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USSR: Fourth-Largest Grain Crop in History



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An Intelligence Assessment

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USSR: Fourth-Largest Grain Crop in History



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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, Agricultural Assessment Branch, OGI, on



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Key Judgments

Information available as of 25 October 1983 was used in this report.

With less than 5 percent of the 1983 Soviet grain crop to be cut, it still appears likely that the harvest will total about 210 million metric tons—the fourth largest ever, and the best showing since the 1978 record of 237 million tons. A crop of this size, coupled with record forage production, means that the USSR should need to buy little, if any, grain in excess of its minimum commitment levels under agreements with exporters. Because of the many variables determining Soviet grain requirements, however, we cannot yet rule out larger imports in the current marketing year (1 July 1983–30 June 1984).

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The good-to-excellent harvests and substantial level of meat imports now expected will enable the USSR to significantly improve meat supplies this year, thus underscoring the leadership's commitment to improve the Soviet diet. Although Andropov will be able to claim initial success for the Food Program, the question remains whether this year's progress will spur further needed improvements to the agricultural sector or be used to argue that additional readjustments are no longer necessary.

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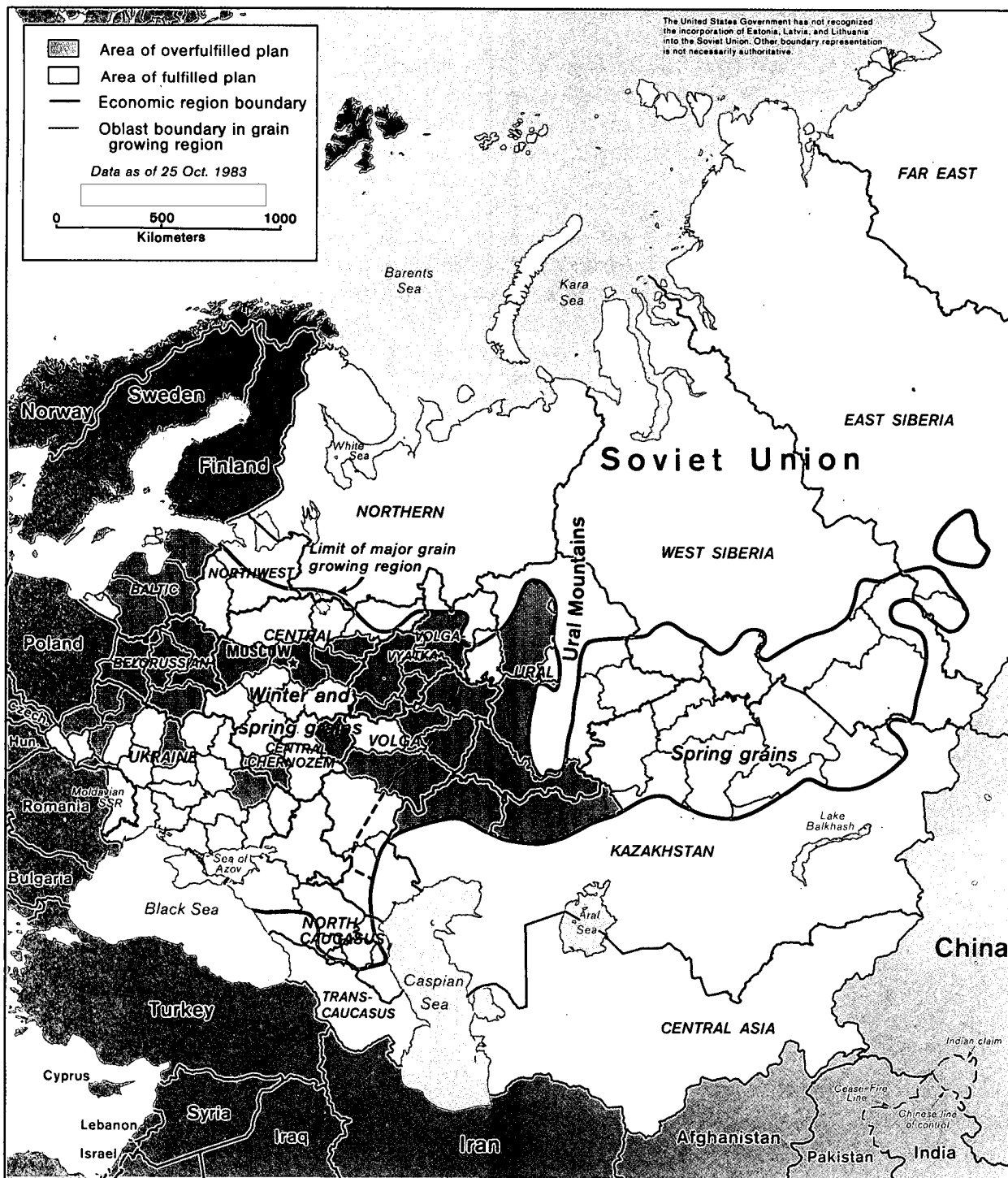
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Figure 1
Soviet Grain Procurements



