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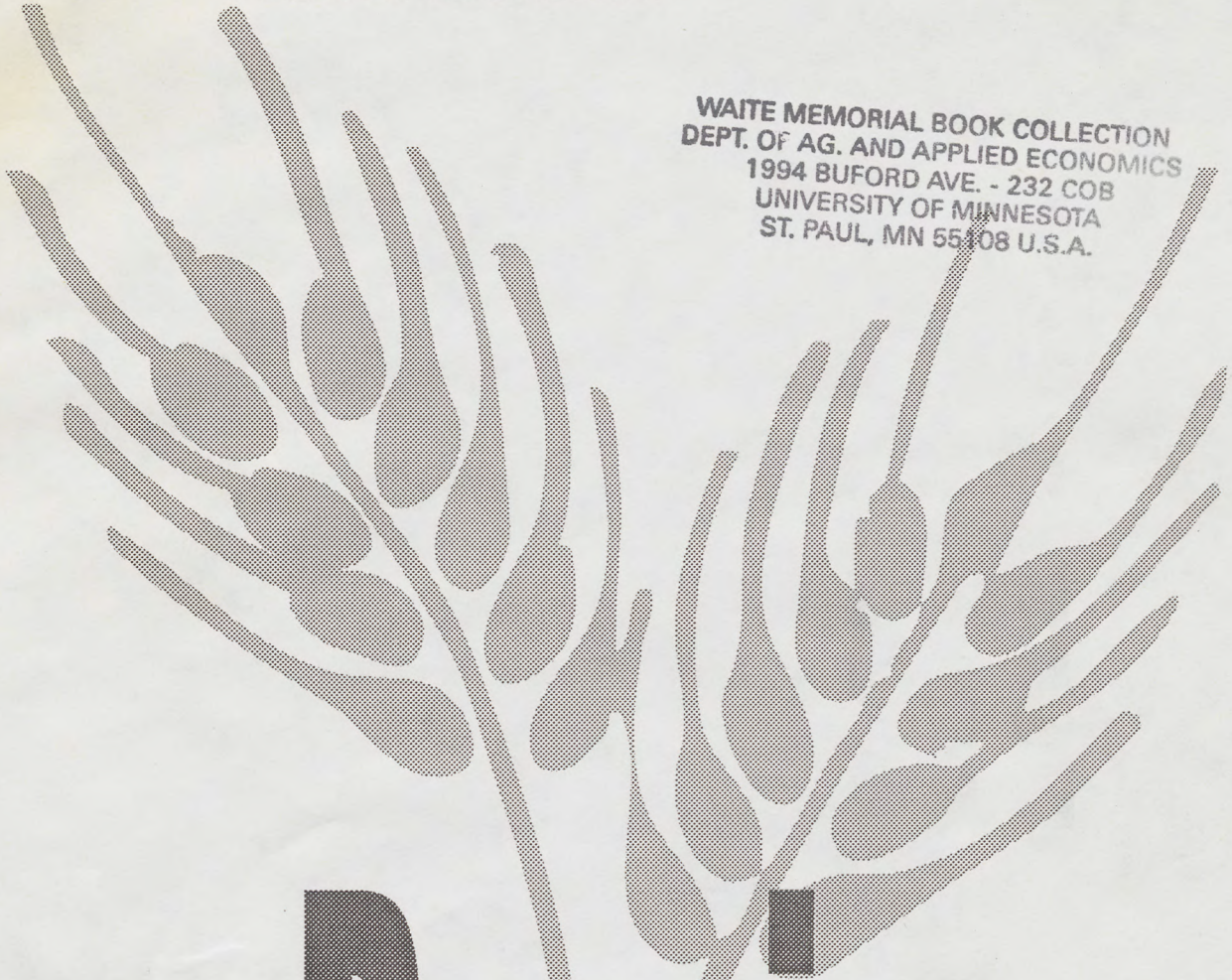
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Determinants of Wheat Import Demand

Sharon S. Sheffield

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Abstract

This report provides an overview of the Russian domestic wheat sector and the factors that affect its wheat import demand. Despite its position as the world's largest wheat producer until the early 1980's, the former Soviet Union has been a consistent net importer of wheat since the mid 1970's. Import demand was driven by an expanding livestock sector and decreasing domestic supply in the form of State procurement. The primary suppliers of wheat to Russia are the United States, the European Community, and Canada. These exporters accounted for over 90 percent of FSU market share in marketing year 1992/93. Availability of financing and price were identified by importers as the most important determinants of import source. Given these criteria, increased cleanliness of U.S. wheat would not lead to larger Russian imports of U.S. wheat. Beginning in 1993, Russian wheat imports began to decline, due to creditworthiness problems, increased production in 1992, and decreased utilization, especially in the livestock sector. If substantial liberalization of the domestic grain marketing system, which was proposed at the end of 1993, is implemented, Russian wheat imports should continue to decrease, given more efficient production and utilization. In addition, quality considerations could become more important if processors are able to directly determine contract specifications.

Keywords: Former Soviet Union (FSU), Russian Federation (RF), Commonwealth of Independent States (CIS), wheat, State procurement, utilization, credit, import demand, quality characteristics.

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Preface

This report is 1 of 17 reports covering 18 wheat-importing countries prepared by the Economic Research Service (ERS) in support of a comprehensive study of cleaning U.S. wheat destined for export. Similar reports are forthcoming for corn and soybeans.

The Food, Agriculture, Conservation, and Trade Act of 1990 (FACTA) required the Federal Grain Inspection Service (FGIS) to establish or amend grain grades and standards to include, "...economically and commercially practical levels of cleanliness." The legislation required FGIS to determine if the benefits of cleaning exceeded the costs. FGIS subsequently asked ERS to conduct the study. The comprehensive study on wheat included two major components: 1) economic-engineering studies of the cost of wheat cleaning in the United States and estimates of domestic benefits from cleaning and 2) a series of in-country interviews of buyers in major wheat-importing countries to determine the effects of cleaner U.S. wheat on sales in these markets.

The results of this work have been prepared in a three-volume set:

"Economic Implications of Cleaning Wheat in the United States" (AER-669), by B.T. Hyberg, M. Ash, W. Lin, C. Lin, L. Aldrich, and D. Pace;

"The Role of Quality in Wheat Import Decisionmaking" (AER-670), by Stephanie Mercier; and

"The Costs and Benefits of U.S. Cleaning Wheat: Overview and Implications" (AER-675), by William Lin and Mack Leath.

The 18-country case studies form the foundation for the results of the international component of the wheat-cleaning study. The 18 countries studied accounted for 58 percent of world wheat imports and 63 percent of U.S. wheat sales in 1991. Each report has two components: background on the wheat-marketing policies, institutions, and distribution system in the wheat-importing country and results of interviews of wheat traders, processors, and government officials. All the interviews were completed during April-September 1992, and all followed a similar format. Each interview team consisted of both a commodity specialist and a country specialist. They attended a series of seminars on grain quality issues, data collection, and interview procedures before doing their interviews.

All the interviews followed a specific set of guidelines. An advisory panel of government officials, private traders and trade association members helped develop the questions, which consisted of five topic areas:

- ▣ The most important factors in the choice of a supplier country;
- ▣ Quality factors most important to the importer's purchase decisions and the importer's perception of wheat purchased from their suppliers;
- ▣ Contract specifications the importer uses to communicate preferences;
- ▣ The level of dockage in the shipments the importer receives and the costs of removing it; and
- ▣ If U.S. wheat were cleaner, would the importer purchase more and/or be willing to pay more?

The background information on the wheat-importing country and the responses from the interviews

provide a unique insight into the role of quality factors in the wheat purchase decisions of the major importers of U.S. wheat.

Alan J. Webb
Coordinator, Country Case Studies

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Summary

For the past 20 years, the **former Soviet Union (FSU)** has been a major importer in the world wheat market. Despite average yearly production of more than 80 million tons and a history of wheat exports, the FSU has consistently been a net importer of wheat since the mid-1970's. It is estimated that two-thirds of total Soviet wheat imports went to the **Russian Federation (RF)**. Wheat imports are used to supplement domestic supply (in the form of State procurement), which grew more slowly than demand. Imported wheat is used mostly for milling, allowing domestically grown wheat to be fed to livestock. Close to 60 percent of total wheat utilization is in the form of livestock feed. The rest is utilized for food and industrial production, seeds, waste, and stock building.

Wheat imports are centralized by the RF Government and negotiated by the former State trading organization, Exportkhleb. Imported wheat is distributed by the State company Roskhléboprodukt (formerly the RF Committee on Grain Products) to State mills and other State-owned processing facilities. The Russian Government is attempting to introduce market reforms to the wheat purchasing, marketing, and distribution system, as well as to privatize processing facilities. Concern over disruptions in food supplies initially led to a more gradual reform process, but at the end of 1993, President Yeltsin signaled the beginning of more rapid reform.

The United States is a significant exporter to the FSU (including Russia) averaging 6 million tons of wheat exports annually during 1988-92. U.S. market share during these years was 25-40 percent of total FSU imports. The FSU also imports wheat from Canada, the EC, Australia, Hungary, and Turkey. During 1991-92, almost all wheat imports were financed with export credits and credit guarantees. In 1993, exporting nations relied heavily on barter, concessional sales, and donations to continue exports to Russia and the other FSU republics. FSU commercial wheat purchases are eligible for U.S. EEP bonuses and EC price restitutions.

In terms of purchase decisions, Russian importers cited **credit availability** and **price** as the most important elements in determining source for wheat imports. End users were more concerned with **quality**. The quality characteristics considered most important to end users are: **gluten content, hardness, test weight, moisture levels, non-millable material, and insect damage**. However, end users have little say in determining import source, and until recently paid subsidized prices for imported wheat.

In the short run, the source of Russian imports will continue to be determined almost entirely by credit availability and donations. Russia's suspension from several credit programs due to repayment difficulties lowered the volume of wheat imported during 1993. Even if Russia pays off its debts, Russian wheat imports are not expected to increase to previous levels. Continued hard currency constraints, reduced import subsidies for processors, further contractions in the livestock sector, and reduced consumer demand for livestock products point to lower Russian grain imports in the near term. In the longer term, market reforms should lead to more efficient production and utilization of domestically produced grain, also resulting in lower wheat import demand and could lead to net exports in years of above average production. Moreover, as mills and processing plants are privatized, which could begin as early as 1994, and are capable of making purchasing decisions, quality considerations should become more important. However, it is expected that a competitive price will most likely remain the primary determinant of Russian import sources.

Russian Federation

Determinants of Wheat Import Demand

Sharon S. Sheffield

Introduction¹

Russia, or the Russian Federation, is the largest republic of the former Soviet Union, with a land area of 170.8 square kilometers (over 75 percent of the FSU) and population of close to 150 million, or more than half of the total Soviet population. Ethnic Russians make up over 80 percent of the population in the Federation. There are more than 150 nationalities living in the Russian Federation.

Possessing tremendous natural resources and industrial capacity, Russia is one of the most economically advanced republics of the former USSR. In 1988, the Russian Federation produced 63.7 and 50.3 percent of total Soviet industrial and agricultural net output, respectively. Primary industrial products include crude oil and gas, coal, nonferrous metals, chemicals, machinery, and timber. The export of these products provides Russia with 50-60 percent of its hard currency earnings. While Russia produces over half of FSU grain output and has an extensive livestock sector, accounting for 50 percent or more of FSU meat, milk, and egg production, the Republic is a net importer of those products. Economic indicators, such as Gross National Product (GNP), are now being formulated, using Western methodology, for the former Soviet republics.² According to these estimates, Russian GNP, accounting for more than 60 percent of Soviet GNP, experienced positive growth until 1990, when it became negative (table 1). Agriculture accounts for a relatively small share (4-5 percent) of Russia's GNP. The share of the Russian labor force employed in agriculture is less than 20 percent.

With the breakup of the Soviet Union at the end of 1991 and years of inconclusive economic reforms during the Gorbachev era, the outlook for Russia's economic performance in the short term is not encouraging. Despite abundant natural resources and a large, relatively well-skilled labor force, the transition to a market economy after 70+ years of central planning has proven difficult. Russia's GNP fell in 1992 by 19 percent, and positive GNP growth is not expected until 1995. In early 1993, inflation (measured in terms of retail price increases) ran at more than 30 percent a month. Industrial output continued to fall in 1992, declining nearly 19 percent from 1991. Industrial output in 1993 is forecast to decline 14-15 percent. The decrease in agricultural production slowed somewhat in 1992, falling 9 percent and is expected decrease by less than 5 percent in 1993. Industrial output has been particularly affected by rising costs, falling demand, conversion of the military industrial complex, and the breakdown in inter-republic trade, and could decline further if subsidies and soft credits are

¹With the collapse of the USSR and the creation of the Commonwealth of Independent States (CIS) in December 1991, it was decided that the scope of this study would be limited to the Russian Federation (RF). Unfortunately, in many cases specific data for the RF are unavailable, in which case data for the former Soviet Union (FSU) are provided. Every attempt has been made to present data that are available for the RF, and to place it in the context of historical Soviet data.

²Data are from PlanEcon, World Market Report, DRI-McGraw-Hill, Lexington, MA, p. 4.

| Table 1 -- Russia: Economic indicators | | | | | |
|---|----------------|---------|---------|---------|---------|
| Indicator | Unit | 1989 | 1990 | 1991 | 1992 |
| Gross national product | | | | | |
| Total 1/ | Bil. dol. | 1,103.0 | 1,110.5 | 1,010.5 | 818.5 |
| Per capita | Dollars | 7,503.4 | 7,501.3 | 6,802.7 | 5,510.2 |
| Total 2/ | Bil. rubles | 634.7 | 622.0 | 566.0 | 458.5 |
| Change | Percent | 2.5 | -2.0 | -9.0 | -19.0 |
| Domestic prices 3/ | | | | | |
| Producer prices | | | | | |
| Industrial, total | Percent change | 1.7 | 3.0 | 138.0 | 3,497.0 |
| Agricultural, total | Percent change | 6.7 | 11.7 | 80.0 | 1,555.0 |
| Crops | Percent change | 7.8 | 30.4 | 60.0 | NA |
| Livestock | Percent change | 5.7 | 4.7 | 88.5 | NA |
| Retail price index | | | | | |
| Total | Percent change | 1.9 | 4.7 | 93.6 | 1,414.0 |
| Balance of payments 4/ | | | | | |
| Imports | Bil. dol. | 173.1 | 171.6 | 141.4 | 109.2 |
| Change | Percent | 2.9 | -0.9 | -21.4 | -29.5 |
| Exports | Bil. dol. | 224.1 | 215.7 | 190.4 | 134.6 |
| Change | Percent | 2.5 | -3.9 | -13.3 | -41.5 |
| Exchange rate | | | | | |
| Official, average | Rb/dollar | 0.630 | 0.585 | NA | NA |
| Commercial, average | Rb/dollar | 1.890 | 1.755 | 1.740 | 220.0 |
| Population | | | | | |
| Change | Mil. | 147.0 | 148.0 | 148.5 | 148.8 |
| | Percent | 0.6 | 0.7 | 0.3 | 0.2 |
| NA=Not Available. | | | | | |
| 1/ Calculated at purchasing parity rate, billion 1990 \$. | | | | | |
| 2/ Billion 1990 rubles. | | | | | |
| 3/ Average price change, throughout year. | | | | | |
| 4/ Calculated at world market prices, includes internal and external trade. | | | | | |
| Source: PlanEcon, June 1993. | | | | | |

discontinued. However, given the political implications of such a policy, it is unlikely to occur in the short term. The situation in agriculture could improve due to recent policy shifts toward increased privatization and liberalization.

Domestic Wheat Supply and Demand

Production

Until the early 1980's, the USSR was the largest wheat producer in the world, with average production of more than 80 million tons a year. Russia produced close to half of the Soviet total

(table 2, fig. 1).³ Generally speaking, wheat production makes up over 40 percent of total grain production in Russia. Projected wheat production in the Russian Federation for the next decade could reach 65 million tons a year, due to increased profitability of wheat production and higher yields. However, weather will continue to affect year-to-year production levels.

