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Soviet Grain Imports: Assessing the Factors at Play

An Intelligence Assessment

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Soviet Grain Imports: Assessing the Factors at Play

An Intelligence Assessment

This paper was prepared by the Office of Global Issues and the Office of Soviet Analysis. Comments and queries are welcome and may be directed to the Chief, OGI

Soviet Grain Imports: Assessing the Factors at Play

Key Judgments

Information available as of 11 February 1983 was used in this report

Moscow seems intent on minimizing purchases of US grain. Despite sizable purchases on the world grain market in recent months, the Soviets have bought only about 6 million tons of grain from the United States during the marketing year that began last July. They may not buy much, if any, more US grain in the marketing year. In these circumstances the United States would account for about 10 percent of total Soviet grain purchases, compared with 50 to 60 percent in the late 1970s before the US grain embargo was imposed following Moscow's invasion of Afghanistan.

In deferring purchases from the United States, the Soviet leadership is probably expressing its anger over recent US trade policy and attempting to encourage opposition within the United States to the future use of sanctions. We believe the USSR is well positioned to minimize its purchases of US grain, even in the marketing year that will end in June 1984. The tendency by major exporters to overproduce probably will persist for at least another year and perhaps much longer. Moreover, long-term grain agreements with non-US suppliers assure the Soviets access to about 10 million tons annually. Moscow has agreements with Canada and Argentina and is exploring possible agreements with France and Australia that could guarantee several million tons more.

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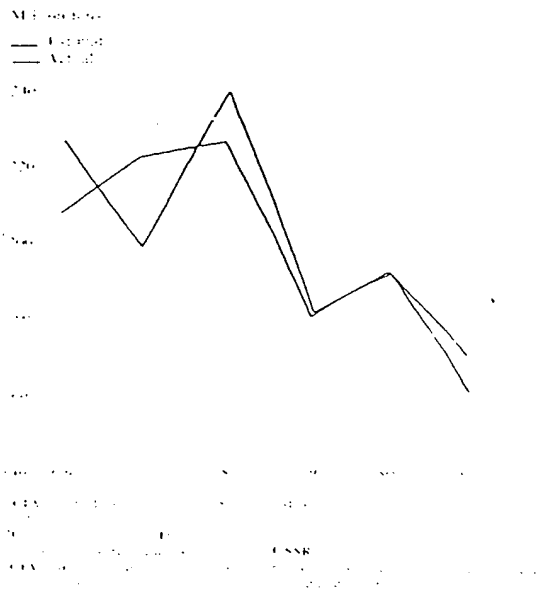
Grain Production

Since July 1982 we have been projecting a crop of about 165 million tons—a fourth consecutive poor harvest. Other sources have offered widely different estimates (appendix A). Statements by Soviet officials on last year's crop give ranges from 140 to over 200 million tons. In early November, for example, Minister of Agriculture Valentin Mesyats stated that the crop would be 27 million tons larger than the 1981 harvest—unofficially placed at 158 million tons. These statements may be misleading. In November 1981 Soviet grain trade officials indicated the crop was more than 175 million tons but all subsequent indications are for a far smaller crop. In addition to Soviet statements, there have been numerous Western estimates of the harvest. They have ranged from 163 to 185 million tons and include the USDA's estimate, which was raised in November from 170 million tons to 180 million tons.

In view of the wide range of estimates and the slow pace of Soviet grain purchases early in the marketing year (July-June), we have reexamined our own estimate. The review included an evaluation of estimates made by other forecasters and statements by foreign officials, assessments of postharvest indicators [redacted] and state grain procurements, and the use of an alternative methodology that looks at six key grain producing areas.[1] The review failed to produce evidence that would cause us to revise our estimate. Because of the many variables involved, the figure of 165 million tons should be considered our best estimate, but one subject to error. On the basis of the track record of our methodology, there are two chances out of three that the crop was in the range of 150-180 million tons and only one chance in 10 that the crop exceeded 185 million tons.

