Apr	128	24.39
	May	130	20.42
	Avg 87/88	120	33.68
1988/89	June	151	30.94
	July	151	15.28
	Aug	151	19.09
	Sept	160	19.85
	Oct	162	20.31
	Nov	165	13.95
	Dec	167	17.91
	Jan	175	21.3
	Feb	173	18.86
	Mar	179	17.92
	Apr	176	10.51
	May	177	9.21
	Avg 88/89	166	18.83
1989/90	June	170	6.35
	July	168	3.57
	Aug	165	7.45
	Sept	164	8.81
	Oct	165	10.34
	Avg 89/90 To Date	167	9.54

* EEP Bonus is weighted by volume of individual sales.

Figure B-1

U.S. Wheat Export Prices and Average EEP Bonuses



*U.S. No. 2 hard red winter wheat at Gulf ports.

Unlike a uniform subsidy targeted to all exports, the EEP has been targeted by country. Thus, bonuses may vary by country. In general, bonuses have been higher for the more contested markets and lower in those where the EC has had less of a presence. From time to time, the EC offers special restitutions to specific markets above and beyond standing restitutions. For example, the Soviet Union, certain North African countries, and Poland are among countries that have received special EC restitutions. Table B-1 shows that some of the highest EEP bonuses were for exports to the Soviet Union, specific North African markets (Algeria, Morocco), China, and Poland in certain years. Bonuses to countries in which the United States has a freight advantage, such as the Philippines, have been lower. Bonuses also have been lower for countries that place a premium on U.S. wheat.

In recent years, bonuses have increased slightly from August through the fall months as the newly harvested EC crop has entered the world market. Increased global supplies lower the world price for wheat and boost competition among exporters for highly contested markets.

Competitor Response and Effects on World Market Shares, Export Revenues, and EC Restitutions

The EEP has been one factor affecting U.S. and competitors' shares of world wheat trade. An ERS study shows the EEP responsible for a 1- to 7-percent increase in the U.S. share of world wheat trade in 1986/87. The EC's share of the world wheat market was about 18 percent in 1985/86 and 1986/87, but declined to 15 percent in 1987/88. In 1988/89, the EC's market share increased to 21 percent, due mainly to a decrease in world exportable supplies, especially in Canada and the United States.

As shown in figure 2, other exporters' shares of world wheat trade also have changed since 1985. Both Argentina and

Australia experienced reduced wheat production and loss of market share in certain recent years. Since 1985, Australian wheat acreage declined due to very high beef and wool prices relative to world wheat prices. In Argentina, wheat area fell because of flooding one year and drought the next. Canada increased its share of the world market from 1985/86 mainly by lowering export prices. It supported producers with high government payments under the Western Grain Stabilization Program and deficiency payments under the Special Canadian Grains Program.

The EC maintained its share of the world wheat market in the first 2 years after the enactment of the 1985 Food Security Act by increasing its restitutions for wheat from \$365 million in calendar 1985 to an estimated \$1.8 billion in 1988. The EC had to lower its export prices with higher per unit restitutions to compete with more competitive U.S. prices and large global exportable supplies. A study by Bailey(1) suggests that about 35-40 percent of the EC's budget increase can be attributed to the EEP, while lower loan rates and dollar depreciation accounted for most of the remainder. Seitzinger and Paarlberg(6) found that EC wheat export revenues declined by 5 percent in the second quarter of 1987 after accounting for the decrease in revenues due to higher EC restitutions. For the 1988 marketing year, the rise in world wheat prices allowed the EC to reduce its subsidies.

Additionality

Additionality is defined here as the increase in total wheat exports attributable to the EEP. The concept of additionality is important to the evaluation of the EEP since the extent to which the EEP boosts exports will affect domestic wheat prices, government farm program outlays, and economic activity in the farm sector.

Several factors affect the additionality of the EEP. These include:

- (1) Market price responsiveness
- (2) Competitor price response
- (3) Import substitution among suppliers
- (4) Market conditions
- (5) Market shares of exporters and importers
- (6) Importer expectations

Market Price Responsiveness

Market price responsiveness, or the importing country's price elasticity of demand, is an important determinant of additionality. A country with a relatively high price elastic-

ity of demand will show a large change in volume purchased given a change in wheat prices. Hence, if the price of wheat is lowered to that country, its overall imports of wheat will grow. The subsidizing exporter will benefit from higher exports.

Most countries' short run import demands for wheat are relatively unresponsive to changes in the world wheat price. This stems from the fact that wheat is a staple good and has few substitutes. However, some importers are more responsive than others, and whether more or less responsive countries are targeted will affect the program's additionality.

Competitor Response

A second factor is competitor response to price changes. A competitor that is highly responsive to price changes will likely retreat from the EEP-targeted market when confronted with EEP subsidies. The competitor will then either hold greater stocks or attempt to sell in another market. In the long run, the competitor may reduce production if the expectations are for low wheat prices. A competitor that is less responsive to price changes would be able to hold markets by lowering export prices through export restitutions or by absorbing losses through a grain board. For example, both the Canadian and Australian governments supported their wheat boards' exports in 1986/87 when wheat prices fell in many markets. The competitor could also retaliate in the targeted market or could enter other non-targeted markets. In these cases, the overall effectiveness of the EEP would be lower.

Import Substitution Among Suppliers

Even if a country's overall demand for a commodity is insensitive to price changes, it may be responsive to relative prices among suppliers offering somewhat the same product. Because there is some substitutability among wheat from dif-

ferent exporters, importers can and do switch suppliers as relative prices offered by competing suppliers change. However, price is only one aspect of an importer's decision. The importer may also consider other factors such as quality and offers of credit in making his decision. Substantial competition in the world wheat market indicates that opportunities for switching suppliers are common, especially during periods of large exporter supplies relative to world import demand. Additionality is expected to be higher in those markets where importers switch sources to take advantage of the lowest possible price.

Market Conditions

Market conditions also affect the EEP's effectiveness in increasing exports. Larger world supplies will motivate other exporting countries to provide support for the export of their commodities, making them more attractive to potential importers. The EEP is a better tool for export expansion when global wheat supplies are large and competition for markets is fierce, as in 1986/87. In an environment of tighter exportable supplies and increased competition for supplies among importers, additionality may decline.

Market Share of Exporters and Importers

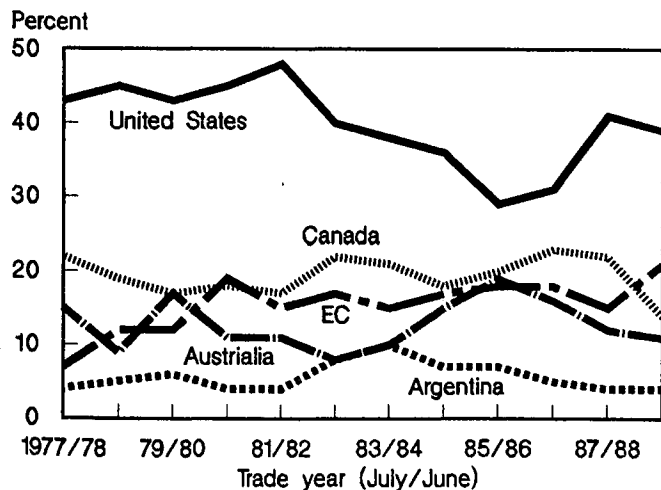
Lower additionality is likely in markets where the United States has a dominant market share compared to other exporters (for example, South Korea in 1983/84), and those in which U.S. exporters have lower transportation costs. However, if the United States holds a small share of a market, an export subsidy may help boost U.S. exports either by increasing total imports of the subsidized commodity or by expanding U.S. exports at the expense of other suppliers. For example, in markets such as South Korea, the additionality of the EEP would come less from displacing other exporters and more from increasing overall imports by the Koreans in response to lower prices.

Higher additionality is expected for importers that use their market power to extract the best possible terms of sale from possible suppliers. Large importers likely would not purchase from the United States without a subsidy during periods of large excess supplies so long as they expect to extract subsidies from other exporters.

Importer Expectations

Once the EEP is implemented, importer expectations of being eligible for the EEP, coupled with changes in world wheat prices, would affect the continued additionality of the EEP. Once an initiative is offered, an importer will likely expect it to be continued. The additionality in this case would likely be high since the importer might not buy from the United States without the EEP if price expectations remain constant. If world wheat supplies tighten, resulting in expectations of higher prices, the importer might purchase without the EEP. In this situation, additionality would be lower.

Figure B-2
World Wheat Trade Shares



Estimates of EEP Additionality

ERS research credits the EEP with increasing U.S. wheat exports, but recognizes the importance of other factors, too. The studies below generated different results for different time periods, but suggest that the EEP had the biggest effect on wheat exports during the 1986/87 marketing year. One of the limitations of these studies is that it is not known to what extent the EC would have subsidized markets in the absence of the EEP. However, it can be assumed that the EC would have pursued markets aggressively in the absence of the EEP given the EC's transformation from net grain importer to major exporter.

Many factors contributed to expanded U.S. exports between 1985/86 and 1987/88, including lower price support loans rates, dollar depreciation, expanded import demand by the Soviet Union and China, and lower and poorer quality supplies in other exporting countries. Bailey(3) estimated that the EEP accounted for about 30 percent of the increase in U.S. wheat exports in 1986/87 and about 20 percent in 1987/88 and 1988/89.

EEP sales were modest in 1985/86, the first year of operation, and had only a small effect on exports. Seitzinger and Paarlberg(6) estimate that the first 6 months of program sales generated a 2-3 percent gain in wheat exports—a relatively small effect, but one that helped offset slumping wheat exports.

As the EEP grew, its contribution to exports also grew. Seitzinger and Paarlberg(6) estimate that wheat exports grew 12-14 percent due to the EEP in the second quarter of 1987, while Bailey(1) estimated that exports grew 20 percent in 1986/87 due to the EEP. Haley(4) estimated increases in U.S. wheat exports due to the EEP of 10 to 30 percent under different assumptions about how aggressively the EC would have subsidized its wheat sales in the absence of the EEP. The 30-percent increase assumes that even without the EEP, the EC would have targeted special refunds for sales to individual countries in addition to its usual restitutions.