Winter wheat is primarily grown in the western and southern regions of European Russia. Production is concentrated in the North Caucasus, Volga Valley, and Central Black Earth (Chernozem) Zone (see map on page 5). Spring wheat is grown in the Volga Valley and in the New Lands region, which extends from the southern Urals into western Siberia. Most of the durum wheat grown in the former USSR is located in the steppe region extending from the low and middle Volga Valley eastward into Kazakhstan. Spring wheat is also planted in Eastern Siberia and the Russian Far East.

Weather conditions can greatly affect wheat production. Inadequate fall moisture levels, which hamper initial establishment, and extremely cold temperatures without adequate snow cover lead to higher winterkill and lower winter wheat production. Drought conditions during the spring and summer months pose the greatest threat to spring wheat. Improper use of low-quality inputs, such as fertilizers and pesticides, also affects wheat production.

Historically, area sown to wheat was determined by central planners and government officials. During the early 1950's, Soviet leader Nikita Khrushchev implemented the New Lands policy, which expanded sown area in an attempt to become self-sufficient in grain production. Over the years 1950-56, area sown to grain increased 60 percent in the USSR, while wheat area increased 30 percent. Over 80 percent of this expanded area was sown to spring wheat, primarily in the Russian Republic, where total wheat area increased 50 percent (fig. 2). This expansion in area

Table 2 -- FSU and Russia: Cleanweight wheat production

| Country and year | Total wheat | Winter wheat | Spring wheat |
|-------------------|-------------|--------------|--------------|
| 1,000 metric tons | | | |
| FSU: | | | |
| 1986 | 86,573 | 44,379 | 42,194 |
| 1987 | 77,331 | 43,668 | 33,663 |
| 1988 | 78,826 | 51,756 | 27,070 |
| 1989 | 87,162 | 60,781 | 26,381 |
| 1990 | 101,891 | 70,697 | 31,194 |
| 5-year avg. | 86,357 | 54,256 | 32,100 |
| 1991 1/ | 72,000 | 53,100 | 18,900 |
| 1992 1/ | 89,350 | NA | NA |
| 1993 2/ | 84,710 | NA | NA |
| Russia: | | | |
| 1986 | 47,434 | 20,863 | 26,571 |
| 1987 | 36,868 | 17,272 | 19,596 |
| 1988 | 39,864 | 23,740 | 16,124 |
| 1989 | 44,004 | 27,090 | 16,914 |
| 1990 | 49,596 | 32,711 | 16,825 |
| 5-year avg. | 43,553 | 24,335 | 19,206 |
| 1991 | 38,900 | 25,827 | 13,123 |
| 1992 1/ | 46,200 | 28,000 | 18,200 |
| 1993 2/ | 45,000 | NA | NA |

NA=Not Available.

1/ Estimate.

2/ Projected.

Sources: USDA, Goskomstat SSSR, and Goskomstat Rossii.

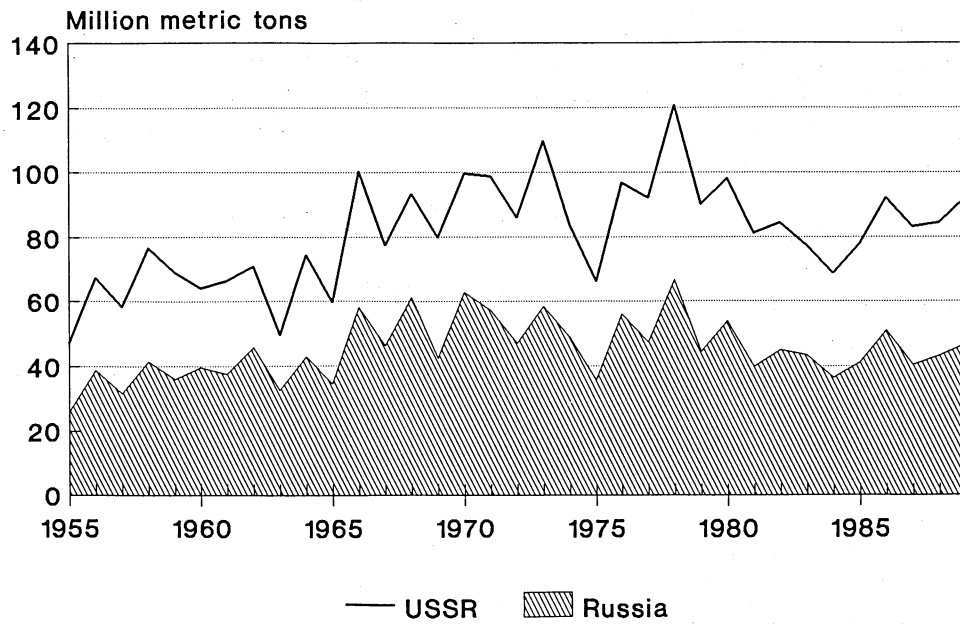
³"Cleanweight" production refers to the volume of grain after initial processing and cleaning. In other words, dockage is removed. Unless otherwise noted, all production numbers will be on a cleanweight basis. However, it should be noted that most of the historical data presented in this study are on a bunkerweight basis. Also, all data are expressed in metric tons.

Western Soviet Union: Economic Regions



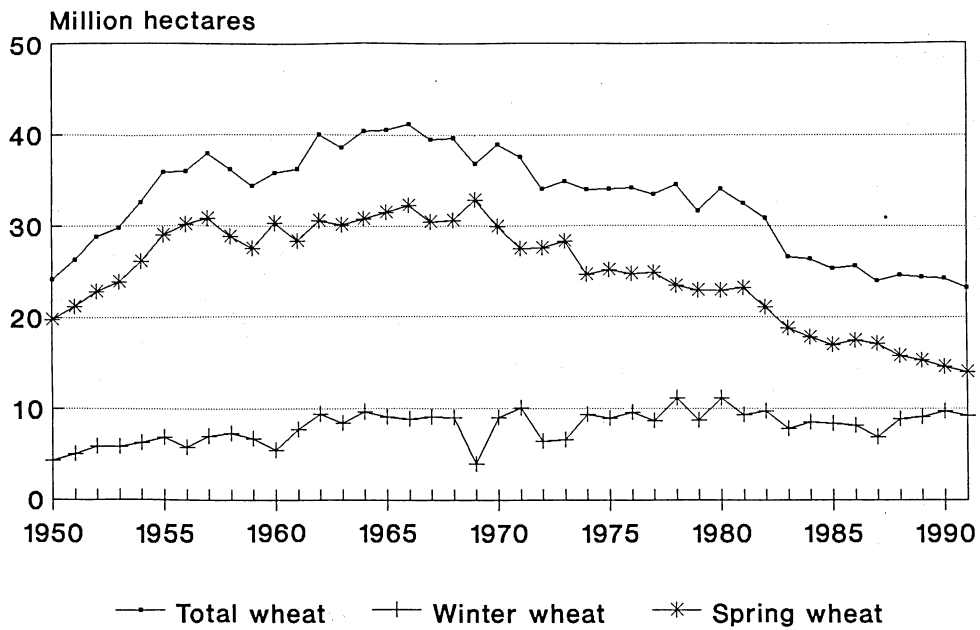
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Figure 1
FSU: Wheat production 1/



1/ Bunkerweight.

Figure 2
Russia: Wheat area



led to short-term increases in wheat production, but also to longer-term yield fluctuations.

During the early 1970's, grain area was again expanded. However, coarse grain area was increased to support the expanding livestock sector, while wheat area fell. By the late 1970's, total grain area began to decline so that fallow area could be increased. As a result, there was a significant cut in spring wheat area over the decade 1980-89, mostly in the Russian Federation, of nearly 8 million hectares. Spring wheat area decreased for several reasons. First, much of the expanded area cultivated with spring wheat was arid, susceptible to drought, and hot, dry, easterly winds known as *sukhovei*. Secondly, expanded area sown to spring wheat tended to be marginal in terms of productivity, and, therefore, more costly.

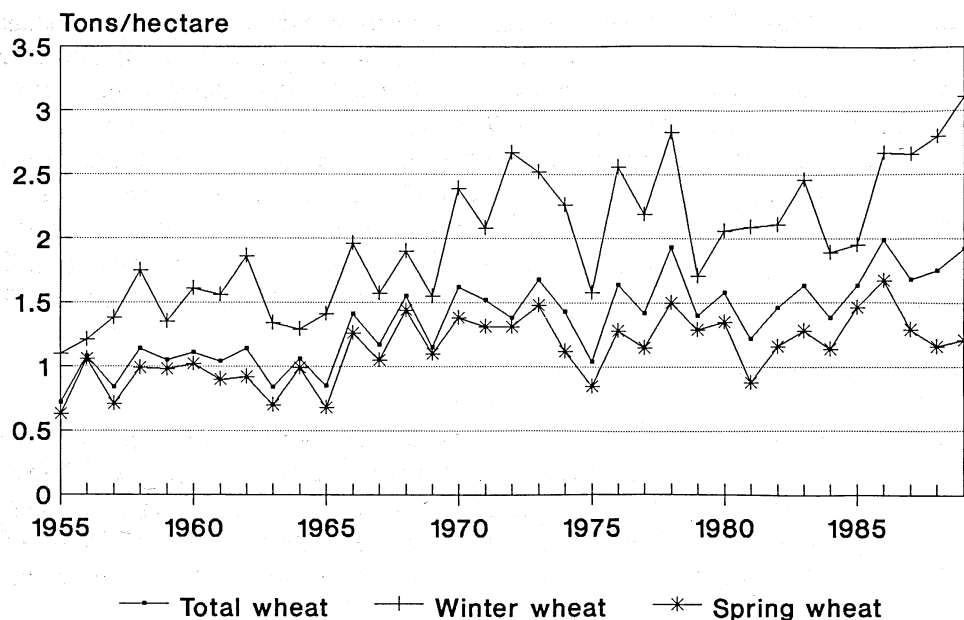
Despite attempts to improve productivity, Soviet wheat yields have been, for the most part, lower than in other primary wheat-producing nations (table 3). While increases have been achieved over the last decade, significant variability in Soviet wheat yields has remained (fig. 3). In addition to climatic conditions, soil compaction, low organic content of fertilizers, and the removal of straw during harvest result in lower and more variable wheat yields.

Table 3 -- Comparative wheat yields 1/

| Country | 1987/88 | 1988/89 | 1989/90 | 1990/91 | 1991/92 2/ |
|---------------------|---------|---------|---------|---------|------------|
| Metric tons/hectare | | | | | |
| Canada | 1.93 | 1.23 | 1.80 | 2.27 | 2.26 |
| United States | 2.53 | 2.29 | 2.20 | 2.66 | 2.31 |
| France | 5.49 | 6.15 | 6.42 | 6.49 | 6.65 |
| Hungary | 4.42 | 5.44 | 5.24 | 5.50 | 5.18 |
| China | 2.98 | 2.97 | 3.04 | 3.19 | 3.10 |
| FSU | 1.78 | 1.76 | 1.94 | 2.24 | 1.59 |
| Russia | 1.48 | 1.42 | 1.61 | 1.85 | 1.44 |

1/ Cleanweight basis.
2/ Preliminary.
Source: USDA.

Figure 3
Russia: Wheat yields 1/



1/ Bunkerweight.

| Table 4--FSU and Russia: Grain area under intensive technology | | | | | | | |
|--|------|------|------|--------|---------|---------|------|
| Item | 1985 | 1986 | 1987 | 1988 | 1989 1/ | 1990 2/ | 1991 |
| Million hectares | | | | | | | |
| FSU | | | | | | | |
| Total 3/ | 19.0 | 29.0 | 34.0 | 38.5 | 43.5 | 50.0 | NA |
| Winter grains | 5.3 | 12.3 | 13.0 | 17.0 | 18.5 3/ | 20.6 | NA |
| Spring grains 3/ of which: | 13.7 | 16.7 | 21.0 | 21.5 | 25.0 | 29.4 | NA |
| Spring wheat | 10.2 | 11.6 | 12.3 | 12.6 | 15.0 3/ | 17.1 | NA |
| Russia | | | | | | | |
| Total 3/ | 9.6 | 14.5 | 18.5 | 21.5 | 26.1 | 14.9 | 9.0 |
| Winter grains | 4.0 | 7.1 | 7.5 | 10.5 | 11.9 | NA | NA |
| Spring grains of which: | 5.6 | 7.4 | 11.0 | 11.0 | 14.2 | NA | NA |
| Spring wheat | 5.6 | 6.4 | 7.2 | 7.2 3/ | 9.5 3/ | NA | NA |
| NA=Not Available. | | | | | | | |
| 1/ Preliminary. | | | | | | | |
| 2/ Plan. | | | | | | | |
| 3/ ERS estimates based on official Soviet data. Data for 1985, 1990, and 1991 Russian area are official. | | | | | | | |
| Sources: CPE Agricultural Report, Goskomstat Rossii. | | | | | | | |

Due to better soil conditions, winter wheat area receives more intensive applications of fertilizer, which, in part, explain generally higher yields.

Over the last decade, winter wheat yields increased 50 percent, while spring wheat yields remained nearly constant. One possible reason for increased winter wheat yields could be the expansion of winter grain area (including wheat, rye, and barley) cultivated under intensive technology (IT), a program adopted in 1985 that claimed to utilize Western technological and agronomic practices. However, many analysts believe that the total effect of this program on overall grain production and quality was minimal, considering that the areas where IT was most aggressively applied were already producing higher yields.⁴ Table 4 provides grain area under IT in the USSR and Russia for the years 1985-90. Although total grain area under IT in the USSR was projected to reach 80 million hectares by the year 2000, recent statistics indicate that area under IT in Russia has fallen to 1985 levels.

Quality Characteristics of Domestic Wheat

The following types of wheat are grown in Russia: durum, red spring, white spring, red winter, and white winter. There are five grades of wheat quality, with 1 being the highest and 5 the lowest. Foreign material allowances range from 1-4 percent, grain admixtures (presence of other grain types) 2-6 percent (spring wheat) and 3-7 percent (winter wheat), and moisture levels, 15.5-16.0 percent. There are also four grades for wheat based on moisture content: dry (up to and including 14 percent),

⁴See Foster, Christian J. "Intensive Technology Claims Inflated," CPE Agricultural Report, July/August 1989, p. 14.

moderately dry (over 14 percent to 15.5 percent inclusive), moist (Over 15.5 percent to 17 percent inclusive), and wet (over 17 percent). These classifications indicate a tolerance for higher than normal moisture levels.

There are two types of wheat: soft (*miagkaia*) and durum (*tviordaia*). Soft wheat has three classes: strong (*sil'naia*), filler (*sredniaia* or *tsennaia*), and weak (*slabaia*). Strong wheat is the best class for baking purposes and is used as an improver. Table 5 contains standards for each type and class. It is not clear, however, how stringently these standards were applied by Soviet authorities, given plan fulfillment requirements that led to an emphasis on quantity over quality.

The quality of domestic grain has been a very important political issue in the former Soviet Union. One reason for this is that a large quantity of domestically produced wheat is fed to livestock, in part because it does not meet milling quality standards. As a result, the FSU became dependent on imported wheat for domestic milling. Several elements account for persistently low wheat quality. Low soil fertility reduces protein content. Weather, in the form of drought during the growing season or extreme wetness during harvest, affects quality. Other contributing factors include the two-stage harvest system (wheat is first cut, then threshed in the field) and poor storage facilities, both of which increase the vulnerability of Soviet varieties to insect infestation and disease.

Table 5 -- Russia: Classification of wheat

| Type | Class | Test weight | Gluten content | Protein | Hardness |
|-------|-----------|-------------|-------------------|------------|-------------|
| | | Gram/liter | -----Percent----- | | |
| Soft | Strong | 680 | 28+ | 14+ | at least 60 |
| | Filler | 680 | 25-27 | 11-13.9 | at least 40 |
| | Weak | 680 | 25 or less | 11 or less | 40 or less |
| Durum | 1st class | 770 | 28+ | 16 | NA |
| | 2nd class | 745 | 25-28 | NA | NA |
| | 3rd class | 745 | 22-25 | NA | NA |

NA=Not available or not specified.
Sources: Rastenivodstvo (1986), Spravochnik po zagotovkam i katchestvu zerna (1985), and Sel'skokhoziaistvennyi entsiklopedicheski slovar' (1989).