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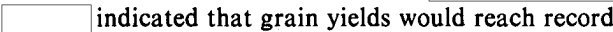

USSR: Fourth-Largest Grain Crop in History




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Introduction

With the grain harvest in the USSR now virtually complete, we continue to believe that Moscow is headed for a grain crop of about 210 million tons this year.¹ While a crop of this size would be far short of the 238-million-ton target, it would be the fourth-largest harvest in Soviet history and well above the estimated annual average of 186 million tons for the 1978-82 period. Although the exact size of the harvest is still subject to a few uncertainties, we believe it unlikely—based on information available to date—that the harvest will exceed 215 million tons or fall below the 200-million-ton mark. During 1978-81, a period when the USSR was still publishing the size of its yearly grain harvest,² our point estimates of the crop were within ± 8 percent of the reported totals. The US Department of Agriculture—applying a slightly different methodology than our own—estimates this year's crop to be 200 million tons.

Our 210-million-ton estimate has held firm since early July. Despite a poor start last fall, when near-drought conditions caused a major shortfall in winter grain sowings, prospects for the 1983 Soviet grain crop turned around this spring and have remained bright ever since. Spring sowing progressed at a near-record pace, weather conditions during the summer were mostly favorable, and analysis   indicated that grain yields would reach record levels in some areas. 

More Evidence of a Good Grain Harvest

Information acquired during the past two months has provided additional evidence that Moscow is headed for a good grain crop this year. Specifically, we have looked at the weather, straw dumps, grain procurements 

The Weather. With few exceptions, weather conditions since mid-July benefited late-season development and ripening of crops and permitted the grain



Table 1 *Million metric tons*
USSR: Grain Production^a

	Actual			Estimated		
	1976-80 Average	1979	1980	1981 ^b	1982	1983
Grain production	205.0	179.2	189.1	158.0	165.0	210.0
By type						
Wheat	99.7	90.2	98.2	81.0	83.0	86.0
Coarse ^c	95.1	81.4	80.7	68.0	73.0	110.0
Other ^d	10.2	7.6	10.2	9.0	9.0	14.0
By republic						
RSFSR	113.9	91.8	105.1	80.0	90.0	120.0
Ukraine	43.1	34.0	38.1	36.0	39.0	43.0
Kazakhstan	27.5	34.5	27.5	24.0	18.0	25.0
Other	20.5	18.9	18.4	18.0	18.0	22.0

^a Measured in bunker weight, that is, gross output from the combine, which includes excess moisture, unripe and damaged kernels, weed seeds, and other trash. For comparison with United States or other countries' grain output, an average discount of 11 percent should be applied.


^b Total grain production in 1981 was unofficially reported at 158 million tons. Grain figures by type and by republic represent our estimates.

^c Coarse grains include barley, rye, oats, corn, and millet.

^d Other grains include rice, pulses, and buckwheat.



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harvest to proceed at an unusually brisk pace. In addition, timely summer rains boosted prospects for the corn crop—about one-third of which remains to be harvested—as evidenced by the excellent crop vigor observed on LANDSAT imagery. In our judgment only two weather events have caused minor problems. A bout of hot, dry weather in mid-August in northern Kazakhstan and West Siberia probably cut grain yields somewhat. More recently, prolonged rainfall in the northernmost parts of the grain region is seriously hampering final harvest operations—especially in the Urals and West Siberia—according to Soviet press reports 