Still larger EEP sales in 1987/88 did not, in themselves, produce even larger export gains. Bailey(2) estimated that the EEP increased wheat exports by somewhat less than 10 percent even though sales under the program were much larger than in earlier years.

Implications of EEP Analyses

The EEP is most effective as a tool to increase wheat exports when it is carefully targeted. The choice of targeted markets is important because some countries will increase their wheat imports more than others in response to reduced prices. The response of competitors is important, too. If the EC lowers its prices further to counter the EEP, exports will increase less than otherwise. The United States must also be

able to maintain its exports to nontargeted markets at the same time that it makes EEP sales if it wants to see total exports expand. The EEP is also more effective in enhancing exports when U.S. and global wheat supplies are large and exporters must compete intensely for import markets. In an environment of tighter exportable supplies and increased competition among importers, the additionality of the EEP may be lower.

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- (4) Haley, Stephen L. "Evaluation of Export Enhancement, Dollar Depreciation, and Loan Rate Reduction for Wheat." Staff Report No. AGES 89-6. U.S. Dept. Agr., Econ. Res. Serv., April 1989.
- (5) "Notices," *Federal Register*, Vol. 50, No. 108, June 5, 1985, pp. 23750-23751.
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FOOTNOTES

^{1/} This article highlights sections of an interagency study released on July 31, 1989, by Under Secretary Richard Crowder as testimony before the House Subcommittee on Wheat, Feed Grains, and Soybeans. USDA agencies participating in the study included the Office of Budget and Program Analysis, the Foreign Agricultural Service, the Economic Analysis Staff, and the Economic Research Service. ERS contributors to the study included Mark E. Smith, Nicole Ballenger, Karen Ackerman, Stephen Haley, and Kenneth Bailey (formerly of ERS). Ann Hillberg Seitzinger, formerly of Purdue University, also provided ERS with an analysis of the EEP.

^{2/} Under the CCC's blended credit program, direct Government loans were combined with Government-guaranteed credit.

Long Term Prospects for China's Wheat Imports

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Abstract: Assessing China's import demand for wheat is difficult because of its unstable political conditions, which are likely to remain for years to come. Larger sown area and higher yields are expected to boost wheat production, but rising incomes and population growth may swell demand beyond domestic output. China's economy could grow at a real growth rate of up to 5 percent and the economy will be mobilized to earn foreign exchange. China's leaders likely will continue to support urban consumers by allocating foreign exchange to import wheat to fill the gap between domestic supply and demand. Thus, wheat imports may rise substantially in the 1990's.

Keywords: China, agricultural policy, population, economic growth, income, stocks, wheat yields, and imports.

Introduction

China is the world's largest wheat producer, with a history of cultivation spanning 3,000 years. Although wheat production rose sharply after rural reforms were initiated in 1978, population gains and rising incomes over the last decade have boosted demand over domestic supply, necessitating large wheat imports. This pattern likely will be repeated in the 1990's.

Agricultural Policy

Political movements in China, such as the Great Leap Forward, the Cultural Revolution, and the rural reforms in the early 1980's profoundly affected agricultural production and trade. It is useful therefore to remember the importance politics plays in China's economy as one examines China's long term economic behavior. At the end of 1988, few China watchers anticipated the events in Tiananmen Square in June 1989. The turmoil in Beijing, the subsequent clearing of Tiananmen Square, changes of political leaders, and a new political atmosphere all underline the difficulty of developing long term economic and trade forecasts.

In the 1990's, China's political system will likely deal with the political succession of Deng Xiaoping. It is likely to be a period of political instability as new leaders are installed. While it is difficult to forecast the kinds of economic policies that will take shape in the next decade, some of the current problems leaders will face are clear.

The land contract system provided great impetus to farmers to produce in the early part of the 1980's. Villages contracted with individual farm households to cultivate specific plots of land for 15 years. But cadres currently are using administrative measures to focus farmers' attention on output for the current year. Hence even though farmers have a 15-year contract for their land, other measures force them to

act on a year-to-year basis. Some farmers are happy with their contracts, but others want to give up farming to work in rural industry.

Experiments in various locations are seeking to find ways that will allow some farmers to leave farming and permit more proficient farmers to consolidate land holdings to form efficient-sized production units. However, these experiments make farmers nervous about their hold on their 15-year contract land. The bottom line is that farmers do not have confidence in the government and party land tenure policy. They have not invested funds in their land. Rather, they have invested in rural housing and rural industry, which they consider more secure and provide higher rates of return.

China's current leadership likely will not resolve the problems with the land tenure system very soon. Leaders could make the situation much worse if they try to force farmers back into the commune system of the 1960's and 1970's. Even if the land tenure system is improved in the coming years, the benefits would probably not be realized for several years. Thus the land tenure system is not expected to provide incentives to boost crop yields in the coming decade.

Farmers' reluctance to invest in their land has undoubtedly limited agricultural production gains in the last half of the 1980's. Government investment in agriculture fell during the early part of the decade, but began to rise in 1989. In the next decade, China's leaders are likely to modestly increase investment in agriculture.

In the 1980's, rural enterprises substantially increased output so that by the end of the decade more than half of rural output came not from agricultural products, but from rural industry, construction, transportation, services, and commerce. In 1989 the central government launched a campaign to slow the growth of these enterprises which provide unwelcome competition with state-owned enterprises for scarce resources. The campaign has been partially successful.

Growth of rural industry in the coming decade probably will be slower than in the 1980's. During the early 1980's output expanded rapidly because administrative barriers produced inefficiencies. Rural reforms provided an environment in which quick gains could be made. Those one-time gains have been achieved and growth in the future will depend on investment, technology, and more efficient administration. Yet rural areas need healthy industrial growth to absorb rural laborers who have given up farming. The formation of efficient farm production units is tied to the expansion of rural industry. If the party restricts the growth of rural industry to protect its own state-owned enterprises, the land consolidation program and crop productivity likely would be affected.

Urban Consumers

Government and party leaders likely will continue to favor urban consumers. Government cadres are expected to continue the grain purchase system that forces farmers to sell wheat at below market prices. The government would deliver the product to urban consumers at prices below what they paid farmers for the raw product and would foot the bill from government revenues. The cheap grain supply policy will likely continue.

In the latter part of the decade, however, there may be major revisions in the urban grain supply system. Even with changes in the grain supply system, wheat probably will continue to be an important and growing part of consumers' diets.

Economic Development

Despite slowing from the high growth rates of the early 1980's, the economy is assumed to continue to expand rapidly in the next decade. Real GNP growth may be around 4.5 percent to 5.0 percent a year. Personal incomes could rise 3 percent per year.

In the next decade China's leaders are expected to continue to have a bias in favor of developing industry. Investment in the agricultural sector probably will continue to lag behind that for industry.

While tourist revenues are down in 1989, and despite international dismay over the events in Tiananmen Square, overall trade patterns continue. In the 1990's China's leaders are expected to vigorously promote exports and will import goods and technology vital to the overall development and political security of the country. It is reasonable to assume that China's leaders will not shut the foreign trade door and that markets in other countries will remain open to China's goods.

Figure C-1
China's Wheat Area

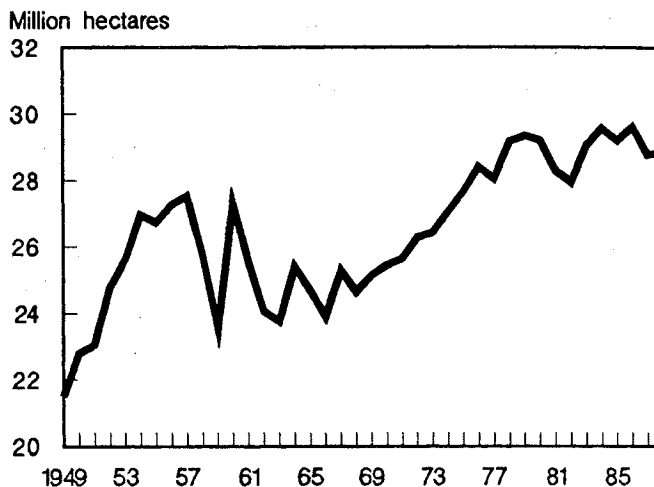


Figure C-2
China's Wheat Yields

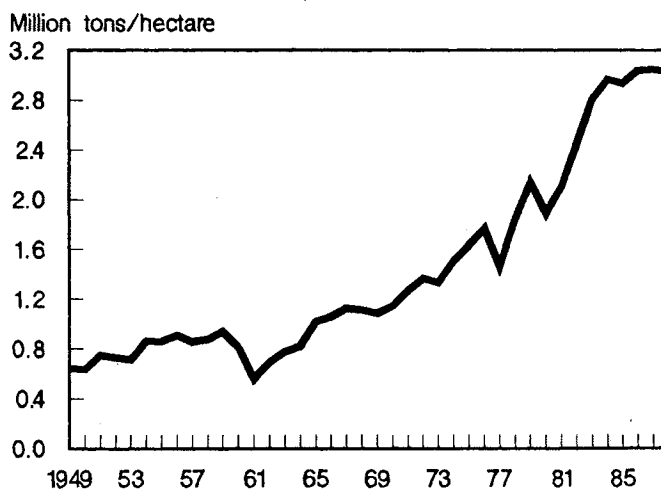


Table C-1--China's wheat yields compared with those in selected countries

Country	Production conditions	1978	1987
-----Kilograms per hectare-----			
China	mostly irrigated	1.84	3.05
Pakistan	mostly irrigated	1.32	1.56
India	mostly irrigated	1.48	1.92
Mexico	mostly irrigated	3.09	4.11
Japan	mostly irrigated	3.27	3.19
Australia	mostly dry land	1.77	1.36
Argentina	mostly dry land	1.73	1.84
USSR	mostly dry land	1.92	1.78
Eastern Europe	mostly dry land	3.26	3.72
EC	mostly dry land	5.03	5.49
Canada	mostly dry land	2.00	1.93
United States	mostly dry land	2.11	2.53

Source: USDA Data, May 1989.