[1] See DDI Technical Intelligence Report [redacted] December 1982, *The 1982 Soviet Grain Crop: Reassessing Estimates*.

Figure 1
USSR: Grain Production, 1976-81



Requirements

We know less about the size of Soviet grain needs than we do about the size of the crop because requirements depend on Soviet intentions as well as on the physical relationships in agriculture and food processing. Nonetheless, determining requirements is a vital step in solving the import puzzle. Sufficient data exist to make reasonably reliable estimates of Soviet use of grain for feed, seed, and industrial

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Soviet Grain Requirements: Changing Estimate

Earlier this year we estimated that the Soviets would need upwards of 65 million tons of grain in excess of this year's crop to meet their domestic needs. We expected grain imports in the marketing year ending next June to reach a record 50 million tons—the limit of Soviet capacity to unload grain and transport it internally. When Moscow bought grain at an unexpectedly slow pace during July-September, we reviewed the factors determining the level of expected imports. As a result of this review we maintained our estimate of the size of the 1982 Soviet grain crop at 165 million tons. Based on the accuracy of our past estimates there are two chances in three that the crop will be between 150 and 180 million tons. We are nevertheless lowering our estimate of Soviet domestic grain requirements by 23 million tons because the harvest of forage crops was substantially greater than we thought it would be. Largely because of this change we have lowered our estimate of Soviet grain imports to a maximum of 42 million tons—8 million tons less than were imported last year.

products, as well as exports. The estimate of grain fed to livestock has a wider range of uncertainty because the underlying data are incomplete and because policy changes can have a major impact on the amount of grain fed. The total secrecy surrounding reserves makes estimates of grain stocks even more difficult to make.

Food, Seed, and Industrial Use. Even in years when harvests are poor the Soviet Union produces more than enough grain to supply its population with bread and other grain products, replenish seed stocks, and produce alcohol, beer, starch, and other secondary grain products. Quantities of grain required for food, seed, and industrial uses have increased slowly over the past decade. We believe that our estimate of 93 million tons of grain for these purposes in MY 1983 is accurate within a few million tons (table 1). The total required for these purposes fluctuates primarily because of changes in seeding needs. Seed use depends on sown area and the amount of reseeding because of winter damage.

Table 1
USSR: Selected Grain Statistics

Million tons

	Production	Used for Food, Seed, and Industrial Purposes	Percent Used for Food, Seed, and Industrial Purposes
1971-72	181.2	89.3	49
1972-73	168.2	89.7	53
1973-74	222.5	91.1	41
1974-75	195.7	90.3	46
1975-76	140.1	90.1	64
1976-77	223.8	92.1	41
1977-78	195.3	92.8	47
1978-79	237.4	92.9	39
1979-80	179.0	92.5	52
1980-81	189.1	92.8	49
1981-82 a	158	92.6	59
1982-83 b	165	93.0	56

a Unofficially reported.
b Estimated.

Livestock Feed. Livestock feed requirements have always been one of the weak links in our estimate of total Soviet grain needs. Their importance in the requirements equation has been increasing as grain used for feed climbed by nearly one-half during the past decade. Early last summer we estimated grain requirements for feed at 119 million tons, on the assumptions that meat production in MY 1983 would be somewhat higher than in MY 1982 and that grain as a share of total feed would not change from last year. On the basis of Soviet reports, we now believe that meat production will not increase and that larger crops of potatoes and forage will permit substantial substitution of nongrain feed in livestock rations (appendix B). We therefore now estimate grain feed requirements in this marketing year at about 94 million tons with a range of uncertainty of at least 5 million tons.