During the 1980's, many articles in the Soviet press and various agricultural journals recognized these problems and called for improvements in the quality of wheat sold to the State. The intensive technology program, described above, was implemented to increase yields and improve quality. However, the emphasis on increasing yields often led to the sowing of varieties that did not always meet milling standards.

Utilization

Wheat is utilized in the form of food, feed, waste, industrial use, seed, and stock buildup (table 6). Close to half of the available Russian wheat supply (production plus imports) is utilized for livestock feed, while human wheat consumption constitutes around 30-35 percent of supply. The rest goes for industrial use, seed supplies, and stock buildup.

USDA estimates that dockage and waste account for 10-15 percent of bunkerweight production. In addition, a significant percentage of wheat is lost after processing. One source estimates that in total, approximately 25-30 percent of all grain (including wheat) is lost, with almost half of the loss

Table 6 -- Russia: Wheat supply and utilization

| Year | Area | Yield | Production | Imports | Exports | Supply | Total use | Feed and residual use | Stock change |
|------------|----------|--------|-----------------------------|---------|---------|--------|-----------|-----------------------|--------------|
| | 1,000 ha | Ton/ha | -----1,000 metric tons----- | | | | | | |
| 1987/88 | 24.0 | 1.5 | 36.9 | 13.3 | 0.5 | 49.7 | 49.6 | 26.7 | 0.1 |
| 1988/89 | 24.6 | 1.6 | 39.9 | 9.5 | 0.5 | 48.9 | 48.8 | 26.0 | 0.1 |
| 1989/90 | 24.4 | 1.8 | 44.0 | 8.2 | 0.5 | 51.7 | 51.5 | 28.6 | 0.2 |
| 1990/91 | 24.2 | 2.0 | 49.6 | 11.0 | 0.5 | 60.1 | 58.8 | 35.5 | 1.3 |
| 1991/92 | 23.2 | 1.7 | 38.9 | 11.5 | 0.1 | 50.3 | 55.0 | 32.2 | -4.7 |
| 1992/93 1/ | 24.4 | 1.9 | 46.2 | 14.0 | 0.5 | 59.7 | 58.1 | 34.8 | 1.6 |
| 1993/94 2/ | 24.0 | 1.9 | 45.0 | 8.3 | 1.5 | 51.8 | 54.3 | 32.4 | -2.5 |

Trade data are on a July-June year and include inter-republic trade.

Production data are cleanweight.

1/ Estimated.

2/ Projected.

Source: USDA, November 1993.

occurring during storage and transport.⁵

Reasons for higher levels of waste include a lack of incentives, such as private ownership, to prevent losses, the long distances between farms, storage facilities, and processors; and the low quality of the transportation infrastructure (roads and vehicles). The infrastructure problem is significant, considering that close to half of all domestically produced grain is transported by road.⁶

For food consumption, wheat is used to produce flour, bread, groats⁷, pasta, and baked goods (pastries, cookies, and cakes). Bread has special cultural significance as it is an important part of the Russian diet. Bread made from rye/wheat blends tends to be more popular than wheat bread varieties. The rye breads, known as "black bread" (*chyornyi khleb*), are an important part of the Russian diet and are preferred in terms of texture, taste, and aroma.

The consumption of bread and grain products (defined as "bread and pasta in flour equivalent, flour, groats, and pulses") in the Russian Federation has declined over the past decade, from 126 kg per capita in 1980, to 119 kg per capita in 1990.⁸ The main reasons for this decrease are that incomes rose substantially, and emphasis was placed on increasing per capita consumption of meat. However, consumption remained almost constant during 1985-90, and started to increase in 1990. In 1991, per capita consumption was 120 kg. Per capita consumption in 1992 continued to increase, and one RF Government official has stated that bread consumption could reach 1970's levels of 144 kg per person, although late-1993 bread price increases could minimize this increase. While U.S. per capita wheat consumption has been increasing, consumption levels in the USSR and in Russia continue to be over 1.5 times higher (table 7).

⁵Food and Agricultural Policy Reforms in the Former USSR, World Bank, 1992, p. 106.

⁶Parotte, J.H. "The Future Development of the Grain Market in Central and Eastern Europe," *Agrarwirtschaft*, August/September 1992.

⁷Groats are a food product made from several kinds of grain, including wheat. They resemble Western breakfast cereals, such as cream of wheat.

⁸This consumption figure includes other grains such as rye. Estimated per capita wheat (for food) consumption is presented in table 7.

Due to the January 1992 price liberalization, a shift took place in consumption patterns away from commodities with high income elasticities, such as meat, in favor of products with low income elasticities, such as bread. Another reason for increased consumption is the high level of bread consumption by livestock, given the relatively lower price of bread compared to mixed feed. However, livestock consumption of bread has already fallen, given increasing bread prices and declining inventories resulting from reduced consumer demand for meat.

Wheat is also utilized in the form of alcohol, primarily in the production of vodka. Based on official statistics, Russian vodka production decreased by almost 50 percent during the period 1980-89, to 117 million decaliters in 1989. The main reason for this decline was the introduction of Gorbachev's anti-alcohol campaign during the mid-1980's. While it is likely that home production of vodka (called *samogon*) increased during this period, ingredients other than wheat, such as sugar, were used. In response to lower State controls and higher prices, vodka production has begun to increase, reaching 151 million decaliters in 1992.

Total livestock feed consumption in the Russian Federation increased steadily during the 1980's, reaching 225.8 million tons (in feed unit equivalent) in 1990 before decreasing to 220.9 million tons in 1991. Concentrated feed, which includes mixed (compound) feed, makes up around 40 percent of this total. These feed rations are poorly balanced, as high levels of grain, estimated at 70-80 percent of the total, are consumed without proper protein supplements. As a result, consumption of manufactured feed per unit of livestock output averages almost twice the level of that in the West.⁹ While wheat constitutes one-quarter of concentrated feed, it is also fed in unprocessed form or as bread.¹⁰ Some estimate the amount of milling quality wheat that is fed yearly to livestock in the FSU at 2 million tons, and as high as 8-10 million tons. Approximately 4-5 million tons of wheat in the form of bread is also reportedly fed to livestock.

Table 8 presents Soviet statistics on the composition of concentrated feed consumed by livestock in 1988. Comparing these statistics to the estimated composition of U.S. feed concentrates shows some interesting differences.¹¹ While corn makes up over 60 percent of feed rations in the United States, it accounts for only 11 percent in FSU rations. Conversely, in the FSU, wheat makes up 25 percent of the ration compared to 3 percent in the United States. Another Soviet source puts the share of wheat in mixed feed rations at 30 percent for cattle, 40 percent for swine, and as high as 70 percent

Table 7 -- Per capita wheat consumption

| Year | USSR 1/ | Russia 1/ | U.S. 2/ |
|-----------|---------|-----------|---------|
| Kilograms | | | |
| 1970 | 119 | 115 | 51 |
| 1980 | 110 | 101 | 54 |
| 1985 | 106 | 95 | 58 |
| 1986 | 106 | 95 | 59 |
| 1987 | 106 | 94 | 61 |
| 1988 | 105 | 94 | 61 |
| 1989 | 103 | 92 | 61 |
| 1990 | 106 | 95 | 64 |
| 1991 | NA | 96 | 64 |

1/ Estimate based on per capita consumption of grain products, defined as bread and pasta in flour equivalent; flour, groats, and pulses.

2/ Defined as flour and cereal consumption.

Sources: Narodnoe khoziaistvo SSSR and RSFSR, various years; USDA.

⁹World Bank, 1992, p. 35.

¹⁰"Pochemu nam ne khvataet zerna?", *Vestnik sel'skokhoziaistvennykh nauk*, No. 9, 1991, p. 89.

¹¹The composition of concentrates fed to animals in the United States in 1988 is from Mark Ash, *Animal Feeds Compendium*, AER 656, May 1992, U.S. Department of Agriculture, Economic Research Service, p. 18.

for poultry.¹² These differences largely stem from the domestic supply of these grains in each country, and in the case of the United States, the lower price of feeding corn relative to wheat. Even more striking is the share of protein meal in U.S. rations, which is twice as high as that of FSU concentrates.

Table 8—FSU: Composition of concentrated feed rations, 1988

| Ingredient | Million tons | Percent |
|-------------------|--------------|---------|
| Total | 161.1 | 100 |
| including: | | |
| Grain | 131.0 | 81 |
| of which: | | |
| Wheat | 40.0 | 25 |
| Barley | 36.9 | 23 |
| Corn | 18.0 | 11 |
| Oats | 10.0 | 6 |
| Other | 16.1 | 10 |
| Protein meals | 11.1 | 7 |
| Other ingredients | 19.0 | 12 |

Source: Vestnik sel'skokhoziaistvennykh nauk, 1991, No. 9.

Given declining levels of State procurement, wheat kept on the farm may be suitable only for feed consumption, as most farms lack adequate storage facilities. Wheat consumption, in the form of animal feed, should decrease as livestock inventories are reduced due to high mixed-feed prices (relative to livestock farmgate prices) and decreasing consumer meat demand. Improved coarse and succulent fodder supplies (and lower relative prices) in 1993 could also lower animal consumption of grain. As markets begin to allocate resources, mixed-feed rations should become more balanced, by increasing protein and decreasing grain content. This should also increase feeding efficiencies and make the livestock sector more productive. However, Russian farmers may continue to feed wheat in larger amounts than in other countries if the relative price between wheat and other grains, such as corn makes feeding wheat more economical.

Wheat Sector Policies

Historically, very little thought was given to the kind of wheat preferred by end users and consumers. State ministries developed procurement levels to purchase as much wheat as deemed necessary by planners to ensure sufficient production of wheat-based products. These ministries, not market mechanisms, determined how much wheat would be produced, how much farms would receive for their output, where it would be distributed, and how it would be utilized. The State routinely subsidized the purchase of wheat and other grains. It is estimated that agricultural subsidies, including wheat producer and consumer subsidies, accounted for as much as 15 percent of GNP. While official proclamations and decrees called for higher quality and fewer losses, very few financial incentives were provided to implement these decrees.

With the breakup of the USSR, the Russian Federation is attempting to decentralize production and procurement. Notable examples of this include the creation of private farms and greater differentiation of producer prices based on quality. However, for the 1992 harvest, the Government still required farms to sell a percentage of their produce to the State (up to 35 percent), and continued to subsidize farm purchases of inputs. Also in 1992, private farms produced less than 1 percent of total agricultural output.¹³ While few policy changes were made for the 1993 harvest, at the end of

¹²"Effektivnee ispol'zovat' potentsial zootekhnicheskoi nauki," *Zootekhiia*, No. 9, 1989, pp. 2-5.

¹³A distinction should be made between private "peasant" farms and private auxiliary plots. Peasant farms have come into existence over the last 2 years, and as of August 1, 1993, totaled 261,393, with an average of 42 hectares per farm. In total, these farms account for 5 percent of total agricultural land. Private auxiliary plots have long been in existence, usually consisting of less than 1 hectare of land located on State and collective

1993, President Yeltsin and his advisors announced new reforms to liberalize and privatize the grain market in Russia. Yeltsin also signed a presidential decree that allows the free sale of land, which should accelerate the growth of private farms and the private sector's share of agricultural output.

Producer Policy

Wheat production and marketing have been controlled by the State since the late 1920's. Forced collectivization of farms into kolkhoz (collective) and sovkhoz (State) farms was implemented by Joseph Stalin during the late 1920's and early 1930's. Government ministries decided how much wheat each collective and State farm would grow and subsequently sell to the State. During the Gorbachev era, State procurement took the form of State orders (goszakaz) and payment in kind taxes (prodalog) that farms were required to turn over to the State. This form of State procurement allowed farms to keep above-plan output for their own use or for sale in collective farm markets.

The State also determined how much farmers would receive for their agricultural production. Procurement prices were differentiated by geographic region, and were equal to a base price plus a bonus, based on quantity, quality, and financial need. As a result, less productive areas often received higher prices for their produce. These differential price zones were reduced when procurement prices were increased over 30 percent during 1990-91. Although special bonus payments to financially weak farms were discontinued, a State-financed investment fund was developed to continue assistance to these farms.¹⁴

However, with increasing decentralization and worsening economic conditions, the amount of grain the State has been able to procure in recent years has declined. Whereas, during the 1970's close to half of all wheat produced was sold to the State, by the early 1980's the level procured dropped to 40 percent. There are several reasons that explain lower procurement levels.

Until recently, prices for better quality wheat were not substantially differentiated from those for lower quality wheat. It can also be argued that even with sufficient price differentials for quality, it was often worthwhile for farms or regions to feed good quality wheat due to relatively higher prices for livestock products. The higher cost of mixed feed relative to grain, as well as the low quality of the feed, also potentially explains why farmers kept wheat on the farm to feed in unprocessed form to livestock.

In addition, farms had an incentive to keep wheat on the farm to pay employees or to barter with, or to sell on commodity exchanges, where they could receive prices 3-4 times higher than what the State offered. During 1992/93, the incentive to keep wheat on the farm was even more compelling, as input prices for products such as fertilizer, machinery, and mixed feed increased faster than prices for agricultural output. A greatly devalued currency and accelerating rates of inflation also make sales to the State for rubles much less attractive.

Higher procurement prices and other bonus schemes were implemented to procure higher quality milling wheat. In 1988, bonuses ranging from 30-150 percent of the base price were offered for

farms. In addition, many urban residents have garden plots at their dachas. An increasing amount of agricultural produce comes from these plots, which make up around 2 percent of agricultural land. The production from these plots is either locally consumed or sold in farmers' markets. It is estimated that private plot production of vegetables and potatoes, as a percentage of total production, equaled 50-70 percent in 1992.

¹⁴World Bank, p. 120.

| Year | All wheat | | Strong wheat | | Durum wheat | |
|--------------|------------|---------------------|--------------|----------------------|-------------|----------------------|
| | Total | Share of production | Total | Share of procurement | Total | Share of procurement |
| | 1,000 tons | Percent | 1,000 tons | Percent | 1,000 tons | Percent |
| 1976-80 avg. | 24,524 | 48.6 | 2,147 | 8.8 | 1,560 | 6.4 |
| 1981-85 avg. | 16,595 | 32.9 | 1,855 | 11.2 | 602 | 3.6 |
| 1986 | 22,644 | 44.8 | 5,046 | 22.3 | 1,794 | 7.9 |
| 1987 | 15,095 | 29.9 | 3,292 | 21.8 | 662 | 4.4 |
| 1988 | 16,328 | 32.3 | 2,628 | 16.1 | 418 | 2.6 |
| 1989 | 17,433 | 34.5 | 2,726 | 15.6 | 866 | 5.0 |
| 1990 | 18,350 | 36.3 | 1,973 | 10.8 | 712 | 3.9 |
| 1991 | 13,133 | 26.0 | 782 | 6.0 | 274 | 2.1 |

Source: Goskomstat Rossii.

milling-quality wheat, based on the quality standards listed above, with an emphasis on gluten content. More recently, hard currency rubles and items such as tractors, trucks, cars, and sewing machines were offered in exchange for increased sales of higher quality wheat to the State.

However, these programs had little effect in terms of improving State procurement of quality wheat (table 9). The sale of milling quality (strong) wheat in Russia (as a percentage of total wheat procurement) dropped to 6 percent in 1991 from 22 percent in 1986. Durum wheat sales also decreased, from 8 percent of total wheat procured in 1986 to 2 percent in 1991. It is unclear whether or not higher-quality wheat procurement fell due to lower production of these classes of wheat or because farmers preferred to keep wheat on the farm or sell it through other channels. Moreover, farmers did not always receive the items promised for above plan procurement, and as a result trust in these schemes is low.

The Russian Government is attempting to dismantle the old Soviet system of production and procurement. For the 1992 harvest, it was decreed that State purchases of all agricultural products from farms would be made at "market prices," and that 35 percent of total output would be "required" to be sold to the State. Sales to the State in 1992 started out very slowly, totaling 4 percent of planned purchases by mid-August, at which point the government announced an increase in the average price for wheat to 12,000 rubles (\$70) per ton. In addition, the Minister of Agriculture announced that only "surplus regions" (that is, regions where production was greater than local needs) would be required to sell to the State. It appeared that farmers were holding back grain in expectation of higher prices, as the rate of procurement began to pick up after the price increase. By the end of 1992, around 26 million tons of grain, including 12.5 million tons of wheat, had been purchased by the State.