Domestic Supply of Wheat Area

Wheat area expanded rapidly, from 21.5 million hectares in 1949 to 27.5 million in 1957. Area fell during the Great Leap Forward (1958-61), when communes were organized, the supply of inputs was disrupted, and farm incentives decreased (1). But area increased steadily to 29 million hectares in 1977 and has remained fairly constant at this level (fig. C-1).

In the next decade China may lose more farmland to urbanization, industry, and roads than can be gained from reclamation projects. Total area sown to grain likely will drop, but the demand for wheat could push farmers to expand wheat area.

Yield and Production

Yield increases have been the driving force behind the rapid jumps in wheat output (fig. C-2). Expanding irrigated area in the North China Plain, increased use of chemical fertilizers, improved seeds, and better management practices all helped to boost yields, particularly in the early 1980's.

By world standards, China's farmers already have achieved fairly high wheat yields—higher than those in India, Pakistan, and countries that cultivate large areas of dryland wheat, such as Canada, Australia, the USSR, and the United States (table C-1). On the other hand, wheat yields in Mexico, the EC and Eastern Europe, and Japan are higher than those in China.

Given sufficient economic incentives, China's farmers can still boost wheat yields with existing physical resources. China's farmers will have difficulty maintaining the supply of irrigation water, and will find it very costly to expand the supply. However, based on past experience, if given greater access to foreign plant breeding techniques and supplies of genetic materials, China's plant breeders will be able to develop higher yielding varieties. Also, larger applications of chemical fertilizers, combined with proper amounts of water and disease control programs, should boost yields. If China's farmers can raise yields 2.5 percent per year, wheat output by the end of the century could approach 120 million tons.

Internal Transportation and Stocks

From 1980 to 1988, construction workers built over 100,000 kilometers of roads (5). In the next decade these workers will build additional roadways, rail lines, add new docks, ports, unloading facilities, and storage areas that support the movement of wheat from farms to consumers.

Wheat stocks for urban consumers may not change very much. Storage facilities are already in place and officials are likely to continue the policy of maintaining 6 months' to a year's wheat supply.

Wheat stocks available for rural consumers likely will increase. When communes were disbanded in 1984, farmers began to build home grain storage facilities. These storage bins serve several purposes: they are a "life insurance policy" in case of local crop failures, sickness, disability and unanticipated events; a place to store feed and seed stock; and a place to store grains until farm families can get a better price (2).

Wheat stocks held by farmers could become an increasingly important element in wheat import decisions as transportation systems improve the link between rural and urban areas. China's state trading company, Ceroil Corp, could weigh the benefits and costs—is it less costly to buy wheat on the international market, or to purchase it from local farm-held stocks and transport it to urban consumers? (See the USSR wheat article in this issue for a scheme to use hard currency to purchase local wheat).

Domestic Demand for Wheat

Population To Rise in 1990's

China's net natural population rates bounced around considerably in the past 40 years. The rate averaged over 2 percent until the Great Leap Forward, when deaths were greater than births and the rate fell to a minus 0.4 percent. The rate rebounded to a peak of 3.3 percent in 1963 and then fell to just over 1 percent in 1980. Since 1986 the rate rose to 1.4 percent, perhaps in part because the land contract system gave farm families more leeway to provide for extra children (5).

Cadres are making a concerted effort in both urban and rural areas to constrain population growth. It is assumed that these efforts will keep the natural increase rate under 1.3 percent well into the 1990's. However, population pressures on the natural resource base may drive officials and families to further reduce the rate to 1.2 percent per year by the year 2000.

Rise in Per Capita Incomes

Per capita incomes rose slowly from 1950 to 1980, but expanded rapidly during the 1980's (fig.C-4). Data in figure C-4 have not been corrected for inflation. Thus far, China's statisticians and economists have not published data that can be used to calculate real income growth (5). In 1987 and 1988, China's inflation ranged between 10 to 20 percent a year.

In the 1990's, the economy should continue to grow and current efforts by China's leaders to curb inflationary pressures may be successful. Personal incomes could rise about 3 percent a year.

Figure C-3

China's Population: Natural Increase Rates

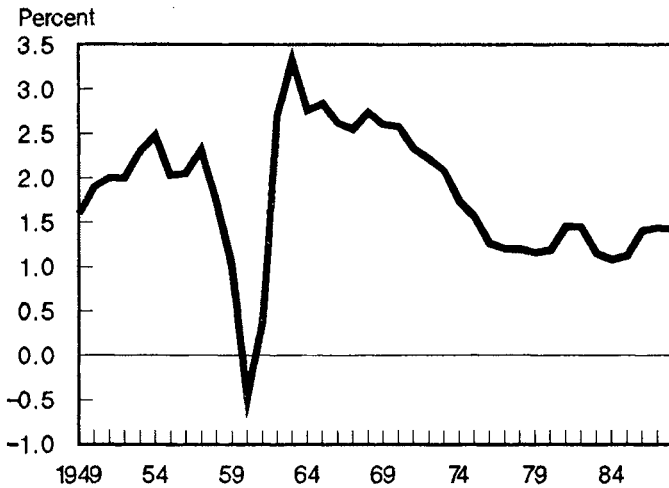
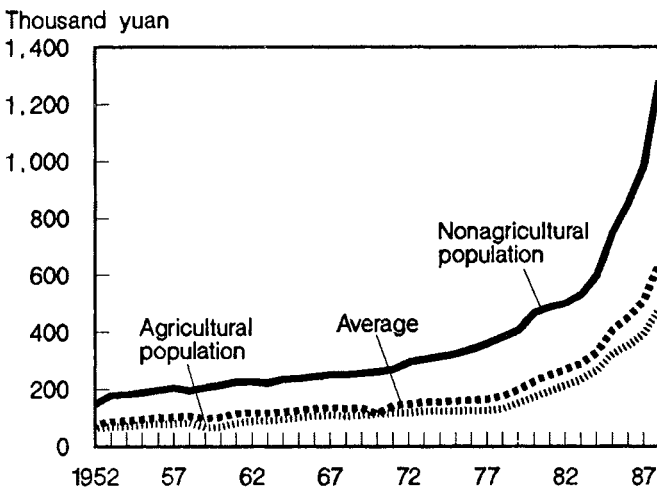


Figure C-4

Per Capita Consumption Expenditures



Substantial Rise in Wheat Consumption

Wheat is a highly prized commodity in rural and urban markets. The government often purchases one-quarter to one-third of total wheat output, primarily for transfer to urban areas, compared with 15-21 percent of total rice and far less of other grains (3). In 1979-86, wheat made up over 28 percent of all grains purchased by the government under contract prices, while rice (which has one-third more output) accounted for over 35 percent and other grains comprised the remaining 37 percent (3).

Farmers prefer to consume wheat and are reluctant to part with it. From 1978 to 1986, government authorities mandated that growers sell most of their wheat at fixed prices. Farmers sold a very small portion of their wheat under negotiated prices. Presumably the government was unwilling to pay sufficiently high prices to coax wheat away from farm-

ers, and instead used the much more extractive fixed price system. Unlike wheat farmers, rice farmers were willing to sell the government a larger portion of their output to the government under negotiated prices.

Rapid increases in grain production since 1978 created a surplus that permitted substantial changes in consumption patterns. The consumption of coarse grains such as corn, sorghum, barley, oats, potatoes, and other grains decreased substantially, and consumption of fine grains, such as wheat and rice, increased.

Rural survey data show that per capita grain consumption rose from 248 kg in 1978 to 259 in 1987 (1, p. 74). In the same period, fine grain consumption jumped from 123 to 211 kg per person. Coarse grain consumption in the same period fell from 125 to 48 kg (fig. C-5).

Urban household income and expenditure survey data available from 1981 and 1987, suggest that urban consumers reduced their grain consumption from 145 to 132 kg. Grain consumption changes were less dramatic for urban residents because by the early 1980's, fine grains constituted a large percentage of total grains consumed in the cities, and coarse grains only a small percentage.

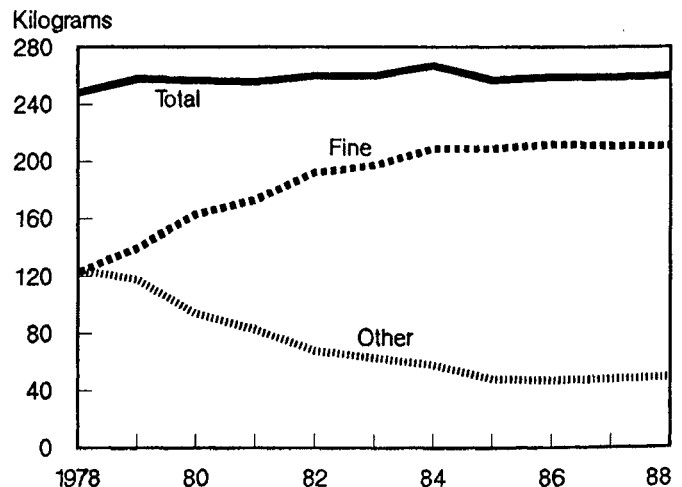
Per capita wheat consumption has risen dramatically since 1960 when it equaled only 29 kilograms. Consumption rose to 48 kilos by 1977, and during the reform period (1978-1988) it soared to 88 kilos.

China's International Wheat Trade

In the past, the gap between domestic wheat supply and demand has been filled with imports. China became a major wheat importer as the country emerged from the dislocations of the Great Leap Forward, when millions of people

Figure C-5

Rural Per Capita Grain Consumption



died from malnutrition. From 1960 to 1987, imports averaged 6.9 million tons a year, reaching a record 15.5 million in 1988/89.