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Table 2
USSR: Exports of Grain

Thousand tons

	1970	1975	1979	1980	1981
Total a	5,698	3,578	3,300	1,668	2,260
Eastern Europe	4,160	2,322	1,400	280	250
Cuba	550	533	750	830	1,302
Vietnam	4	125	260	190	200
North Korea	247	212	400	400	390
Mongolia	56	20	80	8	118
Afghanistan	15	10	40	30	80
Other	666	356	370	30	40

a This total includes grain purchased by the USSR from Western countries and shipped directly to the recipient.

Our assumption that meat production will not increase represents a shift in our perception of Soviet consumer policy. Earlier, we believed Moscow would import as much grain as its ports could handle in order to ensure an increase in meat production. The Soviet leadership, however, apparently has decided to forgo this objective by choosing to import grain at below-capacity levels during July-December. The reduced level of imports also precludes additions to stocks and could leave the USSR in a vulnerable position if there is another shortfall.

Exports. Moscow's grain exports to client states have fallen sharply from the 6-million-ton average of the early 1970s—primarily in sales to Eastern Europe—to roughly 2 million tons annually in recent years (table 2). We believe that the USSR's commitment to the political stability of its client states has forced Moscow to continue Soviet grain exports—especially to Cuba—at about the present level of 2.3 million tons.

Stock Changes. Less is known about Soviet grain stocks than any other aspect of the supply and demand situation. The quantity held in reserve is a state secret. For purposes of estimating grain imports this year, we assume that the USSR will not be able to draw down grain stocks. After a series of poor crops, there is probably little grain left in reserve to compensate for this year's poor harvest.

USSR Grain Purchases and Hard Currency Availability

The rapid deterioration in Moscow's hard currency situation during the first half of 1981 led to sharp cutbacks in many imports in the latter part of the year and into 1982. [redacted] Soviet trade o[redacted] new orders and some projects were suspended, including those to obtain Western enhanced-oil-recovery technology. Even grain apparently did not escape the general Soviet clampdown on imports. In early May, for example, Eksportkhleb officials told [redacted] that the Soviet Union would buy [redacted] through September because of a lack of hard currency.

Efforts taken by the USSR since mid-1981 to correct its hard currency balance of payments, however, have put the Soviets in a much better trade and financial position than they were in a year ago. Although the foreign exchange situation is still tight, we believe that the substantial improvement recorded during the first half of 1982 coupled with the availability of Western credits has given Moscow the ability to pay for as much grain as Soviet ports and railroads can handle in January-June 1983.

Import Requirements and Activity

With a grain crop of 165 million tons, we estimate that the USSR needs 42 million tons of imports this marketing year to (a) support current levels of production of meat and dairy products and maintain livestock inventories, (b) cover requirements for seed, food, industrial use, and exports, and (c) maintain stocks at current levels (table 3).

Table 3
USSR: Grain Position in Marketing Year 1983

Million tons

Requirements	
Food, seed, and industrial	93
Livestock feed, excluding waste	94
Export	2
Stock change	0
Net production [a]	**147**
Import requirements	**42**

[a] The USSR reports grain production on a bunker weight basis-before cleaning and drying. To derive net production, we have reduced this year's crop estimate by 11 percent for excess moisture and for nongrain matter.

Purchases. After a slow first quarter, Soviet grain buying has risen sharply. Purchases during July-December for delivery by 30 June 1983 totaled roughly 30-32 million tons [redacted]

- So far this year the Soviets have contracted for 6 million tons of US grain for shipment through March [redacted]

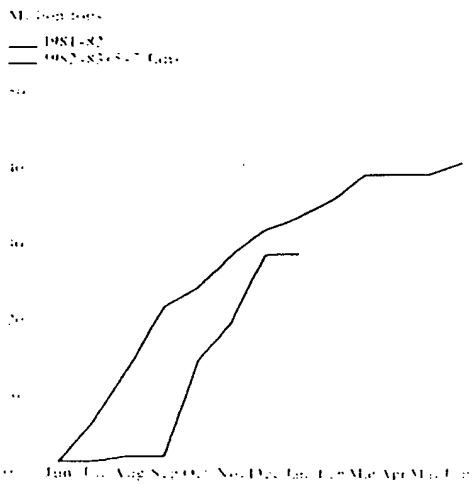
- Purchases of Argentine grain now total some 7-9 million tons. This includes the purchases in November and early December of 3.5-4.5 million tons of new crop wheat from Argentina for delivery beginning in late December, a reported contract with an international grain trader to purchase between 1 to 2 million tons of new crop corn, and the possible purchase of 500,000 to 1 million tons of old crop corn and sorghum. Moreover, 1.8 million tons of old crop grain already has been delivered to the USSR.

