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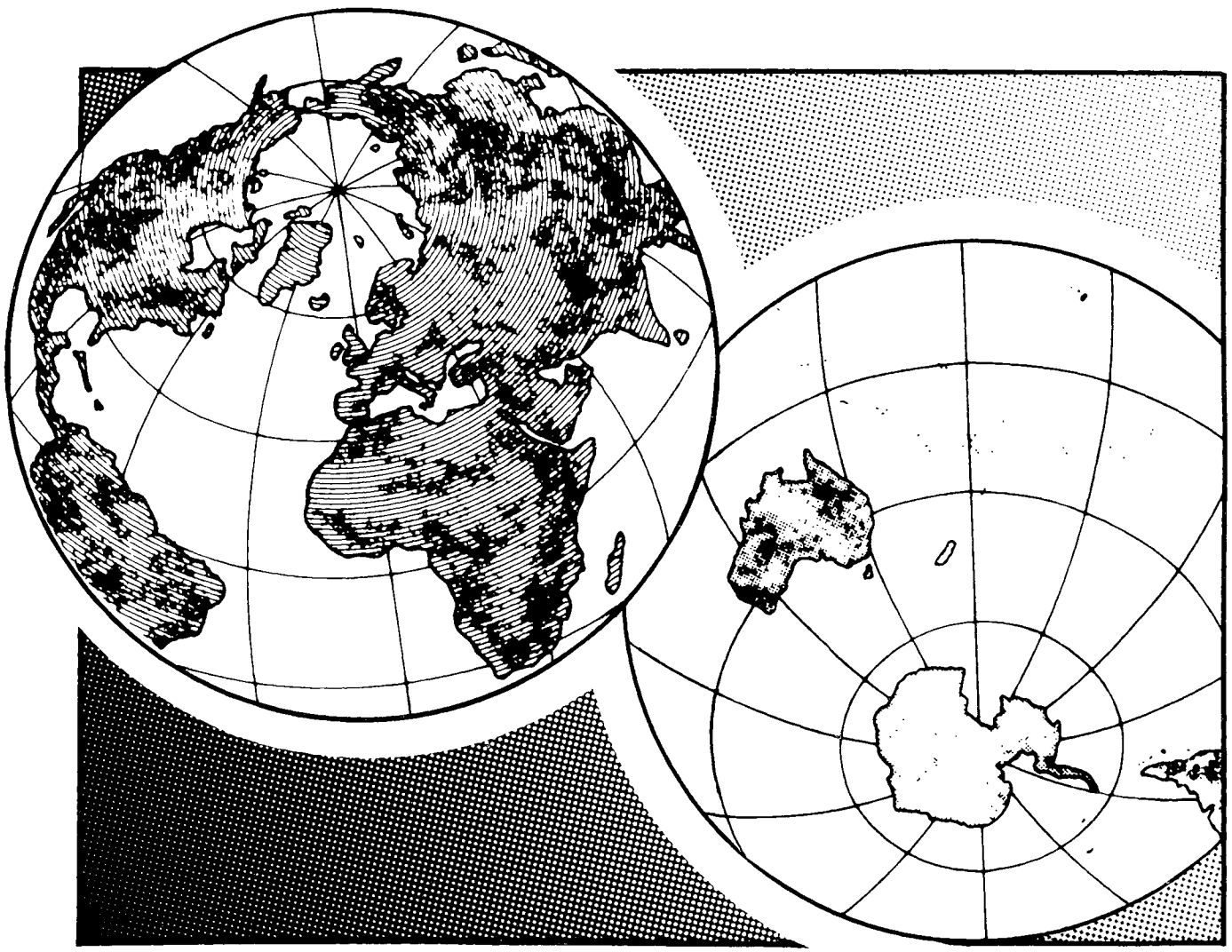
Review of 1982 and Outlook for 1983



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ABSTRACT

During 1982, the USSR registered its first increase in agricultural output since 1978. Overall output was valued at 126 billion rubles, about 4 percent above 1981. USDA estimates the Soviets produced about 180 million tons of grain, a significant improvement over the 160 million thought to have been produced in 1981. Generally, output of other crops and livestock holdings also showed increases over 1981. The new Soviet leadership seems to be placing even greater emphasis on reforming the institutional setting of Soviet agriculture than did the Politburo under General Secretary Brezhnev.

Keywords: Soviet Union, Food Program, agricultural production, agricultural trade, RAPO's, General Secretary Andropov.

FOREWORD

This report reviews the Soviet agricultural situation in 1982 and examines factors that led to these developments. In addition, it provides perspectives on the outlook for Soviet agriculture for the current year. The 4-year run of bad weather and output problems has sharpened the Politburo's awareness of the underlying structural problems in Soviet agriculture. Recent Soviet agricultural policy indicates a shift in efforts to improve productivity, relying more on management improvements than on capital investments in industries supporting the agricultural complex. The new party leadership appears even more determined to make management improvements on all levels of the farm sector in order to increase efficiency.

Angel O. Byrne coordinated overall preparation of the report, as well as writing several sections. Other sections were written by Thomas Bickerton, James Cole, Edward Cook, Anton F. Malish, Yuri Markish, and David Zaslow. Carolyn Miller prepared the statistical data. Kathryn Zeimetz, USSR Section Leader, provided guidance and direction. Pat Reed prepared the manuscript for publication. The U.S. Agricultural Counselor in Moscow, as well as others in U.S. agencies, universities, trader and producer groups, and foreign governments, provided considerable assistance. Statistical data used in this report are largely compiled from official U.S. and Soviet sources.

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We welcome any comments, suggestions, or questions about this report or other aspects of the agricultural situation in the Soviet Union. Responses should be directed to the East Europe-USSR Branch, International Economics Division, Economic Research Service, USDA, Room 314, 500 12th Street, SW., Washington, D.C. 20250. Our telephone number is (202) 447-8380.

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Washington, D.C. 20250

May 1983

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CONVERSION EQUIVALENTS

One kilogram	equals	2.2046 pounds
One centner or metric quintal	"	220.46 pounds
One metric ton	"	2204.6 pounds
One hectare	"	2.471 acres

Metric tons to bushels

One metric ton	Bushels
Wheat, potatoes, and soybeans	36.743
Rye, corn, and grain sorghum	39.368
Barley	45.929
Oats	68.894

To convert centners per hectare to bushels per acre, multiply by:

Wheat, potatoes, and soybeans	1.487
Rye, corn, and grain sorghum	1.593
Barley	1.859
Oats	2.788

USSR

REVIEW OF AGRICULTURE IN 1982 AND OUTLOOK FOR 1983

SUMMARY

For the first time since the U.S. partial embargo, agricultural developments in the USSR gave the Soviets greater leeway in influencing U.S.-USSR agricultural trade. Weather allowed Soviet agricultural production to show its first year-to-year improvement since 1978. As a result, during the second 1-year extension of the U.S.-USSR long-term grain agreement, U.S. grain exports to the USSR are expected to drop to nearly half the amount taken in the previous grain agreement year.

The adoption of the "Food Program" on May 24, 1982, set the course of Soviet agricultural policy through 1990. Following the death of General Secretary Brezhnev in November, the new Soviet leadership continued to emphasize this program and devoted much attention to those institutional reforms intended to make Soviet agriculture more efficient. The approach continues to be one of making the country self-sufficient in grains and in reducing dependence on "capitalist" grain-supplier countries. The success of this program, however, cannot be measured on the basis of so short a period of performance. Indeed, the Soviets will almost certainly remain major importers of grain and other agricultural commodities through at least the mid-1980's.

According to the annual plan fulfillment report printed in *Pravda* on January 23, 1983, Soviet gross agricultural production in 1982, valued at 126 billion rubles, rose 4 percent from 1981. While such production was the second highest on record, it was 2.3 billion rubles short of the 1978 peak. Nevertheless, the improvement provided a small breathing space to Soviet planners and allowed the new leadership to begin its administration by announcing generally improved performance.

The Soviets are estimated to have imported over $21 billion of agricultural goods in 1982. Grain imports (including sorghum), at about 37 million tons, were the largest single category. Nevertheless, grain purchases were down 5 million tons from 1981's record high, primarily because of improved grain and forage output and the desire to hold down hard currency expenditures. The United States supplied about 30 percent of the grain import volume, increasing its grain shipments to the USSR by about 1.8 million tons from 1981 and raising its market share to about 30 percent. Sugar imports were up sharply again as the poor 1982 beet crop followed on the heels of the disastrous 1981 outturn.

For the second consecutive year, the Soviets failed to report grain production. USDA estimates it at about 180 million tons, an increase of perhaps 13 percent over 1981's very poor showing. Still, grain production for the fourth year was far below trend. Over 4 years, Soviet plan shortfalls have been equivalent to a full year's crop. During 1979-82, grain production and yields averaged only 91 percent of the former 8 years. The conditions of the current winter grain crop do not suggest an immediate reversal.

Generally, nongrain crops also fared better than in 1981. Like grains, however, most did not match past achievements. Improvements seem weather related, while the overall poor performance raises questions about existing structural problems.

Sugar beet production, at 71 million tons, rose 17 percent from 1981's disastrous crop. However, it was still below average. Also, potato production, which rose 8 percent, was still the third poorest in 10 years. Among the technical crops, sunflowerseed production remained below average, even though it rose to 5.3 million tons. Soybean production, estimated at 480,000 tons, was the second consecutive poor harvest. Vegetable oil production (from State resources) reached 2.6 million tons, up 8 percent from a year ago. Cotton production, at 9.3 million tons (seed basis), met the plan but fell nearly 4 percent below 1981's near-record output. Both vegetables and fruit did well. Fresh vegetable production reached a record 29 million tons, and fruit production, at 18 million tons, also set a production record.

The Soviets entered 1983 with noticeably better feed supplies made possible not only by the better grain crop, but by improved harvests of succulent and coarse feeds. With continued grain imports and a mild winter, livestock inventories were kept at high levels. Cattle, hogs, and very probably poultry reached record numbers on January 1, 1983. However, because of poor grazing conditions in Central Asia, sheep and goat numbers were lower. Cattle, including cows, totaled 117.1 million head—up 1.2 million from January 1, 1982. Hog numbers, at 76.5 million, gained an impressive 3.2 million head. Poultry inventories probably reached well over a billion. Sheep and goat numbers, totaling 148.3 million head, dropped by 200,000.

Meat production (carcass weight) in 1982 totaled 15.24 million tons, up slightly from 1981. Milk production, at 90.1 million tons, rose 1 percent—reversing a downward trend that had been in effect since 1977. Egg production continued to climb and reached a record 72.1 billion eggs. The first months of 1983 showed dramatic improvement in the food industry's production of meat and dairy products, and the results were readily evident in Moscow State stores. If such a performance can be maintained, the stage is set for the first significant improvement in domestically produced high-quality food supplies since 1978.

In terms of expanding the material base for future production, agriculture, in the second year of the Eleventh 5-Year Plan, received 26.5 percent of the capital investment in the national economy. The share has remained constant at about 27 percent since the mid-1970's. Newly irrigated land and drained land brought into production totaled 640,000 and 700,000 hectares, respectively—both below target. Tractor deliveries fell; truck deliveries remained the same; but grain combine deliveries rose. Fertilizer production (nutrient weight) rose 3 percent; deliveries to agriculture rose nearly 5 percent. The Soviets have embarked on a venture of major changes in agricultural organization, involving price

reforms, on-farm management, and regional planning organizations.

Improved Soviet agricultural performance in 1983 especially hinges on a season of good weather. For winter grains, last fall's unfavorably low soil moisture conditions produced poor winter grain germination in major growing areas. The moisture problems may outweigh the beneficial effects of a mild winter, and the Soviets need good weather and good organizational effort to recoup the potential winter-crop shortfall. For irrigated crops, notably cotton, the Soviets must manage water very carefully to maintain production in Central Asia.

GRAIN PRODUCTION IMPROVES BUT REMAINS DISAPPOINTING

Slightly more than half of Soviet cropland is devoted to grain production, and bread plays an important role in the Soviet psyche. Therefore, the Soviet decision to avoid reporting grain output in the 1981 and 1982 plan fulfillment reports must have been carefully considered. It represents a choice made in favor of further limiting both internal and foreign access to data on Soviet agricultural performance. Unless the data can be obtained by other means—and grain output is one of the information items required to be exchanged under the U.S.-USSR agricultural agreement—it is likely that Soviet grain production may not be officially reported until the results of the Eleventh 5-Year Plan are published in late 1985.

In the absence of officially reported data, USDA continued to analyze a variety of data sources to estimate Soviet grain production.[1] USDA estimates that 1982 production probably amounted to 180 million tons, up from the USDA estimate of the 160 million in 1981 (table 1). Thus, while the 1982 crop was a marked improvement, it still fell some 58 million tons short of the plan. The low output stretched to 4 years the serious shortfalls in grain production. Weather undoubtedly has played a major role. Yet, the shortfalls' magnitude and duration raise questions about other factors contributing to the declines.

Area Down; Unsettled Weather Compromises a Good Crop

The March 1983 issue of the statistical journal *Vestnik statistiki* reported a final 1982 grain area of 123 million hectares. As they did in 1981, the Soviets limited the diversion of grain area to forage. An area of this size represents a decline of 2.5 million hectares from 1981, and it is the smallest area since 1972. While spring wheat and barley areas each decreased, the area sown to winter rye and corn for grain (whose yields are high) rose by 2.3 and 0.6 million hectares, somewhat offsetting production losses for the other crops. The low grain area probably resulted from seed-quality and distribution problems that affected spring sowing, as well as poor sowing conditions in the European areas of the USSR.

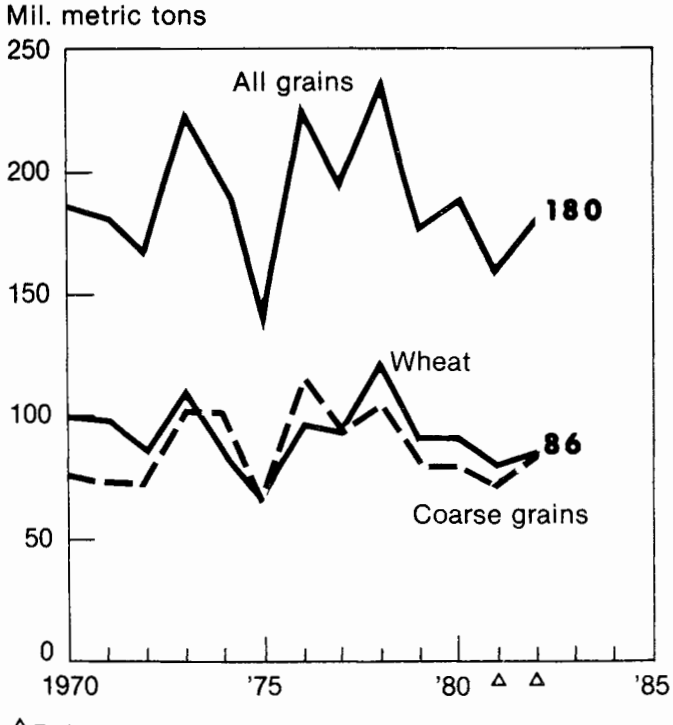
Winter grains were sown on about 35.5 million hectares in the fall of 1981, nearly the full area planned. Fall plowing, a good indicator of crop prospects, was also extensive—some 117.3 million hectares. Press accounts in the fall and winter suggested that a good crop could be expected. The crop entered dormancy in good condition, and December precipitation replenished subsoil moisture in those areas where rainfall had been less than optimal. In fact, Soviet data on final area confirmed that winterkill, along with grazing over and spring green chop, amounted to about only 10 percent, compared with a long-term average of about 17 percent.

Nonetheless, information in early spring indicated the crop in perilous condition. Radio Moscow on April 4, 1982, reported snow mold damage and waterlogged fields in the Baltic republics. In Krasnodar and Stavropol' Krays, South Rostov, and the eastern Ukraine, the melting snow revealed stands thin and poorly developed, a bad omen in an area that can account for 15 to 20 percent of winter grain production.

Late-arriving spring weather in the European USSR hindered spring grains there. Weather-related delays led the Soviet press to note that almost all spring crops would have to be sown simultaneously, but the perennial Soviet problems relating to machinery, spare parts, and high-quality seed meant that spring sowing would fall far short of requirements. By contrast, the principal spring grain regions of the New Lands were warm and dry, a development that aided sowing but probably depressed yields.

By July, unsettled weather ended any prospects for a good crop. A cold spell in early June—so severe in the

USSR Grain Production



[1] USDA, *USSR: Review of Agriculture in 1981 and Outlook for 1982*, p.4 and USDA, *World Agriculture, Outlook and Situation*, December, 1982, p 23.

Grain production by republic, 1978-82

Republic	1978	1979	1980	1981[1]	1982[1]
	1,000 metric tons				
USSR	237,390	179,176	189,090	[2]160,000	[2]180,000
RSFSR	136,526	91,803	105,122	NA	[2]99,000
Ukraine	50,607	33,965	38,100	NA	[2]42,000
Belorussia	7,288	4,585	5,009	5,700	5,900
Uzbekistan	2,525	2,720	2,518	NA	NA
Kazakhstan	27,891	34,534	27,506	NA	[2]20,000
Georgia	672	649	636	NA	670
Azerbaidzhan	1,169	1,182	1,136	1,151	1,200
Lithuania	2,798	2,225	1,932	2,239	2,750
Moldavia	3,523	2,798	2,815	2,285	2,600
Latvia	1,120	1,171	1,054	NA	NA
Kirgizia	1,504	1,549	1,307	1,550	850
Tadzhikistan	337	344	245	NA	330
Armenia	278	318	236	325	NA
Turkmenistan	264	281	276	NA	NA
Estonia	888	1,052	1,198	NA	NA

NA = Not available.

[1]Preliminary. [2]USDA estimate.

Grain procurements by republic, 1978-82

Republic	1978	1979	1980	1981[1]	1982[1]
	1,000 metric tons				
USSR	95,900	62,834	69,372	NA	NA
RSFSR	56,211	29,551	36,960	NA	NA
Ukraine	17,758	7,624	11,368	13,500	[2]14,500
Belorussia	1,616	1,138	1,029	1,800	1,876
Uzbekistan	1,015	1,138	984	1,030	1,000
Kazakhstan	16,784	20,673	16,402	15,734	11,300
Georgia	164	170	184	170	152
Azerbaidzhan	354	363	360	401	353
Lithuania	310	330	220	450	375
Moldavia	907	1,000	1,064	NA	804
Latvia	168	191	182	296	298
Kirgizia	296	304	301	400	NA
Tadzhikistan	74	77	44	100	NA
Armenia	58	71	54	NA	62
Turkmenistan	55	62	65	NA	NA
Estonia	130	142	155	NA	162

NA = Not available.

[1]Preliminary. [2]Reported by Soviets as more than 14.5 million tons.

USSR's central European territories that *Sel'skaya zhizn'* (*Rural Life*) (June 18, 1982) reported it could be expected only once every 8 to 10 years—slowed crop development. In much of the European USSR, the entire summer was characterized as wetter and colder than normal.

In contrast, across the Volga Valley, the Urals, and into Western Siberia, unusually hot, dry, and windy weather stressed developing crops. In certain of these key areas for spring grains, fields failed to show even the vigor of the drought-damaged 1981 crop. August brought better weather, but by then the crop was too advanced to offset yield losses.