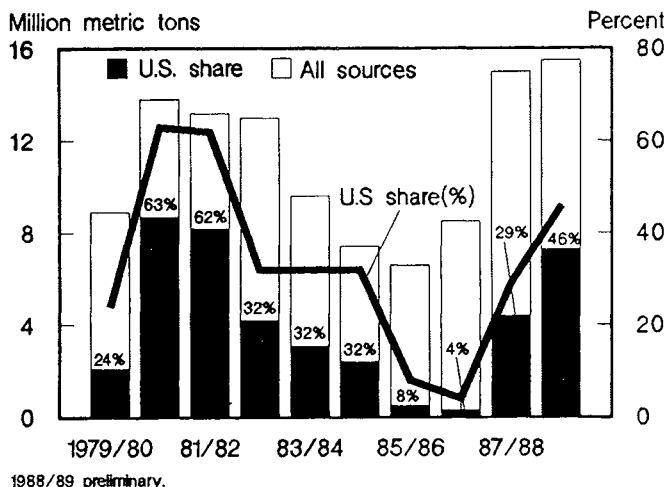
Traditionally, Canada and Australia have been China's major wheat suppliers year in and year out. Argentina also has been a fairly consistent supplier, providing as much as 15 percent of total imports in some years, but none in others. Since 1972 the United States has been a major supplier, sometimes accounting for over 60 percent of total imports. In other years the United States shipped no wheat at all. The EC has sporadically sold wheat to China, accounting for nearly 11 percent of the market in 1982, but also shipping only small quantities, or none at all, in some years.

With their incomes rising, China's consumers have increased their consumption of wheat and wheat products. It is reasonable to assume that wheat per capita consumption will be maintained or raised by the year 2000. Given the limited potential for expanding cultivated area and even with steady yield improvements, domestic supplies will not match demand.

Urban consumers' demand for wheat could be pitted against the requirements of other elements in the society to use scarce foreign exchange to purchase industrial equipment, technology, and raw materials vital for the economic growth and security of the country. Leaders are likely to allocate

Figure C-6

China's Wheat Imports



foreign exchange to purchase wheat to support and maintain urban consumers who constitute an important constituency in China's political system.

Assuming reasonable population growth, yield increases, open trade prospects, income growth, and likely agricultural, economic, and political policies, by the year 2000 imports could expand to 20 million tons and could well exceed that range when weather reduces crop yields.

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Outlook for Soviet Wheat Imports in the 1990's

Christian J. Foster

Abstract: The USSR remains one of the world's top wheat importers, even though domestic production is more than two times greater than food use. This anomaly is primarily due to the enormous amount of milling quality wheat that is fed on farms. Domestic price distortions account for the feeding of wheat and the farmer's lack of interest in selling to the State. The Soviets have introduced agricultural programs to stimulate grain sales to the State, but with little success to date. Soviet wheat imports should decline if output of quality wheat rises and sales of wheat to the State increase.

Keywords: Soviet grain procurements; feed wheat; wheat production, use and trade; USSR.

Wheat production in the USSR has averaged about 83 million tons per year during the 1980's. During that same time, the amount of wheat consumed by humans averaged an estimated 36 million tons, or less than half of output. Moreover, Soviet food norms call for further reducing consumption of flour to 115 kilograms per capita, down from 131 in 1988. Despite the apparent abundance of wheat, the USSR remains one of the world's top two wheat importers, with purchases averaging over 18 million tons per year during the last decade (figures D-1 & 2).

The import anomaly is primarily accounted for by the vast amount of quality wheat that is fed on farms to livestock each year. USDA estimates that roughly 40 million tons of wheat were fed in the USSR last year, comprising about 30 percent of the total grain used for feed. Soviet sources indicate that 8-10 million tons, or as much as a quarter of the wheat fed, are of quality wheat.

Serious domestic price distortions are the primary reason for the heavy feeding of quality wheat and the lack of interest in selling wheat to the State. The price distortions arise out of the price differentiation by the State between the purchase price of wheat and selling price for mixed feeds. For example, the low-cost wheat-producing areas, where much of the high quality wheat is grown, receive the lowest payments (70-80 rubles per ton) by the State for their wheat. On the other hand, the State price charged farms for mixed feeds is uniform throughout the country (200 rubles per ton). Thus, the cost of mixed feed is often over two times greater than the wheat procurement price in the low-cost grain-producing regions. Moreover, the State mixed feeds are usually of poor quality, lacking adequate protein content. Farms therefore prefer to feed wheat, rather than sell it to the State and buy

back inferior, overpriced mixed feed. Furthermore, local officials generally concur with the farms' decisions.

Hard Currency Payments to Farmers

Due to the greater openness (*glasnost*) of Soviet debate in 1989, objections to the grossly inefficient use of wheat and to the substantial State outlays of hard currency for wheat imports have been openly expressed more than ever before. In response to this opposition, the State bolstered its efforts to stimulate output of milling quality wheat and to increase sales of wheat to the State. On August 8, the USSR Council of Ministers authorized payment of 'convertible rubles' to

Figure D-1
USSR Wheat Use¹

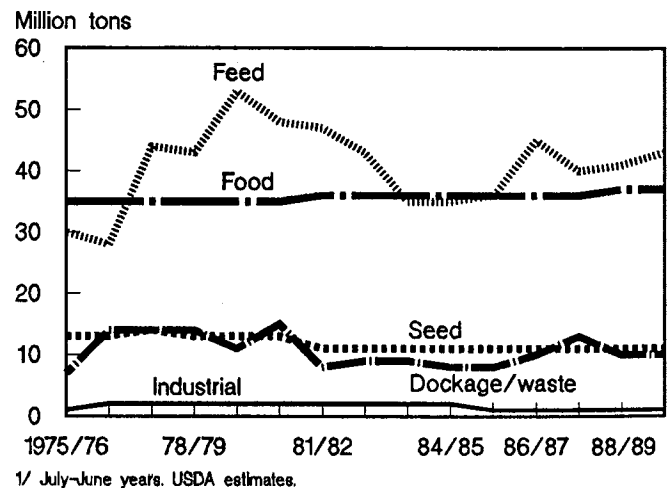
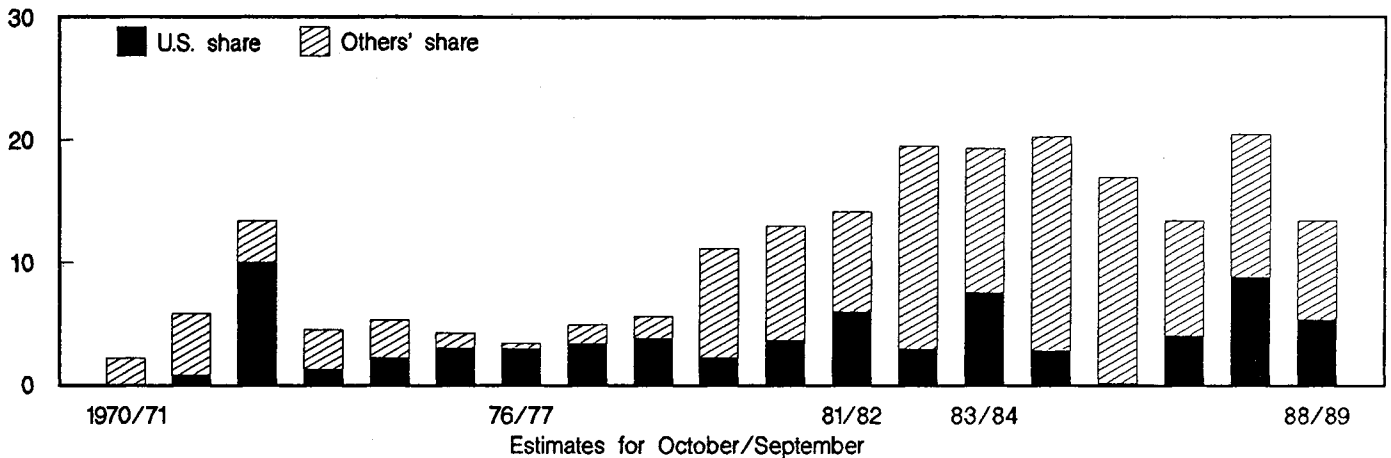


Figure D-2

USSR Wheat Imports

Million metric tons



farms for certain above-average sales of wheat, oilseeds, and pulses to the State. (The normal Soviet ruble is inconvertible, with no value outside the USSR.) Reportedly, the convertible rubles can be used to purchase foreign consumer goods and farm equipment and supplies. To qualify for the hard currency rubles, farms have to meet specific production, procurement, and quality criteria (table 1).

The current proposal for offering farms hard rubles comes on the heels of two earlier, mostly unsuccessful attempts to stimulate grain sales to the State. Past incentives to sell grain by increasing ruble sales bonuses to farms have proved largely ineffective. The failure was due to the shortage of Soviet goods to purchase with the additional rubles, because of the growing volume of rubles in circulation. Furthermore, promises by the State of payment-in-kind (such as in tractors, trucks, cement, etc.) for above-average grain sales have often been broken (*Izvestiya*, 21 April 1988; *Pravda*, 8 August 1989).

The new program is in effect for 1989 and 1990, and an assessment of the measure, along with recommendations, is to be presented to the Council of Ministers in the first quarter of calendar 1991 by the State Commission for Food and Procurements. Hard currency funds for the program will be

Table D-1--USSR: Wheat procurement prices for sales above 1981-85 average 1/

	Convertible rubles/ton	Converted to \$ U.S. 2/
Durum		
Class I	80	128.00
Class II	65	104.00
Class III	45	72.00
Hard wheat		
Class I (silnaya)	60	96.00
Class II (silnaya)	50	80.00
Class III (tsennaya)	40	64.00

1/ Total production of grains must also be at least equal to 1981-85 average output. 2/ 1 accounting ruble = U.S. \$ 1.60

made available from *Eksportkhib* (the Soviet grain importing association), which is expected to be able to reduce its expenditures on imports. According to M. L. Timoshishin, First Deputy Chairman of the State Commission on Food and Procurements, 400 million to 700 million convertible rubles (U.S. \$640 million-\$1.1 billion) will be made available to farms through the new measure (*Izvestiya*, 7 September 1989). The Russian Republic alone will have about 300 million convertible rubles to offer farms involved in the program (*Sovietskaya Rossiya*, 19 August 1989).