- The USSR has contracts for 6.5 million tons of grain from Western and Eastern Europe, Thailand, and Australia.

In addition to grain already purchased, commitments under long-term grain agreements with Argentina could provide the Soviets with another 2-3 million tons of grain. Since the Argentine agreement is not based on the marketing year, the USSR is not required to take delivery before 30 June.

USDA estimates the current level of commitments at 26-27 million tons [redacted]

Figure 2
USSR: Cumulative Grain Purchases[a]



[redacted]

USSR: Existing Non-US Grain Agreements

Argentina (1 January 1980–31 December 1985)

Authorizes the USSR to purchase from private commercial firms 4 million tons of corn and sorghum and 500,000 tons of soybeans annually.

—Purchases in excess of these quantities will be authorized only after consultation.

Purchases will be made at prevailing market prices.

—Quantities stipulated in the agreement and additional amounts agreed upon will not be affected by an embargo.

[redacted]

Brazil (1 January 1982–31 December 1986)

—Authorizes the USSR to purchase from private firms and cooperatives a minimum of 500,000 tons of soybeans and 400,000 tons of soybean meal annually.

—Beginning in 1983, approximately 500,000 tons of corn will be exported to the USSR annually.

Prices will be negotiated.

Shipments. Moscow has taken relatively small deliveries during the first half of the marketing year. Grain shipments during July-December probably totaled about 13 million tons—8 million tons below the level in the comparable period last year. Most of the reduction has been at the expense of the United States and Argentina whose first-half shipments to the USSR probably fell by more than 60 percent compared with the same period last year. The Kremlin may have reasoned that, with its greatest needs for imports coming next spring, small purchases and shipments during the summer could help conserve hard currency and possibly force down world prices. October-November purchases of US grain have accelerated shipping rates for November-December roughly equal last year's rate for the period.

Table 4
USSR: Grain Imports in MY 1982 and Purchases in MY 1983

Million tons

	1982/83 Imports [1]	1982/83 Purchases to Date [2]
Total	45.0	30-32
United States	15.4	5.9
Argentina	13.2	7.0-9.0
Australia	2.5	1.0
Canada	9.2	10.7
Eastern Europe	1.5	1.5
France	2.7	3.4
Other	0.5	0.7

[1] 1 July 1981 to 30 June 1982.
[2] 1 July 1982 to 31 December 1982.
[3] Total does not include rounding.

The Next Six Months and the US Role

Moscow would have to take delivery of 29 million tons during January-June if it is to import the 42 million tons we believe it needs this year. The world grain market can easily meet this requirement. Non-US exporters should be able to supply about two-thirds of Soviet needs during the remainder of the marketing year. The United States would have to deliver about 9 million tons. If this happens, total US grain exports to the USSR for the marketing year would amount to 31 million tons, 30 percent below last year's level. The bulk of any additional US purchases would have to occur during the next two months because of seasonal

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Figure 3
Cumulative Grain Shipments to USSR