Initially, State policy for the 1993 harvest appeared little changed from 1992. In April, the RF Supreme Soviet passed a law on grain that allowed for continued subsidies for grain producers who sold their output to the State. State procurement continued to be utilized for supplying the Federal and regional procurement reserves, and while prices were increased, they remained below world prices (table 10). However, for the first time, State procurement prices were higher than quasi-market commodity exchange prices. The Government also announced that procurement prices would

Table 10-- Russia: Wheat procurement prices

| Class | 1992 | | 1993 1/ | |
|-----------------------------------|------------|------------|------------|-------------|
| | Rubles/ton | Rubles/ton | Rubles/ton | Dollars/ton |
| Durum wheat: | | | | |
| First class | 24,000 | 51,000 | | \$68.00 |
| Second class | 20,000 | 43,000 | | \$57.33 |
| Third class | 17,000 | 36,000 | | \$48.00 |
| Soft wheat: | | | | |
| First class, 40+ gluten content | 20,000 | 43,000 2/ | | \$57.33 |
| First class, less than 40 gluten | 17,000 | 36,000 | | \$48.00 |
| Second class | 15,000 | 34,000 | | \$45.33 |
| Third class | 12,000 | 30,000 | | \$40.00 |
| Fourth class, less than 18 gluten | 10,000 | 26,000 | | \$34.67 |

1/ April 1993 prices, using exchange rate of 750 rubles to the dollar.
2/ Specified as first class, 36 and higher gluten content.

be indexed monthly for inflation, and the average State price for wheat (grade 3) rose to 77,000 rubles (\$77) per ton in September. However, in October the RF Government announced its intention to end indexation. Also, State procurement began to fall off, mostly due to a lack of payment, as the amount owed to farmers reached 1.5 trillion rubles. Against the wishes of pro-reform officials who want to lower the budget deficit and control the supply of money, in October, Roskhleboprodukt received 800 billion rubles in credit, 300 billion of which is interest free, the rest borrowed at a preferential interest rate of 200 percent, with which to pay farms for their output.

In November 1993, a draft Presidential decree on liberalizing the domestic grain market was released, and if enacted, could radically change the way grain is sold and distributed. The decree envisions the nearly complete liberalization of grain marketing and trade, by dismantling the State procurement agency Roskhleboprodukt, ending State procurement (with the exception of a limited Federal Fund) and subsidies as proscribed by the April 1993 grain law, privatizing grain storage and processing units, and allowing market mechanisms to determine grain prices.¹⁵ In addition, the draft decree indicates that grain export barriers may be reduced. In October, President Yeltsin signed a decree allowing for the free sale of land and the acceleration of land privatization.

Recent parliamentary elections and a simultaneous referendum on a new constitution are expected to largely determine President Yeltsin's ability to enact these kinds of policies. Despite the passage of the new constitution, which gives Yeltsin increased powers, and the pro-Yeltsin party Russia's Choice winning the largest number of parliamentary seats, non-reformists, including the influential Agrarian Party, are estimated to hold a majority of the 450 seats in the lower house of the parliament, called the Duma. While no formal coalitions have been announced, it is expected that these non-reform parties will likely hinder any measures to accelerate agricultural reform in the near term.

¹⁵"Nekotorye polozheniia proekta ukaza prezidenta Rossii 'O razvitiu zernovogo pyinka,'" *Kommersant*, October 16, 1993, p. 6; Ukaz Prezidenta Rossiiskoi Federatsii (Proekt) "O liberalizatsii zernovogo rynka v Rossii," and "Polozhenie o privatizatsii predpriatii po pervichnoi pererabotke, khraneniui zerna i proizvodstvu khleboproduktov (November 1993).

Consumer Policy

Historically, the consumer price for wheat products, such as bread, flour, and baked goods, has been kept artificially low through significant subsidies from the State. These subsidies have had a great effect on consumer behavior, overstimulating demand and causing hoarding. This policy also led to the feeding of bread to livestock.

There are three primary channels through which food products are sold: State retail stores, State-dominated consumer cooperatives, and collective farm markets. Retail prices were fixed in State stores, negotiated and administratively controlled in the cooperatives, and basically free in the farm markets. Close to 70 percent of food purchases were made in State stores, although this share most likely began to decline in 1991, given increasing food shortages caused by economic dislocations and hoarding due to expected price increases. An advisor to the Ministry of Agriculture estimated that the State's share of retail trade in the first half of 1993 fell to 50 percent, while trade through private channels increased to 30 percent. In large urban areas, such as Moscow and St. Petersburg, private trade accounts for as much as 50-70 percent of total retail trade.

Bread is a symbolic commodity in Russia. However, in recent years bread has become a symbol for how irrationally prices were set. Anecdotes about farmers feeding bread to their livestock instead of mixed feed and kids playing soccer in the streets with loaves of bread were circulated during the Gorbachev era. While these stories were meant to provide an impetus for change, bread prices remained for the most part fixed until April 1991, when they were increased (not freed) for the first time in several decades.¹⁶ However, this price increase was accompanied by compensation to consumers in the form of a general wage increase, special supports for families, and the upward indexation of savings.

On January 2, 1992, Russia (and, as a result, the other republics followed suit to prevent an outflow of goods) freed prices for most goods, but bread prices were only allowed to increase by a fixed amount.¹⁷ Before liberalization, bread cost 30-35 kopeks/kg (State price) and 2-3 rubles/kg (cooperative price) a loaf; after the price increase, bread rose on average to 2-6 rubles/kg, depending on the quality and type. These increases were not considered to be enough by bakers, who were faced with even larger increases in input prices for flour and other ingredients and by profit controls by the State.

A few months after the first liberalization on January 2, 1992, bread prices were also supposed to be set free and State subsidies were to end. During June 1992, bread prices were increased and the price for high-quality bread rose on average to 16-17 rubles a loaf (table 11). Later reports indicated that prices for lower quality bread would continue to be subsidized. At the end of 1992, the price for bread had risen to 20-40 rubles. In February 1993, a Government decree authorized the reintroduction of bread subsidies. By August, pensioners, the unemployed, children, and students became eligible for bread allowances to supplement their incomes.

In October 1993, the Government announced the end of subsidies for flour mills, and increases in the bread allowance for eligible groups. By ending the flour processing subsidy, a larger share of the cost of producing bread, assuming continued profit controls on producers, is passed along to the

¹⁶In December 1986 there was a price increase directed at higher-quality breads which, on average, equaled 4.5 kopecks per kilogram. To begin with, the best quality bread had cost only 28 kopecks.

¹⁷The exceptions to the January 2 price liberalization included the following products: fuel and energy, and basic foods such as low-quality bread, skim milk, cottage cheese, baby food, salt, and low-quality vegetable oil.

consumer. It is estimated that bread prices could go as high as 300-400 rubles, approximately 30-40 cents, by the end of the year. However, officials noted that local governments could continue subsidies, presumably financed out of regional budgets, and control pricing, which means continued regional differences in the bread prices. It is also expected that bread consumption will begin to decrease as a result of the higher prices.

Trade Policy and Reform

Through 1993, the Russian Government continued to determine grain import levels and commodity mix. Calendar year 1993 grain imports are projected by Government officials at 12 million tons (down 60 percent from 1992), and some claim that Russia's imports in 1994 will be even lower. In addition, these officials have stated that imports will shift away from wheat to corn and protein meals, which they maintain are needed for the livestock sector. While these claims have been made in past years, 9-month statistics show grain imports down over 60 percent from 1992, with larger drops in the quantity of wheat imports (60 percent) than of corn (40 percent).

Table 11 -- Russia: Bread prices, 1992

| Date | Type of bread: | | | |
|--------------------------|-----------------|-----------------|----------|----------|
| | Rye | Rye-wheat blend | Wheat 1/ | Wheat 2/ |
| | Rubles/kilogram | | | |
| Jan. 28 | 1.82 | 1.93 | 5.77 | 2.38 |
| Feb. 25 | 1.87 | 2.14 | 6.27 | 2.80 |
| March 31 | 2.98 | 2.34 | 7.85 | 4.04 |
| April 28 | 2.99 | 3.82 | 10.01 | 4.57 |
| May 26 | 3.49 | 4.52 | 11.06 | 6.26 |
| June 30 | 7.00 | 7.07 | 16.71 | 9.25 |
| July 28 | 9.72 | 8.45 | 17.99 | 10.99 |
| August 4 | 9.37 | 9.22 | 18.05 | 11.49 |
| Sept. 22 | 12.05 | 13.39 | 24.82 | 15.78 |
| Oct. 27 | 17.60 | 21.61 | 32.55 | 24.47 |
| Nov 24 | 21.02 | 23.08 | 39.57 | 28.43 |
| Dec. 8 | 21.73 | 24.21 | 43.57 | 30.50 |
| Total increase (percent) | 1194 | 1254 | 755 | 1282 |

1/ Made from the highest quality wheat flour.
 2/ Made from first and second sorts of wheat flour.
 Source: *Ekonomika i zhizn'*, #32, 8/92; *Delovoi mir*, various issues

Russia is also in the process of partially liberalizing grain trade. There are indications that State control of grain imports could decrease, if liberalization of domestic grain marketing takes place as President Yeltsin and pro-reform officials such as Yegor Gaidar have suggested. Conservative agrarian interests, as articulated by Deputy Prime Minister Zaveriukha, also support decreasing State imports, in order to boost domestic production and to re-direct State expenditures, which, as they see it, support farmers in exporting nations at the expense of those in Russia. Although there are currently no import tariffs or taxes for grain or other agricultural commodities, some agrarian conservatives have begun calling for protectionist measures to help domestic producers. During 1993, import subsidies for all but a few staple goods, such as baby food and medicine, were phased out.

While there has been some movement toward liberalizing exports, the most recent Government decree of November 2, 1993, maintains export quotas and licenses on wheat.¹⁸ However, this decree does

¹⁸"O merakh po liberalizatsii vneshekonomiceskoi deiatel'nosti," *Ekonomika i zhizn'*, No. 46, November 1993.

state that, beginning January 1, 1994, commodities subject to export quotas and licensing (except petroleum and oil products) would be subject to an open tender, which in the past was open only to State trading organizations. Export tariffs on wheat were also reduced, from 70 percent of their export value to 25 percent for durum and 10 percent for other classes of wheat.¹⁹ Yeltsin's draft decree on liberalizing the grain market does call for a reevaluation of this policy by the Ministries of Foreign Economic Affairs and Agriculture.

Steps were taken in September 1993 to formulate a common FSU trade policy, when an economic union treaty was signed by Russia and 9 other FSU republics. Since the breakup of the Soviet Union and the creation of the Commonwealth of Independent States (CIS), inter-republic trade flows have declined due to the lack of a regional trade agreement and clearing mechanism for new national currencies that have been introduced in almost all of the republics. While few details have been finalized, the objectives of the treaty include: lowering and eventually abolishing customs tariffs and other trade barriers, greater coordination of economic policies, and the creation of a payments union (clearing mechanism) that would eventually evolve into a currency union, allowing the other FSU currencies to float within agreed limits against the ruble. Reportedly, plans are also being drawn up to create a common CIS agricultural market.

Marketing and Distribution

Marketing and distribution of wheat have traditionally been organized and performed by the State through various ministries and committees. Since the breakup of the USSR, it is unclear how much has actually changed in terms of State control of these functions. While quasi-private "commodity exchanges" (*tovarnye birzhi*) and trading companies have sprung up outside the State structure, it does not appear that they are handling much if any of the grain which is imported from foreign (non-FSU) sources. There have been proposals to channel imported grain through the commodity exchanges, but it is unlikely that much grain has been distributed this way. An exception to this is the process of monetization, which requires some food donations to be sold on commodity exchanges. Although mills, bakeries, and other grain-processing enterprises are for the most part State owned, large-scale privatization could take place in early 1994.

Domestic Grain Marketing System

Domestic grain has historically been procured by the State from farms at an administratively set price. This grain, along with imported grain, was distributed by the State Committee on Grain Products to end users and processors. Since 1991, increased decentralization has led to the creation of alternative channels of grain marketing and distribution. Examples of this include commodity exchanges and private trading firms, which are involved with internal marketing and distribution and function more or less as private sector enterprises. However, it is still unclear to what extent these developing institutions are involved in handling grain from external markets, and how they compete or work with Exportkhleb and the central authorities of each republic.

Very small volumes of grain are traded through the commodity exchanges. For example, one of the larger commodity exchanges, the Moscow Commodity Exchange, sold 200,000-300,000 tons of domestic grain, mostly wheat, during 1990-June 1992. Another source puts the amount of grain sold on all commodity exchanges in 1992 at 1 million tons. While very little, if any, imported grain has

¹⁹See "Ob utverzhdenii stavok vyvoznnykh tamozhennykh poshlin i perechnia tovarov, v otnoshenii kotorykh oni primeniatsia," 30 October 1993, Government decree No. 1103, published in Kommersant, November 8, 1993, p. 35.

been distributed through these channels, some donated wheat and other grains have been sold through the exchanges during 1992/93, in a process known as monetization, by which the funds raised from the sale of donated commodities are used to create social service programs for the needy. The news agency, Interfax, reported that over 200,000 tons of U.S. No. 2 wheat was sold on the Saratov grain exchange in May 1993, at an average 32,000 rubles per ton (\$38/ton), a price lower than State procurement prices, which could suggest that donations are undercutting local producers. Despite the movement of grain through these non-State channels, there is growing evidence that the State procurement agency Roskhleboprodukt is the primary grain purchaser at these auctions. In addition, some donor nations have indicated they will discontinue monetization on a large scale, given allegations by international relief organizations of corruption and misuse of funds.

Many of the reforms initiated during 1992 appeared to simply rename existing State structures instead of radically changing the grain marketing system. For example, President Yeltsin signed a decree establishing a Federal grain reserve, which would "counter speculation" and ensure the supply of grain to deficit regions, especially urban areas (that is, Moscow and St. Petersburg). Very little difference existed between Yeltsin's grain fund and the former all-Union fund except that it was more decentralized and handled less grain. Additionally, Yeltsin signed a decree in September 1992 that dismantled the RF Committee on Grain Products, the main Government body in charge of grain procurement and processing. The news agency, Interfax, reported that on October 1, 1992, the joint-stock company Roskhleboprodukt would continue in its role as the Government's monopoly grain buyer.

For the 1993 harvest, most of these policies remained in place. However, at the end of 1993, Yeltsin's proposed decree on liberalizing the grain market calls for the privatization during the first half of 1994 of Roskhleboprodukt and all State-owned grain storage and processing units. It is envisaged that these enterprises, including Roskhleboprodukt itself, will be privatized by selling 50 percent of the shares at auctions to agricultural producers, with remaining shares sold through an open privatization auction. While Roskhleboprodukt can continue to buy and sell grain on the domestic market, it would presumably be ineligible for preferential credit from the Government and would compete with other private trading companies. Naturally, Roskhleboprodukt officials have spoken out against such a move, claiming that Russia had not yet developed alternative marketing channels and as a result deficit regions would not receive grain. However, as long as Roskhleboprodukt is able to maintain its monopoly status with access to preferential credit terms alternative markets will develop only marginally.

Processing Industries

Roskhleboprodukt (formerly the RF Committee on Grain Products), provided background information and data on Russia's wheat processing sector. Roskhleboprodukt is responsible for the procurement and processing of grain in the Russian Federation. Russia has 358 flour milling units (half of the FSU total) that normally produce 20.5 million tons of flour and 2.5 million tons of groats a year (table 12). Due to economic dislocations and the process of modernizing mills, flour production has fallen to 18 million tons. Over the past decade, 30 new mills were built. Flour mill capacity ranges from 100 to 2,000 tons a shift (24-hour period) and average output is 500 tons per shift. Some of the mills now use Western equipment purchased from Western firms such as the Swiss company Buhler. In 1992, 70 mills were in the process of technical reconstruction. Many of the milling complexes incorporate elevators, and produce mixed feed, groats, and other grain products in addition to flour.