The program's announcement followed months of discussion in the Soviet press concerning the need for such a program. In early 1989, Yuri Chernichenko, a member of the Soviet Congress of People's Deputies, questioned why the USSR was paying foreign farmers, rather than its own producers, hard currency for grain. The idea gained further momentum after Chernichenko raised the issue again at a meeting of the Soviet Congress in May. Another early advocate of paying Soviet farmers in hard rubles was N. Shmelev, a leading economist with the Soviet Institute for the Study of the United States and Canada.

On June 20, *Pravda* raised the issue of paying hard currency to farmers, noting that a ton of wheat in certain areas currently earns less than 80 rubles from the State, while a ton of mixed feed costs almost 200 rubles. *Izvestiya* (27 June 1989) reported that paying farms hard currency for grains and other produce would not only save resources by curtailing imports, but also increase incentives to farms to boost quality. In *Sotsialisticheskaya industriya* (4 June 1989) it was proposed to open up hard currency accounts for agricultural enterprises that produce 'import-substitution products' in excess of procurement obligations. Moreover, it was argued that losses of domestic farm output are largely the result of the extra load put on the Soviet processing sector by the vast level of imported commodities, i.e. grain, oilseeds and raw sugar.

Increased bottlenecks in the delivery of fuel and oil to farms during Soviet harvesting operations this year exacerbated debate over the wisdom of exporting Soviet oil for hard currency to finance grain imports. (Of course, even if grain imports could be reduced, sales of oil for hard currency would still be required to finance hard ruble payments to domestic producers. Oil exports account for the greatest share of Soviet hard currency earnings, totaling about 40 percent.) An article in *Selskaya zhizn'* (24 June 1989) complained that while shortages of fuel this year were "paralyzing" the harvest in the Kuban, a major grain producing region, the State was exporting oil to purchase grain abroad. The author noted that grain is being imported at a cost of \$175-\$180 per ton, while the State is paying farmers in the Kuban only 75 rubles per ton for its high quality wheat. It was proposed that the State either raise the procurement prices it pays farms for grain or give part of the "oil-ruble" earnings to farms for above-plan grain sales.

Farmers Remain Skeptical

Under the new program, local State procurement points reportedly determine how many convertible rubles a farm qualifies for based on its sales, and notifies *Eksportkhleb* of this value. The procurement agency then reimburses *Eksportkhleb*, rather than the specific farm, for the qualifying grain it has received, with payment in non-convertible rubles. *Eksportkhleb* in turn authorizes the USSR Foreign Economic Bank to transfer hard currency rubles from its account to the respective farm's hard currency account. Whether the hard currency for farms will be diverted only from *Eksportkhleb's* budget is not certain.

Additionally, the budgetary impact of the program may not necessarily be one of conserving hard currency on the whole, because *Eksportkhleb* could be liable in some cases for significant hard ruble payments to farms without realizing any increase in wheat procurements relative to 1988. This is because farms qualify for hard rubles by exceeding the 1981-85 average, not last year's performance (table 2).

Reportedly, the farm is to be given freedom in choosing what goods and from whom to purchase, using its hard currency ruble account. Foreign purchases can reportedly be executed by the individual farm or with the assistance of the appropriate Soviet association affiliated with the Ministry of Foreign Economic Relations. Farms planning to import foreign agricultural technology are recommended to consult with *Litsenzintorg*. Farms planning to purchase foreign consumer goods, medicine, foodstuffs, and the like, are advised to obtain assistance from the trade associations *Vneshposyltorg* and *Prodintorg*.

For the new policy to be successful, farms must: 1) have the resources to meet the specific requirements; 2) be assured of swift and systematic compensation; 3) have freedom of choice in selecting purchases; 4) have the necessary means

Table D-2--USSR: Farm sales of grain to State

	1981-85 average	1986	1987	1988
Total	66.6	78.8	73.3	61.4
Wheat	33.7	43.8	35.2	34.8
Durum	0.8	2.6	1.0	0.9 1/
Hard (silnaya)	5.5	11.0	7.2	6.0 1/

1/ ERS estimate.

to execute a purchase; and 5) have a wide variety and adequate supply of goods to choose from. The State's delay in implementing the new hard currency program has already negated the potential impact on this year's grain production and to date has had little if any success in raising incentives to sell wheat to the State in 1989.

Farms remain highly skeptical of the State's latest proposal, citing the unclear rules and procedures, out-of-reach targets, and excessive program restrictions. For example, it is questioned whether it is realistic to think that Western equipment might be purchased, given the quantity of wheat that would have to be sold to obtain the hard rubles required for such a transaction. *Pravda Ukrainy* (22 August 1989) cites the case of a disgruntled farmer who realized that he would have to grow an additional 800 hectares of wheat on top of the wheat area needed to meet the State plan, in order to obtain the convertible rubles required to buy an American combine valued at \$180,000.

Furthermore, although farms are reportedly to be given freedom in choosing what goods and from whom to purchase using their hard currency ruble accounts, it remains uncertain whether farms will be restricted in the disposal of their hard currency earnings. According to some sources, a maximum of 30 percent of a farm's hard currency funds may be used to purchase consumer goods, with the remainder allotted for importing farm equipment and supplies. Some believe that farms with hard currency accounts will be limited to purchasing scarce Soviet goods that would otherwise be unobtainable through conventional channels. Other sources note the high State taxes applied to purchases of Western goods as reason for reluctance to participate in the program.

The pressures, which have led to the program to pay hard currency payments for wheat, pulses, and oilseeds, exist throughout the Soviet economy where the ruble has lost value. The latest incentive scheme has already come under criticism by producers of commodities, such as sugarbeets and cotton, that are not included in the measure. Moreover, the reactions have taken on a Republic dimension, as well. For example, in the Baltics and Byelorussia, where rye and oats are main crops, producers are complaining that they are being unfairly discriminated against because these crops are not included in the program. The critical responses to the newly announced measure underscore the Soviet dilemma as to just how long a general monetary reform can be avoided.

Outlook for Production and Trade

The Soviets view the new hard currency program as a means of reducing expensive wheat and oilseed imports by paying Soviet farmers for these commodities at prices below their import cost. Expanded wheat area, likely at the expense of coarse grain or forage area, could result in increased output and sales of wheat to the State. However, it may be possible to increase available supplies of quality wheat without increasing the crop's area, by increased care in growing, harvesting, handling, and storage. Estimates of just dockage and waste (i.e. excess moisture and foreign materials in harvested grain, and losses incurred in grain handling) often account for over 10 million tons of Soviet wheat output annually.

Wheat diverted to the State from feed use may force farms to purchase more mixed feeds from State resources. This, in turn, might result in increased imports of coarse grains and protein feeds. Another response to the program might be for farms to actually decrease wheat area, concentrating on only the highest quality wheats. To remain qualified for the hard ruble payments, farms would still have to maintain total grain output, thereby necessitating increased coarse grain area.

If the new program is successful, Soviet imports of high quality wheat could potentially decrease. This would be welcome news for those Soviets opposed to importing wheat, which is seen as providing support to foreign farmers over Soviet producers. However, as one Soviet recently noted, imports of milling quality wheat could not be completely eliminated at any time in the foreseeable future due to the

baking industry's need for imports of high quality wheat for blending purposes.

The hard currency payments for oilseeds may raise output and help the State mixed feed industry increase the protein content of its rations. However, domestic supplies will not be able to close the current protein feed gap of 10-15 million tons (estimated in soybean meal equivalent). Inadequately balanced feeds will continue to keep animal productivity and feeding efficiency below Western standards and maintain high requirements for feed grains, which the Soviets likely will be unable to meet domestically.

Even if the the hard currency payment program proves only marginally successful, Soviet net wheat imports are likely to gradually decrease during the 1990's. Assuming a 15-percent trend increase in wheat yields by the year 2000, annual wheat production could rise over 15 million tons to nearly 100 million, even with a drop in area of more than 5 percent. Moreover, assuming a 5-percent increase in the feed use of wheat by the year 2000, the Soviets' net wheat imports may decline to under 10 million, and leave room to export 1 million tons of feed wheat annually. This scenario would assume little change in the seed and food use of wheat by 2000, but less dockage and waste losses.

Assuming coarse grain production increases 10 percent to over 110 million tons in 2000, and feed use of coarse grain rises about 7 percent to over 96 million tons, Soviet coarse grain imports could remain strong at over 20 million tons annually through the 1990's.