Harvest efforts reflected the year's difficulties. Some fields ripened late. In eastern areas, grain was stunted and uneven because of drought. The press carried reports of widely ranging outturns, from the Tatar Republic, where the crop was so good that storage capacity was inadequate, to western oblasts, where the crop was flattened, tangled, and difficult to combine.

As of August 30, 1982, grain (excluding corn) had been cut on 81.1 million hectares, compared with 95.1 million a year earlier. The slow pace complicated fall field work, and on September 1, Radio Moscow reported that "in many union republics one can see both combines and sowing units in the fields."

The final outturn was thought to be about 86 million tons of wheat and 86 million tons of coarse grains. The Soviet corn crop, judging from reports about upgrading its use from corn-for-silage to corn-for-grain, may have been especially good. The corn area, at 4.2 million hectares, was the highest since 1969.

The USSR did not report data for the most important grain-growing republics. It appears, though, that the shortfall was very large in Kazakhstan, the fourth largest grain producer in the USSR. The Ukraine, the second largest producer, had a relatively good year, with production probably above the 1979 and 1980 levels.

The Soviets give little indication of grain quality. One method of quality assessment is to compare the amount of grain in windrows and the length of time it lies there. In 1982, these indicators were generally much higher than in 1981, and therefore the grain was more susceptible to quality-damaging risks. More recently, a *Sel'skaya zhizn'* article (February 27, 1983) suggested that smut damage to last year's wheat may have been well above normal. If so, it would help explain the high proportion of Soviet wheat imports in the 1982/83 (July-June) marketing year.

Grain Trade Remains High

Soviet grain imports in 1982/83 developed slowly during the first 6 months. Nevertheless, grain imports are forecast at 34 million, 12 million tons short of the previous year's record. Grain shipments from the major exporters are expected to be quite heavy during January-June, although not as large as a year earlier.

In 1982/83, Soviet wheat imports, forecast at a record 21 million tons, are expected to exceed coarse grain imports for the first time in 10 years. The Soviets typically use imported wheat for food, and the quality problems with their domestic wheat crop may be reflected in the higher wheat imports. Coarse grain imports, estimated at 12 million tons, will likely be down to about half the previous year's level.

Grain Use Improves

USDA estimates Soviet grain use for 1982/83 (July-June) at 214 million tons, up 8 million from the previous year. Nevertheless, use will remain well below the 1978/79 record, with grain-for-feed bearing the brunt of the reduction (table 2).

Estimates of Soviet food, industrial, and seed use of grain continued to show little fluctuation. Since Soviet grain data are reported on a "bunker weight" basis—the weight of the grain as it is harvested—an estimate of dockage and waste, a measure of excess moisture and nongrain material, is deducted to give some indication of usable grain. Dockage and waste, probably at about 10 percent, were below the long-term average.

Little is known about the size of Soviet carryover stocks. While USDA analysis suggests that the efforts to maintain livestock feeding in the face of four poor harvests should have exhausted grain inventories, the lower-than-expected 1982/83 imports raise questions about the extent of Soviet grain reserves.

1983 Planting Intentions

In early February, the Soviets indicated that winter-crop sowings were down 3.5 million hectares from plan. Three million hectares were at the expense of the planned 36 million hectares of winter grain. Thus, the current winter-sown area could be the smallest in at least 9 years. Since 1974, the harvested area for winter grains has averaged about 85 percent of sown area, and production has averaged almost 61 million tons.

The spring planting schedule is a complex one. Besides the need to reseed part of the winter grain area, the fall field preparations for spring crops fell behind plan. Fall plowing was 6 million hectares short of the planned 112 million. Unusually warm weather through April has permitted a rapid sowing pace for the 90 plus million hectares of spring grains. (Anton F. Malish, James Cole)

FEED SUPPLIES GOOD ENTERING 1983

The Soviet Union entered 1983 with noticeably better feed supplies, the result not only of the estimated 20-million-ton increase in 1982 grain production, but also improved harvests of succulent and coarse feeds. As of October 4, 1982, procurement of silage was 20 percent larger than a year earlier; supplies of straw for feed were 9 percent higher; and procurement of haylage was 10 percent higher. Supplies of some other feeds—including potatoes, sugar beet pulp, and oilmeal—also improved.

The improved Soviet feed situation in 1982/83 (July-June) is readily apparent in an assessment of recent Soviet feed supplies in oat-unit equivalents.[2] Not only are total feed supplies more than 7 percent larger than in 1981/82, they are the second highest on record, exceeded only by 1978/79. Though concentrate feed availability remains slightly below the average for recent years, these feeds typically account for only 40 to 44 percent of total Soviet supplies on oat-equivalent basis.[3] Livestock feed supplies per standard animal unit have rebounded from 1981/82's relatively low level to roughly the average for the last 9 years.

Long-Term Problems in Feed Management

From 1970-82, the Soviets made no significant progress toward their goal of increasing feed availabilities per animal unit. Instead, they continued to rely on "extensive" practices, boosting livestock production by increasing inventories of low-productivity animals.

There was little or no improvement in feed-conversion efficiency through 1981. This lack of progress is remarkable in light of serious efforts to improve efficiency and intensify livestock production. For example, the Soviets moved toward more feed processing to improve nutrient availability and provide a better ration balance. Between 1970 and 1980, mixed feed production increased from 23.7 to 64.4 million tons. As Soviet specialists frequently point out, feeding a ton of balanced mixed feed in place of a ton of unprocessed or simply processed grain should result in feed savings of up to 20 percent.[4] Through greater attention to breeding, efforts were also directed at improving livestock productivity, particularly of hogs and poultry. In addition, investments were made in feed-harvesting machinery, feed-storage capacity, and livestock housing and facilities.

A primary factor thwarting the Soviets' efforts to increase livestock productivity has been the continued poor quality of feeds and the failure to balance the rations for many essential nutrients. In 1979, for instance, 48 percent of hay, 46 percent of silage, and 57 percent of haylage nationwide were judged to be "fair" to "unacceptable."[5] Fair-quality hay, haylage, and silage contain roughly 25 percent less energy and digestible protein than the best quality feed does. When the quality of these same feeds is "unacceptable," the shortfall in energy and digestible protein is between 40 and 50 percent.[6]

Within the mixed feed industry, too, quality standards are still far from being met. In 1977/78, the State mixed feed industry (Ministry of Procurements) was fully supplied with only 11 of 24 biologically active substances considered essential for proper mixed feed formulation. Supplies of vitamin A were roughly two-thirds of requirements, while those of manganese, vitamin E, and the limiting amino acid, lysine, were half or well below half. The quality of mixed feed produced on the farm and by interfarm enterprises was judged even worse.[7] Other reports indicate serious shortages of vitamins D, K, and B6; phosphorous; and methionine.[8]

A nagging problem for the Soviet feed-livestock sector has been the shortage of available protein in feed rations. In relation to Soviet scientific norms, this shortage has amounted to approximately 15 percent, 6 million tons, of protein per year.[9] The failure to make significant inroads to improve feed quality or eliminating serious feed ration imbalances has necessitated a continued overexpenditure of grain per unit of livestock production.

Soviet Reaction to Grain Shortages

Despite four below-average grain harvests, the Soviet Union was able to maintain total feed supplies at levels sufficient to avoid a major reduction in either livestock

[2]Tabular material first derived by Michael Zahn, "Soviet Livestock Feed in Perspective," *Soviet Economy in A Time of Change*, Vol. 2, Joint Economic Committee of Congress, 1979, and updated here.

[3]In the 1982 *Narodnoye khozyaistvo*, the Soviets failed to update the "Concentrate Fed" series.

[4]*Zhivotnovodstvo* (*Animal Husbandry*), No. 4, 1982.

[5]*Kormoproizvodstvo* (*Feed Production*), No. 6, 1980.

[6]"*Ratsional'noye ispol'zovaniye kormov*" (Rational Use of Feed), special supplement to *Zhivotnovodstvo*, No. 11, 1982.

[7]*Vestnik sel'skokhozyaistvennoy nauki* (*Journal of Agricultural Science*), No. 10, 1981

[8]*Planovoe khozyaistvo* (*Planned Economy*), No. 12, 1982.

[9]*Ekonomika sel'skogo khozyaistva*, No. 2, 1981.

Soviet feed supplies by type in oat unit equivalent, January 1 standard animal units, and feed per standard animal unit

Units	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82[1]	1982/83[1]
					Million tons				
Total Feed	369.2	334.3	395.7	401.4	416.6	393.0	400.3	378.1	405.0
Coarse[2]	75.5	65.7	78.1	78.7	87.8	76.4	82.4	80.7	82.5
Pasture	65.7	65.2	64.6	64.6	64.5	61.7	61.2	60.8	60.5
Succulents[3]	78.1	72.2	95.1	86.9	88.8	81.9	84.1	76.5	92.1
Concentrates[4]	149.9	131.2	157.9	171.2	175.5	173.0	172.6	160.1	169.9
					Million units				
January 1 total animal units[5]	141.6	136.5	138.4	143.9	147.0	148.7	149.4	150.8	153.1
					Tons				
Feed per standard animal unit	2.61	2.45	2.86	2.79	2.83	2.64	2.68	2.51	2.65

[1]Preliminary. [2]Includes hay, haylage, and straw. [3]Includes silage, green chop, potatoes, feed roots, melons, and beet pulp. [4]Includes grain, millfeeds, oilmeal, fish and animal meal, grass meal, feed yeasts, and whole and skim milk. [5]In terms of cows, conversion ratios as follows: cattle (other than cows) 0.6, hogs 0.3, total sheep and goats 0.1, horses 1.0, poultry .02.

numbers or animal-product output. This was accomplished through using grain carryover reserves and through record grain imports. In addition, adequate supplies of nonconcentrate feed were available. Therefore, in only 1 year, 1981/82, did total feed supplies actually appear significantly short.

Feed availabilities relative to livestock inventories in 1981/82 were not as tight as they were in 1975/76, the last time Soviet livestock statistics indicated "distress slaughtering." The difference in feed per standard animal unit between the 2 years, however, is deceptively small. In 1975, the results of the poor harvest showed their effect in the second half of the year, so that by January 1, 1976 (Soviet livestock inventories in both the private and State sectors are reported as of January 1), most of the distress slaughter had already occurred. This fact masks the severity of feed shortages in 1975/76.

A better measure would be to compare feed availabilities with livestock inventories as of July 1, that is, at the beginning rather than the middle of the feed year. But, because private-sector data are available only for January 1, and private-sector livestock represent as much as 25 percent of the total, this is not directly possible. The closest approximation of July 1 numbers that eliminates the bias of distress slaughtering during July-December is data for the preceding January. After pairing January 1 livestock inventories for 1975 and 1981 with feed availabilities in 1975/76 and 1981/82, respectively, the amount of feed per standard animal unit in 1981/82 would have been 2.53 tons of oat units, while in 1975/76, just 2.36 tons. Seen this way, a substantial difference in the severity of the feed shortages in the two periods is apparent.

A second consideration is feed quality. In years of excessive rainfall, the quality of many feeds, particularly hay and haylage, is reduced. In this respect, 1981 was a favorable year for harvesting higher quality feeds. In fact, in 1981, between 14 and 19 percent more "excellent" and "good" quality hay was procured on farms in the Russian Soviet Federated Socialist Republic (RSFSR), the Ukraine, and Byelorussia than during the previous year.[10] (These three Republics account for 70 to 75 percent of hay production in the USSR.) Such qualitative differences are not reflected in the table; therefore, the real value of available feed in 1981/82 is probably understated in comparison with 1980/81.

The Soviets face limited storage capacities for nonconcentrate feed, as well as machinery and labor shortages for crop procurement and handling. In years of relatively abundant feed crops, harvesting operations are protracted, optimal harvesting dates are missed, and nutrient losses in the field are higher. Once brought in from the field, a smaller percentage of feed in an abundant year can be adequately stored, and shortages of feed-handling machinery and labor further reduce feed quality. In tight feed years, the forage crop is better handled. These institutional factors are reflected statistically in a higher year-to-year fluctuation in feed supplies than in livestock production.

Finally, Soviet livestock performance may, in fact, be just now reflecting the results of past investment decisions and new managerial approaches. Over the last few years, the Soviets have devoted increased attention to feed supplies and livestock production. During 1979-81, storage facilities for over 66 million cubic meters of silage and haylage—or roughly 40 to 45 million tons, depending on moisture content—were constructed in the RSFSR alone.[11] Such construction could be significant in reducing high storage losses.

In January 1981, the USSR introduced a reform aimed at expanding livestock production on private plots. Under this system, State and collective farms can establish contracts for livestock fattening on private plots, with the farm supplying certain inputs and services and

Selected feed output from all sources, by type, late September-early October, 1975-82

Year	Hay	Haylage	Straw	Silage	Feed roots
			Million metric tons		
1975	46.5	47.0	79.8	144.3	33.2
1976	49.7	62.1	97.2	211.7	49.9
1977	45.0	65.8	76.3	197.8	45.3
1978	52.8	71.0	86.4	163.6	45.7
1979	52.6	54.4	68.3	163.2	38.4
1980	54.3	67.7	78.5	170.5	41.6
1981	64.1	55.1	79.0	162.7	NA
1982	61.8	60.9	85.9	195.8	NA

NA= Not available.

[10]*Zhivotnovodstvo*, No. 4, 1982.

[11]*Kormoproizvodstvo*, No. 8 1982.

counting the finished product toward its plan-fulfillment targets.[12] This reform could have eliminated some of the antagonism between private plot holders and State and collective farms, and may have contributed to more efficient feed use in 1981/82.

While these changes have potential, it is still too soon to judge their impact. Moreover, the feed quality problems, particularly the protein shortage, persist. (Edward Cook)

LIVESTOCK SECTOR PERFORMANCE IMPROVES

The Soviets made substantial progress in maintaining and expanding animal numbers in 1982. Inventories increased for cattle (including cows), hogs, and poultry. However, meat production remained about the same as a year earlier. Improved feed conditions beginning in late spring were not sufficient to boost average slaughter weights.

Livestock Inventories and Weights

The total cattle inventory (including cows) on January 1, 1983, at a record 117.1 million head, was up 1.2 million (table 3). Cow inventories totaled 43.7 million, the same as a year earlier. The hog population reached a record 76.5 million, up 3.2 million. The poultry inventory as of January 1 was not reported, but it likely reached a record 1.2 billion, compared with the previous record of 1.07 billion in 1982. The total sheep and goat inventory, at 148.3 million, was down 200,000 head from a year earlier. Especially hot, dry weather in the southern regions of Soviet Central Asia and Kazakhstan—where large concentrations of sheep and goat herds are located—caused very poor grazing conditions.

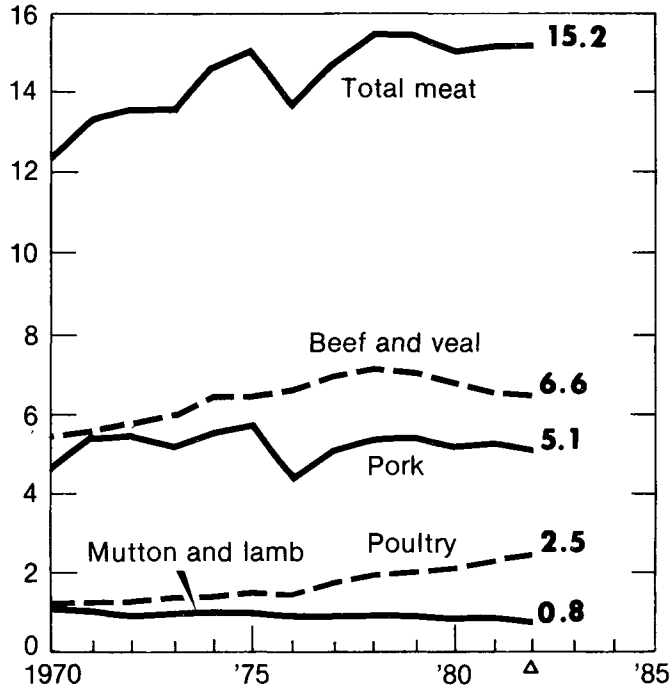
During 1982, monthly changes in livestock numbers in the socialized sector showed no major diversion from normal monthly inventory patterns (table 4). Some pressure on hogs may have occurred in the first quarter of 1982, when slaughter levels were slightly above the previous 2 years, but in the following months, hog slaughter returned to normal.

Indications of feeding stress, however, were more apparent in the low average weights of cattle and hogs sent to slaughter in 1982. January-November cumulative data on slaughter in the socialized sector showed that the average weight for cattle fell to 343 kilograms—down 6 kilograms from a year earlier and 23 from the 1978 peak weight. Similarly, the average slaughter weight for hogs, at 101 kilograms, remained at the depressed levels of the previous 2 years and was down 3 kilograms from the 1978 peak. Marketings of lighter weight animals during January-November 1982 rose for cattle but dropped for hogs, compared with a year earlier.

Meat Production and Consumption

Total meat production (slaughter weight) in 1982 reached 15.24 million tons (table 5). The increase was due to gains in poultry production. Hitting a record, poultry meat increased by an estimated 200,000 tons from 1981's 2.3 million. For cattle, higher marketings were not sufficient to offset weight decreases. Therefore,

Meat Production



Δ Estimates.

the output of beef and veal is estimated to have made little or no gain over the 6.6 million tons produced a year earlier. Pork output likely dropped about 2 percent from 1981's 5.2 million tons, the loss being due to lower marketings. Mutton and lamb output also fell, probably by 100,000 tons from 1981's 900,000, a result of fewer animals and lighter slaughter weights as well.

Soviet imports of meat and meat products in 1982 totaled 940,000 tons, down 4 percent from the 1981 record (table 6). Hard currency problems may have placed some limitations on the volume of trade.

Production increases were insufficient to offset population growth and import declines, thus per capita meat consumption in 1982 probably remained at 57 kilograms and, thus, continued the plateau of the past 6 years. Meat consumption is far below the established nutritional norm of 78 kilograms.

Milk and Dairy Products

Milk production in 1982 totaled 90.1 million tons, up 1 percent from 1981. This increase indicated a reversal of the downward trend in milk production since 1977. Milk yields per cow, which had been dropping steadily since

[12]USDA, *Agricultural Situation: USSR, Review of 1980 and Outlook for 1981*, p. 22.

1978 in the socialized sector, showed a recovery during January-November 1982, compared with a year earlier. The improvement in milk production is attributable to the better quality of 1981 forages and increased supplies beginning in late spring in 1982.

Food-industry output of whole milk products in 1982 reached 26.4 million tons, up 3 percent from a year earlier. Butter output, at 1.3 million tons, rose 7 percent from 1981's reduced level, indicating that more milk purchased by the Government went into producing butter than it did in 1981. Butter imports in 1982, at 150,000 tons, fell 43 percent from 1981 and were the smallest in 4 years. Major butter suppliers to the USSR probably continued to be France, New Zealand, and Hungary.

Per capita consumption of milk and milk products (includes the fresh-milk equivalent of butter, cheese, cream, etc.) had dropped 13 kilograms to 305 in 1981, the lowest since 1974. However, with improved milk supplies, per capita consumption in 1982 probably regained 6 to 7 kilograms.