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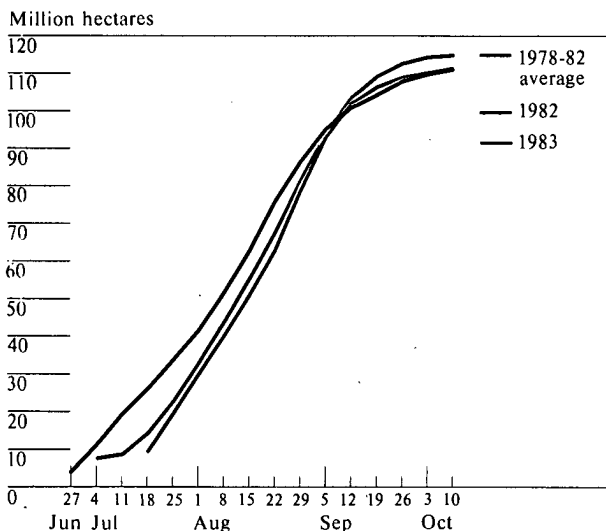
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Figure 2
USSR: Pace of Grain Harvesting



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Straw Dumps.

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[Redacted] While estimates for some oblasts have been refined, no change in the total grain crop estimate has yet been warranted by the straw dump data. Additional information will be available during the next several weeks, at which time we will make further adjustments, if necessary, to our yield estimates [Redacted]

Grain Procurements. Grain procurement data, or the lack of it, as of the end of September also lend credence to our current estimate of Soviet grain production. Although the level of state procurements does not necessarily relate directly to grain output, it can indicate whether a region has experienced a relatively good, average, or poor year. In areas where we believe crop prospects to be good to excellent, namely the northern European USSR (about one-third of total production), every oblast already has

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reported that sales plans have been fulfilled or over-fulfilled. Conversely, the lack of reporting from the Ukraine and lower Volga Valley—the areas hardest hit by unfavorable weather this year—supports our estimate that the harvest there will be no better than average. East of the Ural Mountains, it is still too early, as usual, to draw even preliminary conclusions from the amount of data currently available. [Redacted]

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Other Reporting. Recent collateral reporting continues to support this year's favorable crop outlook as well. In mid-August, the US agricultural attache assessed the overall condition of the 1983 grain crop as "much better than last year." Moreover, Soviet press reports have described the harvest in numerous oblasts as "good," "rich," "not bad," or "successful." By comparison, these descriptors rarely were used during the poor harvests of the past four years. The press also indicates that grain quality this year is much improved over last.

Remaining Uncertainties

Although there is now little doubt that Moscow will harvest one of the largest grain crops in Soviet history, there is still some uncertainty concerning its exact size. Because of the prolonged wet harvest conditions in the northern grain regions, minor losses in both quantity and quality probably already have occurred.

The latest Soviet harvest progress data indicate that only some 5-10 million tons of grain are still at risk.

On the positive side, our estimate of the corn crop—about 8 percent of this year's total grain production—could turn out to be about 2-3 million tons too low. Owing to early planting, a larger-than-normal portion of the corn acreage intended for forage will likely be harvested for grain. Depending on how much acreage the Soviets choose to switch, corn production could well reach a record level.

A final unknown is the total impact of increased chemical fertilizer production this year. During January-May 1983, fertilizer output exceeded plan and was up 10 percent over the corresponding period last year.

. Because much of the Soviet grain growing region—especially the northern European USSR—received adequate rainfall this summer,

³ The attache's estimates for the 1982 and 1983 Soviet grain crops are 180 million tons and 210 million tons, respectively. These estimates are based largely on Soviet press and weather reports, and on discussions with Soviet officials and other Western agricultural attaches, who visited the grain growing region. Unlike many previous years, however, crop inspection travel by the US attache was denied by Moscow for nearly the entire 1983 crop season.

Table 2
USSR: Forage Procurements ^a

Million metric tons of feed units

	1978-82 Average	1979	1980	1981	1982	1983
Total	91.2	84.5	92.0	90.6	97.4	112.8
Hay	25.6	23.5	24.3	28.8	27.6	33.7
Haylage	21.6	19.0	23.7	19.3	21.3	23.3
Silage	39.4	37.7	39.2	37.7	43.8	50.6
Grass Meal	4.6	4.3	4.8	4.8	4.7	5.2

^a As of 3 October.

^b One feed unit contains the nutrient equivalent of 1 kilogram of oats.

grain yields in several areas could surpass the record and near-record levels we have already incorporated into our estimate partly because of the increased fertilizer availability.