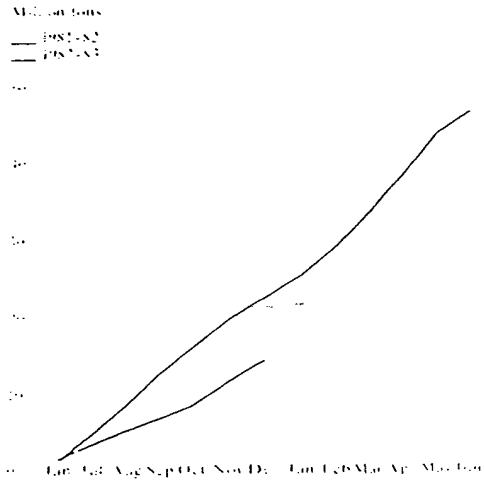

Table 5
Grain Shipments to the USSR
in MY 1983

Million tons

	Source of Grain		Total
	Non-US	US	
Total for the year	**31.0**	**11.0**	**42.0**
First quarter (Jul-Sep)	5.2	0	5.2
Second quarter (Sep-Dec)	5.8	2.0	7.8
Total first half	**11.0**	**2.0**	**13.0**
Third quarter (Jan-Mar)	6.5	7.0	13.5
Fourth quarter (Apr-Jun)*	13.5	2.0	15.5
Total second half	**20.0**	**9.0**	**29.0**

shortages of grain in non-US exporting countries and the Soviet need to prevent shipping bottlenecks that could limit total grain imports for the marketing year

If Moscow imports less than 42 million tons of grain this year for whatever reason—including the possibility that we have underestimated this year's crop—the shortfall will come largely out of US sales. Given all the variables at play in assessing import needs and intentions, it is possible that the USSR will make no additional purchases beyond the 6 million tons already bought

In this connection, political considerations appear to be playing a large role in Soviet import decisions. Although the United States will probably be the largest single source of grain for the USSR during the January-March period, Moscow is probably also determined to minimize purchases of US grain, even if this leaves domestic requirements only partially met. Soviet trade sources have repeatedly stressed in the past few months that grain purchases from the United States would be kept to an absolute minimum, and we judge that these declarations should be taken seriously:

- Moscow views the United States as an unreliable trade partner, and despite Washington's recent offer of increased grain sales and its lifting of the gas pipeline sanctions, the leadership probably believes that the United States still cannot be trusted. In late September, for example, journalist and regime spokesman Alexander Bovin said in *Izvestiya* that "there can be no doubt" that Washington would continue to push for limits on East-West trade.

- Soviet leaders probably also want to avoid appearing dependent on US grain at a time when Washington is seeking leverage through Soviet economic difficulties. Although General Secretary Andropov and Premier Tikhonov affirmed the desirability of increased trade in recent speeches, they also said that expanded purchases from the United States would depend on whether the United States abandons efforts to restrict commerce.

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Soviet Logistics Capacity

Soviet capacity to offload seaborne grain and move it to the interior by rail and inland waterway depends on:

- *The rated capacities of grain offloading equipment in Soviet ports, adjusted for weather, maintenance, and labor constraints.*
- *The availability of grain railcars and inland waterway vessels to accept offloaded grain and the availability of grain storage facilities at the piers.*
- *Seasonal limitations on the use of the inland waterways and other transport networks.*

Appendix C describes in more detail the major factors limiting port capacity.

Over the past few years, Moscow has been expanding and improving its grain import capability. This enhanced capability will allow Moscow greater flexibility in scheduling imports.

[redacted]

In addition, the Soviets have expanded grain transshipment activities in Western Europe, where North American grain delivered by large bulk carriers to Hamburg and Rotterdam is transferred to smaller vessels for carriage to Riga and other shallow-river ports in the USSR.

Because of increased port capacity and the greater availability of railcars for imported grain in the spring, the surge in monthly shipments to a record 5.3 million tons in May 1982 caused much less port congestion (as reflected in ship turnaround times) than a weaker surge in the fall of 1981.