Eggs

Output rose to a record 72.1 billion eggs, up almost 2 percent from the previous record set in 1981. The rate of growth in egg production slowed down, however, compared with the 4-percent increase in 1981. Nevertheless, egg production has made rapid and steady growth in the past 10 years, rising 41 percent between 1973 and 1982. With the boost in output, per capita consumption in 1982 probably rose by at least 8 eggs from 1981's record 245.[13]

Wool

Wool production in 1982 totaled 450,000 tons (physical-weight basis), down 2 percent from 1981. On a greasy basis, output probably reached about 470,000 tons, versus 474,000 in 1981. The decline in wool output probably resulted from a drop in sheep inventories. It is estimated that imports rose slightly from the 126,000 tons imported in 1981. Major suppliers most probably were Australia, New Zealand, and Argentina. Soviet exports of wool (scoured) have stayed low for several years, probably not more than 2,000 tons.
(Angel O. Byrne)

[13] *Ptitseprom* (*The Poultry Industry*), No. 1, 1983.

MEAT AND DAIRY PROBLEMS

Expanding domestic output of animal products to meet growing demand has been an ongoing struggle in the USSR for many years. The Soviet poultry industry has been given top priority and has expanded accordingly. However, other portions of the livestock economy remain weak.

G. Yelistratov, deputy head of the Agricultural Procurement Department of the USSR State Planning Committee, admitted in a Moscow radio broadcast in August 1982 that the demand for livestock products was being satisfied less than any other foodstuff in the USSR, and that the most acute problem was the supply of meat. He underscored two primary reasons for the overall lag in the development of livestock raising. First, a weak fodder base and, secondly, an acute shortage of skilled personnel in livestock raising. According to Yelistratov, to achieve higher livestock productivity, a minimum of 4.0 to 4.5 tons of feed units per head of cattle has to be laid in annually, versus the average 2.5 to 2.7 tons now available on the majority of farms. The biggest weakness is the shortage of coarse and succulent fodder.

Yelistratov also noted that the time to rear and fatten animals had to be reduced to save fodder and labor. He pointed out that a weight of 400 to 450 kilograms for young cattle could be achieved in 18 to 20 months, but that the majority of farms took up to 27 to 30 months to achieve this weight. To encourage workers to remain on livestock farms and not migrate to urban areas, the party and Government set up procedures for wage increases to workers for uninterrupted periods of service, and offered extra holidays for livestock farmers.

Problems in milk supplies were examined in *Sel'skaya zhizn'* (March 24, 1982). In addition to feed shortages, inadequate ration preparations, and blunders by veterinary specialists and technicians, the article emphasized handling and processing shortcomings. Measures to improve quality milk supplies include a State standard for quality control, higher prices for higher grade milk, establishing mobile milk laboratories in some areas to advise on veterinary and processing problems, and expanding the use of tank trucks.[14]

An article in *Ekonomika i organizatsiya promyshlennogo proizvodstvo* (*The Economics and Organization of Industrial Production*), No. 6, 1982, provides another reason for milk shortages. Annually, 12 to 15 percent of the gross output of whole milk in the USSR is used for calf and piglet feed, whereas in the United States and a number of other countries, only 1.6 to 2 percent is fed because of the broader use of whole milk substitutes. Although Soviet production of the substitutes increased from 85,400 tons in 1975 to 182,100 as far back as 1979, output is still not adequate to satisfy the needs for livestock raising. Production of whole milk substitutes is planned to reach 318,000 tons by 1985 and 817,000 by 1990.[15]

[14] *Kadry sel'skogo khozyaistva* (*Agricultural Labor Force*), No. 2, 1982, pp. 59-63.

[15] *Planovoe khozyaistvo*, No. 10, 1982, pgs. 18-25.

SUGAR BEET PRODUCTION BELOW AVERAGE

The Soviet Union recorded its fourth consecutive poor sugar beet crop in 1982. The below-average production of 71 million tons, however, was up 17 percent from 1981's disastrous crop. Output was still more than 27 million tons short of the target. Since 1979, output has averaged just 72 million tons, in sharp contrast to 1976-78, when output averaged 96 million tons (table 7). The 1982 shortfall resulted from a continuing combination of weather and structural problems. The structural problems extend to the processing area, further contributing to the need for record sugar imports.

Early in 1982, sowing and weather problems indicated that the Soviet beet crop would be mediocre, at best. The beet area amounted to 3.6 million hectares, about 100,000 short of the sowing target. Late arrival of warm spring weather delayed field work 10 to 14 days in most areas. Efforts to make up the lost time by accelerating the sowing pace failed because of heavy rains in the Ukraine and Moldavia. Also, wind damage was reported in southern Kazakhstan, thus necessitating reseeding part of the crop.[16] In Kirgizia, on the other hand, hot weather and insufficient moisture caused such extensive damage that some beet areas were written off and resown to other crops.[17]

The weather-related problems that occurred in the spring continued into the growing season. Spring weather in the Ukraine promoted excessive soil hardening, widespread crop thinning, and delays in initial plant growth.[18] Portions of the crop were infected with beet scab, root rot, and leaf spot.

Throughout late summer, the Soviet press reported numerous complaints about failures to ready machinery and ensure proper allocation of fuel for vehicles that would be needed for the harvest. In Kursk Oblast, for example, an average of one modern beet loader was reported available for every 4 to 5 farms. As a result of widespread equipment problems, by mid-September, 600,000 tons of beets were deteriorating in the fields; by early October, the total had exceeded 10 million.[19]

The continuing equipment and fuel shortages have contributed to huge annual beet losses. According to the USSR Glavsakharprom, the Main Administration for the Sugar Industry, in good crop years, up to 45 million tons of beets are lost; in poor crop years, up to 16 million tons. In 1982, Government purchases of sugar beets may have totaled only 64 million tons, down 28 percent from the target of 89.3 million tons (table 8). This is estimated to have caused a similar shortfall from the beet sugar production goal of 9.7 million tons, raw value (table 9).

Serious problems continue to exist within the Soviet sugar industry as well, thus limiting its ability to produce more. One problem has been the chronic inability to reduce the overly long processing season that extends 180 days, resulting in significant spoilage of beets.[20] A Soviet study of the sugar industry showed that at the beginning of the processing season, plants usually turn out a minimum 0.12 ton of sugar per ton of beet root. By February, they produce only 0.04 ton. As a result, roots processed late in the season are usually suitable only for molasses and beet residue stock feeds.[21]

The lack of processing capacity results from failure to follow capital investment schedules within the industry. For instance, during the first quarter of 1982, 82 percent of the plan was carried out as scheduled in the RSFSR, but only 57 percent in Moldavia and 50 percent in the Ukraine—the major beet sugar-producing region.[22] Construction delays prevented a major new processing plant from coming on line in 1982, completion of which would have increased total capacity from 804,000 tons per day to 818,000. In 1982, downtime within the industry probably reached 2,000 processing days. This is the equivalent of about 7 percent of the industry being out of production for the entire processing year.

(Thomas Bickerton)

IMPROVED OILSEED CROP

Oilseed output is estimated at 10.8 million tons in 1982, up 2 percent from 1981. Although domestic production fell short of Soviet expectations, oilseed output reached its highest level since 1978, primarily on the strength of another good cottonseed crop and a satisfactory sunflower outturn that recovered from dismal performances in 1980 and 1981.

Sunflowerseed Production Up

Sunflowerseed production totaled 5.3 million tons in 1982, up 13 percent from 1981. While the crop was better than in the preceding 2 years, it was almost one-fifth short of the announced 6.4-million-ton target and substantially below the 5.9 million tons averaged during 1966-80. Poor weather and declining area were responsible for the below average outturn. In 1982, only 4.25 million hectares are estimated to have been sown to sunflowerseed, in contrast to past years, when acreage reached as much as 5 million hectares.

Sowing operations were delayed 10 to 14 days because of the late arrival of warm weather. As of April 26, the seeding pace lagged behind 4 of the previous 5 years. Seed shortages also occurred, as they had a year earlier. Sowing operations are estimated to have ended about May 24.

Unseasonably cool temperatures and wet conditions prevailed through July. In August, generally excellent

[16] FBIS, Daily Report, Soviet Union, May 5, 1982.

[17] *Sovetskaya Kirgizia*, June 20, 1982, p. 1.

[18] *Sil's'ki visti* (*Agricultural News*), August 7, 1982, p. 2.

[19] Roots, lifted and stored in fields for just one day lose 1 percent of their mass and 0.1 percent of their sugar content.

[20] In West German plants, for example, the sugar beet-processing season is about half that in the USSR.

[21] *Sakharnaya promyshlennost'* (*The Sugar Industry*), June, 1982, p. 5.

[22] Ibid.

weather arrived, accelerating crop growth, checking the spread of grey and white mold, and improving yields—currently estimated at 1.25 tons per hectare. Yields would have been even higher had needed pesticides and herbicides been delivered and had drying operations been carried out as planned in key areas, such as the Central Chernozem (Black Soil) region of the RSFSR. Elsewhere, such as in Krasnodar Kray, additional losses were sustained as the crop lay in the fields and on threshing floors waiting to be taken to elevators. Furthermore, the oil extraction rate may be reduced because of poor seed drying operations.

Rather than increasing sown area to levels as high as those that prevailed in the mid-1970's, the Soviet strategy for raising output is to improve yields by: (1) introducing new early-maturing varieties and hybrids that are resistant to disease and pests and (2) expanding area under "industrial crop technology", i.e., using more machinery and chemicals in sowing, cultivating, and harvesting. Soviet efforts to gradually increase acreage in improved seeds, however, have been slow, and to date the new types occupy a relatively insignificant area. Only about 60 percent of the 325,000 hectares allocated to hybrids in the 1982 plan were actually sown. Although the plan was met in the RSFSR and Moldavia, significant planting shortfalls were noted in the Ukraine. During 1981, only 20 percent of the planned hybrid seed was produced.[23] This repeated failure to make better progress casts doubt on the Soviets' ability to carry out a plan to sow more than a million hectares to hybrids by 1985.

Other Oilseeds

Soviet cottonseed output is estimated at 4.7 million tons, the third largest on record. In contrast to the relatively good cotton crop, the Soviet soybean crop, estimated at 480,000 tons, sustained a second consecutive year of poor production because of unusually harsh weather. The Soviets have not published soybean production data for either 1981 or 1982.

[23] *Sakharnaya promyshlennost'*, August 18, 1982, p. 2.

USSR oilseed production, 1976-82[1]

Year	Sunflowerseed	Cottonseed	Soybeans	Other	Total
	1,000 metric tons				
1971-75 Average	5,974	4,295	471	249	10,989
1976	5,277	4,511	480	232	10,500
1977	5,904	4,693	540	175	11,312
1978	5,333	4,804	634	243	11,014
1979	5,414	4,510	467	196	10,587
1980	4,620	5,082	525	223	10,450
Average	5,310	4,720	529	214	10,773
1981	4,678	5,189	450	278	10,595
1982[2]	5,300	4,695	480	293	10,768

[1]Does not include oilseeds from fiber flax and hemp. [2]Estimate.

Source: *Vestnik statistiki*, various issues.

Soybean sowing operations were delayed by unfavorable weather in the Far East, where about three-fourths of the crop is located. Then, the worst drought in 70 years followed—lasting from early June to mid-July. Night temperatures often remained as high as 86 degrees Fahrenheit, and the water level in the Amur River in some places fell to record lows.

The 1982 soybean area, at 876,000 hectares, showed no appreciable increase from 1981. Efforts to boost soybean acreage have not been very successful in recent years, not only because of poor weather, but also because of some farmers' failure to increase areas, probably due to unfamiliarity with the crop. The largest area sown was in 1972—about 900,000 hectares. Most future soybean expansion is expected to continue to occur in western USSR and in the Central Asia region. In Kazakhstan, for instance, the soybean area has risen from 3,000 hectares in 1978 to about 16,000 at present.

Among the minor oilseeds, rapeseed production is estimated to have reached about 55,000 tons in 1982. Rapeseed received special Soviet press attention, with discussions on expanding area and the call for 500,000 tons to be produced in 1985 and 1.5 million by 1990. The Soviets increased production 25,000 tons between 1981 and 1982; expanding production by an average of 150,000 tons over the next 3 years is unrealistic.

INDUSTRIAL CROP TECHNOLOGY

The Soviet drive to modernize their agricultural sector is captured under the rubric of "industrial crop technology" (ICT). The ICT method involves closely matching crop varieties and cropping practices to the soil, water, and climate characteristics of particular zones. A typical ICT program would involve seeds optimized for a particular zone and for mechanized cultivation and harvesting, the careful and timely application of fertilizers and pesticides, the expansion of mechanization, and proper crop rotation.

As would be expected, careful management of quality inputs increases labor and land productivity and decreases interyear production fluctuations. In those instances where the program is in effect, labor hours per hectare of sugar beets are reduced about 40 percent, and per hectare of corn and potatoes, by more than half. Yields for sunflowerseed have improved by about half a ton per hectare, sugar beets by about 6 tons, and corn by 0.8 tons.

In 1979, the program covered farms totaling 271,000 hectares, and by 1981, 3.7 million hectares were included. By 1985, 11 million hectares are to be brought under the ICT method. This kind of modern farming depends on timely delivery of quality inputs and the skillful management of on-farm resources. While these resources have been an integral part of the U.S. farm sector for decades, they remain undeveloped in Soviet agriculture.

Vegetable Oil Production Below Average

Vegetable oil production in 1982, 2.6 million tons (from State resources), saw the third consecutive poor year. Output remained about 5 percent below the average of the three previous 5-year plans. The low 1982 production reflects the very poor 1981 crop.

Soviet efforts to develop sunflowerseeds with a higher oil content may have contributed to erratic yields in recent years. These hybrids tend to have thinner hulls, which increase the crop's vulnerability to disease and moisture.

The vegetable oil industry has not fully converted from the oil-press method to the oil-extraction method. Overall processing capacity has increased to 43,250 tons per day, about a one-third increase since 1971. Increases in processing capacity have been achieved primarily by improving existing facilities. Among the various types of processing plants, cottonseed plants have enjoyed the greatest increase in capacity, up 48 percent since 1970. Processing capacity for sunflowerseed has also risen considerably—39 percent. Soybean capacity, however, has increased only 6 percent. Most imported soybeans are sent to nonspecialized processing plants, usually during the second quarter of the year when most domestically produced oilseeds already have been processed. (Thomas Bickerton)

POTATOES, VEGETABLES, AND FRUIT INCREASE OUTPUT

Potato production, at 78 million tons, rose 8 percent from 1981's below-average crop and 16 percent from 1980's disastrous harvest. Despite the increase in 1982, the crop was still 10 million tons short of plan. Potato area, estimated at 6.9 million hectares, increased slightly, thus reversing a steady 6-year decline.

The weather in 1982 was more favorable for potato growing than in 1981. Early varieties fared better than the late ones, because heat and heavy rains in August promoted disease and insect problems. Infestations of phytophthora and Colorado beetles were contributing factors for the below-plan crop outturn.

Per capita consumption of potatoes in 1981 dropped 4 kilograms from a year earlier, to a reported 105 kilograms. With the improved harvest in 1982, it is estimated that per capita consumption rose by 1 to 2 kilograms. With a crop of 78 million tons, food use of potatoes probably amounted to about 28 to 29 million tons (about 36 to 37 percent of the crop), versus about 26 to 27 million tons from the 1981 crop. The remainder of the 1982 crop (taking into account losses of about 15 to 20 percent accrued during harvesting, transporting, and storage) was used for seed, industrially processed items as alcohol and starch, and livestock feed—with the latter accounting for the largest part.

Total vegetable production (not including potatoes) reached a record 29 million tons in 1982. Total fruit production also reached a record—18 million tons. Better weather than in 1981 was a major factor behind the increases.

Per capita consumption of vegetables in 1982 is not available at present. However, with record output, consumption likely rose about 2 to 3 kilograms from the 98 reported for 1981. Per capita consumption of fruit and berries probably rose again in 1982, by 1 to 2 kilograms from 1981's.

In August 1982, the Government and party decreed new regulations covering farm sales of fruit and vegetables to consumer cooperatives and in collective farm markets. This decree was likely part of a series of decisions all related to the Food Program. According to the decree, State and collective farms are now authorized to sell up to 10 percent of their planned production directly to consumer cooperatives and in collective farm markets. The direct sales are to be counted as part of the farms' fulfillment of annual planned deliveries to the Government. Heretofore, farms were obligated to deliver all of their planned production to Government procurement centers, and could sell only their over-plan production directly to consumers' cooperatives and in collective farm markets. The new regulations cover all vegetable and fruit production with the exception of table grapes, onions, and garlic. Why these commodities were excluded was not explained. (Angel O. Byrne)

COTTON OUTPUT DOWN

Cotton output in 1982 reached 9.3 million tons (seed basis), down nearly 4 percent from 1981's near-record crop of 9.6 million tons (table 10). On a lint basis, production reached about 12.6 million bales, making the USSR the world's second largest cotton producer after the People's Republic of China; the United States is third.

Cotton was seeded on a record 3,188,000 hectares, up 20,000 from a year earlier. The area expansion rate has remained about the same for the past 2 years, but it has slowed down in comparison with the average annual rate of 43,000 hectares during 1975-1980. Expected shortages of irrigation water and rising soil salinity in the major cotton belt of Soviet Central Asia strongly suggest that the area expansion will continue slowly. The much-discussed long-range plan to alleviate these problems by diverting the flow of Siberian rivers from the Artic into Soviet Central Asia becomes more remote because of questionable cost effectiveness and adverse environmental impact.

Kirgizia, both the smallest producing and the lowest yielding cotton republic in Soviet Central Asia, may be phasing out as a cotton producer, just as the Republic of Armenia was phased out during the mid-1960's. Cotton area in Kirgizia declined from 72,000 hectares in 1981 to 43,000 in 1982, the smallest in about 20 years.

Cotton had an excellent start, with the fastest seeding pace in several years. Warm weather early in the season accelerated crop development. However, as the season progressed, prevailing above-normal hot, dry conditions and water shortages in some areas of Soviet Central Asia

caused major concerns. The fields were repeatedly irrigated, and fertilizer applications were stepped up to sustain yields. Following these countermeasures, the crop status improved and prospects were good. In late September and early October, however, weather took a further toll on the crops over most of the cotton-producing regions of Soviet Central Asia and the Transcaucasus. The onset of earlier-than-usual cold weather, snow, torrential rains, and hail storms caused serious crop damages and losses. Cotton plans and socialist pledges were not met in the Republics of Turkmenistan, Kazakhstan, and Kirgizia. Uzbekistan (the largest cotton producer in the USSR) managed to meet its goal of 6 million tons, but quality suffered.

