22224

National
Foreign
Assessment
Center

~~Secret~~

USSR: Impact of Another Poor Crop Year

An Intelligence Assessment

Information available as of 9 November 1981 has been used in the preparation of this report

This paper was prepared by the Offices of Global Issues and Soviet Analysis. Comments and queries are welcome and should be directed to [redacted] OGI, or [redacted] SOVA.

~~Secret~~
NF 81-10014
November 1981

Warning Notice	Intelligence Sources and Methods Involved (~~WNINTEL~~)
National Security Information	Unauthorized Disclosure Subject to Criminal Sanctions

Dissemination Control Abbreviations	NOFORN (NF)	Not releasable to foreign nationals
	NOCONTRACT (NC)	Not releasable to contractors or contractor/consultants
	PROPIN (PR)	Caution—proprietary information involved
	ORCON (OC)	Dissemination and extraction of information controlled by originator
	REL...	This information has been authorized for release to...
	FGI	Foreign government information
	WN	WNINTEL—Intelligence sources and methods involved
	A microfiche copy of this document is available from OCR/DLB (351-7177); printed copies from OCO/IMD (351-5203). Regular receipt of NFAC reports in either microfiche or printed form can also be arranged through OCO/IMD.	(Derivative classification b Review 20 years from date Derived from NFIB-D-46.2/31

All material on this page is Unclassified.

BLANK PAGE

Secret

USSR: Impact of Another Poor Crop Year

Key Judgments

Soviet grain production this year is expected to be no more than 170 million tons, down 10 percent from last year and the USSR's third consecutive poor crop. Several other crops have recovered partially from last year's harvest disaster. Meat production in 1981 will remain at 1980 levels, while milk production will continue its long-term decline. Farm output should rise about 1.5 percent in 1981 after declining at an average annual rate of more than 5 percent in 1979-80. Food availability on a per capita basis, however, will show little improvement over last year.