There are 315 mixed-feed plants in Russia, and 1,000 additional plants located on State and collective farms. Over the past 2-3 years, the former USSR produced around 80 million tons of mixed feed a year, almost half of which was produced in Russia. In 1991, Russian feed mills produced 37 million tons of mixed feed, while an additional 20 million was processed directly on farms. Mixed-feed

Table 12--FSU and Russia: Primary processed grain output

| Item | Mixed feed | Bread | Flour | Groats | Pasta |
|---------------------|------------|-------|-------|--------|-------|
| Million metric tons | | | | | |
| FSU | | | | | |
| 1980 | 64.4 | 35.2 | 41.4 | 4.1 | 1.6 |
| 1985 | 73.6 | 34.7 | 42.6 | 4.6 | 1.7 |
| 1986 | 75.3 | 34.5 | 40.8 | 4.9 | 1.7 |
| 1987 | 77.4 | 32.5 | 41.1 | 4.9 | 1.7 |
| 1988 | 79.3 | 31.7 | 40.4 | 5.0 | 1.8 |
| 1989 | 81.2 | 31.6 | 40.2 | 5.0 | 1.8 |
| 1990 | NA | 32.5 | 41.4 | 4.8 | 1.8 |
| 1991 1/ | NA | 33.5 | 41.5 | 4.6 | 2.0 |
| 1992 | NA | NA | NA | NA | NA |
| Russia | | | | | |
| 1980 | NA | 19.9 | 23.2 | NA | 0.9 |
| 1985 | 37.9 | 19.1 | 22.5 | NA | 1.0 |
| 1986 | NA | 19.1 | 21.1 | 2.8 | 1.0 |
| 1987 | NA | 18.0 | 20.8 | 2.8 | 1.0 |
| 1988 | NA | 17.7 | 20.1 | 2.8 | 1.0 |
| 1989 | NA | 17.6 | 19.9 | 2.9 | 1.0 |
| 1990 | 41.0 | 18.2 | 20.7 | 2.9 | 1.0 |
| 1991 | 37.4 | 18.8 | 20.5 | 2.7 | 1.1 |
| 1992 2/ | 24.2 | 15.9 | 17.8 | 1.7 | 1.1 |

NA=Not Available.

1/ ERS estimate based on CIS data.

2/ Mixed feed production is from State enterprises.

Source: ERS.

production continues to decline as a result of lower availability of inputs and decreased demand due to lower livestock inventories. However, this trend has slowed somewhat during the first 6 months of 1993.

Roskhleboprodukt is responsible for 60 percent of bread production, mostly for city populations and controls 1,500 bread-baking plants. Private and cooperative bakeries produce the rest. In 1991, State-owned bakeries produced 12 million tons of bread (18 million tons were produced in total), 1 million tons of pasta, and 750,000 tons of baked sweet goods. Of all bread products produced by the State, 40 percent are from rye flour or a rye/wheat blend, 25 percent are from wheat flour, and the rest are in the form of crackers, rolls, and buns.

While many of the flour mills have received new technology from the West, some of the technicians indicated that technology levels of Russian mills still lag behind those of the Western mills. Many mills are old, some built before the 1917 Revolution. Because of the lower level of technology, milling yields seem to be greatly affected by grain defects and inconsistent quality, especially gluten levels and hardness.

Processors have no direct way to communicate quality preferences to those who purchase the grain and sell it to them. For example, when asked about end users' complaints about imported wheat,

officials from Roskhlleboprodukt were able to cite only one example and stated that there was no official data on end users' satisfaction with the grain they receive. Some mills indicated that they would prefer to purchase domestically grown grain, as it possesses the quality characteristics they perceive to be most important.

One reason millers were unable to influence quality specifications and import source is due to the fact that they paid only a fraction of the original cost of imported grain. For example, in June 1992 when this study was conducted, the exchange rate at which processors paid for imported grain was 20 rubles=\$1, compared to a commercial exchange rate at that time of 125 rubles=\$1. Beginning in mid-1993, import subsidies were drastically reduced to provide funds for increased procurement prices. Even with lower subsidies, the mills continued to pay less than the original import price valued at current exchange rates. However, there are indications that, officially, at least, wheat import subsidies for processors have ended.²⁰

In October 1993, the Government announced the elimination of all subsidies paid to flour millers for wheat purchases. While the federal budget will no longer finance flour subsidies, regional administrations can continue subsidies (out of local budgets), if they choose. If grain trade, marketing, and processing are liberalized, then it could become possible for millers to have a larger role in determining purchasing source and quality characteristics of the grain they buy.

Organization of Grain Imports

Historically, the Ministry of Foreign Economic Relations in conjunction with Exportkhleb (formerly a Foreign Trade Organization or FTO) fulfilled Government instructions to purchase grain abroad. State ministries determined the total volume, delivery time, assortment, and amount of money authorized for making the purchase. Import volumes were determined by the USSR Ministry of Grain Products based on domestic production and utilization needs. Exportkhleb's role was primarily to facilitate grain imports and negotiate the terms of trade (price, transportation, and quality specifications).

After the breakup of the Soviet Union, the Commonwealth of Independent States (CIS) initially decided that Exportkhleb would continue to be the central importer for most of the member nations. Exportkhleb, was converted into a quasi-private joint-stock company, whose shares are mostly held by the FSU republics, with Russia holding a majority. In addition, a protocol signed by the CIS nations (excluding Ukraine) and the Republic of Georgia (not a member of the CIS) maintained centralized purchases of food and other materials from abroad with financial support from Vneshekonombank, which is backed by the Russian Government.

However, beginning in 1992, the other CIS countries began arranging deals directly with exporting countries. In addition, regions within the Russian Federation, which possess either hard currency earnings or goods for barter, have begun to purchase grain directly. If State grain trade is liberalized in 1994 as envisioned in Yeltsin's draft decree on the Russian grain market, Exportkhleb could lose its monopoly on Russian grain imports. Reportedly, State orders make up around 80 percent of Exportkhleb's business, although an Exportkhleb employee put the share at closer to one-half. The former president of Exportkhleb, Oleg Klimov, has left to start a private trading company, and Exportkhleb has announced that it will become a purely commercial firm and look for new markets.

²⁰According to a document published in Kommersant, only baby foods and medicines appeared to be eligible for import subsidies from the federal budget. In a letter written by Minister of Finance Fedorov, it is suggested that all import subsidies will be abolished in 1994. See "Pis'mo Minfina o dotirovanii importa," Kommersant, 15 November 1993, p. 42.

Wheat Import Demand

Until the mid-1960's/early-1970's, the former USSR was a net exporter of wheat. The vast majority of Soviet wheat exports went to member nations of the Council for Mutual Economic Assistance (CMEA) on a soft currency or barter basis.²¹ During the 1980's almost all exports went to Cuba. The USSR began consistently importing wheat in significant quantities in 1972, when 8 million tons were purchased (fig. 4). The Soviets began to import in larger quantities for several reasons: slow growth in supply outpaced by rapid growth in demand (resulting from increasing livestock herds), as well as the decision to use international markets to supplement domestic supply (fig. 5). One source estimates that close to half of all wheat milled in the FSU was imported.²² The Soviets also imported feed wheat, mostly from the EC, when prices were competitive. Most imported feed wheat now is supplied through donations.

The USSR imported between 14 and 28 million tons of wheat each calendar year during the period 1980-89, purchased mostly with hard currency earned from energy and raw material exports. It is estimated that the Russian Federation received close to two thirds of total Soviet grain imports, which indicates annual import levels during the last decade of 9-18 million tons, half of which was wheat.

Recent import levels for the RF have been even higher than these estimates, mostly due to declining domestic procurement (table 13). However, 9-month data for 1993 show the sharp decline in Russian imports, due to debt problems and reduced utilization.

| Table 13-- Russia: Grain imports 1/ | | |
|-------------------------------------|-------------|-----------------|
| Year | Total grain | of which: wheat |
| Million metric tons | | |
| 1990 | 12.1 | 4.8 |
| 1991 | 19.2 | 10.7 |
| 1992 | 29.5 | 18.3 |
| 1993 2/ | 8.8 | 5.7 |

1/ From non-FSU sources.
2/ January-September.
Source: Goskomstat Rossii.

The primary wheat exporters to the former USSR during the 1980's were Argentina, Australia, Canada, France, Hungary, and the United States (table 14). Given the recent reliance on credits for purchases, Argentine and Australian exports have sharply fallen off, with the United States, Canada, and the EC (France and Germany) picking up the difference. Hungary has maintained trade through the use of barter arrangements and credit. Turkey recently has become a significant exporter to the region, although most of the wheat is going to the Muslim republics through re-export.

U.S. wheat exports to the former USSR have averaged 6 million tons a year (calendar year (CY) 1988-92), consisting of soft red winter (SRW), hard red spring (HRS) and hard red winter (HRW) (fig. 6-10). The hard red varieties are chosen for their high protein content, and all three varieties are used to produce baked goods. In general, U.S. No. 2 wheat is purchased, most likely for economic reasons (lower price than No. 1).

Import demand has been and will continue to be largely dependent on domestic harvest and consumption needs, as well as on procurement levels. This has resulted in year-to-year import fluctuations and significantly affected the global wheat market. Cold war tensions have also influenced grain trade between the United States and the Soviet Union. Major sources of controversy

²¹CMEA was the Council for Mutual Economic Assistance, the Soviet-bloc trading organization. Some analysts believe that a portion of Soviet grain exports to CMEA members were actually re-exports of imported grain from other sources.

²²World Bank, p. 40.

Table 14--FSU: Wheat imports, calendar years 1/

| Year | Total | Argentina | Share | Australia | Share | UK | Canada | Share | FRG 2/ | France | Share | Hungary | Romania | U.S. | Share | Other |
|---------------------|--------|-----------|-----------|-----------|-----------|-------|--------|-----------|--------|--------|-----------|---------|---------|-------|-----------|-------|
| | | | (percent) | | (percent) | | | (percent) | | | (percent) | | | | (percent) | |
| Million metric tons | | | | | | | | | | | | | | | | |
| 1955 | 29 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 1956 | 443 | -- | -- | -- | -- | -- | 403 | 91 | -- | -- | -- | -- | -- | -- | -- | 41 |
| 1957 | 122 | -- | -- | -- | -- | -- | 121 | 99 | -- | -- | -- | -- | -- | -- | -- | 2 |
| 1958 | 323 | -- | -- | -- | -- | -- | 283 | 88 | -- | -- | -- | -- | -- | -- | -- | 40 |
| 1959 | 247 | -- | -- | -- | -- | -- | 199 | 81 | -- | -- | -- | -- | -- | -- | -- | 48 |
| 1960 | 98 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 98 |
| 1961 | 656 | -- | -- | -- | -- | -- | 486 | 74 | -- | -- | -- | -- | 162 | -- | -- | 8 |
| 1962 | 45 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 5 | -- | -- | 40 |
| 1963 | 3,053 | 6 | -- | 273 | 9 | -- | 2,323 | 76 | -- | -- | -- | -- | 395 | -- | -- | 55 |
| 1964 | 7,281 | 106 | 1 | 1,402 | 19 | -- | 3,885 | 53 | -- | -- | -- | -- | 5 | 1,785 | 25 | 99 |
| 1965 | 6,375 | 763 | 12 | 1,239 | 19 | -- | 3,310 | 52 | -- | 834 | 13 | -- | 172 | -- | -- | 58 |
| 1966 | 7,583 | 1,443 | 19 | 137 | 2 | -- | 4,494 | 59 | -- | 1,168 | 15 | -- | 335 | -- | -- | 5 |
| 1967 | 1,828 | -- | -- | -- | -- | -- | 1,613 | 88 | -- | 171 | 9 | -- | -- | -- | -- | 44 |
| 1968 | 1,340 | -- | -- | -- | -- | -- | 1,289 | 96 | -- | -- | -- | -- | 49 | -- | -- | 2 |
| 1969 | 38 | -- | -- | -- | -- | -- | 30 | 78 | -- | -- | -- | -- | 9 | -- | -- | -- |
| 1970 | 1,846 | -- | -- | -- | -- | -- | 1,634 | 89 | -- | -- | -- | -- | -- | -- | -- | 212 |
| 1971 | 2,300 | -- | -- | 277 | 12 | -- | 1,805 | 78 | -- | 200 | 9 | -- | -- | -- | -- | 18 |
| 1972 | 8,100 | -- | -- | 479 | 6 | -- | 4,000 | 49 | -- | 539 | 7 | 100 | 210 | 2,419 | 30 | 354 |
| 1973 | 15,200 | -- | -- | 845 | 6 | -- | 3,535 | 23 | -- | 344 | 2 | 157 | 183 | 9,848 | 65 | 290 |
| 1974 | 2,707 | 206 | 8 | 581 | 21 | -- | 411 | 15 | -- | -- | -- | 118 | -- | 1,323 | 49 | 69 |
| 1975 | 9,146 | 810 | 9 | 1,186 | 13 | -- | 2,197 | 24 | -- | -- | -- | 675 | 381 | 3,811 | 42 | 86 |
| 1976 | 6,686 | 961 | 14 | 1,263 | 19 | -- | 2,038 | 30 | -- | -- | -- | 20 | 328 | 2,052 | 31 | 25 |
| 1977 | 6,350 | 103 | 2 | 959 | 15 | -- | 2,253 | 35 | -- | -- | -- | 201 | -- | 2,830 | 45 | 4 |
| 1978 | 9,024 | 961 | 11 | 1,077 | 12 | -- | 3,177 | 35 | -- | -- | -- | 285 | -- | 3,321 | 37 | 203 |
| 1979 | 9,636 | 238 | 2 | 1,301 | 14 | -- | 1,934 | 20 | -- | -- | -- | 459 | -- | 5,372 | 56 | 332 |
| 1980 | 14,700 | 2,312 | 16 | 3,386 | 23 | -- | 4,904 | 33 | -- | -- | -- | 600 | -- | 1,807 | 12 | 1,691 |
| 1981 | 17,326 | 2,959 | 17 | 1,677 | 10 | -- | 4,529 | 26 | -- | -- | -- | 884 | -- | 3,744 | 22 | 3,533 |
| 1982 | 21,096 | 2,741 | 13 | 2,020 | 10 | -- | 6,214 | 29 | -- | -- | -- | 760 | -- | 5,160 | 24 | 4,201 |
| 1983 | 23,001 | 4,981 | 22 | 991 | 4 | -- | 7,901 | 34 | -- | 3,676 | 16 | 552 | -- | 4,236 | 18 | 564 |
| 1984 | 28,162 | 2,863 | 10 | 2,156 | 8 | -- | 8,669 | 31 | -- | 3,985 | 14 | 729 | -- | 7,662 | 27 | 1,884 |
| 1985 | 21,400 | 4,613 | 22 | 1,772 | 8 | -- | 6,355 | 30 | -- | 4,065 | 19 | 1,373 | -- | 1,429 | 7 | 1,557 |
| 1986 | 15,745 | 40 | 0 | 3,348 | 21 | 513 | 5,358 | 34 | 1,041 | 3,454 | 22 | 1,108 | -- | -- | -- | 659 |
| 1987 | 18,097 | 539 | 3 | 781 | 4 | 1,104 | 5,174 | 29 | 1,073 | 3,194 | 18 | 1,064 | -- | 4,158 | 23 | 908 |
| 1988 | 21,180 | 593 | 3 | 298 | 1 | 139 | 4,927 | 23 | 1,411 | 2,151 | 10 | 1,111 | -- | 8,901 | 42 | 1,341 |
| 1989 | 14,186 | 608 | 4 | 249 | 2 | 574 | 2,391 | 17 | 613 | 2,128 | 15 | 1,095 | -- | 5,385 | 38 | 936 |
| 1990 | 15,025 | 528 | 4 | -- | -- | 1,708 | 4,171 | 28 | 80 | 2,926 | 19 | 1,028 | -- | 3,795 | 25 | 571 |

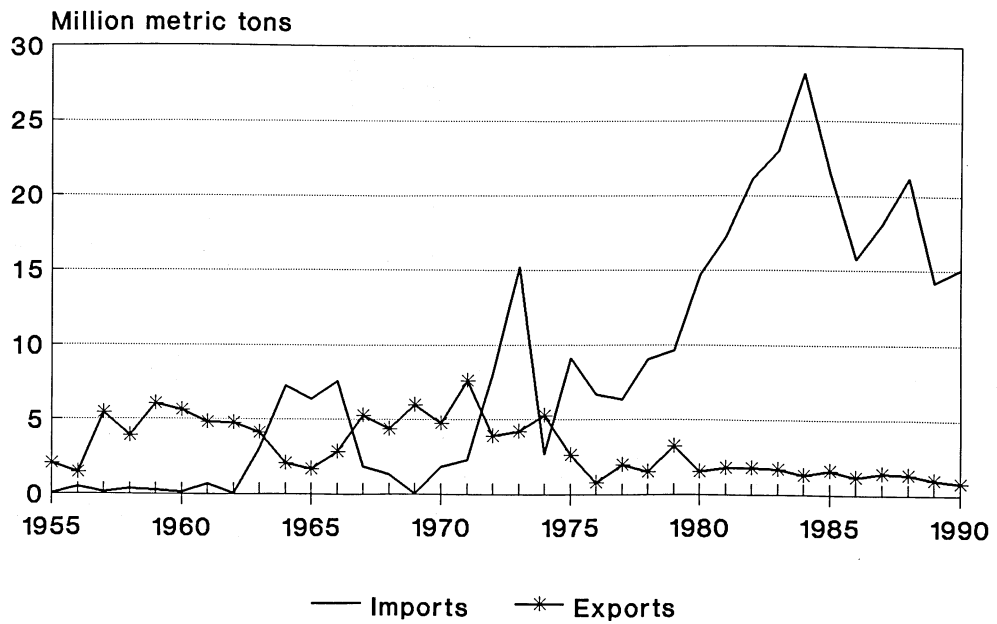
-- = None or negligible.