Soviet storage and processing technology contribute to quality losses. *Pravda* (February 18, 1983), in an article on Uzbekistan, said the major factors contributing to the low quality of raw cotton were: (1) the long distance from procurement points to ginning plants and (2) prolonged storage of raw cotton (usually in open-air mounds of 5,000 tons[24]) prior to ginning. In pointing out the degree of deterioration in quality and the negative effect on ginning rates, the article contrasted immediate ginning of first-rate raw cotton to obtain a lint outturn of 34.2 percent, against an outturn of only 30.2 percent after long storage. The article recommended that the cotton-processing period be shortened to about 5 to 6 months (still long by U.S. standards), rather than the typical operating period of approximately 11 months. According to the Soviets, such long ginning operations are used to permit plant personnel to work on a steady basis rather than on a seasonal one. Other recommendations included expansion of ginning capacities and the construction of new ginning plants, procurement points, and cotton-drying shops.

Although not discussed in the article, a possible cause for the decreasing ginning rate is the increase in mechanical harvesting, which increases the amount of trash collected and leads to fiber damage. Soviet mechanical harvesting of cotton has increased from about 38 percent in 1971 to about 65 percent in more recent years.

The dramatic quality problems of 1982 are not fully explained but are probably weather related. Because of the below-average quality of Soviet cotton in at least the past 2 years, the USSR cotton ginning rates for 1981 and 1982 have been revised downward to 30.0 and 29.5 percent, respectively.

A further manifestation of the low quality is an increase in the amount of cotton lint needed to manufacture a given quantity of cloth. Total USSR cloth production, at 11.1 billion square meters, was up 1 percent from 1981, but it was also 1 percent below plan. The output of cotton cloth probably made little, if any, gain over the 7.2 billion square meters produced in 1981.
(Angel O. Byrne)

TOBACCO PRODUCTION UNEVEN

The Soviet Union's output of standard cigar and cigarette tobacco leaf is estimated at 285,000 tons in 1982. The Soviets cultivate the fifth largest tobacco area worldwide, trailing only China, the United States, India, and Brazil. In 1982, the USSR tobacco area, at 180,000 hectares, rose 8 percent from 1981. Tobacco yields have remained fairly static in recent years, averaging 1.67 tons per hectare. A peak yield of 1.74 tons was reached in 1979, compared with only an estimated 1.58 tons in 1982.

Six new curing factories have been brought into operation since the mid-1970's, including one in 1982. These facilities use new preparation techniques to aromatize raw tobacco, and presently have an annual production capacity of 54,000 tons. Regulations were also enacted in July 1982 to monitor production specifications. Cigarette diameters have often exceeded official limits, which were reduced from 8.2 millimeters to 7.9 after the Tenth 5-Year Plan (1976-80).

The Soviets have not equaled their peak output of 378 billion cigarettes set in 1977. The slowdown is due to successive poor harvests, whose impact has been somewhat alleviated by large imports. The 1981 shortfall caused the discontinuation of many expensive, but unprofitable, cigarettes. Because of greater raw tobacco supplies, production in 1982 probably registered a modest increase over 1981's 365 billion cigarettes.

Soviet adult per capita cigarette consumption is only 63 percent of that of the United States, but it is increasing despite price rises. Soviet antismoking policies appear to be less stringent than in the United States. While the harmful effects of smoking are a matter of public discussion in the USSR, cigarette packages lack warning labels. (David Zaslow)

USSR FOREIGN TRADE

Overall Trade

The value of Soviet foreign trade in 1982 is estimated at 120 billion rubles (about $166 billion). Soviet trade is projected to have risen by 9 percent, about one-half the rate of growth recorded for the previous year and the lowest increase since 1971. The value of imports, in particular, rose more slowly than did the value of exports. The Soviets maintained a positive trade balance, with exports estimated at 63 billion rubles ($88 billion) and imports at 56 billion rubles ($78 billion).[25]

At least four factors contributed to the smaller rate of growth in Soviet trade: worldwide recession, a decline in

[24] *U.S. Team Reports on Soviet Cotton Production and Trade*, USDA, FAS-M-277, June 1977.

[25] All trade data in this section is given on a calendar-year basis. Dollar figures are converted from official Soviet statistics using U.S. dollar exchange rates for the Soviet foreign exchange ruble as announced by the State Bank of the USSR. In 1980, 1 ruble averaged $1.54; in 1981 and 1982, $1.39. Exports and imports are valued f.o.b. Official Soviet statistics count as imports or exports items purchased abroad, even if they actually never entered the Soviet Union. Thus, for instance, Canadian flour purchased for delivery to Cuba appears in Soviet trade statistics as both an import and an export.

USSR foreign trade, 1980-82

Direction	1980	1981	1982
	Billion rubles		
Exports	49.6	57.1	63.2
To socialist countries	26.9	31.2	34.2
To Western industrialized countries	15.8	17.2	18.8
To developing countries	6.9	8.7	10.2
Imports	44.5	52.6	56.4
From socialist countries	23.7	26.7	30.8
From Western industrialized countries	15.7	18.1	18.9
From developing countries	5.1	7.8	6.7

world commodity prices, higher interest rates, and reduced grain imports. In addition, following the establishment of martial law in Poland, economic sanctions imposed by the United States and other Western countries may have reduced Soviet trade.

The USSR posted an estimated $4.7 billion surplus with nonsocialist countries in 1982, almost all of which was generated in trade with developing countries. Imports fell by 14 percent, and exports to these countries increased by 17 percent. With the Western industrialized countries, the Soviets recorded a $139 million trade deficit, just one-ninth of that recorded in the previous year.

The Soviet export surplus with other socialist countries fell to $4.7 billion. This trade, while denominated in dollars here for comparative purposes, is largely carried out under clearing accounts and other means of settlement, so that this surplus represents little or no gain in hard currency reserves.

In 1982, West Germany was the Soviets' most important nonsocialist trading partner. The United States ranked no better than seventh according to preliminary Soviet trade data.

Trends in Agricultural Trade

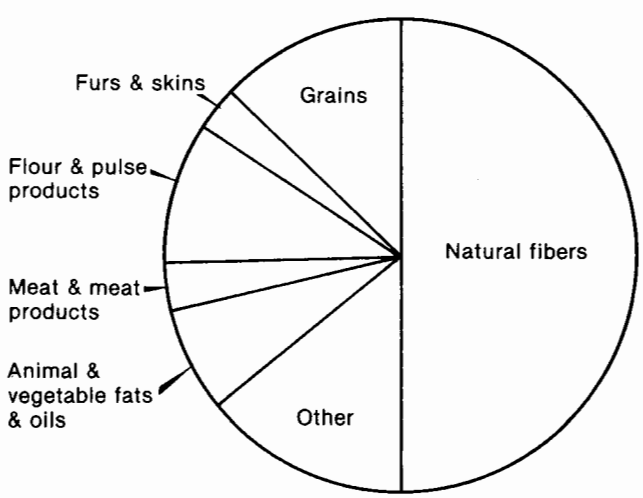
The most recent issue of the USSR's annual trade yearbook (*Vneshnyaya torgovlya v SSSR*) presents data for 1981. For 1982, partial trade estimates made from a variety of sources provide the basis for analysis.

In 1981, Soviet agricultural imports were valued at $20.4 billion, reflecting an increase of about 19 percent from 1980 (table 11). Four commodity groups accounted for three-fourths of the value of Soviet agricultural imports: grains and grain products, 41 percent; sugar, 19 percent; meat and dairy products, 9 percent; and fats and oils, 6 percent. All four hit records in 1981.

Grain imports (wheat, rye, barley, oats, and corn by Soviet definition) amounted to about 38 million tons in 1981 (table 12). In addition, imports of sorghum, first recorded in 1980, amounted to about 4 million tons. These imports were valued at about $6.7 billion and $600 million, respectively, and represented about 35 percent of total agricultural imports. The largest grain supplier was Argentina, which provided almost a third (including all sorghum imports). One-fifth, roughly 10 million tons, came from the United States. Soviet data indicate that the United States ranked second in wheat sales behind Canada, and second in corn sales behind Argentina. Imports of rice and wheat flour exceeded 1 million tons

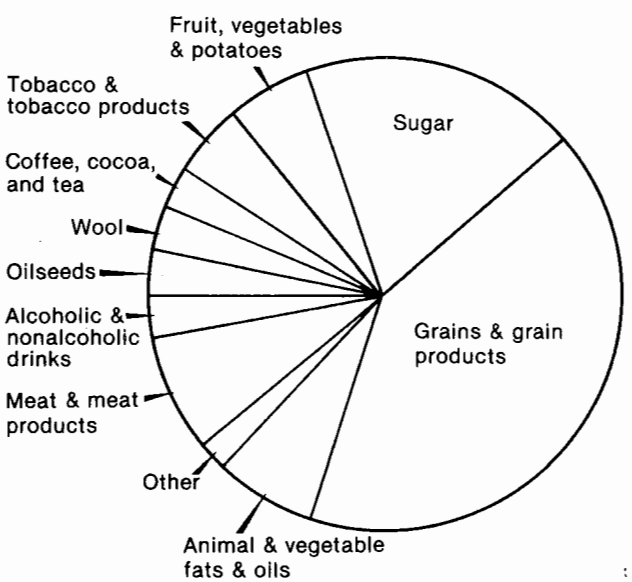
USSR Agricultural Trade Structure, 1981

Exports



Agricultural exports = $3.0 billion
Total USSR exports = $79.4 billion

Imports



Agricultural imports = $20.4 billion
Total USSR imports = $73.1 billion

each for the first time. India provided about one-half of the rice.

Imports of raw and refined sugar were valued at $3.9 billion, about the same as in the previous year. The Soviets imported a record 5.2 million tons (raw value). Cuban sugar cane represented almost three-quarters of raw sugar purchases. The Philippines and Brazil supplied the bulk of the remainder. The European Community provided most of the Soviets' refined sugar.

Meat imports have risen sharply since 1978 in an effort to prevent consumption from falling. Purchases of foreign meat and meat products peaked in 1981 with a value of $1.7 billion, up one-fifth from 1980.

Since the mid-1970's, Soviet purchases of oilseeds more than doubled as a result of a series of poor harvests and growing Soviet awareness of the advantage of using oilseed meal as a livestock feed supplement. In 1981, oilseed imports were valued at about $600 million and totaled 1.5 million tons. The bulk of this was soybeans that Argentina and Brazil supplied. Soybean meal purchases from abroad increased to 1 million tons, and Brazil and the EC were the Soviets' most important suppliers. The Soviets bought vegetable oil in record quantities totaling 604,000 tons. Sunflower, palm, soybean, and coconut oil made up most of these imports.

Fruit, vegetable, and berry imports remained significant in 1981, totaling 6 percent of Soviet agricultural purchases. Hungary and Morocco supplied the bulk of these goods. The Soviet Union's international tobacco trade is primarily import oriented. In 1981, tobacco imports (leaf and products) were valued at about $900 million.

Soviet agricultural exports, valued at just short of $3 billion, have been relatively stable since 1979. Cotton accounts for about half the value (tables 13 and 14).

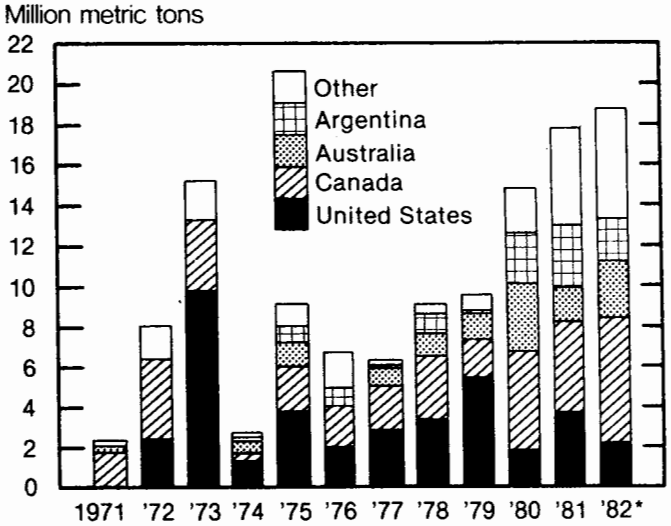
In 1982, the Soviet Union is estimated to have imported more than $21 billion of agricultural goods, significantly reducing the rate of growth evident since 1979. Soviet foreign trade objectives, which appeared to place a higher priority on balancing hard currency trade during the year, and improved agricultural production at home may explain the smaller growth rate.

Estimated grain imports (including sorghum) of about 37 million tons are valued at perhaps $5.3 billion. The Soviets' most important supplier was the United States, which regained its position, if not its market share. The United States provided about 11.5 million tons, roughly one-third of the USSR's grain imports. Canada ranked second, and Argentina third, providing about 9.3 and 8.8 million tons, respectively. Soviet foreign rice purchases are believed to have remained high. One indication of continuing large rice imports is a 1982 agreement with Thailand to purchase 500,000 to 800,000 tons over an 18-month period, amounts far higher than those provided by Thailand in 1980 and 1981.

Soviet imports of sugar, both raw and refined, reached a record of more than 7.5 million tons. Of this, about 6.2 million tons represent raw imports; 1.3 million tons, refined (raw value). Because world stocks of sugar have been high and international prices low, the Soviets could readily and cheaply supplement deliveries from Cuba, their traditional supplier.

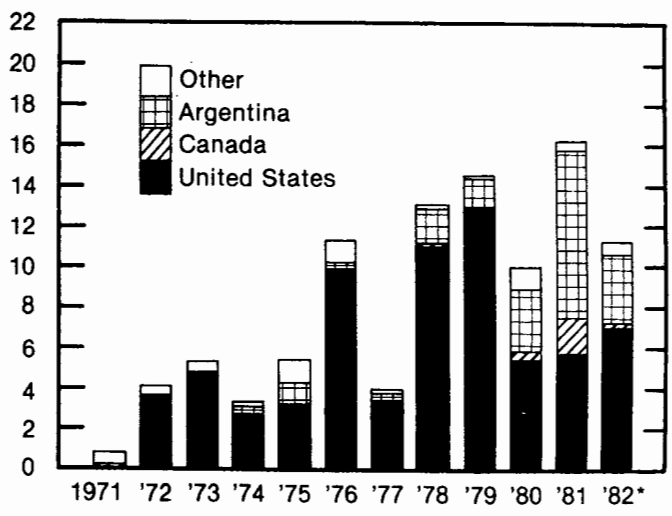
Soviet trade in meat and meat products in 1982 totaled 940,000 tons, down 4 percent from the 1981 record. Soviet imports of soybeans are estimated to have approached a record 1.7 million tons in 1982. Likewise, soybean meal imports rose to a record 1.7 million. In addition, vegetable oil imports were bought in record

USSR Wheat Imports



*Estimate

USSR Corn Imports



*Estimate

volume, reaching 866,000 tons, most of which was probably palm, sunflowerseed, and soybean oil.

Fresh vegetable imports fell 18 percent from 1981, to 174,000 tons. East European countries very likely continued as the major suppliers. Fresh fruit imports rose 14 percent to a high of 1.16 million tons. As in most previous years, apples, oranges, and lemons likely accounted for the bulk of 1982 imports. Major suppliers probably were Hungary, China, and Bulgaria for apples; Morocco, Egypt, and Cuba for oranges; and Greece, Spain, and Turkey for lemons.

In 1982, cotton lint exports probably dropped, and imports rose. Exports likely dropped to about 840,000 tons, 8 percent below the record 916,000 tons exported in 1981. Soviet imports of tobacco leaf reached a record 124,000 tons. The Balkans and India probably continued to be the major suppliers. Soviet imports of cigarettes are unknown, but they probably rose.
(Thomas Bickerton)

The United States has maintained its substantial net trade surplus with the Soviet Union. U.S. exports to the USSR were valued at $2.6 billion, a 6-percent increase from 1981. Although this is the second highest total on record, U.S. sales remained about one-third below the $3.6 billion recorded in 1979. U.S. imports from the USSR declined for the fourth consecutive year, falling to about $229 million, the lowest since 1977. Anhydrous ammonia, valued at $88.8 million, was the leading item imported.

U.S. Agricultural Exports and Imports

Agricultural commodities accounted for almost three-fourths of all U.S. exports to the Soviets in 1982. The value of these goods approached $1.9 billion, up 11 percent. The mix of U.S. agricultural exports remained heavily weighted in favor of grain; wheat and corn accounted for 88 percent.

The Soviet market, which represented 8 percent of U.S. agricultural exports in 1979, fell to 2 percent in 1980 before recovering to 4 percent in 1981. In 1982, it represented about 5 percent. U.S. wheat exports to the USSR, at 4.3 million tons ($802 million), accounted for 10 percent of all U.S. wheat shipments (table 15). U.S. corn exports to the USSR, at 7 million tons ($819 million), represented 14 percent of U.S. sales worldwide.

The value of commodities other than grain more than doubled, rising from about $111 million in 1981 to $229 million in 1982. Soviet purchases of U.S. soybeans returned to 1976-78 levels as the Soviets took deliveries of about 650,000 tons valued at $171 million. However, no U.S. sales of soybean meal or rice were recorded in 1982. The Soviets have not returned to U.S. markets for these commodities since 1979.

In addition, the United States benefited from the Soviet need to import large quantities of vegetable oil. In 1982, the Soviets tripled their purchases of U.S. vegetable oil, taking about 41,000 tons of sunflowerseed oil valued at $22.7 million.

Among the minor agricultural exports, the United States provided the USSR with $10 million in almonds, down from 1981's $16 million. Sales of U.S. tallow also dropped, falling from about $48.5 million in 1981 to $18 million in 1982. The Soviets have been regular purchasers of U.S. tallow since 1978. Soviet purchases of U.S. hops were also down, declining from about $14 million in 1981 to about $3 million in 1982. However, the Soviets did return to U.S. markets to purchase fruit after a year's absence, taking about $3 million in dried prunes.

U.S. agricultural imports from the USSR declined to $10.9 million in 1982. The most important commodity was furskins valued at $7.6 million, down about $1 million from 1981. Sable pelts have consistently dominated USSR exports to the United States. In addition, $1.2 million worth of horses were imported. Casein imports, which at times have amounted to almost a quarter of the U.S. purchases, reached $840,000.

Trade Policy Developments

Over the last year, U.S. policy affecting U.S.-Soviet trade has been largely directed at industrial commodities, technology, and credits. Whether, or to what extent, these actions may have affected agricultural trade is difficult to determine.

Under the U.S.-USSR grain agreement (now scheduled to expire on September 30, 1983), U.S. and Soviet representatives continued to hold semiannual consultations. During May 21-22, 1982, meetings were held to discuss the world grain supply and demand situation, U.S. supplies, and Soviet import needs. The U.S. side agreed to work to improve the quality of grain shipped to the Soviets. The United States also noted it had no problems with the private credit arrangements that accompanied some of the 1982 sales. In August, the U.S.-USSR grain agreement was given a second 1-year extension.

In mid-October, the President announced supply assurance provisions for Soviet purchases up to 23 million tons of wheat and corn. At the next scheduled meeting (October 28, 1982), the discussions again focused on the quality of U.S. grain shipments and trade issues. The United States officially conveyed the 23-million-ton offer and extended agreement-like assurances for grain purchased in November and shipped within 180 days.

U.S. trade with the USSR, 1972-82[1]

Year	U.S. exports			U.S. imports		
	Total	Agricultural	Nonagricultural	Total	Agricultural	Nonagricultural
	Million dollars					
1972	542	430	112	88	4	84
1973	1,191	920	271	204	5	199
1974	607	300	308	334	9	326
1975	1,834	1,133	701	243	7	236
1976	2,306	1,487	819	215	8	206
1977	1,621	1,037	584	221	11	210
1978	2,249	1,687	563	530	12	517
1979	3,604	2,855	749	873	15	858
1980	1,510	1,047	463	431	10	421
1981	2,430	1,665	765	357	12	345
1982[2]	2,584	1,850	734	229	11	218

[1]No adjustments made for transshipments. [2]Preliminary.