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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 (Preliminary)	1989/90 (Projected)
Million acres							
Area:							
Planted	76.4	79.2	75.6	72.1	65.8	65.5	76.6
Harvested	61.4	66.9	64.7	60.7	56.0	53.2	62.1
Set aside and diverted	29.8	18.3	18.8	21	23.9	22.3	9.7
Acreage reduction	8.7	9.1	11.9	15.8	20.2	19.1	6.2
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	3.2	3.5
Conservation Reserve Program	---	---	---	0.6	4.2	6.9	7/ 8.4
National base acreage	90.9	94.0	94.0	92.2	91.8	91.7	90.7
Bushels per acre							
Yield/harvested acre	39.4	38.8	37.5	34.4	37.7	34.1	32.9
Million bushels							
Supply:							
June 1 stocks	1,515	1,399	1,425	1,905	1,821	1,261	698
Production	2,420	2,595	2,425	2,092	2,107	1,811	2,042
Imports 2/	4	9	16	21	16	23	21
Total supply	3,939	4,003	3,866	4,018	3,945	3,095	2,760
Million bushels							
Disappearance:							
Food	642	651	674	698	726	727	735
Seed	100	98	93	84	85	103	107
Feed and residual 3/	369	405	279	411	281	143	200
Total domestic	1,111	1,154	1,046	1,193	1,092	973	1,042
Exports 2/	1,429	1,424	915	1,004	1,592	1,424	1,275
Total disappearance	2,540	2,578	1,961	2,197	2,684	2,397	2,317
Million bushels							
Ending stocks:							
May 31	1,399	1,425	1,905	1,821	1,261	698	443
Farmer-owned reserve	611	654	433	463	467	287	150
Special program 4/	---	3	163	169	0	0	0
CCC inventory 5/	188	378	602	830	283	190	100
Outstanding loans 6/	379	175	678	236	178	19	10
Other	221	215	29	123	333	202	183
\$/bushel							
Prices:							
Received by farmers	3.51	3.39	3.08	2.42	2.57	3.72	3.90
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	6,739	8,065

--- = 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: Marketing year supply and disappearance, 1960/61-1989/90 1/

Year beginning June 1	Supply				Disappearance						Ending stocks May 31		
	Begin- ning stocks	Pro- duction	Imports 2/	Total	Domestic use				Exports 2/	Total disap- pearance	Govt. owned	Pri- vately owned 4/	Total
					Food	Seed	Feed 3/	Total					
Million bushels													
1960/61	1,384.2	1,354.7	8.1	2,747.0	496.5	64.3	30.4	591.0	653.5	1,244.5	1,224.6	277.8	1,502.4
1961/62	1,502.4	1,232.4	5.9	2,740.7	504.0	56.3	44.0	604.4	715.7	1,320.1	1,074.4	346.2	1,420.6
1962/63	1,420.6	1,092.0	5.3	2,517.9	502.7	61.4	34.7	598.8	649.4	1,248.2	1,101.8	167.9	1,269.7
1963/64	1,269.7	1,146.8	4.0	2,420.6	487.9	64.9	28.6	581.5	845.6	1,427.1	799.8	193.7	993.5
1964/65	993.5	1,283.4	1.8	2,278.7	514.4	65.5	54.9	634.9	722.7	1,357.6	634.8	286.3	921.1
1965/66	921.1	1,315.6	0.9	2,237.6	517.9	61.5	145.9	725.3	851.8	1,577.1	299.2	361.3	660.5
1966/67	660.5	1,304.9	1.7	1,967.1	505.1	77.4	100.5	683.1	771.3	1,454.3	122.0	390.8	512.8
1967/68	512.8	1,507.6	1.0	2,021.4	517.8	71.3	36.8	625.8	765.3	1,391.2	100.1	530.1	630.2
1968/69	630.2	1,556.6	1.1	2,187.9	522.4	60.8	156.5	739.7	544.2	1,283.9	139.5	764.5	904.0
1969/70	904.0	1,442.7	2.9	2,349.5	520.1	55.5	188.4	764.0	603.0	1,367.0	277.2	705.4	982.6
1970/71	982.6	1,351.6	1.4	2,335.7	517.1	62.1	193.0	772.1	740.8	1,512.9	352.6	470.2	822.8
1971/72	822.8	1,618.6	1.1	2,442.5	523.7	63.2	262.4	849.3	609.8	1,459.1	355.1	628.3	983.4
1972/73	983.4	1,546.2	1.3	2,530.9	531.8	67.4	199.5	798.7	1,135.1	1,933.8	6.3	590.8	597.1
1973/74	597.1	1,710.8	2.6	2,310.5	544.3	84.0	125.1	753.4	1,217.0	1,970.4	0.6	339.5	340.1
1974/75	340.1	1,781.9	3.4	2,125.4	545.0	92.0	34.9	671.9	1,018.5	1,690.4	---	435.0	435.0
1975/76	435.0	2,126.9	2.4	2,564.3	588.5	100.0	37.3	725.8	1,172.9	1,898.7	---	665.6	665.6
1976/77	665.6	2,148.8	2.7	2,817.1	588.0	92.0	74.4	754.4	949.5	1,703.9	---	1,113.2	1,113.2
1977/78	1,113.2	2,045.5	1.9	3,160.6	586.5	80.0	192.5	859.0	1,123.8	1,982.8	48.3	1,129.5	1,177.8
1978/79	1,177.8	1,775.5	1.9	2,955.2	592.4	87.0	157.6	837.0	1,194.1	2,031.1	51.1	873.0	924.1
1979/80	924.1	2,134.1	2.1	3,060.3	596.1	101.0	86.0	783.1	1,375.2	2,158.3	187.8	714.2	902.0
1980/81	902.0	2,380.9	2.5	3,285.4	610.5	113.0	59.0	782.5	1,513.8	2,296.3	199.7	789.4	989.1
1981/82	989.1	2,785.4	2.8	3,777.3	602.4	110.0	134.8	847.2	1,770.7	2,617.9	190.3	969.1	1,159.4
1982/83	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	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	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	1,425.2	2,425.1	16.3	3,866.6	674.3	93.0	278.9	1,046.3	915.4	1,961.6	601.7	1,303.3	1,905.0
1986/87	1,905.0	2,091.6	21.2	4,017.8	697.6	84.0	411.8	1,193.4	1,003.5	2,196.9	830.1	990.8	1,820.9
1987/88	1,820.9	2,107.5	16.1	3,944.5	726.5	85.0	280.0	1,091.5	1,592.1	2,683.6	283.0	977.8	1,260.8
1988/89	1,260.8	1,811.4	22.7	3,094.9	726.6	103.0	143.2	972.9	1,424.5	2,397.3	190.5	507.1	697.6
1989/90 5/	697.6	2,041.9	21.0	2,760.5	735.0	107.0	200.0	1,042.0	1,275.0	2,317.0	100.0	343.5	443.5

--- = 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/ Projected.

Appendix table 3--Wheat: Quarterly supply and disappearance, 1983/84-1989/90 1/

Year and periods beginning June 1	Supply				Disappearance						Ending stocks		
	Begin-ning stocks	Pro-duction	Imports 2/	Total	Domestic use				Exports 2/	Total disap-pearance	Govt. owned	Pri-vately owned 4/	Total
					Food	Seed	Feed 3/	Total					
Million bushels													
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	5.1	3,855.4	165.8	1.0	235.9	402.8	249.1	651.9	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	(0.2)	224.4	390.3	390.3	526.3	1,729.5	2,255.8
Mar.-May	2,255.8	----	3.5	2,259.3	160.8	25.0	(20.5)	165.3	189.0	354.3	601.7	1,303.3	1,905.0
Mkt. year	1,425.2	2,425.1	16.3	3,866.6	674.3	93.0	278.9	1,046.3	915.4	1,961.6	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	(19.6)	223.3	263.4	486.7	863.9	1,809.6	2,673.5
Dec.-Feb.	2,673.5	---	5.9	2,679.4	168.0	3.0	55.3	226.3	202.7	429.0	905.3	1,345.1	2,250.4
Mar.-May	2,250.4	---	7.3	2,257.7	174.7	23.0	22.3	220.0	216.8	436.8	830.1	990.8	1,820.9
Mkt. year	1,905.0	2,091.6	21.2	4,017.8	697.6	84.0	411.8	1,193.4	1,003.5	2,196.9	830.1	990.8	1,820.9
1987/88:													
June-Aug.	1,820.9	2,107.5	2.7	3,931.1	181.0	1.0	362.7	544.7	409.9	954.6	798.8	2,189.7	2,976.5
Sept.-Nov.	2,976.5	---	4.5	2,981.0	193.1	58.0	(79.2)	171.9	308.5	480.4	755.4	1,750.5	2,500.6
Dec.-Feb.	2,500.6	---	3.7	2,504.3	170.8	3.0	(6.2)	167.6	413.1	580.8	450.1	1,473.4	1,923.5
Mar.-May	1,923.5	---	5.1	1,928.7	181.6	23.0	2.7	207.3	460.6	667.8	283.0	977.8	1,260.8
Mkt. year	1,820.9	2,107.5	16.1	3,944.5	726.5	85.0	280.0	1,091.5	1,592.1	2,683.6	283.0	977.8	1,260.8
1988/89:													
June-Aug.	1,260.8	1,811.4	8.6	3,080.9	181.4	1.0	281.6	463.9	363.4	827.3	250.0	2,003.6	2,253.6
Sept.-Nov.	2,253.6	---	6.3	2,259.8	196.4	67.0	(43.6)	219.8	330.1	549.9	213.0	1,496.9	1,709.9
Dec.-Feb.	1,709.9	---	3.7	1,713.6	175.8	3.0	(50.0)	128.9	363.0	491.9	203.2	1,018.5	1,221.7
Mar.-May 5/	1,221.7	---	4.1	1,225.9	173.0	32.0	(44.8)	160.2	368.0	528.3	190.5	507.1	697.6
Mkt. year 5/	1,260.8	1,811.4	22.7	3,094.9	726.6	103.0	143.2	972.9	1,424.5	2,397.3	190.5	507.1	697.6
1989/90:													
June-Aug.	697.6	2,041.9	5.9	2,745.4	191.2	1.0	272.4	464.6	369.9	834.5	167.9	1,743.0	1,910.9
Sept.-Nov.	1,910.9	---	5.5	1,916.4	191.0	70.0	(71.4)	189.6	305.1	494.7	NA	NA	1,421.7
Dec.-Feb.	1,421.7	---	4.6	1,426.3	172.8	3.0	(5.0)	170.8	325.0	495.8	NA	NA	930.5
Mar.-May 5/	930.5	---	5.0	935.5	180.0	33.0	4.0	217.0	275.0	492.0	100.0	343.5	443.5
Mkt. year 5/	697.6	2,041.9	21.0	2,760.5	735.0	107.0	200.0	1,042.0	1,275.0	2,317.0	100.0	343.5	443.5