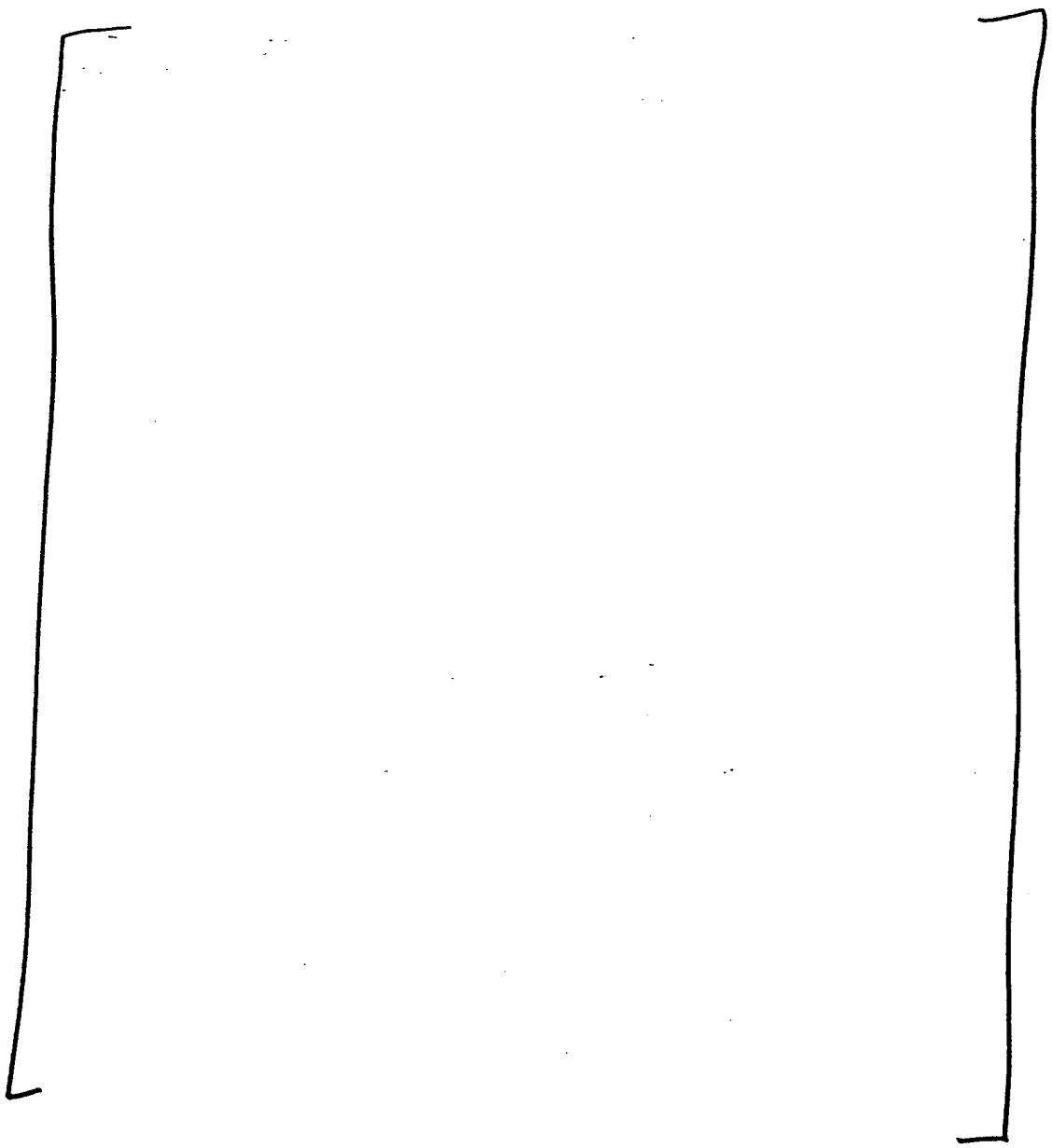
Imports of agricultural products in 1981 will reach a record high, accounting for more than 40 percent of hard currency imports. These purchases, furthermore, will provide 80 percent of the increase in per capita availability of agricultural products this year. Next year, Moscow probably will import as much grain as ports can handle—some 45 million tons—40 percent of which is likely to come from the United States. We also expect Soviet meat imports to reach 1 million tons this year and remain at that level in 1982. Larger imports of grain, other bulk farm products, and meat cannot be achieved without considerable disruptions in handling other dry cargo.

Large grain imports are playing a major role in stabilizing meat production, but a fair harvest of forage crops and potatoes and a feeding strategy that economizes on grain have also been important. Soviet farmers are continuing to build up livestock inventories despite relatively tight feed supplies. Per capita meat consumption will increase about 1 percent this year, and—if the 1982 grain harvest amounts to some 215 million tons, 45 million tons of grain and large amounts of meat are imported, and farmers continue to build livestock herds—per capita consumption could increase 2 percent next year. In the USSR per capita meat consumption is a key indicator of well-being, and gains of this size are likely to be imperceptible, particularly when compared with gains posted during the late 1960s and early 1970s.

~~Secret~~
NF81-10014
November 1981

BLANK PAGE

Contents



Secret

USSR: Impact of Another Poor Crop Yield

The 1981 Harvest

Grain

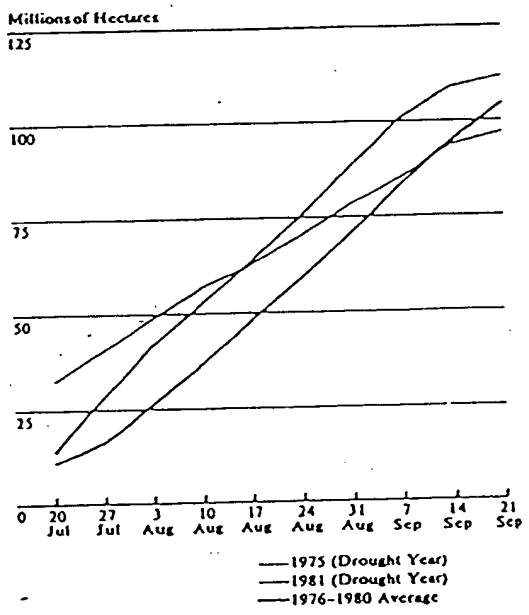
The total Soviet grain harvest for 1981 will probably not exceed 170 million tons, the poorest grain crop since 1975. Indeed, late-season harvesting difficulties could reduce this estimate by about 3 million tons. If our current assessment holds, this year's crop will fall more than 65 million tons short of the plan and will put the 1981-85 goal for annual average grain production out of reach. (To meet these goals, Soviet farmers would have to produce four consecutive harvests of 255-261 million tons, about 20 million tons more than their previous record crop.)