Given these developments, the USSR should have little difficulty absorbing an average of 4.8 million tons of grain per month from January through June 1983, or 29 million tons during the second half of FY 1983. This, together with the estimated 13 million tons shipped during July-December, will enable Soviet imports to reach 42 million tons. Because the availability of grain railcars will be at a peak through May, import capacity probably will approach the discharge capacity of USSR port equipment, which demonstrated a capability to handle 5 million tons a month in the spring of 1982. If new facilities under construction at Novorossiysk on the Black Sea are completed by the end of March, we estimate discharge capacity could be as high as 5.4 million tons per month. Beginning in June, however, unloading capability may drop as railcars are diverted to meet demands arising from the new harvest and other factor.

- The USSR probably decided to ignore the October offer of increased US grain sales in part to demonstrate that trade limitations can be applied by both sides, a longstanding public warning of Moscow's. The Soviets know that US farm and business interests will then put increased pressure on Washington to avoid imposing future sanctio:

The Soviet goal of reducing dependence on Western grain may also be influencing Moscow's purchasing decisions, but we doubt that it is a major consideration. The food program launched earlier this year and still backed by Andropov is partly intended to reduce the USSR's reliance on foreign agricultural commodities. That is almost certainly a secondary and long-term objective of the program, however, and the new leadership would be reluctant to cut imports sharply in the first year of the program solely for that reason.

To the extent that the USSR eschews US grain, it will have to make internal adjustments—again assuming that we have the requirements right. The USSR could ease the shortfall in the near term by reducing the quantity of grain used for food and industrial purposes, saving perhaps up to 5 million tons of grain. Livestock herds could also be cut, thereby increasing meat supplies temporarily but reducing them over the next year or two. Feed supplies could be stretched

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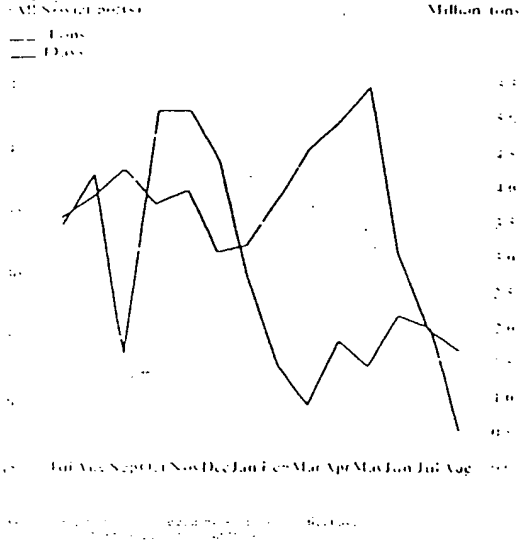
Figure 4
USSR: Grain Shipments and Turnaround Time, July 81–August 82[a]



even more than at present by reducing feedstock rations. Although this would save several million ton of grain, it would also lower animal productivity by making slaughter weights lighter and by reducing milk yield

Looking Ahead

Beyond the current marketing year, Soviet grain imports will continue to be linked to the size of the annual harvest. If there is a bumper harvest next fall, imports could fall from the levels of the past few years. If grain production does not pick up this year, however, Moscow will face a difficult choice. Although the USSR could reduce long-established goals for meat production to avoid an increase in dependence on foreign grain, a turndown in meat availability could affect already low labor productivity. In any case, on the assumption that world grain production will continue to increase for at least the next year, we expect Moscow to have no problems meeting the lion's share of its future grain import needs from suppliers other than the United States

Long-term agreements with non-US suppliers already assure the Soviets access to about 10 million tons of grain annually. In addition to existing agreements with Canada and Argentina, Moscow is exploring possibilities with France and Australia that could assure several million tons more. In these circumstances Soviet officials will be in a good position to take a wait-and-see attitude toward making purchases in the United State

[redacted]

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Appendix A

Survey of Recent Soviet Crop Estimates

Date of Estimate	Million Tons	Source of Estimate
6 January 1983	187	
4 January 1983	205 + (see comments)	
December 1982	(see comments)	
November	200 + (see comments)	
19 November	180 + (see comments)	
10 November	180	
8 November	165	
3 November	176	
1 November	185	
31 October	180	
October	186	
19 October	185	
19 October	170	
14 October	180	
8 October	170	
4 October	180-190	
30 September	180	
30 September	167.6	
24 September	(see comments)	
12 September	163.3	
10 September	(see comments)	
9 September	(see comments)	