Good Prospects for Other Crops

The current outlook for the major nongrain crops in the Soviet Union—sunflowers, sugar beets, vegetables, potatoes, and cotton ⁴—as well as prospects for selected forages—hay, haylage, silage, and grass meal—remains good to excellent. We continue to estimate that these crops will show increases over 1982 production and exceed the average of the past five years. In addition, according to the USSR Central Statistical Administration, forage procurements as of early October were about 15 percent higher than last year's record. Although this gap may narrow before the end of the season, we believe that a second consecutive record forage harvest is certain. Moreover, because most of the harvesting to date has been carried out under favorable weather conditions, forage quality this year will be up as well. Harvested forages—in terms of nutrient content—comprise about one-half of the livestock ration in the USSR.

Grain Requirements and Imports

A grain crop of 210 million tons would still leave the USSR short of the amount of grain we believe

⁴ For a more detailed assessment of these crops and the methodology used to estimate them, see appendix.

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Estimating Soviet Grain Requirements

Just as our estimate of Soviet grain production is subject to error, so is our estimate of Soviet grain requirements, particularly the amount of grain required for livestock feed. Moscow's requirements beyond those implied in the annual and longer term plans are difficult to predict. While plans for the agriculture sector in 1983 are known, those for 1984 are not. To the extent that actual 1984 goals for livestock product output differ from those implied in the 1981-85 plan targets, our estimate of the amount of grain required for feed in the first half of 1984 will be biased accordingly. In addition, a number of physical factors affect the USSR's need for grain. Among these are the size of the yearly grain and forage crops, weather conditions during the overwintering period for livestock, the availability of high protein feeds such as oilseed meal, and changes in feeding efficiencies. [redacted]

With the crop season coming to a close, we now have a good handle on 1983 grain and harvested forage production, two key variables in the grain requirements equation. Our grain crop estimate of 210 million tons has remained unchanged since early summer, and it now appears certain that a second consecutive record forage harvest is in the making. If properly handled and stored, this year's additional forage could be used to reduce the need for grain by

[redacted]

some 5-15 million tons. We believe, however, that the grain-forage balance in the ration will be roughly the same as last year or, if feeding efficiencies of the past few years remain unchanged, will shift slightly in favor of grain for two reasons:

- *The increase in grain supplies this year is larger than the increase in supplies of harvested forage.*
- *Because Soviet livestock feed rations are currently about 20-percent short of announced standards for energy intake, animal productivity would increase more by boosting total feed per animal than by adjusting the grain-forage balance.* [redacted]

Weather conditions—particularly temperatures—during the winter and spring will also play a large role in determining total livestock feed requirements. Our current estimate assumes average temperatures, but, if the winter is warmer or colder than normal, feed requirements will change correspondingly. For example, an unusually warm winter last year reduced the need for feed by an estimated 17 million tons of grain.^a Similarly, the quantity of soybeans and soybean meal imported will also affect grain needs. These high-protein feeds help improve the balance of livestock feed rations and thus increase feeding efficiency. [redacted]

necessary to maintain current levels of seed, food, and industrial use, as well as to achieve planned output targets for meat, milk, and egg production.⁵ Because

⁵ The USSR records grain production in bunker weight, that is, as the grain comes from the field before cleaning and drying. Our production estimate is also in bunker weight. Uses of grain, however, are recorded in standard weight. Our research has shown that the bunker-weight measure must be reduced by an average of 11 percent to be comparable to the standard-weight measure. The discount varies according to moisture conditions prior to and during harvest, and to crop size, and thus can become either larger or smaller than the 11-percent average as the season advances. This year we are using a discount of only 10 percent because much of the harvest was carried out in dry weather. Our current estimate indicates a standard-weight grain crop of roughly 190 million tons, given a bunker-weight crop of 210 million tons. Our estimate of requirements is based on a July-June crop year. [redacted]

of the record forage crop and already committed grain imports, however, the USSR has increased flexibility in management of the livestock sector. Moscow could choose either to reduce the need for grain by continuing to substitute harvested forages for grain in feed rations or to increase total feed supplies by maintaining the quantities of grain fed at current levels. Although the former would allow additions to grain stocks, we believe the Soviets will emphasize the latter. Such action would further raise animal productivity (more meat per animal), thus underscoring the leadership's commitment to improving meat supplies in the near term. [redacted]