U.S. exports of wheat and corn, and share to USSR, 1972-82, calendar year

	Wheat exports			Corn exports		
	Total	To USSR		Total	To USSR	
	1,000 metric tons		*Percent*	*1,000 metric tons*		*Percent*
1972	21,196	2,657	12	22,357	3,060	14
1973	33,143	4,190	13	37,390	8,718	23
1974	25,022	1,063	4	29,799	2,007	7
1975	30,876	4,083	13	33,168	3,172	10
1976	26,359	1,705	6	44,038	8,797	20
1977	23,512	3,017	13	40,363	3,582	9
1978	33,841	2,925	9	49,947	9,925	20
1979	33,378	5,365	16	59,167	11,970	20
1980	35,750	1,769	5	63,042	4,227	7
1981	43,908	4,082	9	54,746	5,396	10
1982[1]	40,780	4,295	10	48,789	6,968	14

[1]Preliminary.

Source: *U.S. Foreign Agricultural Trade Statistics* report, calendar year, various issues.

The Soviets failed to take advantage of the additional assurances.

In routine consultations held March 24-25, 1983, the U.S. representatives noted the slowdown in Soviet imports of U.S. grain, which raised concern about the reliability of the USSR as a market. This concern, according to the representatives, contributed toward U.S. steps to reduce grain production.

In January 1983, the President signed the Futures Trading Act of 1982. The act contained a "contract sanctity" amendment stipulating that if the President declares an embargo, he may no longer cancel shipments of grain or other commodities that have been privately contracted for until 270 days have passed. This restriction is automatically suspended only if the President declares a national emergency or the Congress declares war. (Thomas Bickerton)

CAPITAL INVESTMENT

Productivity in the Soviet agro-industrial complex has been declining. Recent Soviet studies provide clues to the extent of the declines. According to *Finansy SSSR* (*USSR Finances*) (No. 8, 1982), during the Eighth 5-Year Plan (1966-70), expenditures of 70 rubles were required to obtain 100 rubles worth of gross agricultural output (in constant 1973 prices). During 1971-75, however, the same output cost 89 rubles to obtain, and in the Tenth 5-Year Plan (1976-80), expenditures of 107 rubles were required. By 1980, fully half of all State and collective farms failed to show a profit. Particularly unprofitable commodities were sugar beets, meat, milk, and wool.

A second article highlighted declining growth rates for labor productivity. In the agro-industrial complex, the rate of growth in labor productivity dropped from 4.9 percent during 1965-70 to 3.2 percent during 1976-80, and in agriculture alone, the deceleration was even more severe, dropping from 6.3 percent to 2.8 percent.[26] Not surprisingly, Soviet policy now gives primary emphasis to reversing these trends, increasing the effectiveness of investment, and improving the institutional setting of Soviet agriculture.

Major Capital Outlays

The Eleventh 5-Year Plan was adopted on March 2, 1981. As adopted, investments in the agro-industrial complex showed a 4-percent decline over 1976-80. Since a modest increase in investment was planned for the agriculture sector alone (and this portion represents 70 to 80 percent of the total), a major reduction—39 percent—was planned for investment in the agriculture-related industries, such as agricultural machine building, food processing, and agrochemicals.

This planned decline, identified in the financial journal cited above, is particularly puzzling since it was concentrated in those very industries where continuing complaints of shortages and low-quality output would seem to require expanded resources to improve productivity. The paradox provokes several explanations. According to Soviet officials, investment in the food processing industry is affected by an inability to obtain new technology and equipment resources. An article in *Sovetskaya Rossiya* (August 7, 1982) indicated unusual attention—at the RSFSR Council of Ministers Presidium level—was being directed toward underutilization of existing capacities. Of some 2,500 installations commissioned over the past 5 years, more than 60 percent were reported operating below design capacities. Chemical and textile facilities were among those especially singled out; in the case of mineral fertilizers (a critical commodity whose production and delivery problems are well documented in Soviet sources), some 8 million additional tons could have been obtained if the existing RSFSR plants surveyed had been operating at the proper level.[27]

Another complicating factor is the longer periods taken to complete construction of existing projects. Since

[26] *Vestnik sel'skokhoziaistvennoy nauki*, No. 5, 1982, p. 4.

[27] Excess, or underutilized, capacity in the USSR perhaps should be contrasted with the familiar notion of this concept (usually demand related) in the United States. In the USSR, underutilized capacity is likely the result of some shortage on the supply side—a key part, a needed raw material, necessary transport, etc.—which prevents a facility from operating at a level necessary to meet its production or contract commitments.

Capital investment in agro-industrial complex, 1976-83

Year	Total complex	Agricultural sector[1]	Related industries[2]
		Billion rubles	
1976-80 actual	241.9	171.0	70.9
1981-85 5-year plan	233.0	190.0	43.0
1981-85 plan (annual average)	46.6	38.0	8.6
1981 actual	44.2	36.7	7.5
1982 actual	45.0	37.4	7.6
1983 plan	47.0	37.7	9.3

[1]Includes state and collective farms and intra-farm enterprises. [2]Includes input industries such as farm machinery, fertilizers, pesticides, and preliminary processing industries such as sugar refinement, cotton ginning and wheat milling.

no ministry wants to lose its claim on new capital investment because of backlogs of incomplete construction, facilities are declared "finished" when, in fact, years of work still remain to bring them into full operation. Finally, an obvious explanation in an economy experiencing many and diverse claims on investment funds is simply that higher priorities exist elsewhere.

The increase in investment in agriculture will be devoted to on-farm infrastructure and improvement of living conditions in the countryside. While this type of investment is needed to stem the flow of labor to urban areas, its payoff in additional output is very low.

Of the 45 billion rubles invested in the agro-industrial complex in 1982, 24 billion rubles were devoted to construction. The remainder was expended on maintenance and repair work, land improvement, acquisition of equipment, and other projects. Agricultural investment in 1982, at 37.4 billion rubles, accounted for 26.5 percent of total investments in the national economy, a share virtually unchanged since the mid-1970's.

Capital investment in the agro-industrial complex in the first 3 years appears to be running close to the planned 1981-85 goal. Again, curiously, investment in the related industries had been proceeding at a pace insufficient to meet even its reduced target. For 1983, a 22-percent increase is planned to redress the shortfall. The additional 1.7 billion rubles to be diverted to agriculture-related industries is not at the expense of the agricultural sector, whose own investment program rose slightly from the actual levels of 1981 and 1982.

Investment funds for new construction are likely to be constrained in 1983 and subsequent years. In 1981, the value of unfinished investment in agriculture totaled 12.9 billion rubles, well above known guidelines. Also, increasing emphasis is being placed on reconstruction and modernization of existing facilities. The share of investment designated for reconstruction will be augmented 23 percent in 1983, compared with 19 percent in 1981.

Intensive development is planned in 1983, with agricultural machine building to increase 16.5 percent, feed processing 15 percent, and storage facilities for fruit and vegetables 23 percent. Agricultural investment in the renovation of rural villages (new housing, schools, hospitals, etc.) is planned at 5.2 billion rubles in 1983, 8 percent above the amount planned in 1982.

According to *Ekonomika sel'skogo khozyaistva* (*Economics of Agriculture*) (January, 1983), a partial breakdown of the 1983 planned investments in industries and services for agriculture include: 1.1 billion rubles for agricultural machinery and equipment, 312 million rubles for equipment for livestock raising and feed production, 1.1 billion rubles for the food industry, 771 million rubles for the meat and milk industry, and 310 million rubles for the microbiological industry. These would represent planned increases of 28, 26, 21, 21, and 59 percent, respectively, over actual investments made in 1981.

Irrigation and Drainage

In 1982, 640,000 hectares of newly irrigated lands were brought into production, 3 percent less than in 1981 and 60,000 hectares short of the goal. Drainage was carried out on 700,000 hectares, the same as a year earlier but 100,000 hectares below plan. Water was supplied to 4 million hectares of meadows and pastures, the same as in 1981 but 1.4 million hectares below the target. The total improved area reached somewhat over 30 million hectares.

Planned investments in land improvement and other reclamation projects are being cut back in 1983. Allocations for these purposes are to total 7.6 billion rubles, to bring an additional 676,500 hectares of irrigated land and 714,600 hectares of drained land into production—both below the 1982 planned levels. Furthermore, the planned 4 million hectares of meadows and pastures to be supplied with water are down 26 percent from the 1982 goal. Of total 1983 investments for land improvement and reclamation, a portion is to be expended for reconstruction and restoration of existing irrigation systems.

Improved land accounts for all cotton and rice production, 40 percent of corn, 75 percent of vegetables, 50 percent of fruit, and about 25 percent of fodder.[28] At present, irrigated land accounts for 11 percent of total arable land but more than 36 percent of crop output. A Soviet publication stated that one irrigated hectare of land provides almost 5.8 times more output than a nonirrigated hectare. Similarly, one drained hectare of land provides 1.5 times more than a nondrained one.[29] In the future, over one-third of the increase in Soviet grain production is planned to be obtained from improved lands.[30] By 1985, total irrigated and drained lands are planned to reach 36 million hectares, and up to 41 to 44 million hectares in 1990.

Farm Machinery

Soviet agricultural machinery showed mixed progress in 1982 (table 16). Tractor deliveries decreased slightly to 349,000; grain combines increased to 111,000; and truck deliveries stayed the same at 268,000. Scrapping rates showed across-the-board improvements in 1981, but in 1982, the rates for all three categories of machines again increased. Between 1978 and 1982, for example, the Soviets delivered nearly 1.8 million tractors to agriculture, yet the fleet increased by only 140,000 units.

[28]*Ekonomicheskaya gazeta* (*Economics Gazette*), No. 29, 1982.

[29]Ibid.

[30]*Sel'skaya zhizn'*, July 16, 1982.

Symptomatic of the shortage of trucks (and poor quality of rural roads) was an *Izvestiya* article (September 2, 1982) that noted some 20 million tons of potatoes, vegetables, beets, and fruit travel remarkably short distances by railroad, some 50 or so kilometers. This imposes a significant short-haul burden on rolling stock, while the greater handling, loading, and off-loading increase waste and losses.

The seasonal work for a tractor in 1983 is planned at 83 hectares (compared with 87 hectares in 1980), and for a grain combine, 152 hectares (compared with 174). In the United States, seasonal work for a tractor in 1982 was 40.5 hectares. Thus, part of the problems of Soviet equipment breakdowns and scrappings result from overworking equipment.

Criticism of the standards and quality of agricultural machinery are rampant in the Soviet press. Grain combines, for example, are said to be "not adaptable for harvesting of high-yielding grain varieties and cannot be modified for this purpose."[31] Furthermore, Soviet farms frequently receive combines in semifinished manufactured form.[32] Complaints about shortages of spare parts are so numerous that their effect in explaining shortfalls must be great. In turn, those closely associated with machinery manufacturing complain that State and collective farmers fail to comply with even the most basic maintenance requirements.

In addition, a serious problem discussed by Z. Nuriev, deputy chairman of the USSR Council of Ministers and chairman of the national-level commission on the agro-industrial complex, is the significant increase in the cost of agricultural machinery.[33] The cost of one plow or seeder increased three times from 1966-70 to 1976-80. The cost of irrigation equipment per hectare also almost tripled. The cost of materials and equipment for the livestock sector have also increased. Nuriev noted that production costs always outstripped the efficiency of improved equipment.

One factor seriously limiting expanded machinery production is the lack of automation in equipment manufacture. At present, this industry has mechanization capability of only 25 to 30 percent and automation capability for only about 6 percent of its assembly (and most labor intensive) operations.[34]

A new decree (*Pravda*, April 10, 1983), addressed the correction of problems associated specifically with the poor reliability, short service life, and obsolescence of agricultural machinery in production. Ministries typically enjoying high priority in the USSR—for instance, the Ministry of Aviation Industry; the Ministry of Instrument Making, Automation Equipment and Control Systems; and the Ministry of Chemical and Petroleum Machine Building—were urged to ensure that better quality materials and subassemblies be delivered to the Ministry of Tractor and Agricultural Machine Building during 1984-1990.

Agricultural Chemicals

Mineral fertilizer production (nutrient-weight basis) in 1982, at 26.7 million tons, showed a 2.7-percent improvement from a year earlier (table 17). Mineral fertilizer deliveries to agriculture, at 20.1 million tons, rose 924,000 from 1981 but were 4 percent below plan (table 18). Virtually all of this increase was accounted for by larger production of compound and concentrated fertilizers. Deliveries of feed additives (urea and feed phosphates) totaled 609,000 tons, down 8,000 from 1981. The Soviets imported 362,000 tons of mineral fertilizers last year.

In 1981, granulated phosphorous fertilizers were applied on 65 million hectares during the spring sowing period for grains, and nitrogen fertilizers were applied on all the land used for winter crops. Application of nutrient fertilizers per hectare of sown area in 1982 comprised: 445 kilograms for sugar beets, 54 kilograms for grains (excluding corn), 182 kilograms for corn-for-grain, 63 kilograms for sunflowerseeds, 105 kilograms for soybeans, and 384 kilograms for cotton.[35] In 1981, average fertilizer use per hectare of cropland in the USSR reached 85.6 kilograms (nutrient weight), 1.6 kilograms more than in 1980. For comparison, in 1980, the USSR supplied 84 kilograms per hectare of cropland; the United States, 117; England, 319; and West Germany, 480.[36]

The 1983 plan calls for fertilizer deliveries to agriculture to reach 22.8 million tons (nutrient weight), up 13.4 percent from 1982. The bulk of the planned fertilizer deliveries are targeted for use in grain and fodder crops. Deliveries of feed additives are planned to reach 950,000 tons, up 56 percent from actual deliveries in 1982.

Problems related to fertilizer production continue to plague the Soviets. Inefficient technologies cause high losses of mineral resources during processing and reprocessing. For example, during mining/extraction operations, losses in phosphates are said to range from 25 to 50 percent; during enrichment of phosphate ores, losses evidently reach 40 percent; and during flotation processing of apatite-nepheline ores, losses of phosphates account for 6 to 8 percent. Also, 5 to 6 percent of phosphorous is lost during mechanical and chemical reprocessing of phosphates into superphosphorous acid or concentrated fertilizers.[37]

More than half of arable lands in the USSR continue to show a significant lack of phosphorous, especially in Kazakhstan, the Volga regions, the North Caucasus, and in the Far East.[38] Soils in these regions contain only small quantities of mobile phosphorous—5 milligrams per 100 grams of soil. High-yielding crops, however, require 20 milligrams and more. The lack of effective phosphorous levels has reduced soil fertility, grain yields, and the effectiveness of nitrogen and potassium fertilizers. Another factor impoverishing arable lands is water erosion, which reportedly leaches out 1.5 million tons of

[31] *Voprosy ekonomiki* (*Problems of Economics*), No. 11, 1982, p. 49.

[32] *Voprosy ekonomiki*, No. 7, 1982, p. 9.

[33] *Pravda*, October 1, 1982

[34] *Voprosy ekonomiki*, No. 11, 1982. p. 65.

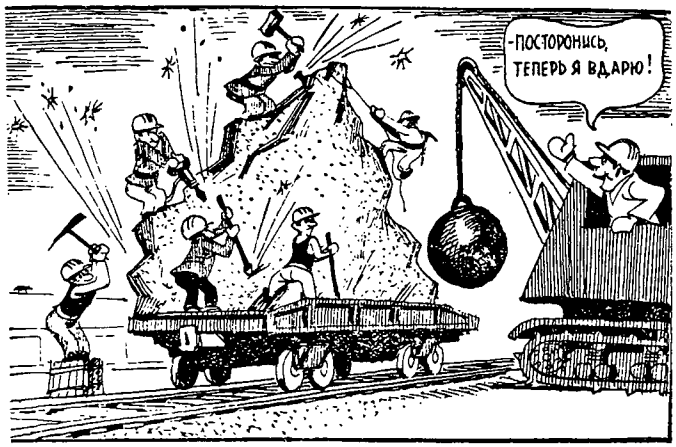
[35] *Vestnik statistiki*, No. 3, 1983, p. 76.

[36] *Finansy SSSR*, No. 7, 1982, pgs. 5-6.

[37] E. Mishustin and Y. Bystrakov, *Voprosy ekonomiki*, No. 12, 1982, p. 108.

[38] *Zemledelie* (*Land Use*), No. 11, 1982, Supplement, p. 15.

Soviet Commentary On Fertilizer Quality



Последнее средство. Рис. Ю. Черепанова.

"The last resort." "Get back. I'll break it up now!"

"Many complaints have been received about the poor quality of mineral fertilizers, low nutrient content, high moisture and impurities. Often fertilizers from the Novgorod Production Association, Azot (Nitrogen), are delivered in the form of hardened lumps and stone-like blocks. Fertilizers from the Rustaviy Chemical Plant are delivered in the shape of monolithic slabs." *(Pravda, October 28, 1982)*

phosphorous (including 240,000 tons of mobile phosphorous) from the land annually.

The Soviets have been increasing phosphate fertilizer through imports of phosphate fertilizers and superphosphoric acid. In 1981, they imported pre-embargo levels of superphosphoric acid from the United States, and in 1982, U.S. exports of this commodity increased to 891,000 tons. In 1981, Soviet phosphate fertilizer imports remained high (229,000 tons), despite the resumption of high imports of superphosphoric acid.

Incomplete construction of new fertilizer plants has contributed to delays in supplying sufficient fertilizers and plant-protection compounds to agriculture. A member of the Politburo of the Central Committee of the Communist Party stated in October 1982 that out of the 53 enterprises, planned construction targets were met for only 20 enterprises during January-May 1982.[39] Furthermore, in 1982, some existing fertilizer plants were operating at as low as 62 percent of their total capacity.[40]

Deliveries of plant-protection compounds totaled 533,000 tons in 1982, up 5.7 percent from a year earlier. Plans in 1983 call for deliveries to reach 551,000 tons, a 3-percent rise. Concern over pollution from pesticides and herbicides continued in 1982. The toxicity of these compounds lead to water pollution, soil damage, and harmful effects on humans and animals.[41]

The Soviets remain heavy users of organic fertilizers. In 1981 and 1982, they applied perhaps 885 million tons each year, or about 4 tons per hectare of sown area. The target for 1983 calls for the application of 920 million tons.

Storage Capacity

The expansion of storage facilities is slower than planned. According to the USSR Minister of Procurements, "The result of the construction of granaries and drying facilities during the first year and a half of the current 5-year plan period shows that present achievements do not meet the goals of the Food Program." He pointed out that, in 1981, only 70 percent of the planned construction of elevators was completed.[42] As of January 1981, the ministry had 1,433 grain elevators in operation, not counting those on farms.