--- = 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 4--Quarterly Government stock activity for wheat, 1987/88-1989/90

	1987/88				1988/89				1989/90
	June-Aug.	Sept.-Nov.	Dec.-Feb.	March-May	June-Aug.	Sept.-Nov.	Dec.-Feb.	March-May	June-Aug.
Million bushels									
9-month loans:									
Carryin outstanding	235.0	245.1	383.1	301.1	117.0	108.1	93.1	46.9	19.2
Loans made	104.0	293.7	63.5	13.0	60.1	34.2	10.8	1.7	11.6
Certificate exchange	33.2	124.0	24.4	11.0	5.8	0.7	0.5	0.2	0.1
Cash redemption	45.3	11.4	110.5	118.7	118.2	47.1	55.2	23.1	4.8
CCC collateral acquired	15.4	20.3	10.6	7.4	5.0	1.4	1.3	6.1	6.0
Reserve conversion	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Carryout outstanding	245.1	383.1	301.1	117.0	108.1	93.1	46.9	19.2	19.9
FOR loans:									
Carryin FOR	631.0	597.5	553.4	519.8	466.8	391.0	383.4	377.9	287.0
Reserve conversion	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cash redemption	2.0	4.2	0.0	8.3	0.0	0.5	1.8	68.4	38.8
CCC collateral acquired	17.0	27.4	21.6	23.1	23.2	3.4	1.8	2.9	5.3
Certificate exchange	14.5	12.5	12.0	21.6	52.6	3.7	1.9	19.6	11.9
Carryout FOR	597.5	553.4	519.8	466.8	391.0	383.4	377.9	287.0	231.0
CCC owned:									
Carryin CCC	830.1	798.8	755.4	450.1	283.0	250.0	213.0	203.2	190.5
CCC collateral acquired	32.4	47.7	32.2	30.5	28.2	4.8	3.1	9.0	11.3
Certificate exchange	47.9	69.4	302.8	158.9	20.2	23.6	9.0	6.6	3.5
Other 1/	15.8	21.7	34.7	38.7	41.0	18.2	3.9	15.1	19.2
Carryout CCC	798.8	755.4	450.1	283.0	250.0	213.0	203.2	190.5	179.1

1/ Includes PL480 exchanges for Title II, off-grade sales, domestic programs, section 416 export programs, and residual errors.

Appendix table 5--Wheat: Status of price support loans on specified dates, 1980/81-1989/90

Crop year	Total stocks	Total CCC inventory	Outstanding CCC loans	Farmer owned reserve 1/	Free stocks
Million bushels					
1980/81					
June 1	902.0	187.8	99.3	259.9	355.0
September 1	2,714.0	202.1	96.7	211.0	2,204.2
December 1	2,092.3	202.9	128.2	210.5	1,550.7
March 1	1,522.8	203.2	114.3	303.8	901.5
1981/82					
June 1	989.1	199.7	54.6	359.6	375.2
September 1	3,056.0	195.4	147.0	398.6	2,315.0
December 1	2,338.4	190.6	195.4	459.1	1,493.3
March 1	1,777.6	190.2	182.2	515.2	890.0
1982/83					
June 1	1,159.4	190.3	112.0	560.4	296.7
September 1	3,229.3	193.3	77.5	763.3	2,195.2
December 1	2,642.8	189.7	105.6	986.3	1,361.2
March 1	2,072.0	184.6	92.5	1,117.1	677.8
1983/84					
June 1	1,515.1	192.0	65.2	1,060.6	197.3
September 1	3,233.1	365.0	294.1	824.8	1,749.2
December 1	2,535.7	375.8	396.0	736.6	1,027.3
March 1	1,951.5	313.8	443.9	610.7	583.1
1984/85					
June 1	1,398.6	188.0	379.1	611.2	220.3
September 1	3,160.1	278.1	254.9	657.9	1,969.2
December 1	2,338.5	359.4	247.2	674.9	1,057.0
March 1	1,800.8	375.7	218.4	673.8	532.9
1985/86					
June 1	1,425.2	377.6	175.0	657.1	215.5
September 1	3,203.5	406.7	493.7	689.5	1,613.6
December 1	2,643.4	517.1	734.9	653.7	737.7
March 1	2,255.8	526.3	770.8	633.1	325.6
1986/87					
June 1	1,905.0	601.7	677.7	596.4	29.2
September 1	3,156.5	793.8	455.8	629.9	1,277.0
December 1	2,673.5	863.9	527.6	657.7	624.3
March 1	2,250.4	905.3	419.8	662.6	262.7
1987/88					
June 1	1,820.9	830.1	235.6	631.8	123.4
September 1	2,976.5	798.8	245.1	597.5	1,335.1
December 1	2,500.6	755.4	383.1	553.4	808.7
March 1	1,923.5	450.1	293.8	517.9	661.7
1988/89					
June 1	1,260.8	283.0	177.5	466.8	333.5
September 1	2,253.6	250.0	108.1	391.0	1,504.5
December 1	1,709.9	213.0	93.1	383.4	1,020.4
March 1	1,221.7	203.2	46.9	377.9	593.7
1989/90					
June 1	697.6	190.5	19.2	287.0	200.9
September 1	1,910.9	167.9	48.2	211.4	1,483.4

1/ Includes any quantity in the Special Producer Storage Loan Program.

Source: Agricultural Stabilization and Conservation Service, USDA.

Appendix table 6--Wheat classes: Estimated acreage, yield, and production, 1978-1989 1/

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	1,091.6
1980	40.7	35.8	33.0	1,181.3
1981	43.4	37.9	29.3	1,112.1
1982	43.2	37.0	33.6	1,243.6
1983	41.3	30.2	39.7	1,197.8
1984	43.6	34.1	36.7	1,250.6
1985	42.5	34.5	35.7	1,230.1
1986	39.4	31.5	32.3	1,017.8
1987	36.3	28.6	35.7	1,020.8
1988	34.4	26.8	32.8	880.1
1989	37.8	26.3	27.4	721.1
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	13.0	10.1	17.9	181.2
1989	16.6	15.9	27.8	443.1
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	44.8
1989	3.8	3.7	25.3	92.9
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	473.7
1989	13.2	11.9	45.9	545.4
White:				
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	4.0	3.8	61.1	231.5
1989	5.1	4.3	56.1	239.4

1/ 1989 data preliminary.

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

Appendix table 7--Wheat classes: Marketing year supply and disappearance, 1982/83-1989/90 1/

Year beginning June 1	Supply			Disappearance			Ending stocks May 31
	Beginning stocks	Pro- duction	Total 2/	Domestic use	Exports	Total	
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:							
Hard winter	567	880	1,447	512	634	1,147	300
Hard spring	402	181	590	173	200	373	217
Soft red	75	474	549	189	320	509	39
White	134	231	370	39	250	289	81
Durum	83	45	139	59	20	79	60
All classes	1,261	1,811	3,095	973	1,424	2,397	698
1989/90 3/:							
Hard winter	300	721	1,022	426	395	821	201
Hard spring	217	443	667	246	270	516	151
Soft red	39	545	585	239	335	574	11
White	81	239	324	72	220	292	32
Durum	60	93	163	59	55	114	49
All classes	698	2,042	2,760	1,042	1,275	2,317	443

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 8--U.S. wheat exports: Grain, flour, and products, by month, 1980/81-1989/90

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	115,899	91,579	1,347,411
1989/90	90,808	137,971	131,989	150,700									
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	6,540	5,214	73,740
1989/90	907	1,897	5,775	8,915									
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	1,465	1,073	984	529	2,604	472	796	1,492	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	30	25	3,329
1989/90	31	33	457	74									
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	122,469	96,818	1,424,478
1989/90	91,747	139,901	138,221	159,688									

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

Sources: U.S. Bureau of the Census.
ERS calculations.

Appendix table 9--U.S. Wheat exports: By selected programs

Fiscal year	P.L. 480	Section 416	Aid 1/	Total Concessional	CCC export credit 2/	Export enhancement program 3/	Total U.S. wheat exports	P.L. 480, CCC export credit, and EEP exports divided by total exports (%) 4/
1,000 metric tons								Percent
1978/79	3,234	0	7	3,241	2,684	0	31,340	19
1979/80	2,785	0	44	2,829	1,945	0	36,066	13
1980/81	2,537	0	4	2,541	3,261	0	42,246	14
1981/82	2,978	0	0	2,978	3,725	0	44,607	15
1982/83	3,340	0	123	3,463	8,597	0	36,701	33
1983/84	3,442	0	0	3,442	11,406	0	41,699	36
1984/85	4,392	0	74	4,466	8,221	0	28,524	44
1985/86	4,685	76	513	5,274	7,740	4,800	24,626	59
1986/87	3,927	406	1	4,334	8,125	12,350	28,204	68
1987/88 5/	3,321	1,186	292	4,799	9,273	25,100	40,523	78
1988/89 6/	3,100	0	789	3,889	9,500	17,700	37,774	NA

1/ Shipment mostly under the Commodity Import Program, financed with foreign aid funds. 2/ Source: FAS/USDA. 3/ Unofficial estimates of shipments compiled from EEP press releases. 4/ Adjusted for overlap between CCC export credit and EEP shipments. 5/ Preliminary. 6/ Unofficial estimates.

Contact: Karen Ackerman/Mark Smith (202) 786-1821.