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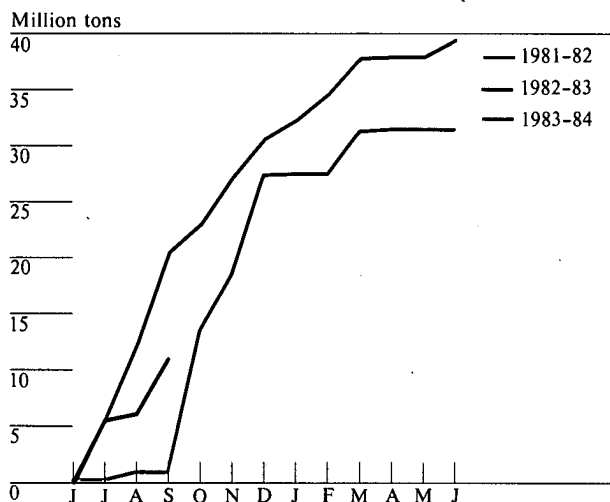
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Figure 4
USSR: Cumulative Grain Purchases^a



^a This chart represents grain contracts signed by the Soviets during the marketing year. It does not include grain purchased before 1 July but shipped to the USSR during the marketing year.

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By virtue of agreements with various grain exporters, Moscow is committed to purchase about 22 million tons of grain during the marketing year (MY), which began on 1 July 1983.⁶ So far during MY 1984 (1 July 1983-30 June 1984), the Soviets have bought 11 million tons of grain from all sources, including nearly 5 million tons from the United States. Canada has chalked up 3.7 million tons of the total, with Argentina and the European Community accounting for 1 million and 1.5 million tons, respectively. The USSR has additional commitments through bilateral agreements and protocols for about 10.5 million tons of grain, including 3 million tons from the United States.

Unless we have substantially overestimated this year's grain harvest, we believe that the USSR will have little need to import more than the minimum amount

⁶ It is impossible to estimate precisely the quantity of grain the Soviets are committed to buy during this period because of differences between crop years in the northern and southern hemispheres, market years, and LTA years. This amount, however, is not likely to vary by more than a few million tons in any given 12-month period.

of grain. Even so, it is still too early to accurately forecast likely Soviet grain imports for the current marketing year. Depending on weather conditions during the winter and early spring, the need for grain could swing substantially. In addition, imports in excess of the minimum commitment levels most likely will be determined by Soviet policy choices that pit the hard currency costs of additional imports and the aversion to becoming dependent on Western producers against the leadership's commitment to expand meat production and thereby improve the quality of the Soviet diet.

[redacted] Moscow's recent dealings with supplier countries suggest that the USSR will buy little, if any, grain in excess of its minimum commitment levels. The US Embassy in Moscow reports that:

- In early September, the Soviets turned down a 2-million-ton grain offer by Australian grain merchants.
- Both Argentina and Canada attempted unsuccessfully to increase the minimum amount of grain sales under their Long-Term Grain Agreements (LTA) with the USSR.
- The French agricultural attache expects French grain sales to the Soviet Union during MY 1984 to fall well below last year's level.

Other evidence indicates that Moscow may buy upward of 30 million tons of grain this market year. In particular,

[redacted] the USSR intends to buy slightly more than the 29 million tons currently estimated by the US Department of Agriculture.

[redacted]

We cannot rule out imports of this magnitude at this point in the marketing year. Poor weather conditions in the winter and spring, in particular, could boost import demand. In addition, Moscow could choose to import more than the 22-million-ton minimum in

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order to add to its grain reserves. Although lower world grain prices are expected next year, Moscow cannot bank on another good harvest in 1984 and thus may not want to pass up an opportunity to stockpile grain this year. Moreover, by spreading purchases out over two or more years, Moscow would be able to minimize price runups caused by its own heavy buying activity. [redacted]

Implications for the United States

With good-to-excellent Soviet grain and forage crops now virtually assured, prospects for US grain sales to the USSR in MY 1984 would have been poor were it not for the signing of the new US-USSR LTA in August of this year. Under terms of the agreement, the USSR is committed to purchasing a minimum of 9 million tons of US grain (or 8 million tons if it buys 500,000 tons of soybeans or meal as now appears likely) during the period from October 1983 to September 1984.⁷ An additional 3 million tons of grain may be bought without further US Government approval. [redacted]