During the current 5-year plan, construction of small granaries with drying facilities is also planned for remote regions of the Volga area, Kazakhstan, Siberia, and other areas. This type of granary is especially important because annually over 60 percent of the total grain harvested is left on farms for seed, fodder, and payment-in-kind to farmers. Further, as a result of the poor quality of cleaning and drying equipment on farms and their ineffective use, much of the State-procured grain is contaminated and wet. Thus, storage capacity in the USSR still remains largely insufficient and inadequate. (Yuri Markish)

AGRICULTURAL POLICY

On May 24, 1982, the Central Committee of the Communist Party of the Soviet Union approved a "Food Program" to be in place until 1990. This program is premised on reaching certain per capita consumption targets for major food products, most still far above current levels (table 19). Because of its long period of development, major elements of the program have already been identified.[43] Under the new party leadership, the Food Program continued to receive great attention.

General Secretary Andropov's initial overall direction for the Soviet economy seems aimed at restoring a sense of order and discipline in economic affairs. Some important personnel changes have followed, sometimes linked to individual charges of corruption or other shortcomings. In the agricultural sector, a new Minister of Rural Construction, a key post under the Food Program, has been named, as well as a new Minister of Agriculture in

[39] *Kommunist*, No. 10, 1982.

[40] *Pravda*, June 17, 1982.

[41] *Sotsialisticheskaya industriya*, September 11, 1982.

[42] *Ekonomicheskaya gazeta*, No. 36, 1982, p. 2.

[43] See, for example, USDA, *Agricultural Situation: USSR Review of 1980 and Outlook for 1981*; USDA, *USSR, Review of Agriculture in 1981 and Outlook for 1982*; U.S. Congress, Joint Economic Committee, *The Soviet Economy in the 1980's*, "The Food Program: A New Policy or More Rhetoric" (forthcoming); *The ACES Bulletin*, "The Soviet Food Program: Prospects for the 1980's"; (forthcoming); and *Farmline*, March 1983, "Soviet Food Program: A Feast of Optimism."

the RSFSR. But the more important changes address overall economic management, especially the role of pricing and marketing, the production framework on individual State and collective farms, and the new regional agro-industrial organizations.

Prices and Marketing

Soviet pricing policies often foster considerable inefficiencies. Thus, it is not surprising that a movement toward a more efficient pricing structure seems to be underway. The decree of August 5, 1982, (already noted) is designed to increase the supplies of perishable fruit and vegetables in the collective farm markets, where a degree of free-market pricing already affects supply and demand. This change is intended to raise farmers' income while reducing market prices.

On January 1, 1983, Soviet procurement agencies again increased the prices paid to State and collective farms for cattle, hogs, sheep, milk, grain, sugar beets, potatoes, vegetables, and some other products. The procurement price for the most widely used variety of seed corn, one of the few examples so far available, increased from 90 to 120 rubles per ton. Unspecified "markups" were to be added for goods produced on the most unprofitable farms. The amount budgeted for these increases—16 billion rubles (about $22 billion at official exchange rates)—represents a sum nearly as large as what the Soviets admit to spending on national defense. These price increases, if not offset elsewhere, would raise the amount of State subsidies needed to maintain retail price stability for foodstuffs to about $70 billion per year. In addition, the writeoff of bad debts that farms owed the State amounted to 9.7 billion rubles ($13.6 billion), implying another financial subsidy. Finally, farm loan obligations in excess of 11 billion rubles were delayed.

Subsidies on this scale would seem to signal the end of retail price stability for foodstuffs in State stores. A recent article by a State Planning Committee official examined the theoretical circumstances under which retail prices could be increased without undue burden either to the populace or Soviet ideology.[44] Perhaps more importantly, General Secretary Andropov's first major article on the Soviet economy devoted much attention to bringing wages in line with the supply of consumer goods and services.[45] Retail price increases for a number of manufactured consumer goods appear to have taken place in early February, and the expectation is that food prices may soon follow.

Farm Management

A second development is the increased attention devoted to "progressive forms of labor organization and remuneration." In both the national press and republic-level reports, these progressive forms have focused on the "brigade" or "collective-contract" teams.

Under this arrangement of on-farm effort, production brigades are allocated land and equipment "for permanent use," as well as the necessary material resources. Wages would be based on the harvest, not merely on tasks performed. M. Gorbachev, the Politburo member responsible for agriculture, reported that under such a system "...the personal interests of the specific worker are better combined with the interests of the enterprise, the link between labor and its remuneration is strengthened, and better use is made of land, equipment, and other production capital."[46] *Moscow News* (No. 14,

[44] *Ekonomika*, No. 1, 1983.

[45] *Kommunist*, reprinted in FBIS, Daily Report: Soviet Union, February 24, 1983.

[46] *Pravda*, February 10, 1983.

AGRICULTURAL EDUCATION AND RESEARCH

The USSR has developed an extensive agricultural research complex and education system, and a number of ministries and State committees are responsible for carrying out this effort. The most important of these is the Ministry of Agriculture, which operates more than 800 research and educational institutes. In addition, the Ministry of Land Reclamation and Water Conservation operates about 60, the State Committee for the Material and Technical Services for Agriculture about 45, and the State Committee for Forestry about 20. In all, there are more than 1,000 such institutes in the system.

The Ministry of Agriculture directs most agricultural research. Subordinate to it is the prestigious Lenin All-Union Academy of Agricultural Sciences (VASKHNIL), whose facilities conduct research throughout the USSR at each of its seven regional departments.

While the work of institutes operating at the national, republic, or local level overlaps, it is possible to generalize about the type of work being carried out at each. The all-union institutes conduct general research, provide methodological guidance to agronomists and other scientists, and make recommendations for the practical application of new discoveries. In addition, these institutes organize training for research personnel. Republic research institutes develop improved techniques for growing crops and raising livestock in the zones in which they are located. Finally, the regional centers frequently address problems of specific interest to the local State and collective farms.

The personnel who conduct Soviet agricultural research are the product of about 100 agricultural institutions of higher learning, of which about 60 are devoted to general agricultural subjects and 12 to veterinary medicine. The rest offer study in mechanization and electrification, fruit and vegetable growing, land management, milk production, cotton farming, and other areas of specialization. By comparison, about 215 institutions of higher learning offer degrees in agriculture and natural resources in the United States.

During the 1981/82 school year, almost 800,000 students were enrolled in secondary specialized agricultural schools, and about 550,000 students were in institutions of higher learning. In 1981, Soviet secondary schools graduated about 207,000 agricultural students. Institutions of higher learning produced almost 79,000 agricultural graduates. By comparison, U.S. institutes of higher learning graduated almost 28,000 students in agriculture and natural resources in the 1979/80 school year.

1983) generalized that brigade teams routinely obtain 20 to 30 percent more produce per hectare than do groups paid in the traditional way. Further, these teams do it with a savings of resources. Soviet commentary now stresses the number of such teams established, with the clear implication that farms failing to follow the lead are poorly managed.

Regional Agro-Industrial Organizations

Regional agro-industrial organizations, RAPO's in the Russian acronym, figured prominently in the Food Program, but their function was obscured by continued references to central direction (and even a new statute expanding the authority of the State Planning Committee in the agricultural sector). Under the new leadership, these organizations—and their counterparts at the oblast, republic, and union level—are rapidly being established, and their roles clarified.

The basic concept of the RAPO is that of a council made up of farm managers, directors of agricultural service industries, and agricultural administrators at the rayon (county) level to serve as a coordinating body. Counterpart organizations are formed all along the administrative system, finally reaching the presidium commission for the agro-industrial complex at the Council of Ministers. The agro-industrial complex thus becomes an independent entity for planning, and while central control is still maintained, greater coordination and involvement at the local level is made possible. More than 3,100 RAPO's and some 156 such intermediate organizations have been formed.

Regulations issued as 1982 ended suggest that the RAPO's could significantly increase local initiative in the planning process. For example, the RAPO's have some ability to aggregate farm procurement plans and shift quantities among the several farms in their areas of responsibility. The RAPO's have authority to determine interfarm prices for livestock and farm materials and to shift 10 to 15 percent of capital expenditures and material resources, including labor, between farms. Thus, the RAPO's may be able to adjust to local conditions in a way that the traditional Soviet planning methods prevented. (Anton F. Malish)

OUTLOOK FOR 1983

No major diversions from the established policies of the Food Program are expected to occur in the USSR. Although the reforms and new management systems being implemented are not expected to show strong results in 1983, they should not be written off lightly. Some improvements in output will likely occur through increased price incentives, greater local involvement and coordination in farm affairs, increased emphasis on private plot production, and the profit-motivating influence of the brigade teams.

The value of gross agricultural production in 1983 is planned to reach 137.3 billion rubles, 800 million rubles above 1982's target and 9 percent above actual output in 1982. The prospects for achieving this goal are not promising.

Production Prospects

Despite the serious shortfalls in grain production in the first 2 years of the current 5-year plan, no change has been announced concerning the 1981-85 annual average target of 239 million tons. As noted, the current pace is far off this target. Long-run trends would put 1983 production about 30 million tons below the target level. Weather variations could put actual output far outside trend projections.

The area planted to winter grains, at 33 million hectares, is the smallest since at least 1974. On average, harvested area is somewhat less than 85 percent because of winter losses. Generally, a mild winter (such as 1982/83) results in below-average losses. But, poor soil moisture during the fall, average winter losses in the Non-Black Soil Zone of the RSFSR, and greater-than-average losses in portions of the North Caucasus, Eastern Ukraine, and the Lower Volga Valley could result in above-average losses in harvested area and yields. When faced with shortfalls in the winter grain areas, the Soviets have typically increased spring barley, corn-for-grain, and spring wheat sowings. The Soviet press indicates that 1983 is no exception.

Spring sowing will be complicated by the need to resow some of the winter crop areas and also by the fact that fall field work was not completed. Through mid-April, dryer soils have permitted rapid spring sowing; as of April 4, about 10 percent of the 91 million hectares of spring grain had been sown, and planting progress was 2 weeks ahead the usual pace. The total planned grain area is 124 million hectares. Continuing soil moisture problems decrease the probability of a bumper harvest this year.

Plans for the coming harvest call for the procurement of 443.9 million tons of feed, oat-unit equivalent, well in excess of the previous record. Emphasis is to be placed on increasing supplies of succulent and pasture feed, with little increase in concentrate feed availability. Greater use of fertilizer and irrigation for feed crops, expanded sowing of high-yield varieties at the expense of lower yielding ones, and better supplies of certified grass and legume seeds are expected to improve production and procurement compared with last year.

Meat production (slaughter weight) is planned to reach 16.2 million tons in 1983, up 6 percent from 1982. With increased grain and feed supplies available in early 1983 from the improved 1982 crops, projected large grain imports, and record inventories of cattle, hogs, and poultry, meat production is expected to show a significant improvement.

In the first 2 months of 1983, slaughter weights for cattle and hogs rose 4 kilograms each from a year earlier, and meat production rose 4 percent. To approach the 1983 goal for meat output, however, these gains would have to show even greater improvement. So far, the early spring should be a favorable sign for the survival of young animals, but the final result will depend heavily on 1983 output of grain, forages, and nongrain crops, such as potatoes and sugar beets. At present, it is estimated that meat output will reach 15.5 million tons, compared with 15.2 million in 1982 and the peak of 15.5 million in 1978.

Milk production is targeted at 94 million tons for 1983, up 4 percent from 1982. Despite record cow inventories going into 1983 and some measures to improve dairy

farming, the recent performance does not auger well for achieving this goal. However, with a significant improvement in milk yields and production in the socialized sector in the first 2 months of 1983, it is estimated that output will exceed 1982's level by 2 percent, rising to 92 million tons. Furthermore, with the expected increase in total milk output, butter production will rise. During January-February 1983, butter output rose a dramatic 25 percent from the same period a year earlier.

Egg production is expected to continue on the uptrend of recent years and to exceed the 1983 target for 73 billion eggs by 2 to 3 percent. According to an article by I.B. Bakhtin, the director of the USSR poultry industry, per capita consumption is planned to reach 270 eggs in 1983. Since this goal is above the 260 to 266 eggs per capita now targeted for 1990, a revision of the 1990 goal could be forthcoming.

Vegetable and fruit production in 1983 are targeted at 29.8 and 18.7 million tons, respectively. The vegetable target is 6 percent above the 1982 goal and close to 3 percent more than 1982's actual record output. The goal for fruit production, at 18.7 million tons, is 4 percent above 1982's record. With normal weather and also the new incentives for direct sales of produce from State and collective farms, the targets could possibly be reached.

Potato production in 1983 is planned at 89 million tons, 14 percent above actual output in 1982. Based on the declining potato area, continuing below-average crops in recent years, and problems with plant disease, it is unlikely that the 1983 plan will be met. Nevertheless, the crop is expected to show some improvement over 1982, increasing about 4 percent.

The 1983 goal for sugar beet production, at 96.1 million tons, represents a 35-percent increase over actual output in 1982. Taking into account the recent poor performance and the gradually declining sugar beet area, it is not likely that this goal (second only to the record 100-million-ton crop in 1976) can be achieved. Since the 1976 record harvest and the relatively good 1977 and 1978 crops (averaging somewhat over 93 million tons), annual sugar beet production has ranged from 61 to 81 million tons.

Sunflowerseed production is planned to reach 6.6 million tons in 1983, close to 25 percent above actual output in 1982. In the past 10 years, sunflowerseed production has met the annual plan only once, in 1973. In subsequent years, annual plan shortfalls have averaged close to 1.9 million tons, and this trend is expected to continue into 1983. A 6.6-million-ton output would not be unprecedented—a harvest of this size was achieved in 1974—but that year the sunflowerseed area was significantly larger than in more recent years. There is no current indication that the Soviets will return to the larger areas planted in past years.

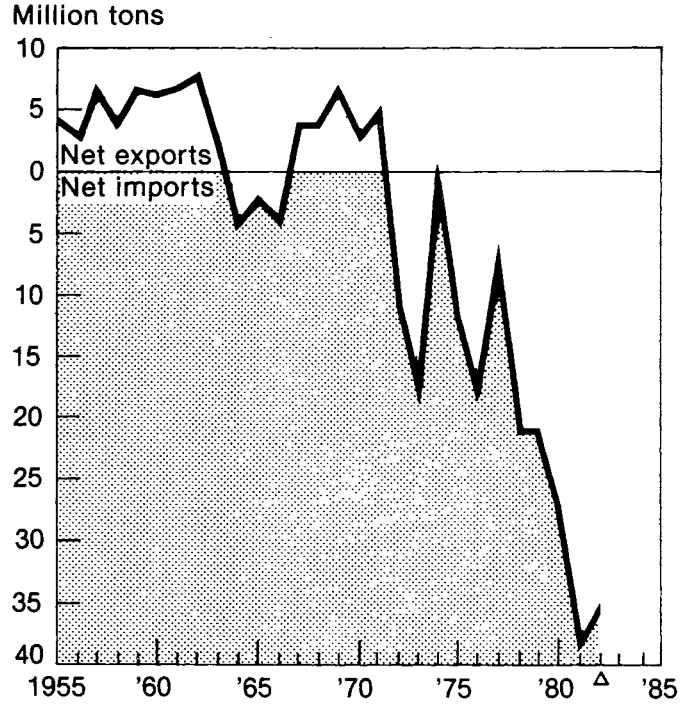
Cotton production in 1983 is planned at 9.2 million tons, down 100,000 from the 1982 goal. With more favorable weather during fall, this goal can be met and exceeded by several thousand tons. A key factor will be the availability of irrigation water. Insufficient snowfall in the Pamir and Tyan-Shan Mountains, the streams of which are major feeders of Uzbekistan's irrigation system, could cause some problems for the 1983 crop. Soviet countermeasures include plans to concrete 2,000 kilometers of irrigation canals, to build 134 additional pumping stations and 30 small reservoirs, and to drill 320 artesian wells. In previous years, when comparable conditions have occurred in Uzbekistan, similar measures have been undertaken and have proved to be successful in offsetting major reductions in yields.

Fertilizer production is planned to reach 28.2 million tons (nutrient-weight basis) in 1983, up about 6 percent from 1982. In the first 2 months of 1983, output totaled 4.9 million tons, up 14 percent from a year earlier. If this rate of growth is sustained, the 1983 goal can be met.

Trade and Investment

Grain imports for the next 3 years could average about 30 million tons per year, based on production trends, large animal herds, and meat output well below Soviet plans. Because the highly variable Soviet grain production is the principle factor influencing grain imports, imports may vary up to 50 percent in any particular year. Economic and political considerations will likely determine the U.S. market share.

USSR Net Grain Trade



ΔEstimates.

With some improvement expected in meat production, Soviet imports of meat and meat products in 1983 will probably fall below 1982's near record. On the other hand, butter imports are expected to rise from 1982's reduced level.

Because of the poor quality of the 1982 cotton crop, Soviet demand for and imports of high-quality cotton lint are expected to rise sharply in 1983. Conversely, Soviet cotton shipments, their major agricultural export, are expected to decline. Through April, confirmed Soviet purchases included: 267,000 bales from the United States, 45,000 from Australia, 20,000 from Nicaragua, and 15,000 from India. Trade sources are forecasting USSR imports as high as 1 million bales. Quality problems are affecting export trade; the Soviets suspended cotton exports to Japan for the remainder of the crop year.

The Soviets are expected to remain large importers of sugar because of shortfalls in the 1982 sugar beet crop and a likelihood that the 1983 outturn will not attain the levels of the late 1970's.

Soviet oilseed imports are projected to remain heavy, as the Soviets accelerate their program of supplementing domestic feed supplies with protein meal. Soybean meal imports are projected to reach at least 2.6 million tons in 1983. Soybean purchases, while slightly off from 1982, should reach 1.5 million tons. Most Soviet oilseed and oilseed meal needs are expected to be met by Argentina, Brazil, the European Community, and the United States. Long-term contracts with Argentina and Brazil will provide the Soviets at least 1 million tons of soybeans annually through the mid-1980's. Since the Soviet fats and oils industry will be unable to meet domestic needs, the USSR is expected to again import more than a half million tons of vegetable oil this year.

Soviet investment, based on Eleventh 5-Year Plan documents, does not seem sufficient in comparison with the ambitious goals of the Food Program. These investment figures were developed before the scope of the 1981 and 1982 shortfalls in agriculture were known. While a modest increase in 1983 investment in agriculture-related industries is in progress, previous crop failures (such as the one in 1972) led to wide-ranging plan revisions in order to bolster agricultural investment. But so far, no major changes in investment (or output) targets have been announced.