1/ Does not include wheat flour.

2/ Federal Republic of Germany. Data for the years 1989-90 are assumed to include the former GDR.

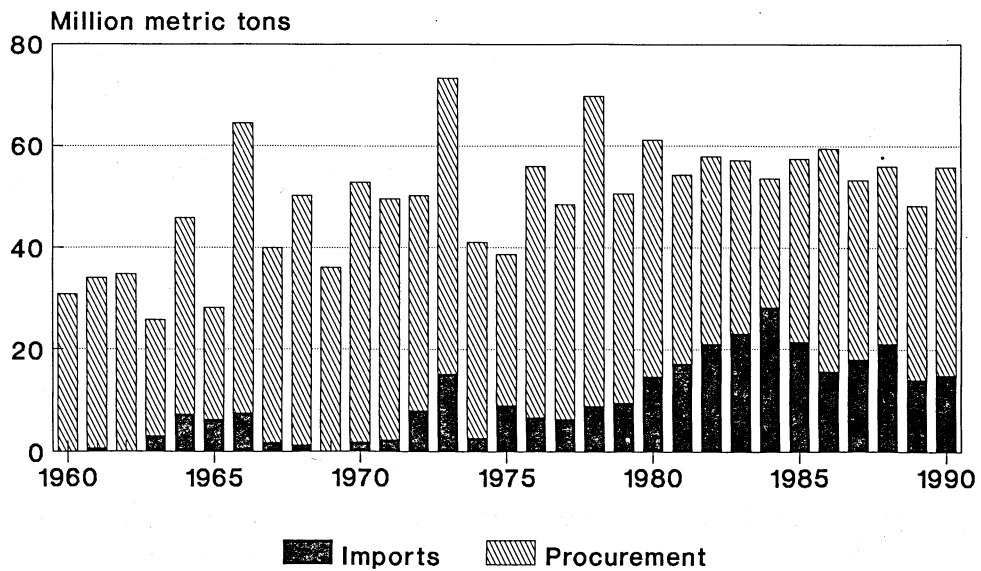
Sources: Vneshniaia torgovlia SSSR and Vneshnie ekonomicheskie sviazi SSSR, various issues.

Figure 4
 FSU: Wheat trade 1/



1/ Calendar year.

Figure 5
 FSU: Wheat imports and procurement 1/



1/ Calendar year.

Figure 6
 FSU: U.S. wheat market share

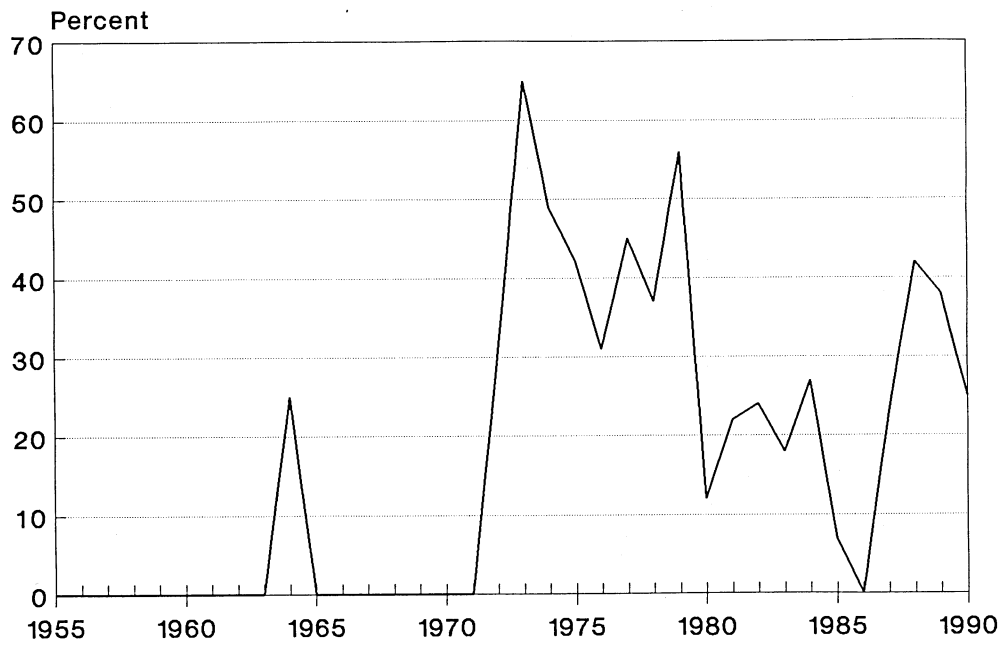
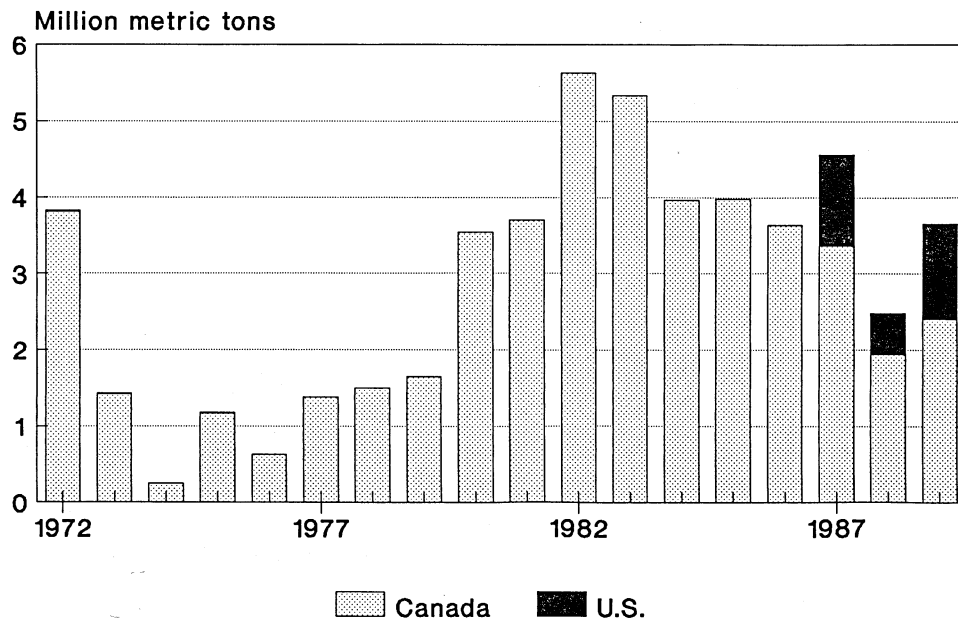


Figure 7
 FSU: Hard spring wheat imports 1/



1/ July/June.

Figure 8

FSU: Hard winter wheat imports 1/

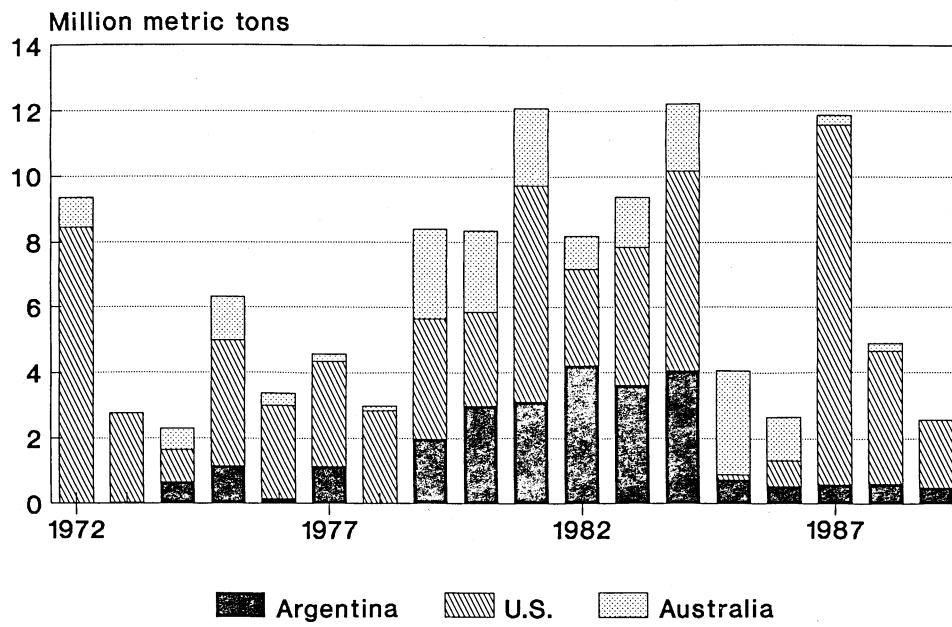
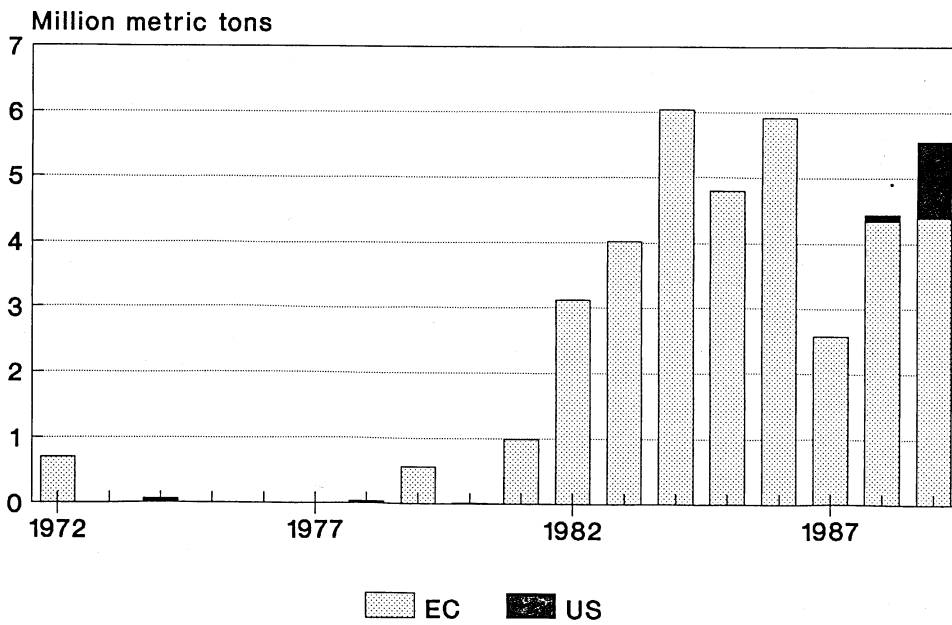


Figure 9

FSU: Soft winter wheat imports 1/



include the Soviet grain deal of 1973, when the Soviets unexpectedly purchased large quantities of grain at low prices, disrupting the U.S. grain market; and the 1980 U.S. embargo on agricultural exports to the USSR, in response to the Soviet invasion of Afghanistan.

Beginning in October 1976, the United States and the USSR entered into the first of three long-term buying agreements (LTA), which stipulated the minimum amount of grain the Soviets were bound by contract to purchase over a 5-year period. The purpose of these agreements was to stabilize Soviet grain purchases and give advance notice of their possible volumes. However, problems with fulfilling the LTA arose. The Soviets claimed U.S. grain did not meet their standards, and used this complaint to purchase less grain than was stipulated in the LTA. To the extent these complaints were legitimate, or that the Soviets simply did not want to purchase additional grain, is not clear. Negotiations between American and Soviet officials helped to clear up many of the complaints about U.S. grain quality. Now, given the dependence on Western credit and aid packages, very little about grain quality has been registered in official channels.

Historically, the USSR purchased wheat imports with hard currency earnings from petroleum and other raw materials exports. By the late 1980's, the Soviets were forced to use commercial loans, as wheat import demand grew and hard currency earnings fell (due to decreased domestic production and lower world prices of export products). By 1990-91, the creditworthiness of the USSR was such that banks required governmental credit guarantees in order to provide further loans. The requirements for striking the 1974 Jackson-Vanik Amendment, which prevented the USSR from receiving U.S. credit guarantees, were met when Soviet emigration policy was liberalized and in January 1991, the first allocation of GSM-102 export credit guarantees, totaling \$1 billion, was announced.

Prior to receiving GSM-102 credit guarantees, the Soviets were already eligible for the Export Enhancement Program (EEP). The first EEP wheat sales were made in 1987. Since 1991, most FSU (including Russian) wheat imports from the United States have been made with GSM-102 credit guarantees which, beginning in September 1991, carry a U.S. government guarantee of 100 percent of the principal.²³ This is a higher percentage than for most GSM-102 allocations, due to the FSU's creditworthiness. All wheat purchases (not including concessional sales and donations) to date have been eligible for EEP bonuses, which averaged around \$34 per ton (table 15).

To date, Russia, Ukraine, Uzbekistan, and Turkmenistan are the only republics of the FSU to directly receive GSM-102 credit lines for wheat purchases.²⁴ At the end of November 1992, Russia was suspended from the U.S. GSM-102 credit program due to unpaid arrears that totaled over \$1.1 billion in late 1993. As a result, U.S. sales of wheat during fiscal 1993 fell off considerably, decreasing by nearly 50 percent. In April 1993, the Paris Club of government creditors rescheduled \$15 billion of Russia's 1993 debt obligation, such that during the remainder of 1993 Russia is required to make payments of \$2 billion, including \$1.1 billion on debt owed to the United States. While this rescheduling could help Russia pay its GSM-102 defaults, it does not necessarily mean that Russia will be automatically reinstated into the GSM-102 program, mostly due to continued concerns over Russia's creditworthiness. At the beginning of December 1993, Russia completed two out of three payments, which altogether total \$420 million, of its rescheduled U.S. debt. The third payment is due on December 31, and if Russia makes this payment then it is conceivable that Russia could become eligible again for GSM-102, or possibly the longer-term GSM-103, if it meets those

²³Since the breakup of the Soviet Union, only Russia has received GSM-102 credit guarantees with 100 percent U.S. Government backing of the principal. The other republics have received GSM-102 with the standard 98 percent guarantee of principal.

²⁴In fiscal 1993, Estonia received \$5 million in GSM-102 credit guarantees for the purchase of U.S. cotton.