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Date of Estimate	Million Tons
1 September	180
September	180
31 [illegible]y	163.5
26 July	165
19 July	168.8
12 July	175
12 July	170
Early July	160
28 June	185
June	[illegible]

[illegible]

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Appendix B

Estimating Soviet Livestock Feed Needs

Historical estimates of grain feed are based on Soviet statistics on the quantity of total concentrates fed, reported by calendar year. (Concentrates are feeds high in nutritive value.) Estimates of nongrain concentrates fed—milling byproducts, oilseed meals, and alfalfa and grass meals—must be deducted from total concentrates to derive estimated grain fed in the calendar year. The calendar year statistic, in turn, is converted to crop year (July-June) using a conventional one-third fed in year of harvest, two-thirds fed in the following year.

Our estimates of future use of grain for feed initially assume that (a) planned targets for production of livestock feed will be met and (b) the share of grain in total livestock feed remains unchanged. In poor crop years, estimates of grain required for feed decline as goals for livestock products become unattainable. For example, our latest estimate of grain required for livestock feed in crop year 1982/83 dropped by 8 million tons (from 119 million tons net to 111 million tons) as monthly production data (for meat, milk, and eggs on state and collective farms) ruled out earlier projections of increased livestock product output in 1982 and first-half 1983.

Moreover, as the crop season progresses, information on the availability of nongrain feedstuffs affects the estimate of grain needed for livestock feed. This year, an improved potato crop (estimated at 80-85 million tons compared with 72 million tons in 1981) and substantially larger supplies of harvested forage hay, haylage, straw, silage, and grass meal—will permit relatively more substitution of nongrain feed for grain in livestock rations. As of late October, supplies of haylage and silage were at record levels. Supplies of harvested forage crops and potatoes for feed in terms of feed units (comparable nutritive basis) this year are up substantially over last year. If the quality of these feeds can be maintained—a difficult task in the USSR where storage facilities are limited and losses as high as 40 percent are cited in the literature—the estimated need for grain for feed could be reduced by 15-20 million tons compared with 1981/82.[1] In our calculation of grain utilization in 1982/83, we now estimate livestock feed requirements at 94 million tons of grain, net of waste and losses. This estimate takes into account the increased availability of forage crops and assumes livestock product output at roughly last year's level.

Leadership choices regarding herd maintenance and animal productivity add further uncertainty to our estimates of grain required for feed. Our estimates implicitly assume that current feeding levels will continue. This may not be correct. Feed rations per head peaked in 1977, dropped slightly in 1978—the last good year of agricultural performance—and have continued to decline slowly since then.

A decision to maintain current livestock inventories while reducing feed supplies further would reduce total feed requirements by about 20 million tons and grain requirements by as much as 7 million tons. Although a cut in rations on this scale would sharply reduce output, it would maintain herd numbers, a high priority goal of the USSR since the forced slaughter that occurred following the disastrous 1975 grain harvest.

[1] Recently, farms have been warned not to expect to cover feed shortages from state supplies. This could force farms to handle forage crops with more care in order to reduce losses as well as to use available feed more efficiently.