[redacted] the next round of buying from the United States is likely to occur in November and December, at which time they think the Soviets will have bought the required amount of US grain. Once that obligation has been satisfied, [redacted] the Soviets will want to make a final assessment of their own crop production, their hard currency situation, and conditions in the international grain market before additional purchases, if any, are made. [redacted]

Although the state of US-USSR political relations could play an important role in determining Soviet purchases of US grain, we believe the Soviets are unlikely to buy more than the minimum stipulated in the US-USSR LTA. [redacted]

[redacted] the head of the Soviet grain-buying agency, V. I. Pershin, indicated in mid-September that Moscow will not exceed its minimum purchase obligation under the US-USSR LTA because of its own good grain crop and the availability of grain from other suppliers. [redacted]

⁷ During the marketing year that ended on 30 June 1983, Soviet purchases of US grain totaled only 6.2 million tons. [redacted]

Domestic Impact of the Good Crop Year⁸

The improved Soviet grain harvest this year will benefit both the population—by improving the quality of the average Soviet diet through an increased supply of domestically produced livestock products, especially meat—and the leadership—by permitting Andropov to claim initial success for the Food Program. [redacted]

Benefits to the Soviet Consumer. The taut food supply situation of recent years—manifested in shortages and rationing of quality foods—should be eased in the coming months. Domestic meat production, stimulated in part by the good crop year, could reach a record 16.3 million tons in 1983, and it appears that meat imports will be about 800,000 tons, near last year's level of 940,000 tons. Given these conditions, per capita meat availability would be up by 6 percent from the 1982 level and would be about 2 kilograms per capita higher than the previous peak in 1981. We believe that such an increase is large enough to be perceived by consumers as a real improvement in their welfare. [redacted]

Implications for the Leadership. General Secretary Andropov's first year in power coincides with the USSR's first good grain harvest since 1978. Although the improvement is principally the result of better weather, it will enable the leadership to claim initial success for the highly touted Food Program and thus demonstrate its support for the consumer. It also frees Moscow from having to choose between stagnation in meat production and continued heavy dependence on Western grain this year. The good crop year also carries with it some favorable economic implications, most notably, the potential of a 30-percent reduction in grain imports from a year ago. Such a cutback will save the USSR nearly \$2 billion in hard currency outlays. These savings could in turn be used to increase purchases of badly needed high-technology goods. [redacted]

[redacted]

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The longer term implications of this year's good harvests on the progress of the Food Program are uncertain. Under both Brezhnev and Andropov, a few adjustments affecting resources allocated to other sectors (including defense) have been made in order to keep the Food Program on track. In addition, Soviet programs to improve the quality and quantity of the forage crop and to provide material incentives directly to those involved in grain production were partially responsible for this year's successes. The question remains, however, whether these favorable results will increase the leadership's resolve to push for even more improvements in agricultural efficiency or be used as an argument that no further readjustments are necessary.

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Appendix

**USSR: Late-Season Outlook
for Major Nongrain Crops**

As of early October, the outlook for the major nongrain crops in the Soviet Union—sunflowers, sugar beets, vegetables, potatoes, and cotton—remains good.⁹ We estimate that these crops will show increases over 1982 production and exceed the average of 1978-82. If this forecast holds and normal weather prevails through harvest, output of sunflowers, sugar beets, and potatoes would be up for the second straight year, vegetable production would match last year's record crop, and the harvest of cotton would return to a near-record level. The Soviets were able to start the harvest five to 14 days sooner than usual because of the early planting this past spring and a warm summer. [redacted]

Sunflowers

Our estimate of sunflower production this year remains at 5.5-6.0 million tons above last year's output of 5.3 million tons but well below the 6.6-million-ton plan. The above-normal precipitation received in the sunflower growing region from mid-July to mid-September bodes well for an above-average crop. By early October, 3.4 million hectares, about 80 percent of the crop, had been harvested. [redacted]

Sugar Beets

Our estimate of sugar beet production has been raised to the 85-to-90-million-ton range, substantially better than last year's harvest of 71 million tons but short of the 96-million-ton plan. Weather conditions since midsummer have been mostly favorable, and several press reports described this year's crop as having weightier roots and higher sugar content than last year's crop. In the Ukraine, the principal sugar beet region, more than half of the crop is described by Soviet agricultural officials as being in good condition and another third as being satisfactory. By 3 October workers had lifted sugar beets from nearly 70 percent of the fields throughout the USSR. [redacted]