Efforts to improve efficiency should make the USSR an attractive market for agricultural technology. The Soviets have shown keen interest in such U.S. technology as genetic engineering and remote sensing. Soviet efforts to obtain refrigeration equipment, food handling and packaging equipment, agricultural machinery, pesticides and herbicides, techniques and components for the manufacture of agricultural machinery and chemicals, and breeding stock would all be consistent with Soviet policy through the 1980's. (Angel O. Byrne)

Table 1.—Area, yield, and production of grain, USSR, 5-year averages and 1976-82 annual

Year	Wheat			Rye	Barley	Oats	Corn	Other[1]	Total grain
	Winter	Spring	Total						
				1,000 hectares					
Area:									
1966-70 average	18,280	48,894	67,174	11,505	20,331	8,680	3,517	10,876	122,083
1971-75 average	18,443	43,025	61,469	8,500	28,370	11,310	3,596	10,743	123,988
1976	17,248	42,219	59,467	9,035	34,261	11,269	3,303	10,425	127,760
1977	20,712	41,318	62,030	6,697	34,514	13,026	3,362	10,715	130,344
1978	23,122	39,776	62,898	7,719	32,690	12,097	2,535	10,526	128,465
1979	18,718	38,964	57,682	6,476	37,005	12,239	2,667	10,282	126,351
1980	22,553	38,922	61,475	8,645	31,583	11,770	2,977	10,158	126,608
Average	20,470	40,240	60,710	7,714	34,011	12,080	2,969	10,421	127,906
1981	20,305	38,927	59,232	7,551	31,781	12,470	3,545	10,980	125,559
1982	20,438	36,840	57,278	9,829	29,706	11,489	4,161	10,549	123,012
				Metric tons per hectare					
Yield:									
1966-70 average	1.96	1.11	1.34	1.12	1.50	1.38	2.72	1.18	1.37
1971-75 average	2.26	1.10	1.45	1.36	1.53	1.31	2.82	1.19	1.47
1976	2.59	1.24	1.63	1.55	2.03	1.61	3.06	1.45	1.75
1977	2.51	.97	1.49	1.27	1.53	1.41	3.25	1.21	1.50
1978	2.98	1.31	1.92	1.76	1.90	1.54	3.50	1.26	1.85
1979	2.05	1.33	1.56	1.26	1.30	1.24	3.13	.91	1.42
1980	2.21	1.24	1.60	1.18	1.38	1.32	3.17	1.21	1.49
Average	2.47	1.22	1.64	1.40	1.63	1.42	3.22	1.21	1.60
1981[2]	1.97	1.03	1.35	1.26	1.18	1.20	2.26	.91	1.27
1982[2]	2.30	1.06	1.50	1.42	1.38	1.35	3.24	.95	1.46
				1,000 metric tons					
Production:									
1966-70 average	35,888	54,304	90,192	12,834	30,454	11,938	9,558	12,785	167,562
1971-75 average	41,590	47,345	88,935	11,493	43,289	14,812	10,215	12,810	181,554
1976	44,594	52,288	96,882	13,991	69,539	18,113	10,138	15,092	223,755
1977	51,971	40,190	92,161	8,480	52,687	18,407	10,979	13,013	195,727
1978	68,829	52,107	120,936	13,612	62,118	18,578	8,898	13,248	237,390
1979	38,417	51,790	90,207	8,113	47,954	15,162	8,373	9,367	179,176
1980	49,816	48,366	98,182	10,205	43,450	15,544	9,454	12,250	189,090
Average	50,725	48,942	99,674	10,880	55,149	17,160	9,568	12,594	205,028
1981[2]	40,000	40,000	80,000	9,500	37,500	15,000	8,000	10,000	160,000
1982[2]	47,000	39,000	86,000	14,000	41,000	15,500	13,500	10,000	180,000

NA = Not available [1]Includes millet, buckwheat, rice, pulses, and miscellaneous grains. [2]Estimate.

Table 2.—Total supply and estimated utilization of grain, USSR, 1976/77-1982/83[1]

Year beginning July 1	Production[2]	Trade			Availability	Utilization						
		Imports	Exports	Net[3]		Seed	Industrial	Food	Dockage-waste	Feed	Total	Stock change[3, 4]
					Million metric tons							
Total grains and pulses												
1976/77	223.8	11.0	3.3	+7.7	232	29	4	45	31	112	221	+11
1977/78	195.7	18.9	2.3	+16.6	212	28	4	45	29	122	228	−16
1978/79	237.4	15.6	2.8	+12.8	250	28	4	46	28	125	231	+19
1979/80	179.2	31.0	0.8	+30.2	209	28	4	46	22	123	223	−14
1980/81[5]	189.1	34.8	0.5	+34.3	223	27	4	47	28	122	228	−5
1981/82[6]	160.0	46.0	0.5	+45.5	206	27	4	47	16	112	206	0
1982/83[7]	180.0	34.0	0.5	+33.5	214	27	4	47	18	118	214	0
Wheat												
1976/77	96.9	4.6	1.0	+3.6	100	15	1	35	14	28	93	+7
1977/78	92.2	6.6	1.0	+5.6	98	15	1	35	14	44	109	−11
1978/79	120.8	5.1	1.5	+3.6	124	14	1	35	14	43	107	+17
1979/80	90.2	12.0	0.5	+11.5	102	15	1	35	11	53	115	−13
1980/81[5]	98.1	16.0	0.5	+15.5	114	15	1	36	15	50	117	−3
1981/82[6]	80.0	19.5	0.5	+19.0	99	15	1	36	8	39	99	0
1982/83[7]	86.0	21.0	0.5	+20.5	106	15	1	36	9	46	106	−1
Coarse grains[8]												
1976/77	115.0	5.7	2.0	+3.7	119	12	3	7	16	78	116	+3
1977/78	92.6	11.7	1.0	+10.7	103	11	3	7	14	74	109	−6
1978/79	105.0	10.0	1.0	+9.0	114	12	3	7	13	79	114	0
1979/80	81.0	18.4	0	+18.4	99	12	3	7	10	68	100	−1
1980/81[5]	81.0	18.0	0	+18.0	99	11	3	7	12	68	101	−2
1981/82[6]	72.0	25.5	0	+25.5	98	11	3	7	7	70	98	0
1982/83[7]	86.0	12.0	0	+12.0	98	11	3	7	9	68	98	0

[1]Rounded to the nearest million tons, except for production and trade data. Thus, totals may not add due to rounding. [2]Calendar year basis. [3]Minus indicates net exports or drawdown of stocks. [4]Difference between availability and estimated total utilization. [5]Preliminary. [6]USDA end-of-season forecast. [7]Projected. [8]Includes rye, barley, oats, corn, and millet.

Table 3.—January 1 livestock numbers and animal units in terms of cows, USSR, 1971-83

Year	Cattle		Hogs	Sheep	Goats	Horses	Poultry	Total animal units[2]
	Total	Cows[1]						
				Million head				
1971	99.2	39.8	67.5	138.0	5.4	7.4	652.7	130.5
1972	102.4	40.0	71.4	139.9	5.4	7.3	686.5	134.4
1973	104.0	40.6	66.6	139.1	5.6	7.1	700.0	134.1
1974	106.3	41.4	70.0	142.6	5.9	6.8	747.7	138.0
1975	109.1	41.9	72.3	145.3	5.9	6.8	792.4	141.6
1976	111.0	41.9	57.9	141.4	5.7	6.4	734.4	136.5
1977	110.3	42.0	63.1	139.8	5.5	6.0	796.0	138.4
1978	112.7	42.6	70.5	141.0	5.6	5.8	882.3	143.9
1979	114.1	43.0	73.5	142.6	5.5	5.7	946.9	147.0
1980	115.1	43.3	73.9	143.6	5.8	5.6	980.9	148.7
1981	115.1	43.4	73.4	141.6	5.9	5.6	1,029.3	149.4
1982	115.9	43.7	73.3	142.4	6.1	5.6	1,067.5	[3]150.8
1983	[4]117.1	43.7	76.5	[3]142.2	[3]6.1	[3]5.6	[3]1,200	[3]153.1

NA = Not available.

[1]Revised series beginning 1966; excludes cows placed on feed for slaughter. [2]In terms of cows. Conversion ratios as follows: Cattle (other than cows) .6; hogs .3; total sheep and goats .1; horses 1.0; and poultry .02. [3]Estimate. [4]Preliminary.

Table 4.—USSR livestock and poultry numbers on State and collective farms by first of month, for selected years

Year and category	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
						Million head						
Cattle												
1975	80.9	81.0	82.2	83.9	86.0	87.0	86.5	86.6	85.8	84.6	83.9	83.4
1980	89.0	88.9	89.6	91.6	93.4	94.0	93.5	93.1	92.2	90.8	90.0	89.6
1981	NA	89.4	90.0	92.2	94.1	94.8	94.3	93.8	92.7	91.1	90.3	90.1
1982	NA	90.1	90.6	92.6	94.5	95.4	94.9	94.6	93.6	91.9	91.0	90.5
1983	NA	90.6	91.6									
Cows												
1975	26.9	26.8	26.8	27.0	27.2	27.4	27.5	27.5	27.4	27.3	27.3	27.3
1980	29.8	29.5	29.5	29.6	29.7	29.8	29.9	29.9	29.8	29.7	29.6	29.6
1981	NA	29.6	29.6	29.7	29.8	29.9	30.0	29.9	29.8	29.8	29.7	29.7
1982	NA	29.7	29.7	29.8	29.9	30.0	30.1	30.0	30.0	29.9	29.7	29.7
1983	NA	29.7	29.6									
Hogs												
1975	53.6	53.5	53.2	52.3	53.6	55.2	55.6	56.8	54.3	49.6	46.4	43.9
1980	55.2	54.9	54.3	54.4	55.0	55.6	56.0	58.0	58.2	58.2	57.7	56.6
1981	NA	55.4	55.2	55.2	55.6	56.3	56.9	58.3	58.6	58.6	58.4	56.2
1982	NA	54.8	54.6	54.1	55.0	55.8	56.6	58.2	59.1	59.1	58.6	57.4
1983	NA	56.6	56.8									
Poultry												
1975	401.8	404.9	444.3	498.8	547.4	577.2	573.3	547.3	483.5	418.8	376.2	361.8
1980	592.0	586.0	606.0	642.8	688.0	708.9	704.0	707.6	697.8	675.0	655.5	634.8
1981	NA	624.1	651.3	689.7	730.6	741.8	735.7	733.7	720.9	691.3	674.2	659.2
1982	NA	651.0	669.8	706.9	746.8	757.7	751.1	756.0	747.0	726.0	713.0	695.0
1983	NA	687.0	704.0									
Sheep and goats												
1975	116.8	119.6	125.3	136.1	149.6	151.7	146.8	142.2	135.4	127.4	120.7	116.5
1976	115.4	117.7	122.5	131.9	143.1	144.4	141.6	136.8	131.0	122.7	117.8	115.2
1980	117.4	119.8	126.5	137.8	148.4	148.8	143.9	140.2	133.8	125.3	119.5	116.7
1981	NA	117.7	124.4	135.9	148.2	148.5	143.9	140.0	133.6	124.9	119.6	116.6
1982	NA	117.8	124.0	135.1	146.5	146.4	141.5	137.6	131.1	122.6	118.0	115.4
1983	NA	117.3	123.0									

NA = Not available.

Table 5.—Production of principal livestock products, USSR, 5-year averages and 1976-82 annual

Year	Meat						Milk	Wool[2]	Eggs
	Total	Beef and veal	Pork[1]	Mutton, lamb, and goat	Poultry	Other			
				1,000 metric tons					*Millions*
1966-70 average	11,583	5,187	4,327	992	853	224	80,553	398	35,840
1971-75 average	14,004	5,985	5,394	972	1,335	318	87,446	442	51,427
1976	13,583	6,615	4,343	885	1,411	329	89,675	436	56,187
1977	14,722	6,888	4,950	894	1,691	299	94,929	459	61,194
1978	15,501	7,086	5,302	921	1,902	290	94,677	467	64,517
1979	15,341	6,903	5,268	863	2,034	273	93,341	472	65,585
1980	15,073	6,645	5,183	894	2,139	259	90,899	461	67,828
Average	14,844	6,833	5,860	881	1,828	292	92,650	459	63,062
1981	15,239	6,600	5,204	900	2,248	261	88,874	[4]474	70,855
1982[3]	15,240	6,600	5,100	800	2,500	200	90,100	[4]470	72,100

[1]Including fat. [2]Greasy basis. [3]Preliminary. [4]Estimate.

Table 6.—Trade in meat and meat products, USSR, 5-year averages and 1976-82 annual

Commodity	1966-70 Average	1971-75 Average	1976	1977	1978	1979	1980	1981	1982
					1,000 metric tons				
Imports									
Total meat & meat products	98	303	362	617	184	611	821	980	940
Fresh, frozen meat	74	261	284	559	136	527	736	904	NA
Red meat	43	201	226	438	84	386	577	651	NA
Poultry meat	31	60	58	121	52	141	159	253	NA
Canned meat[1]	23	64	61	75	62	150	129	104	NA
Canned meat with vegetables[1]	31	35	117	71	47	49	67	56	NA
Other	0	9	13	7	10	17	19	22	NA
Exports									
Total meat & meat products	115	54.0	40.9	32.8	38.6	33.5	35.1	81.4	NA
Fresh, frozen meat	97	28.0	7.9	7.7	9.5	5.9	8.1	52.5	NA
Red meat	NA	NA	NA	NA	NA	NA	NA	NA	NA
Poultry meat	NA	NA	NA	NA	NA	NA	NA	NA	NA
Canned meat[1]	15	61.1	74.7	62.8	70.3	68.0	69.9	82.1	NA
Canned meat with vegetables[1]	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other	0	7	10	5	7	7	5	5	NA

NA = Not available. [1]Millions of cans.

Table 7.—Area, yield, and production of selected nongrain crops, USSR, 5-year averages and 1976-82 annual

Year	Seed-cotton	Sugar beets	Sun-flowers	Fiber flax	Potatoes	Vege-tables	Fruit berries, grapes[1]	Tobacco[2]
				1,000 hectares				
Area:								
1966-70 average	2,527	3,582	4,837	1,341	8,238	1,440	2,625	144
1971-75 average	2,810	3,527	4,474	1,234	7,953	1,601	3,304	168
1976	2,949	3,754	4,534	1,214	7,087	1,562	3,356	183
1977	2,992	3,761	4,574	1,209	7,067	1,567	3,370	182
1978	3,038	3,763	4,558	1,197	7,042	1,646	3,345	165
1979	3,090	3,739	4,334	1,046	6,966	1,654	3,326	170
1980	3,147	3,710	4,353	1,116	6,936	1,715	3,297	169
Average	3,043	3,745	4,471	1,156	7,020	1,629	3,339	174
1981	3,168	3,633	4,235	946	6,854	1,703	3,442	167
1982[1]	3,188	3,526	4,250	1,014	6,856	1,715	NA	180
				Metric tons per hectare				
Yield:								
1966-70 average	2.41	22.8	1.32	.34	11.5	13.2	3.7	1.44
1971-75 average	2.73	21.7	1.32	.37	11.3	13.7	3.8	1.62
1976	2.81	26.6	1.16	.42	12.0	15.2	4.5	1.66
1977	2.93	24.8	1.28	.40	11.8	14.6	4.5	1.66
1978	2.80	24.8	1.17	.31	12.2	16.1	4.3	1.66
1979	2.96	20.4	1.24	.30	13.0	15.6	4.9	1.74
1980	3.17	21.8	1.06	.26	9.6	15.0	4.4	1.70
Average	2.93	23.6	1.19	.34	11.8	15.2	4.5	1.67
1981	3.04	16.8	1.10	.28	10.5	15.0	5.0	1.60
1982[3]	2.92	20.1	1.25	NA	11.4	16.9	NA	1.58
				1,000 metric tons				
Production:								
1966-70 average	6,099	81,118	6,389	458	94,813	19,472	9,710	207
1971-75 average	7,667	75,984	5,974	456	89,782	22,974	12,393	273
1976	8,278	99,872	5,277	509	85,102	24,991	15,260	303
1977	8,758	93,099	5,904	480	83,652	24,149	15,275	302
1978	8,500	93,488	5,333	376	86,124	27,902	14,374	274
1979	9,161	76,214	5,414	314	90,956	27,215	16,303	296
1980	9,962	80,987	4,618	296	67,023	27,291	14,673	287
Average	8,932	88,732	5,309	395	82,571	26,326	15,717	292
1981	9,636	60,843	4,678	268	72,139	27,138	17,256	268
1982[3]	9,300	71,000	5,300	NA	78,000	29,000	18,000	285

NA = Not available. [1]Bearing area. [2]Excluding makhorka. [3]Preliminary.

Table 8.—Government procurements of nongrain crops, USSR, 5-year averages and 1976-82 annual

Year	Seed cotton	Sugar beets	Sunflower-seeds	Fiber flax	Potatoes	Vegetables	Fruit, berries, grapes	Tobacco[1]
				1,000 metric tons				
1966-70 average	6,099	74,426	4,672	421	10,921	9,416	5,431	206
1971-75 average	7,667	67,907	4,547	433	12,732	13,073	7,189	271
1976	8,278	85,142	3,770	483	13,435	16,022	9,684	299
1977	8,762	84,869	4,447	440	17,122	16,171	9,439	300
1978	8,500	80,161	4,028	332	14,951	18,374	9,268	273
1979	9,161	69,300	4,225	296	16,400	18,010	10,882	294
1980	9,961	64,407	3,357	247	11,099	17,658	10,046	284
Average	8,932	76,775	3,965	360	14,601	17,247	9,863	292
1981	9,600	53,497	3,645	252	13,518	17,064	11,695	267
1982[2]	9,300	64,000	3,975	NA	NA	NA	NA	NA

NA = Not available.

[1]Excluding makhorka. [1]Estimate.

Table 9.—USSR sugar production and trade, 5-year averages and 1976-82 annual

Year	Industrial production		Imports			Exports refined
	Total	Of which from beets	Raw		Refined	
			Total	From Cuba		
			1,000 metric tons			
1966-70 Average	10,203	8,638	2,082	2,081	2	1,097
1971-75 Average	9,694	7,771	2,154	1,812	82	249
1976	9,249	6,162	3,343	3,068	383	73
1977	12,036	8,173	4,287	3,652	458	81
1978	12,209	8,605	3,990	3,797	3	162
1979	10,647	7,293	3,766	3,707	294	226
1980	10,127	6,617	3,839	2,647	1,056	152
Average	10,854	7,370	3,847	3,374	439	139
1981	9,491	5,900	4,190	3,090	936	169
1982[1]	12,100	6,800	6,200	4,200	[2]1,380	161

NA = Not available.

[1]Preliminary. [2]Estimate.

Source: *Narodnoe khozyaystvo v SSSR*, and *Vneshnyaya torgovlya v SSSR*, various issues.

Table 10.—Production, trade, and available supplies of cotton lint, USSR, crop years 1975/76-1982/83

Year beginning August 1	Procurements of seed cotton	Lint cotton production	Imports[1]	Exports[1]	Net exports	Supplies available for domestic utilization
			1,000 metric tons			
1975/76	7,864	2,528	125	846	721	1,807
1976/77	8,278	2,615	104	936	832	1,783
1977/78	8,758	[2]2,768	77	906	829	[2]1,939
1978/79	8,500	[2]2,669	77	818	741	[2]1,928
1979/80	9,161	[2]2,858	64	821	757	[2]2,101
1980/81	9,962	[2]3,038	33	[2]886	[2]853	[2]2,185
1981/82	9,636	[2]2,891	[2]50	[2]850	[2]800	[2]2,091
1982/83	9,300	[3]2,744	[3]130	[3]805	[3]675	[3]2,069

[1]Calendar year data converted to crop year basis. [2]Estimate. [3]Forecast.