Appendix table 10--Wheat and flour price relationships at milling centers, annual and by periods, 1982/83-1989/90

Year and period	At Kansas City					At Minneapolis				
	Cost of wheat to produce 100 lb. of flour 1/	Wholesale price of			Over cost of wheat	Cost of wheat to produce 100 lb. of flour 1/	Wholesale price of			Over cost of wheat
		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				Actual			
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
Mar.-May	10.37	11.03	1.59	12.62	2.25	10.32	10.72	1.62	12.34	2.01
Mkt. year	9.62	10.21	1.68	11.89	2.27	9.94	10.39	1.62	12.01	2.07
1989/90:										
June-Aug.	9.86	11.07	1.14	12.21	2.35	9.84	10.63	1.15	11.78	1.94
Sept.	9.53	10.30	1.36	11.66	2.13	9.30	9.70	1.37	11.07	1.77
Oct.	9.64	10.25	1.72	11.97	2.32	9.37	9.65	1.60	11.25	1.88

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 11--Wheat farm prices for leading classes and major feed grains in U.S. regions, 1983/84-1989/90

Crop year	June	July	Aug.	Sept.	Oct.1/	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Average	Loan rate
\$/60-pound 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	2.82
1988/89	3.30	3.36	3.42	3.62	3.72	3.74	3.90	3.90	3.89	4.04	4.03	4.01	3.74	2.21
1989/90	3.84	3.80	3.74	3.76	3.74								3.74	2.04
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	2.59
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	2.59
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	1.95
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	1.86
1988/89	2.57	2.78	2.59	2.61	2.55	2.44	2.45	2.48	2.47	2.52	2.58	2.53	2.55	1.80
1989/90	2.43	2.38	2.28	2.28	2.20								2.55	1.69
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	2.35
1988/89	3.33	3.39	3.53	3.67	3.84	3.93	4.06	4.13	3.99	4.12	4.00	3.91	3.82	2.33
1989/90	3.80	3.75	3.77	3.82	3.84								3.82	2.14
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	1.98
1988/89	2.75	3.08	2.98	2.91	2.78	2.73	2.79	2.87	2.79	2.87	2.84	2.87	2.86	1.95
1989/90	2.80	2.75	2.57	2.52	2.39								2.86	1.80
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	2.28
1988/89	3.30	3.62	3.67	3.79	3.83	3.74	3.81	3.92	3.94	3.99	3.96	3.98	3.80	2.21
1989/90	3.89	3.80	3.66	3.59	3.66								3.80	2.06
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	2.28
1988/89	4.61	5.18	5.28	5.21	4.99	4.93	4.72	4.29	4.43	4.44	3.78	4.18	4.67	2.21
1989/90	3.83	3.65	3.50	3.25	3.33								3.83	2.06
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	2.39
1988/89	3.44	3.72	3.80	3.97	4.13	4.19	4.31	4.48	4.56	4.37	4.41	4.32	4.14	2.32
1989/90	4.13	4.13	4.14	4.04	4.14								4.14	2.17
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	1.77
1988/89	2.94	3.15	3.30	3.13	3.06	3.27	3.20	3.23	3.06	3.25	3.28	3.22	3.17	1.74
1989/90	3.08	2.90	3.19	2.91	2.69								3.17	1.60
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	4.01	3.72	2.21
1989/90	3.84	3.78	3.74	3.72	3.79								3.72	2.06

1/ October 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 12--Wheat cash prices for leading classes at major markets, 1983/84-1989/90

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	4.03	4.13	4.18	4.25	4.40	4.37	4.32	4.46	4.55	4.17
1989/90	4.41	4.28	4.24	4.18	4.28								
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	4.60	4.22
1989/90	4.44	4.29	4.24	4.18	4.23								
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	4.07	4.00
1989/90	3.87	3.92	3.94	3.93	4.07								
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	4.20	4.08
1989/90	3.89	3.95	3.97	4.03	4.05								
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	4.09	4.02
1989/90	3.86	3.86	3.86	3.84	3.95								
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	3.91	3.83
1989/90	3.81	3.82	3.83	3.79	3.92								
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	4.66	4.53
1989/90	4.47	4.47	4.50	4.56	4.72								
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	4.50	4.25
1989/90	4.29	4.21	4.22	4.23	NQ								
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	4.55	4.36
1989/90	4.41	4.36	4.18	4.08	4.11								
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	5.01	5.53
1989/90	4.64	4.50	4.18	4.08	4.12								

NQ = No quote.

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

Appendix table 13--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
May	147	167	177	193	NQ	209	182
June	141	161	170	187	156	204	178
July	139	157	168	185	155	204	175
August	137	155	165	181	155	196	170
September	137	153	164	180	149	188	171

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. 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 in-store, St. Lawrence. 7/ Australian standard wheat, f.o.b.

Appendix table 14--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 7/	1989/90 8/
----- Million metric tons -----						
Exports:						
Canada	19.4	16.8	20.8	23.6	13.5	17.0
Australia	15.8	16.0	14.8	12.2	10.7	9.9
Argentina	8.0	6.1	4.3	3.7	3.6	6.4
EC-12	18.5	15.6	16.4	14.8	21.0	21.0
USSR	0.5	0.5	0.5	0.5	0.5	1.0
All others	6.7	4.9	5.5	6.7	10.6	7.1
Total non-U.S.	68.9	60.0	62.3	61.5	60.0	62.4
U.S. 2/	38.1	25.0	28.4	43.4	37.8	35.0
World total	107.0	85.0	90.7	104.9	97.8	97.4
Imports:						
EC-12	3.4	2.8	2.4	2.2	2.5	2.5
USSR	28.1	15.7	16.0	21.5	15.5	12.0
Japan	5.6	5.5	5.8	5.7	5.4	5.3
E. Europe	2.6	3.4	3.7	3.4	2.7	2.5
China	7.4	6.6	8.5	15.0	15.5	15.0
All others	59.9	50.9	54.3	57.2	56.2	60.0
World total	107.0	85.0	90.7	104.9	97.8	97.4
Production: 3/						
Canada	21.2	24.3	31.4	26.0	16.0	24.0
Australia	18.7	16.2	16.1	12.4	14.1	12.5
Argentina	13.2	8.5	8.9	8.8	8.1	11.0
EC-12	83.1	71.6	72.0	71.4	74.8	79.4
USSR 3/	68.6	78.1	92.3	83.3	84.4	89.0
E. Europe	42.1	37.1	39.1	39.8	45.1	42.3
China	87.8	85.8	90.0	85.8	86.4	91.0
India	45.5	44.1	47.1	44.3	45.1	53.0
All other foreign	61.1	68.4	76.7	72.5	77.5	74.4
U.S.	70.6	66.0	56.9	57.4	49.3	55.6
World total	511.9	500.1	530.7	501.7	500.8	532.2
Utilization: 4/						
U.S.	31.4	28.5	32.5	29.7	26.5	28.4
USSR 5/	91.2	91.6	102.8	101.5	100.4	99.0
China	92.2	100.4	101.5	102.8	104.4	106.0
All other foreign	278.2	275.7	285.7	297.2	299.2	302.9
World total	493.0	496.2	522.4	531.6	530.5	536.2
Stocks, ending: 6/						
	164.0	167.9	176.1	146.5	116.8	112.8

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. 7/ Estimated. 8/ Forecasted as of November 1989.

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

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 1/	1989/90 2/
Million acres									
Area:									
Planted	2,566	2,533	2,707	2,971	2,563	2,384	2,498	2,424	2,044
Harvested	685	677	896	981	717	677	683	607	483
Bushels per acre									
Yield/harvested acre	26.6	28.9	30.3	33.1	28.8	28.8	29.0	24.8	28.2
Million bushels									
Supply:									
Beginning stocks	4.0	3.0	5.8	11.3	19.8	21.9	18.6	18.9	10.3
Production	18.2	19.5	27.1	32.5	20.6	19.5	19.8	15.0	13.6
Imports	0.4	3.0	1.6	0.6	2.2	1.0	1.2	0.2	0.7
Total supply	22.6	25.6	34.5	44.4	42.6	42.4	39.6	34.2	24.6
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	11.8	10.0
Seed	4.3	4.3	4.7	4.1	3.8	3.7	3.8	3.2	3.5
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	20.5	19.0
Exports	1.5	0.2	1.0	0.4	0.2	0.5	0.5	3.4	1.5
Total disappearance	19.6	19.7	23.2	24.6	20.8	23.8	20.7	23.9	20.5
Ending stocks	3.0	5.8	11.3	19.8	21.9	18.6	18.9	10.3	4.1
\$/bushel									
Prices:									
Loan rate	2.04	2.17	2.25	2.17	2.17	1.63	1.55	1.50	1.40
Season average price	3.00	2.40	2.17	2.08	2.03	1.49	1.63	2.49	2.10
\$1,000									
Value of production	54,004	47,460	60,074	68,828	41,902	29,159	32,289	37,027	28,581

1/ Preliminary. 2/ Projected.

Appendix table 16--Rye: Production by major States, 1980-1989

State	1981	1982	1983	1984	1985	1986	1987	1988	1989
1,000 bushels									
Georgia	2,730	1,470	1,470	1,760	2,070	1,785	1,540	1,890	1,610
Indiana	234	260	270	336	308	280	297	330	204
Michigan	448	522	600	588	651	713	640	650	660
Minnesota	2,883	3,300	4,960	6,650	3,300	1,600	1,200	920	1,088
Nebraska	924	1,269	1,265	1,392	1,242	1,035	1,150	1,375	600
N. Jersey	261	319	390	261	320	310	232	310	182
N. York	288	341	416	429	420	429	300	396	480
N. Carolina	400	525	440	550	665	595	720	910	525
N. Dakota	2,170	2,400	4,320	5,400	2,640	4,250	5,115	1,350	1,064
Oklahoma	680	736	780	704	828	840	360	720	532
Pennsylvania	363	408	578	578	740	630	630	792	704
S. Carolina	726	621	320	546	532	391	528	720	644
S. Dakota	3,220	4,680	8,740	10,800	4,440	4,440	5,040	2,250	3,240
Virginia	364	364	312	378	312	364	435	560	264

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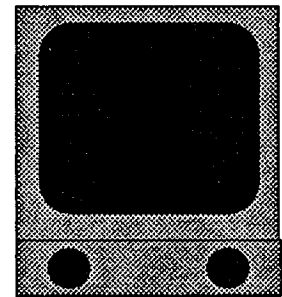
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