⁹ Estimates are based on local press articles, reports from US agricultural attaches. [redacted]

[redacted] In addition, a weather regression yield model, consisting of a time trend term and a departure from trend due to weather effects term, is employed for all major nongrain crops. [redacted]

Vegetables

Our estimate of vegetable production is 29-31 million tons, up slightly from our earlier forecast of 28-30 million tons. If this estimate holds, a new record would be established. The USSR Central Statistical Administration reports that fieldwork this year was carried out earlier than in 1982 and with high labor productivity. Procurements are 300,000 tons ahead of last year's pace, and the plan for the sale of early vegetables to the state has been considerably overfulfilled. An official also noted that losses this year should be substantially lower than usual because there are more refrigerated trucks and refrigerated units on river vessels transporting vegetables. By 3 October vegetables had been picked on three-fourths of the sown area in the socialized sector,¹⁰ which accounts for 65 percent of the total vegetable acreage. [redacted]

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Potatoes

We continue to estimate potato production at 80-85 million tons, an increase over the 78 million tons produced in 1982 and slightly above the recent five-year average of 79 million tons. Despite optimum weather conditions throughout the summer in the major potato growing regions, there have been numerous reports of localized crop damage caused by the Colorado beetle. Thus far, however, no reports have surfaced indicating greater beetle damage this year than last. Mass potato lifting began in late August in the Ukraine, Belorussia, and the Central Chernozem Region. As of early October, harvesting in the socialized sector, which comprises slightly less than half the total area sown to potatoes, was about 90 percent complete, according to the Soviet press. [redacted]

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¹⁰ Soviet agriculture is comprised of a socialized sector—state and collective farms—and a private sector—small plots of land farmed by individuals. Harvesting statistics for the private sector are not published by the Soviets. [redacted]

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Table 3
USSR: Production of Nongrain Crops

	Area (million hectares)	Yield (quintals/ hectare)	Production (million tons)
Sunflowers			
1978-82 average	4.3	11.6	5.0
1981	4.2	11.0	4.6
1982 plan			6.54
1982	4.2	12.6	5.3
1983 plan			6.6
1983 July estimated	4.2	13.1-14.3	5.5-6.0
1983 Sept estimated	4.2	13.1-14.3	5.5-6.0
Sugar Beets			
1978-82 average	3.7	206.8	76.5
1981	3.6	167.0	60.6
1982 plan			98.2
1982	3.5	203.0	71.0
1983 plan			96.1
1983 July estimated	3.5	228.6-242.9	80.0-85.0
1983 Sept estimated	3.5	242.9-257.1	85.0-90.0
Vegetables			
1978-82 average	1.7	161.1	27.4
1981	1.7	147.0	25.6
1982 plan			
1982	1.7	175.3	29.0
1983 plan			29.8
1983 July estimated	1.7	164.7-176.5	28.0-30.0
1983 Sept estimated	1.7	170.6-182.4	29.0-31.0
Potatoes			
1978-82 average	6.9	114.2	78.8
1981	6.9	105.0	72.0
1982 plan			88.4
1982	6.9	113.0	78.0
1983 plan			89.0
1983 July estimated	6.9	115.9-123.2	80.0-85.0
1983 Sept estimated	6.9	115.9-123.2	80.0-85.0
Cotton			
1978-82 average	3.1	30.0	9.3
1981	3.2	30.4	9.6
1982 plan			9.33
1982	3.2	29.1	9.3
1983 plan			9.2
1983 July estimated	3.2	29.7-31.2	9.5-10.0
1983 Sept estimated	3.2	30.3-31.6	9.7-10.1

Cotton

Ideal weather since mid-July has improved the outlook for the 1983 cotton crop. We now estimate production at 9.7-10.1 million tons, up from our previous forecast of 9.5-10.0 million tons. A crop of this size would exceed last year's 9.3-million-ton harvest and the 1983 plan of 9.2 million tons. The record output of 10 million tons was achieved in 1980. Cotton harvesting began in late August in Central Asia and by 29 September more than 3.0 million tons had been picked.

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