Table 15--FSU: U.S. wheat exports by program 1/

| Year | GSM-102 | Title I 2/ | EEP | | | Total U.S. Exports |
|---------|------------------------|------------|--------|------------|-------------|--------------------|
| | | | Amount | Bonus Rate | Total Bonus | |
| | -----Million tons----- | | | \$/ton | Million \$ | Million tons |
| 1986/87 | 0 | 0 | 4.0 | 41.53 | 166.1 | 4.1 |
| 1987/88 | 0 | 0 | 8.8 | 32.02 | 281.8 | 8.8 |
| 1988/89 | 0 | 0 | 4.7 | 20.57 | 96.7 | 5.3 |
| 1989/90 | 0 | 0 | 3.8 | 19.95 | 75.8 | 3.7 |
| 1990/91 | 3.2 | 0 | 3.2 | 44.75 | 143.2 | 2.5 |
| 1991/92 | 8.1 | 0.3 | 8.4 | 41.62 | 349.6 | 8.7 |

1/ Fiscal year. Annual export program data and trade data may not be strictly comparable because of differences in time periods and reporting lags.

2/ P.L. 480 and Food for Progress.

Source: USDA.

programs' conditions of creditworthiness.

Despite Russia's suspension from the GSM-102 program, U.S. wheat is still going into Russia and the other republics through concessional sales, food aid, and barter. In September 1992, USDA announced that part of the FSU's EEP invitation for wheat would be allocated for third-party trade transactions. It is estimated that 1.5-2 million tons of U.S. wheat have been sold through this arrangement, mostly to Uzbekistan, during 1992/93 (July/June).

The availability of credit determines, to a very large extent, which countries export wheat to Russia (table 16). For example, exports from countries like Argentina have all but ended due to that country's inability to offer credit packages to compete with those of the United States, Canada, and EC. Australia, which did offer credit guarantees to the FSU, stopped nearly all wheat shipments for almost 2 years due to nonpayment of debt. On the other hand, countries such as Hungary and Turkey, which are able to enter into barter agreements with Russia and the other republics, trading wheat for petroleum and other raw materials, will be able to maintain some level of market share.

The main U.S. competitors for wheat exports to Russia are the EC and Canada. France and Germany account for most EC wheat exports. Both of these nations offer credit to Russia, through COFACE and Hermes credit guarantees. Russia also receives export subsidies (restitutions) through the EC. The EC has put together its own credit packages, but these have been subject to long delays due to logistical and political difficulties. Overall, the EC (excluding COFACE and Hermes credit) has offered over 850 million ECU (\$1.5 billion) in EC credit guarantees to Russia over the last 2 years. Part of the EC package requires Russia to purchase East European grain, subject to availability, as part of a triangular trade agreement. However, it is estimated that less than 1 million tons have been purchased this way. In July 1993, Russia missed a 121 million ECU repayment on its first EC loan, arguing that it should have been included in the Paris Club rescheduling. However, by October the payment was reportedly made.

In 1992, Canada and Russia signed a new 5-year LTA for the sale of 25 million tons of grain over the duration of the agreement. In recent years, the FSU purchased around 3-5 million tons of wheat a

Table 16-- FSU: United States and competitor programs

| Supplier | Price subsidies | Commercial credit | Concessional credit and donations | Amount 1/ FY 1991 - FY 1993 | Notes |
|---------------|-----------------|-------------------------------|--|----------------------------------|--|
| United States | yes (EEP) | yes (GSM-102) | Food for Progress P.L. 480, Title I Section 416(b) | \$6 billion FY 1991 - FY 1993 | GSM-102 includes full government guarantee of principal. Russia directly received \$733 million in FY 1992, \$1.3 billion in FY 1993 in total aid. Russia was suspended from the GSM-102 program at the end of November 1992 due to default. Russia begins payment of rescheduled debt at the end of 1993. |
| Australia | not known | yes | | US\$400 million December 1990 | Further credit has not been made available due to default on previous loan. Australia and Russia arrange barter deal for Australian wheat and Russian aluminum in early 1993. |
| Canada | not known | yes (Canadian Wheat Board) | | US\$1.5 billion 1990-1993 | Canada and Russia signed a new LTA for the sale of 25 mmt of grain over 5 years. In August 1992, Russia defaults on loan payments to Canada, shipments are temporarily suspended. Russia defaults again in September and remains suspended from Canadian export credit program. In April 1993, resolution of debt problem announced, although grain shipments are not resumed. |
| EC | yes | yes | | US\$3 billion 1990-1992 | Approximately half allocated directly to Russia. In July 1993, Russia defaulted on debt repayment, makes payment 3 months later. |
| France | yes | yes (COFACE) | | US\$1 billion | COFACE credit for 2 years, with 95% government guarantee. |
| FRG | yes | yes | | US\$3 billion 1991 | Some of the German credit was issued through Hermes, a 2-year credit guarantee program. |
| Hungary | not known | yes | | not known | Hungary also signed a \$670 million barter arrangement with Russia in June 1991, which included 500,000 tons of wheat in exchange for crude oil, raw materials, etc. Hungary has also exported wheat under EC triangular trade. |
| Turkey | not known | yes (Turkish ExIm Bank) | | US\$1.2 billion 1991-93 | Most of credit, issued in 1993, was for the Muslim nations of the FSU. |

1/ Estimates, may include agricultural commodities besides grain.

year from Canada. The Canadian Government (through the Canadian Wheat Board) also provides credit for Russian wheat purchases, but it is unclear what kind of export subsidy if any is available. In September 1992, wheat shipments from Canada stopped due to nonpayment of debt. However, some wheat was exported to the FSU through barter and hard currency purchases. In April 1993, Prime Minister Mulroney announced that a resolution of Russian defaults had been achieved. However, the Canadian Wheat Board has also stated that resolving the debt problem would not necessarily lead to an immediate resumption of wheat shipments.

Table 17 presents free on board (fob) price data by supplier, based on Soviet trade statistics. Interestingly, the price paid for Hungarian wheat was very high in the early 1980's and remained above the average price paid throughout the decade, except for 1983. One possible explanation for this result is the way in which prices were distorted under the CMEA system. Overvalued soft currency prices were used for many of the goods the Soviet imported, and in return they exported highly subsidized oil to their CMEA partners. Another example of this distortion is the price the Soviets paid for Cuban sugar, which was higher than world market prices, thus providing an implicit subsidy.

Over the long run, competition for market share will intensify as the level of Russian wheat imports remains greatly reduced from 1980's levels, and the possibility that Russia will begin to export increases. As was the case in the USSR, Russian requirements will be largely determined by domestic supply; however, it is expected that more efficient supply and use of wheat should dampen import demand. Other primary FSU wheat producers, such as Ukraine and Kazakhstan, can be expected to continue some level of wheat exports to Russia. Additionally, Russian officials have made it clear that they wish to change the structure of State imports away from wheat to increased corn and protein meal.

| Table 17--FSU: Wheat import prices, calendar years 1/ | | | | | | | |
|---|------------|-----------|-----------|--------|--------|---------|---------------|
| Year | Avg. price | Argentina | Australia | Canada | France | Hungary | United States |
| Dollars per ton | | | | | | | |
| 1980 | 195.75 | 209.26 | 197.73 | 189.05 | -- | 220.83 | 192.70 |
| 1981 | 199.93 | 200.24 | 186.58 | 214.20 | -- | 234.05 | 188.68 |
| 1982 | 185.40 | 165.49 | 174.95 | 198.13 | -- | 222.50 | 186.72 |
| 1983 | 168.69 | 144.17 | 180.83 | 176.90 | 169.34 | 139.13 | 171.53 |
| 1984 | 163.62 | 158.85 | 151.67 | 169.52 | 165.24 | 170.23 | 161.60 |
| 1985 | 139.83 | 141.75 | 129.51 | 150.84 | 121.16 | 123.38 | 162.49 |
| 1986 | 112.10 | 115.00 | 129.45 | 96.38 | 111.26 | 139.62 | -- |
| 1987 | 85.51 | 79.41 | 92.19 | 91.92 | 73.76 | 127.54 | 78.86 |
| 1988 | 113.39 | 96.46 | 108.72 | 141.73 | 117.25 | 160.13 | 94.21 |
| 1989 | 158.17 | 155.43 | 171.08 | 185.95 | 143.75 | 167.85 | 154.47 |
| 1990 | 153.64 | 146.65 | -- | 169.87 | 143.42 | 172.65 | 146.88 |

-- = None or negligible.
 1/ Does not include wheat flour.
 Sources: Vneshniaia torgovlia SSSR and Vneshnie ekonomicheskie sviazi SSSR, various issues.

Factors Affecting Choice of Supplier

The availability of credit is the main criterion for determining supplier source. Price was ranked second (which is consistent with the need to purchase as much grain as possible, given limited hard currency availability), and quality was ranked third. While grade No. 2 wheat is bought because of the lower price, it is not clear that Exportkhleb is receiving the lowest price possible. A former employee of Exportkhleb indicated that due to certain contract specifications (most likely a higher test weight and stringent quarantine seed and insect infestation levels), Exportkhleb pays a higher price than it would in the absence of such conditions. In January 1992, the Russians began purchasing wheat from the United States on a c.i.f. basis, once transportation costs were directly covered by GSM-102 credit.

In terms of supplier performance, the United States was, in nearly all cases, ranked second behind Canada, and sometimes third behind Australian or FSU wheat. Cleanliness, moisture levels, insect and quarantine seed infestation, and intrinsic qualities (gluten, hardness, kernel size, test weight) were most often listed as the main criteria for evaluating supplier performance in terms of quality by end users. France, the UK, and Hungary were usually ranked after the United States.

Importance of Specific Quality Factors

Physical Attributes: Moisture levels were cited by all respondents as one of the most important quality factors. Purity and cleanliness were mentioned more often by end users, especially at older mills, which have more difficulty cleaning the grain.

Wholesomeness: The presence of live insects, quarantine seeds, insect damage, and pesticide and metal residues were all listed as very important. In the past, the presence of quarantine seeds in U.S. wheat was a major complaint of the Soviets, but new guidelines and cooperation with U.S. traders seem to have reduced, if not eradicated, the problem. Insect damage continues to be a problem perceived by end users, despite fumigation during transport.

Intrinsic Characteristics: These characteristics, by far, were most often mentioned as being extremely important, especially to end users. Gluten content, hardness (called glassiness or virteousness), kernel size, test weight, and color were the most important characteristics. There is a definite difference in perception on the part of Exportkhleb and millers concerning gluten content, as trade officials have claimed that there is no problem with this characteristic in U.S. wheat. However, millers, who are more aware of the demands of available milling technology, were more concerned about this characteristic.

Quality Problems: Given the large quantities of wheat needed for import and current monetary difficulties, these quality characteristics do not seem to have much, if any, impact on the choice of supplier. However, one trader indicated that in some instances Canadian wheat is specifically requested (most likely by private as opposed to State sources) because of its quality characteristics. Millers interviewed for this study perceived Canadian wheat to be superior in terms of all of the quality characteristics listed above, and if possible, they would buy more Canadian wheat. Australian wheat was also perceived to be better than American wheat in terms of quality, and although it was not stated, it is assumed that they would buy more Australian wheat if credit or hard currency was available. Several millers stated that they would be willing to pay more for higher quality wheat, or more specifically, wheat that possesses the qualities they feel are most important. However, it is unclear if they have a clear conception of how much more they would pay, since they currently pay low prices, subsidized by the State.

Officials at the St. Petersburg port were also questioned about quality concerns. The port handles on average 5-6 million tons of grain each year (a record of 9 million tons was delivered in 1985). Officials expect the flow of imports into the St. Petersburg port to increase, due to the increased costs of using the Baltic ports since their independence. Shipping data support this point, as around 4 million tons of grain had already been delivered to the St. Petersburg port during the first half of 1992. However, these officials noted that technical and infrastructure problems will constrain the degree to which grain shipments into the port can increase. They also cited serious delays in unloading vessels resulting from missing paperwork (certificates of quality, etc.), a problem they blamed both importers and exporters for causing. These delays lead to cargo losses, and affect the quality of the commodities on board. The officials noted that this problem will only get worse, as grain trade is liberalized and newcomers (traders other than Exportkhleb) start to make deals without knowing port requirements.

Wheat shipments are first inspected at the port of arrival. While the laboratory at the St. Petersburg port did not seem to be highly modernized, the technicians seemed very knowledgeable about testing methods and quality characteristics. The basic quality concerns of U.S. wheat were small kernel size and the presence of quarantine weed seeds. Interestingly, dockage and non-millable materials in wheat shipments were not mentioned, which could mean these are not perceived as a problem upon arrival. One complaint voiced by the technicians concerned the presence of phosphine in grain shipments. All of the technicians were women (this seemed to be the case in other laboratories visited), and they were concerned about the effect of the chemicals on their health and reproductive systems. While it is true that the Russians require fumigation of U.S. wheat, these technicians argued that is unnecessary for other suppliers (Canada, Australia, etc.) to fumigate wheat shipments due to a lack of problems with the presence of quarantine seeds or insects. Additionally, the port inspectors believed that cleaning the grain before shipment would not necessarily completely solve the problem of quarantine seeds. They stated that the problem required herbicide and pesticide application in areas where the seeds exist.

Contract Specification of Quality Preferences

The Russians contract for No. 2 or better wheat from the United States, mostly hard red winter as well as some hard red spring and soft red winter. The contract provided by Exportkhleb for HRW specifies a test weight of 77.0 kg/hl minimum (around 60 lbs./bushel), protein (on a 12 percent moisture basis) of 11.5 percent minimum, moisture levels of 14.5 percent maximum, foreign material of 2.0 percent maximum, no more than 0.5 percent fusarium kernels, and dockage over 0.5 percent deductible from invoice amount. There are also stipulations concerning the content of heavy metals and mycotoxins, pesticide residue, and quarantine objects.

The contract specifications for HRS are similar to those of HRW, except for a lower test weight (75.0 kg/hl or 59 lbs./bushel), higher minimum protein (12 percent) and a specification for ergot levels (.02 percent maximum). Contracts for SRW imports also require a test weight of 75.0 kg/hl, but lower protein levels (11 percent minimum on a dry weight basis). These specifications are standard for all Russian contracts negotiated by Exportkhleb. According to Exportkhleb, the specifications are the same for each exporter, the only difference being loading rates and conditions, quality price, and shipment schedule. Barter deals arranged by other firms may contain alternative specifications, but it is doubtful that they differ greatly from the standard specifications. The combination of quality factors seems less important than the **consistency** of the shipments in terms of meeting those specifications.

Probably the most important factor that affects quality standards of wheat demanded is stringent phytosanitary requirements. There are strict limits on the level of mycotoxins and poisonous admixtures allowed and grain shipments must be certified free of five kinds of quarantine weevils and

seven types of quarantine weed seeds. However, more recent contracts include a provision for a cleaning discount of 75 cents/ton if the percentage of quarantine weed seeds exceeds 0.5 percent.

Importance of Dockage

Grain cleanliness was listed as an important quality characteristic, especially to end users. However, the Russian Government would not be willing to pay more for cleaner grain, as it is mostly concerned about quantity. Dockage is specified in the contract as amounts over 0.5 percent deductible from the invoice amount. According to FGIS statistics, U.S. wheat dockage has been over 0.5 percent in many instances, especially for SRW and HRS shipments. Even if U.S. wheat does meet contract standards for dockage upon shipment, there is a potential for increased dockage to accumulate during distribution to Russian mills given less modern transportation and storage facilities. However, data provided by Exportkhleb for the period 1987-89 show that U.S. wheat consistently contained higher levels of foreign material than was found in Canadian and Australian wheat.²⁵

Information about the costs and returns of cleaning grain is incomplete. An official with the RF Committee on Grain Products who deals with mixed-feed manufacturing indicated that 100 percent of screenings are used as fillers for mixed feed. The director of one mill said that they are able to sell screenings to other feed mills (they would not use it in their own mixed feed) for 30 percent of the original cost of the wheat. He also indicated that not all of the screenings are usable for feed. And he, like the other millers, claimed to have no idea about how much it costs to clean the grain in the first place. He did say he would be willing to pay 1 percent more for each percent dockage is reduced. However, this could be meaningless, since he pays a fraction of the real cost of imported grain. Until producer prices and the costs of production are in line with supply and demand (prices transmit information), it is difficult to discuss the willingness of millers to pay more for cleaner imported grain.