Table 11.—USSR agricultural imports, 1975-81, by value

Commodity	1975	1976	1977	1978	1979	1980	1981
				Million dollars[1]			
Animals for slaughter	190.0	101.1	115.8	76.5	134.7	152.6	176.3
Breeding animals	7.9	5.9	6.3	7.0	15.9	5.8	5.2
Meat and meat products	495.0	379.7	691.7	257.7	844.3	1,359.3	1,647.1
Milk and milk products	31.6	33.8	42.2	35.0	50.2	100.0	143.3
Egg and egg products	34.8	29.5	87.6	32.3	42.8	40.6	28.8
Grains	2,673.2	2,968.3	1,371.0	2,416.9	3,425.7	4,890.9	6,692.9
Sorghum	—	—	—	—	—	223.3	562.8
Wheat flour	92.6	88.0	102.6	66.0	172.5	296.9	559.9
Rice	101.0	102.3	129.6	153.3	216.7	263.8	550.5
Vegetables and potatoes	250.8	274.4	362.7	391.4	446.5	456.7	473.0
Fruit and berries, fresh	245.6	264.0	262.0	300.6	370.1	433.6	422.8
Dried fruit	67.7	48.4	87.6	83.4	131.6	169.6	159.5
Processed fruit and berries	104.9	99.8	112.2	125.3	136.1	185.8	185.2
Nuts	114.7	78.5	146.3	118.1	114.9	195.7	227.0
Sugar, raw	2,184.2	1,936.9	2,352.8	3,129.1	3,116.5	3,334.8	3,223.2
Sugar, refined	.8	134.7	111.8	1.5	60.6	528.9	699.9
Coffee, cocoa, tea	505.7	455.6	615.2	615.0	739.2	745.8	575.7
Spices	22.4	27.5	31.2	35.9	38.0	33.8	38.6
Alcoholic and nonalcoholic drinks	530.1	505.8	532.5	621.2	717.4	808.3	561.4
Tobacco, raw	226.2	212.0	233.8	224.1	246.5	293.4	324.2
Tobacco products	297.9	314.4	328.7	365.4	403.1	466.0	541.2
Furs	2.0	2.1	2.9	2.8	3.2	4.8	3.5
Raw hides	64.9	55.3	6.6	52.4	39.2	44.1	16.0
Oilseeds	129.3	454.3	390.3	270.8	542.2	368.6	587.8
Natural fibers	289.4	247.5	234.9	112.0	177.8	139.1	85.3
Wool	266.6	304.2	368.1	417.6	484.1	501.9	534.1
Animal fats including butter	12.1	10.5	67.9	47.0	216.5	412.8	514.2
Vegetable oils	54.8	58.3	83.1	83.5	146.4	259.7	413.4
Technical fats and oils	53.8	32.6	47.0	68.6	160.4	191.8	227.6
Seed and planting materials	86.3	105.1	193.1	128.6	120.8	180.3	194.7
Total agricultural imports	9,136.3	9,330.5	9,117.5	10,239.0	13,313.9	17,088.7	20,375.1

[1]USSR official data converted at $1.34 in 1975; $1.33 in 1976; $1.34 in 1977; $1.46 in 1978; $1.52 in 1979; $1.54 in 1980; $1.39 in 1981.

— = Negligible or none.

Source: *Vneshnyaya torgovlya v SSSR*, 1975-81.

Table 12.—Principal agricultural imports, USSR, 1975-82, by quantity

Commodity	1975	1976	1977	1978	1979	1980	1981	1982
				1,000 metric tons				
Total Grain:	15,909	20,638	[1]10,470	[1]22,674	[1]26,713	[1]27,913	[1]38,225	NA
Wheat	9,146	6,686	[1]6,348	[1]8,951	[1]9,532	[1]14,926	[1]17,823	NA
Corn	5,548	11,376	[1]4,013	[1]13,221	[1]14,474	[1]10,049	[1]16,307	NA
Rice, milled	279	324	460	414	631	694	1,285	NA
Wheat flour	339	380	462	391	792	959	1,568	NA
Sorghum	0	0	0	0	0	1,493	3,967	NA
Animals for slaughter:								
Cattle	208	70	(2)	(2)	(2)	(2)	(2)	NA
Sheep	37	32	(2)	(2)	(2)	(2)	(2)	NA
Horses	15	16	(2)	(2)	(2)	(2)	(2)	NA
Meat and meat products	515	362	617	184	611	821	980	940
Shell eggs[3]	767	654	691	680	767	737	556	526
Fruit:								
Fresh	860	871	841	847	907	995	1,021	1,158
Dried	118	101	113	114	109	130	124	NA
Vegetables:								
Fresh	144	186	191	182	147	133	213	174
Canned	347	324	370	381	422	420	388	NA
Raw sugar	3,236	3,343	4,287	3,990	3,766	3,839	4,190	6,200
Coffee	60	44	45	26	40	48	41	NA
Cocoa beans	156	134	73	103	126	127	121	NA
Tea	67	60	60	46	49	71	84	NA
Tobacco	88	74	78	65	66	83	105	124
Hides and skins[3]	22	14	1	3	1	2	1	NA
Oilseeds	424	1,827	1,455	966	1,814	1,155	1,459	NA
Crude rubber	235	NA	NA	NA	219	215	218	NA
Wool, scoured	110	110	112	127	134	124	126	NA
Cotton lint	137	116	94	65	86	49	22	NA
Vegetable oil, edible	61	129	126	167	199	357	604	866

NA = Not available.

[1]ERS estimates, official USSR sources report only value. [2]Official USSR sources report only value. [3]Million pieces.

Source: *Vneshnyaya torgovlya v SSSR*, various issues; *Ekonomicheskaya gazeta*, March 1981, No. 3.

Table 13.—USSR agricultural exports, 1975-81, by value

Commodity	1975	1976	1977	1978	1979	1980	1981
				Million dollars[1]			
Meat and meat products	50.9	49.5	38.5	51.4	43.8	49.5	98.4
Milk and milk products	34.6	36.0	36.4	40.2	47.5	48.1	52.6
Grains	508.0	212.9	508.0	205.1	555.5	310.0	403.7
Flour and pulse products	173.9	186.1	172.3	185.7	233.0	227.8	291.3
Vegetables, fruit and nuts	31.6	24.9	29.5	28.5	31.7	47.2	46.2
Sugar and confectionary	36.8	35.5	33.0	58.8	72.2	76.3	[2]95.3
Alcoholic and non-alcoholic drinks	51.2	54.0	57.5	72.4	84.6	93.4	85.9
Tobacco products	6.3	4.9	6.2	7.3	5.0	5.8	21.1
Furs	72.8	108.7	115.4	134.9	162.5	159.9	131.7
Raw hides	13.1	12.6	7.1	7.2	12.5	16.3	6.2
Oilseed, tobacco and other raw materials	78.1	54.5	67.3	62.3	65.3	71.5	62.3
Natural fibers	936.3	1,033.2	1,375.9	1,247.8	1,239.4	1,383.7	1,484.1
Wool	16.3	8.2	12.5	11.8	8.8	10.4	12.1
Animal fats including butter	73.1	57.5	74.8	83.5	84.4	80.9	58.5
Vegetable oils	310.7	172.0	141.0	98.8	90.6	87.0	74.0
Technical fats and oils	7.2	5.3	2.7	3.6	4.4	4.7	4.4
Seeds and planting materials	25.6	22.3	40.5	34.9	45.4	39.4	39.2
Total agricultural exports	2,426.5	2,078.1	2,718.6	2,334.2	2,786.6	2,711.9	2,967.0

[1]USSR official data converted at $1.34 in 1975; $1.33 in 1976; $1.34 in 1977; $1.46 in 1978; $1.52 in 1979; $1.54 in 1980; $1.39 in 1981. [2]Refined sugar only.

Source: *Veshnyaya torgovlya v SSSR*, various issues.

Table 14.—Principal agricultural exports, USSR, 1975-81, by quantity

Commodity	1975	1976	1977	1978	1979	1980	1981
				1,000 metric tons			
Total grain	3,578	1,468	[1]3,763	[1]1,374	[1]3,275	[1]1,426	[1]2,691
Wheat	2,665	808	[1]2,062	[1]1,150	[1]3,071	[1]1,270	[1]2,500
Barley	818	503	[1]1,506	[1]50	[1]26	[1]46	[1]18
Corn	86	149	[1]177	[1]158	[1]163	[1]102	[1]163
Rye	—	—	—	—	—	—	—
Oats	9	9	[1]18	[1]16	[1]16	[1]8	[1]10
Flour	569	632	651	769	762	601	573
Groats	124	157	109	123	222	118	175
Pulses	50	37	43	52	54	32	44
Sugar, refined	53	73	81	162	226	152	169
Meat and meat products	44	41	33	39	34	35	81
Butter	20	16	18	18	18	18	13
Hides and skins[2]	350	346	319	326	574	2,190	292
Oilseed cake and meal	NA	NA	NA	NA	NA	NA	NA
Sunflowerseed	61	—	—	—	—	—	—
Vegetable oil							
Total edible	416	295	231	149	113	124	116
Sunflower	388	293	231	148	113	123	112
Tea	17	14	21	17	17	19	17
Cotton, lint	800	878	972	858	789	843	916
Flax tow	20	15	17	16	15	14	4
Starch	10	17	17	16	17	17	12

NA = Not available.

— = Negligible or none.

[1]ERS estimates, official USSR sources report only value. [2]Thousands.

Source: *Vneshnyaya torgovlya v SSSR*, various issues.

Table 15.—U.S. agricultural trade with the USSR, 1972-82

Commodity	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982[1]
						Million dollars					
Exports[2]											
Wheat	160.0	556.6	124.1	672.7	264.2	426.8	355.8	813.2	336.1	772.6	802.2
Coarse grains[3]	232.7	359.9	176.1	457.8	1,180.2	412.4	1,109.4	1,572.0	692.9	801.4	818.8
Corn	186.5	294.5	159.5	452.6	1,170.1	412.4	1,109.4	1,540.9	692.9	801.4	818.8
Rice	—	—	—	9.2	15.3	25.2	6.0	9.1	—	—	—
Soybeans	53.6	87.2	—	2.9	126.4	154.4	222.1	494.1	45.3	8.4	171.2
Oilcake & meal	—	—	.5	—	—	1.5	.2	6.7	—	—	—
Soybean oil	—	—	—	—	—		—	—	15.8	—	—
Cattle hides	9.6	1.1	7.9	5.2	2.5	.8	8.1	3.2	.1	.1	—
Fruit, nuts and berries	1.1	2.8	5.3	6.1	8.4	20.4	16.8	15.6	18.5	16.1	13.1
Tallow (inedible)	—	—	—	14.0	—	—	18.7	57.6	28.2	48.5	17.9
All other	2.4	9.5	9.8	2.4	7.8	[4]11.3	[5]28.0	12.8	16.8	[6]37.4	27.2
Total	459.4	1,017.1	323.7	1,170.3	1,604.8	1,052.8	1,765.1	3,000.1	1,137.8	1,684.7	1,850.4
Imports											
Animal and animal products	3.4	4.0	7.1	5.4	7.2	10.2	11.6	12.9	7.5	9.0	9.7
Casein & mixture	—	.2	2.0	1.7	.7	1.7	2.4	3.0	1.0	.3	.8
Furskins	3.0	3.1	4.5	3.5	6.1	8.0	8.9	9.6	6.5	8.6	7.6
Bristles	.2	.5	.4	(7)	—	—	—	—	—	—	—
Gelatin	(7)	.3	.3	(7)	.1	(7)	—	—	—	—	—
Licorice root	.2	.2	.2	1.1	.6	—	—	—	—	—	—
Tobacco fillers	—	—	—	—	—	—	.6	1.2	1.5	.9	.4
All other	.2	.2	.9	.7	.5	.7	.2	.6	.8	2.0	.8
Total	3.8	4.7	8.5	7.2	8.4	10.9	12.4	14.7	9.8	11.9	10.9

— = Negligible or none.

[1]Preliminary. [2]Including transshipments through Canada, Belgium, the Netherlands, and West Germany. [3]Includes corn, rye, barley, oats, and sorghum. [4]Includes $4.5 million of peanuts. [5]Includes $16.6 million of peanuts. [6]Includes $15.6 million of sugar. [7]Less than $50,000.

Table 16.—Inventories, deliveries, and scrapping rates of tractors, grain combines, and trucks, USSR, 5-year averages and 1976-82 annual[1]

Year	Tractors			Grain combines			Trucks		
	Inventories	Deliveries	Scrapping rate[2]	Inventories	Deliveries	Scrapping rate[2]	Inventories	Deliveries	Scrapping rate[2]
	Thousands		*Percent*	*Thousands*		*Percent*	*Thousands*		*Percent*
1966-70 Average	1,748	293	12.6	558	94	13.8	[3]1,061	144	—
1971-75 Average	2,210	333	12.3	649	90	12.1	1,230	220	13.6
1976	2,334	369	13.0	680	98	13.7	1,396	269	16.0
1977	2,400	365	12.8	685	101	13.6	1,442	268	14.5
1978	2,458	371	12.8	693	111	15.0	1,501	270	16.2
1979	2,515	355	13.1	700	112	15.1	1,528	267	14.9
1980	2,540	348	12.8	706	117	14.4	1,568	268	15.3
1976-80 Average									
1981	2,562	352	12.4	722	105	11.9	1,596	268	13.2
1982	2,598	349	[4]13.1	741	111	[4]13.1	1,653	268	[4]13.7

NA = Not available.

[1]Inventories are for the beginning of the year. [2]Equal to deliveries minus change in inventories divided by inventories at the beginning of the year. [3]Including tank trucks. [4]Estimated.

Table 17.—Production of mineral fertilizers by type, USSR, 5-year averages and 1976-82 annual

Year	Total	Nitrogen	Phosphate	Ground phosphate rock	Potash	Trace elements
			1,000 metric tons			
Standard gross weight:						
1966-70 average	44,127	20,527	10,855	5,029	7,638	78
1971-75 average	74,071	35,344	18,459	5,430	14,754	84
1976	92,244	41,970	25,844	4,372	19,977	81
1977	96,752	44,450	27,822	4,320	20,063	97
1978	97,976	45,356	28,596	4,240	19,694	90
1979	94,523	44,634	29,399	4,460	15,949	81
1980	103,858	49,944	30,066	4,384	19,385	79
Average	97,071	45,271	28,345	4,355	19,014	86
1981	109,106	52,213	32,400	4,091	20,308	94
1982	NA	NA	NA	NA	NA	NA
Nutrient weight:[1]						
1966-70 average	10,379	4,210	2,030	955	3,177	7
1971-75 average	17,876	7,248	3,451	1,032	6,138	8
1976	22,590	8,609	4,833	831	8,310	7
1977	23,493	9,114	5,203	821	8,347	8
1978	23,653	9,299	5,347	806	8,193	8
1979	22,137	9,151	5,497	847	6,635	7
1980	24,767	10,241	5,622	833	8,064	7
Average	23,328	9,283	5,300	828	7,910	7
1981	25,998	10,705	6,059	777	8,449	8
1982	[2]26,700	11,000	6,210	800	8,680	10

NA = Not available.

[1]Nitrogen—20.5 percent N, phosphates—18.7 percent P2/O5, ground rock phosphates—19 percent P2/O5, potash—41.6 percent K2O. [2]Preliminary.

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Table 18.—Deliveries of mineral fertilizers to agriculture by type, USSR, 5-year averages and 1976-82 annual

Year	Nitrogen	Phosphate	Ground Phosphate rock	Potash	Trace elements	Total excluding feed additives	Feed additives		Total including feed additives
							Urea	Feed phosphates	
				1,000 metric tons					
Standard gross weight:									
1966-70 average	17,171	[1]9,878	4,508	5,340	79	NA	—	NA	36,977
1971-75 average	30,290	15,926	4,759	8,902	84	59,960	165	1,261	61,386
1976	35,376	21,751	4,395	13,407	81	75,010	382	2,340	77,732
1977	36,694	22,918	4,307	12,981	84	76,984	435	2,341	79,760
1978	37,358	24,334	4,258	12,967	85	79,002	385	1,832	81,219
1979	36,423	24,799	4,435	10,604	77	76,338	374	2,216	78,928
1980	40,301	25,456	4,369	11,788	79	81,993	421	2,310	84,724
Average	37,230	23,852	4,353	12,349	81	77,865	401	2,208	80,473
1981	40,894	27,262	4,110	11,791	94	84,151	606	2,633	87,390
1982	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nutrient weight:[2]									
1966-70 average	3,520	[1]1,847	857	2,221	7	NA	—	NA	8,453
1971-75 average	6,209	2,978	904	3,703	8	13,802	34	236	14,072
1976	7,252	4,068	835	5,577	7	17,739	78	438	18,255
1977	7,522	4,286	818	5,400	8	18,034	89	438	18,561
1978	7,658	4,551	809	5,394	8	18,420	79	342	18,841
1979	7,467	4,637	843	4,411	7	17,365	77	414	17,856
1980	8,262	4,760	830	4,904	7	18,763	86	432	19,281
Average	7,652	4,460	827	5,137	7	18,064	82	413	18,559
1981	8,383	5,098	781	4,905	9	19,176	124	493	19,793
1982[3]	8,785	5,350	810	4,145	10	20,100	NA	[4]609	20,709

— = Negligible or none.
NA = Not available.
[1]Includes feed additives. [2]Nitrogen—20.5 percent N, phosphates—18.7 percent P2/O5, ground rock phosphates—19 percent P2/O5, potash—41.6 percent, K2O. [3]Preliminary. [4]Total for feed additives.

Table 19.—USSR consumption norms of selected food products and per capita consumption, selected years 1950-81 and 1990 plan

Year	Meat and fat	Fish and fish products	Milk and milk products[1]	Eggs	Sugar	Vegetable oil	Potatoes	Grain[2]	Vegetables and melons	Fruit and berries
		Kilograms		*Number*				*Kilograms*		
1950	26	7.0	172	60	11.6	2.7	241	172	51	11
1960	40	9.9	240	118	28.0	5.3	143	164	70	22
1970	48	15.4	307	159	38.8	6.8	130	149	82	35
1966-70 average	47	14.3	287	144	37.2	6.5	132	150	78	NA
1971	50	14.8	300	174	39.5	7.0	128	147	85	39
1972	52	15.1	296	185	38.8	7.0	121	145	80	36
1973	53	16.1	307	195	40.8	7.3	122	143	85	41
1974	55	16.5	316	205	41.0	7.9	121	142	87	37
1975	57	16.8	315	216	40.9	7.6	120	141	89	39
Average	53	15.9	307	195	40.2	7.4	122	144	85	38
1976	56	18.4	316	209	41.9	7.7	119	141	86	39
1977	56	17.1	321	222	42.4	8.1	120	139	88	41
1978	57	17.1	318	232	42.8	8.3	117	140	92	41
1979	58	16.3	319	235	42.0	8.4	115	138	98	38
1980	58	17.6	314	239	44.4	8.8	109	138	97	38
Average	57	17.3	318	227	42.7	8.3	116	139	92	39
1981	57	17.9	305	245	43.9	9.0	105	138	98	40
1990 plan	70	19	330-340	260-266	45.5	13.2	110	135	126-135	66-70
Revised consumption norm[3]	78	18.2	405	292	40.0	9.1	110	115	130	91

NA = Not available.
[1]Including milk equivalent of butter. [2]Flour equivalent. [3]*Planovoe khozyaistvo*, No.10, 1981, p. 117.

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