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Table B-1
USSR: Feed Expenditures

Million tons of feed units

	Average 1966–67, 1975–76	Average 1976–77, 1978–79	1979–80	Estimated 1980–81	Estimated 1981–82
Total feed units	338.4	401.0	399.8	399.4	396.7
Concentrates	103.3	141.9	145.8	144.6	145.1
Grain					
Gross	87.1	121.0	125.2	122.9	123.4
Net	70.2	93.6	108.7	101.6	110.6
Nongrain concentrates	16.2	20.9	21.6	21.7	21.7
Succulents	93.5	118.0	116.4	117.4	119.9
Of which					
Silage	38.0	43.7	48.1	48.0	48.1
Coarse feed	48.8	59.6	59.3	60.8	60.7
Of which					
Hay	36.3	43.7	35.5	36.1	40.7
Other[1]	92.8	81.5	79.3	76.6	71.0

The USSR measures grain production on a bunker-weight basis; that is, straight from the combine before cleaning and drying. We have established in earlier work that the discount varies around 11 percent of total output depending on size of crop and moisture at time of harvest. For grain balance work, official statistics on grain fed must be adjusted to be compatible with the standard weight grain associated with other uses. To make the adjustment, we assume that 80 percent of total waste and losses is included in the official feed statistics. This share reflects in particular the higher-than-average storage losses associated with grain used for feed and was found to yield reasonable net feed and implied stock change series. It was also found to give results that are consistent with derived average feed unit values for grain fed on a standard weight basis. The average feed unit value of grain fed in the USSR varies from 0.98 to 1.0 according to Soviet feed specialists, or is about equal to the nutritive value of oats, the Soviet standard feed unit.

[1] Largely pasture but also includes feedstuffs such as milk, skim milk, meat, bone meal, and other feeds of animal origin that are excluded by Soviet definition from concentrates.

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Appendix C

Soviet Logistic Constraints

Merchant Ship Availability

The USSR will have little difficulty lining up all the foreign-flag grain carriers it needs during the grain marketing year ending in June 1983, and it will be able to do so at rock-bottom rates. Record numbers of dry bulk carriers are laid up for lack of business, and charter rates are weaker than at any time in the last four years. Surplus ship capacity is mounting because of heavy deliveries of new ships ordered before the present slump in shipments of key bulk cargoes such as coal and ore. With more excess tonnage overhanging the market, charter rates probably will drop even further. The USSR is currently chartering bulk carriers in the size range it most frequently uses for grain (25,000 to 35,000 DWT) at rates averaging no more than $3,500 per day—less than half the rate it was paying for such ships in the second half of 1981.

Offloading Equipment Capacity

Our preliminary assessment of all the grain offloading equipment available and apparently operational in the 18 major Soviet grain ports indicates that the total rated capacity of the equipment probably exceeds 58 million tons per year. This estimate is based on conservative efficiency assumptions of 16-hour workdays and 240-day workyears, even though older open-hopper equipment is being steadily replaced with higher capacity covered units having all-weather capability. Moreover, the estimate does not take into account the ability of the many small inland waterway ports to absorb grain delivered by small, shallow-draft vessels after transshipment from big ships in West European ports—a practice that allowed the Soviets to bring in at least a million tons of grain last year beyond that handled by the major ports.

Although measures are being taken to alleviate the situation, Soviet port authorities currently lack sufficient covered storage facilities for grain and are unwilling to store it in the open. With little buffer storage, the unloading of a grain ship usually has to stop when the supply of empty railcars runs short. In such circumstances, spot shortages of railcars can constrain both the ports' capacity to offload grain and the movement of grain inland from the ports.

Rail Availability

The availability of appropriate types of railroad cars for grain movement out of seaports fluctuates seasonally. The demand for cars often exceeds supply, especially during those months when railroad cars suitable for moving imported grain are also required in large numbers for competing transportation activities—usually mid-June through November. These periodic shortages reflect both the limited inventory of cars and inadequacies in the maintenance and management of the car park. Barring disruptions stemming from extreme weather conditions, railcar availability is unlikely to curb the flow of grain through Soviet seaports until some time in June 1982.

Estimate of Current Grain Offloading Capacity

Taking into account the past investment in grain handling facilities and the recent patterns of shipping activity, we conclude that the rated discharge capacity of USSR grain port equipment significantly exceeds the Soviet's ability to move the grain inland, which we have estimated to be 45 to 50 million tons per year.

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