Trade Impacts of Quality Factors and Implications of Reform

The United States plays an important role in the Russian wheat market, since it is able to supply large quantities of wheat at competitive prices and provide credit guarantees and export subsidies to finance the purchases. All of the major wheat suppliers to Russia are facing a shrinking market, as Russian import demand is falling due to credit difficulties, increased wheat production, and lower utilization due to declining livestock herds. Additionally, increased liberalization of the domestic grain market, expected to occur in the next 2-3 years, should lead to more efficient production and use, further reducing Russian import requirements. In the short term, as long as most Russian wheat imports are centralized and purchased by the State, quality will not become a major factor in import source determination. However, in the longer term (5-10 years) quality considerations and price competitiveness should become more important as domestic wheat producers and processors pay more attention to the quality of their output.

Conclusions

Importers, millers, and processors have distinctly different preferences (and in some cases perceptions) in terms of quality characteristics and import source determination. Importers, namely the Russian Government acting through Exportkhleb, are primarily influenced by **credit availability**

²⁵U.S. wheat on average contained foreign material (FM) levels of 1.7 percent (ranging from 0.6-3.7 percent), Canadian wheat averaged 0.7 percent (0.6-1.0 percent) and Australian wheat averaged 0.5 percent (0.4-0.6 percent).

and price. End users, who are responsible for milling the grain but until recently were heavily subsidized by the State, are more concerned with **quality characteristics**. **Gluten content, hardness, test weight, moisture levels, non-millable material (including dockage), and insect damage** were mentioned most often by end users as the most important characteristics. Damaged grain, pesticide residue, and weed seeds were also cited. However, end users have little or no direct influence in determining quality specifications.

The importance of quality characteristics most likely will increase over the next 5-10 years, as more economically efficient production and use of grain develops. Currently, Russia produces more wheat per capita than does the United States, but is required to import due to the inefficiencies of the State procurement and processing system. If the State were removed from the wheat-marketing system and end users could purchase directly from farms or through commodity exchanges, more wheat would be available for use. Also, wheat would be used more efficiently and as a result less required. If end users were able to decide from whom to buy, the qualities most important to them would become more important in determining the source. However, price will very likely remain a crucial determinant in terms of import source.

In the long run, the Russian wheat market appears to be most responsive to changes in **intrinsic qualities and wholesomeness**. This assumes the introduction of market-driven supply and use of wheat. Many of the millers indicated that they would rather use Russian or FSU wheat than imported wheat. The reason stated for this is that domestically produced wheat contains the intrinsic qualities (gluten, test weight, hardness, and kernel size) they perceive to be most important. They perceived domestic wheat to be less damaged and infested and, overall, of better quality. However, market incentives would have to be in place in order for Russian farmers to not only sell high-quality wheat to processors, but also to grow more of it. This means a change in the prevailing mindset that yields (quantity) are more important than quality and customer satisfaction.

Russia's debt burden and suspension from several export credit programs has limited its ability to purchase grain, including wheat, during 1993. There are some indications, given successful debt rescheduling and repayment, that Russia could become eligible for new credits in 1994. If this occurs, the availability of financing will again largely determine import source in the short to medium run. Insofar that price will continue to be an important variable, export subsidy programs will also play a large role in maintaining market share. Quality considerations will become more important as end users begin to purchase wheat directly at market prices with their own earnings. The possibility exists (albeit tenuously) that the CIS members could move toward more preferential trading arrangements within the Commonwealth, which could make the Russian wheat market more competitive for non-CIS nations.

References

Ash, Mark S. Animal Feeds Compendium, AER-656, U.S. Department of Agriculture, Economic Research Service, May 1992.

East Europe Agriculture and Food Monthly, Agra Europe (London), various issues.

"Effektivnee ispol'zovat' potentsial zootekhnicheskoi nauki," Zootekhiia, No. 9, 1989.

Ekonomika i zhizn', various issues.

Food and Agricultural Policy Reforms in the Former USSR, Studies of Economies in Transformation, World Bank, 1992,

Former USSR: Situation and Outlook Series, International Agriculture and Trade Reports, U.S. Department of Agriculture, Economic Research Service, various issues.

Foster, Christian J. "Intensive Technology Claims Inflated," CPE Agricultural Report, July/August 1989.

Goskomstat SSSR, various publications.

Goskomstat Rossii, various publications.

Interfax Agriculture Report, various issues.

Kommersant", various issues.

Moore, Emily. USSR Grain Policies and Data, ERS Staff Report No. AGES-860213, U.S. Department of Agriculture, Economic Research Service, July 1986.

_____. An Analysis of the USSR Wheat Economy and Prospects for U.S.-Soviet Wheat Trade, unpublished report, August 1986.

Parotte, J.H. "The Future Development of the Grain Market in Central and Eastern Europe," Agrarwirtschaft, August/September 1992.

PlanEcon, World Market Report, DRI-McGraw-Hill, Lexington, MA, 1993.

"Pochemu nam ne khvataet zerna?," Vestnik sel'skokhoziaistvennykh nauk, No. 9, 1991.

Rastenivodstvo. Moscow, 1986.

Sel'skokhoziaistvennyi entsiklopedicheskii slovar'. Moscow, 1989.

Spravochnik po zagotovkam i kachestvu zerna. Moscow, 1985.

Zeimetz, Kathryn A. USSR Agricultural Trade, SB-803, U.S. Department of Agriculture, Economic Research Service, August 1991.

Glossary

Blending: The systematic combining of two or more lots or kinds of grains to obtain a uniform mixture to meet a desired specification.

C & f: Cost and freight to the designated delivery point, paid by the seller.

C.i.f.: Cost, insurance, and freight to the designated delivery point, paid by the seller.

Commodity Credit Corporation (CCC): An agency of the U.S. Department of Agriculture created in 1933 to carry out loan and storage operations as a means of supporting prices above the level that would have prevailed in a free market.

Cu-Sum: A set of rules established by FGIS, that exporters must follow when loading grain on ocean vessels. The rules control variability among sublots blended to meet contract grade limits.

Damaged grain: In U.S. grading standards, the term damage refers primarily to biological deterioration associated with discoloration. Physical damage (such as cut or broken kernels) is not included in U.S. grades but is included in the standards of some other countries.

Defects: Computed total amount of damaged kernels, foreign material, and shrunken and broken kernels.

Dockage: Nongrain material that can be readily removed by accepted screening devices.

Durum wheat: Very hard, high-protein wheat used in the production of semolina flour for pasta products.

Export Credit Guarantee Program (GSM-102): U.S. agricultural export promotion program that guarantees repayment of private, short-term credit for up to 3 years.

Export Enhancement Program (EEP): Program to help U.S. exporters meet competitors' prices in subsidized markets: Exporters are awarded generic certificates that are redeemable for CCC-owned commodities, enabling them to sell certain commodities to specified countries at prices below the U.S. market price.

Extraction rate: The fraction of the wheat kernel that is converted into flour during the milling process.

Falling number test: A test used to measure sprout damage in wheat.

F.a.s.: Free alongside ship specifies that the seller delivers goods to the port elevator or dock at a specified location and the buyer pays for loading the ship and ocean freight.

Federal Grain Inspection Service (FGIS): An agency of the U.S. Department of Agriculture that establishes grain standards and develops the technology to measure the factors contained in such standards. This agency also develops and publishes sampling and inspection procedures, evaluates and approves equipment, monitors inspection accuracy, and oversees mandatory export inspection of grain by agency or FGIS-licensed inspectors.

F.o.b.: Free on board specifies that the seller loads the ship or other conveyance at the specified delivery point with the buyer paying freight charges.

Foreign material: Nonwheat material of similar size and weight to wheat kernels.

Gluten: A tenacious, elastic protein substance found especially in wheat flour that gives cohesiveness to dough.

Grade: A number or letter designation assigned to grain based on an established set of criteria.

Grade factor or grade determining factor: Those characteristics of grain used to determine the numerical grade. The grade factor is based on quantitative limits (either maximums or minimums) placed on each factor for each grade.

Grain grades and standards: Specific standards of grain quality established to maintain uniformity of grains from different lots and permit the purchase of grain without the need for visual inspection and testing by the buyer.

Hard Red Spring wheat: Spring seeded; includes the following three subclasses: dark northern, northern, or red: This wheat is high in protein and has a vitreous endosperm, is used primarily to produce bread flour and is produced in the upper Great Plains.

Hard Red Winter wheat: Fall seeded; This wheat may be either dark hard, hard, or yellow hard, medium to high in protein, a vitreous endosperm, and used primarily to produce bread flour. It is produced in the lower Great Plains.

Hard wheat: A generic term applied to wheat with a vitreous endosperm suitable for making bread flour or semolina; yields coarse, gritty flour that is free-flowing and easily sifted; and flour consists primarily of regularly shaped particles of whole endosperm.

Impurities: Any nongrain material contained within a shipment that could hinder the processing of a grain or detract from its end value.

Intrinsic value or end-use value: Characteristics critical to the end-use of grain. These are nonvisual and can only be determined by analytical tests. For example, the intrinsic quality of wheat is determined by characteristics such as protein, ash, and gluten content.

Moisture content: The amount of water in grain; measured by the weight of water as a percentage of the total weight of the grain including water (wet basis) or total weight of the dry matter excluding water (dry basis).

Nongrade determining factor: Factors that influence the quality of grain but are not taken into account in the grading of grain. These factors must be reported as information whenever an official inspection is made.

Nonmillable material: All material that is not wheat, includes shrunken and broken kernels.

Physical quality: Grain characteristics associated with the outward appearance of the grain kernel, including kernel size, shape, color, moisture, damage, and density.

Premiums: Prices that exceed the base price offered for grains with higher quality characteristics than specified. Generally calculated for factors that increase the value of the grain in market channels.

Public Law 480 (PL-480): Common name for the Agricultural Trade Development Assistance Act of 1954, which seeks to expand foreign markets for U.S. agricultural products, combat hunger, and

encourage economic development in developing countries.

Sanitary quality: Grain characteristics associated with cleanliness. They include the presence of foreign material that detracts from the overall value and appearance of the grain, including the presence of dust, broken grain, rodent excreta, insects, residues, fungal infection, and nonmillable matter.

Screenings: The material removed from grain by means of mechanical sizing devices; generally include broken grain as well as nongrain material removed on the basis of density or particle size with mechanical cleaners.

Semolina: A coarse separation of endosperm extracted from Durum wheat to make pasta.

Shrunken and broken kernels: All matter that passes through a 0.064 inch by 3/8 inch oblong-hole sieve.

Soft wheat: A general term describing wheat with a chalky endosperm suitable for making pastry flour; yields a very fine flour consisting of irregularly shaped fragments of endosperm cells that adhere and sift with difficulty.

Spring wheat: A general term for wheat that is grown in the spring and harvested in the summer or fall; It has a relatively high protein content and is used in bread flours.

Test weight: Weight per unit volume as measured in pounds per bushel as defined in the United States. Determined by weighing the quantity of grain required to fill a 1-quart container. The international equivalent measure is kilograms per hectoliter (conversion factor 0.77).

Uniformity: Conformity within and between shipments for quality attributes; such as physical, milling, and baking performances.

Wheat middlings: Fine particles of the bran and the wheat kernel. Normally used for livestock feed.

White wheat: Fall or spring seeded; it includes four subclasses: hard, soft, club, western: It is soft or hard and low in protein and is used mainly for pastry flours and oriental noodles.

Winter wheat: A general category describing wheats that are sown in the fall, lie dormant in the winter, and are harvested the following spring or summer.

Appendix Table 1--FSU: Supply and use of wheat

| Year | Area | Yield | Production | Imports | Exports | Consumption | | | Feed share of total |
|------|---------|--------|------------------------|---------|---------|-------------|------------|------------|---------------------|
| | | | | | | Total | Per capita | Feed | |
| | 1000 ha | ton/ha | ----- 1,000 tons ----- | | | | Kg | 1,000 tons | Percent |
| 1960 | 60,393 | 1.06 | 64,299 | 585 | 5,020 | 58,864 | 275 | 9,685 | 16 |
| 1961 | 63,000 | 1.06 | 66,483 | 239 | 5,338 | 64,384 | 295 | 12,996 | 20 |
| 1962 | 67,411 | 1.05 | 70,778 | 242 | 5,744 | 64,276 | 290 | 8,194 | 13 |
| 1963 | 64,609 | 0.77 | 49,688 | 9,746 | 2,655 | 53,779 | 239 | 2,669 | 5 |
| 1964 | 67,887 | 1.10 | 74,399 | 2,222 | 2,197 | 64,424 | 282 | 9,198 | 14 |
| 1965 | 70,205 | 0.85 | 59,686 | 8,549 | 2,631 | 74,604 | 323 | 20,423 | 27 |
| 1966 | 69,958 | 1.44 | 100,499 | 3,082 | 4,387 | 72,194 | 309 | 16,227 | 22 |
| 1967 | 67,026 | 1.16 | 77,419 | 1,508 | 5,294 | 74,633 | 316 | 20,314 | 27 |
| 1968 | 67,231 | 1.39 | 93,393 | 215 | 5,829 | 85,779 | 360 | 27,098 | 32 |
| 1969 | 66,426 | 1.20 | 79,917 | 1,147 | 6,441 | 93,623 | 389 | 33,496 | 36 |
| 1970 | 65,230 | 1.53 | 99,734 | 484 | 7,203 | 101,015 | 416 | 38,643 | 38 |
| 1971 | 64,035 | 1.54 | 98,760 | 3,525 | 5,828 | 93,457 | 381 | 36,370 | 39 |
| 1972 | 58,492 | 1.47 | 85,993 | 15,590 | 1,300 | 98,283 | 397 | 41,344 | 42 |
| 1973 | 63,155 | 1.74 | 109,784 | 4,508 | 5,000 | 96,292 | 385 | 30,486 | 32 |
| 1974 | 59,676 | 1.41 | 83,913 | 2,500 | 4,000 | 93,413 | 370 | 33,682 | 36 |
| 1975 | 61,985 | 1.07 | 66,224 | 10,100 | 500 | 85,824 | 337 | 29,929 | 35 |
| 1976 | 59,467 | 1.63 | 96,882 | 4,600 | 1,000 | 92,482 | 360 | 28,237 | 31 |
| 1977 | 62,030 | 1.49 | 92,161 | 6,649 | 1,000 | 107,810 | 415 | 42,923 | 40 |
| 1978 | 62,898 | 1.92 | 120,820 | 5,142 | 1,500 | 106,462 | 407 | 43,000 | 40 |
| 1979 | 57,682 | 1.56 | 90,200 | 12,125 | 500 | 113,825 | 431 | 53,000 | 47 |
| 1980 | 61,475 | 1.60 | 98,182 | 16,000 | 500 | 112,682 | 423 | 48,000 | 43 |
| 1981 | 59,232 | 1.37 | 81,100 | 20,300 | 500 | 104,900 | 390 | 46,800 | 45 |
| 1982 | 57,278 | 1.47 | 84,300 | 20,800 | 500 | 100,600 | 371 | 43,000 | 43 |
| 1983 | 50,800 | 1.53 | 77,500 | 20,500 | 500 | 93,000 | 340 | 35,000 | 38 |
| 1984 | 51,061 | 1.34 | 68,600 | 28,100 | 500 | 91,200 | 330 | 34,700 | 38 |
| 1985 | 50,265 | 1.55 | 78,100 | 15,700 | 500 | 91,600 | 328 | 35,600 | 39 |
| 1986 | 48,728 | 1.89 | 92,306 | 16,000 | 500 | 102,806 | 365 | 44,806 | 44 |
| 1987 | 46,684 | 1.78 | 83,312 | 21,500 | 500 | 101,500 | 357 | 40,500 | 40 |
| 1988 | 48,058 | 1.76 | 84,445 | 15,500 | 500 | 100,445 | 351 | 41,445 | 41 |
| 1989 | 47,676 | 1.94 | 92,307 | 14,600 | 500 | 103,407 | 358 | 41,407 | 40 |
| 1990 | 48,200 | 2.24 | 108,000 | 14,800 | 500 | 119,300 | 410 | 53,300 | 45 |
| 1991 | 45,900 | 1.57 | 71,980 | 22,900 | 500 | 101,300 | 348 | 52,200 | 46 |

Production is on a cleanweight basis.

Trade is on a July-June basis, and does not include inter-republic trade.

Source: USDA.

U.S. Department of Agriculture
Economic Research Service
1301 New York Ave., NW.
Washington, DC 20005-4788