This year's poor crop is chiefly the result of a summer long drought that drastically reduced spring grain yields in the Volga Valley and West Siberia and eventually affected production in about two-thirds of the total grain area. The hot, dry weather speeded harvesting of the small grain crop except in eastern Siberia. Rain, snow, and low temperatures have prevailed there since mid-September, and many spring wheat and oat fields may have been abandoned, thus accounting for the uncertainty remaining in our assessment.

Soviet press reports on grain production and on sales of grain to the state (a rough gauge of production) have been unusually scarce. In the 100 or so oblasts, krays, and autonomous regions of the three major grain-producing republics (the RSFSR, the Ukraine, and Kazakhstan) that normally account for 90 percent of the grain harvest, only five have reported yields. Of the 12 remaining republics only five—Belorussia, Kirgiz, Lithuania, Azerbaijan, and Tadzhik—have announced yields, and those were preliminary figures. Of these, only Azerbaijan and Tadzhik (both minor grain producers) reported above-average yields

Soviet officials, however, have acknowledged a shortfall. In early September, public lecturers in Leningrad described the 1981 crop season as "unusually complicated" and warned that countrywide production of

USSR: Pace of Grain Harvesting



grain, feed, potatoes, and meat would be "seriously below plan." In early October, Politburo member Gorbachev echoed that theme [illegible]

The most precise assessment [illegible] year's crop was given to Western newsmen in early October by Soviet planners with access to economic data. They claimed that this year's grain harvest would probably fall below 170 million tons; according to UPI, the actual figure being "passed around by agricultural experts" was 168 million tons.

Secret

Other Major Crops

We have reduced our estimates of other major crops on the basis of new information from the Soviet press. [C

] In the European USSR, particularly in the northern regions, the effects of this summer's drought were more severe than initially estimated. Yields in other parts of the country, moreover, have been cut by an assortment of weather conditions: below-normal temperatures retarded the development of the major nongrain crops in parts of Central Asia and Siberia, and a typhoon, heavy rains, and flooding took their toll in the Far East.

Potatoes. Although production of potatoes is still expected to show a marked improvement compared with last year, the 1981 total probably will not exceed 80 million tons—some 3 million tons below the 1976-80 average.

Sugar beets. Production of sugar beets will be well below average for the third consecutive year. We now estimate a harvest of 75-80 million tons. A [C

] traveling in August found beet fields in the Moscow area to be particularly thin.

Sunflowers. The cumulative effect of drought, disease, and a reduced sown area is expected to keep this year's harvest of sunflower seed under 5 million tons, the second lowest crop in the past decade

Vegetables. Production should be almost 26 million tons, the average of the past five years. After assessing the full effect of the drought in the European USSR, we lowered our forecast to the bottom of our previous range. Because a sizable portion of these crops still comes from private farmers, yields do not vary as much from year to year as some other crops.

Cotton. The below-normal temperatures in Central Asia last summer will reduce cotton yields below 1980 levels. An increase in the planted area, however, is likely to keep total production near the 1981 target of 9.2 million tons.

Forage Crops. With a third consecutive grain crop failure, forage crops will be especially important this year for winter livestock feed supplies. Despite this summer's drought, output of hay, haylage, and silage did not suffer markedly. The quality is better; therefore, the nutrient content of this year's forage is above the average for the past two years.[1] Early rain and warmth promoted good grass growth this season. The drought created ideal conditions for harvesting the first cutting of hay, but later slowed development of forage crops. In some areas, forage crops may have been revived by late August rainshowers. Moreover, hay supplies were boosted by early cutting of several million hectares of unpromising grain area for hay.

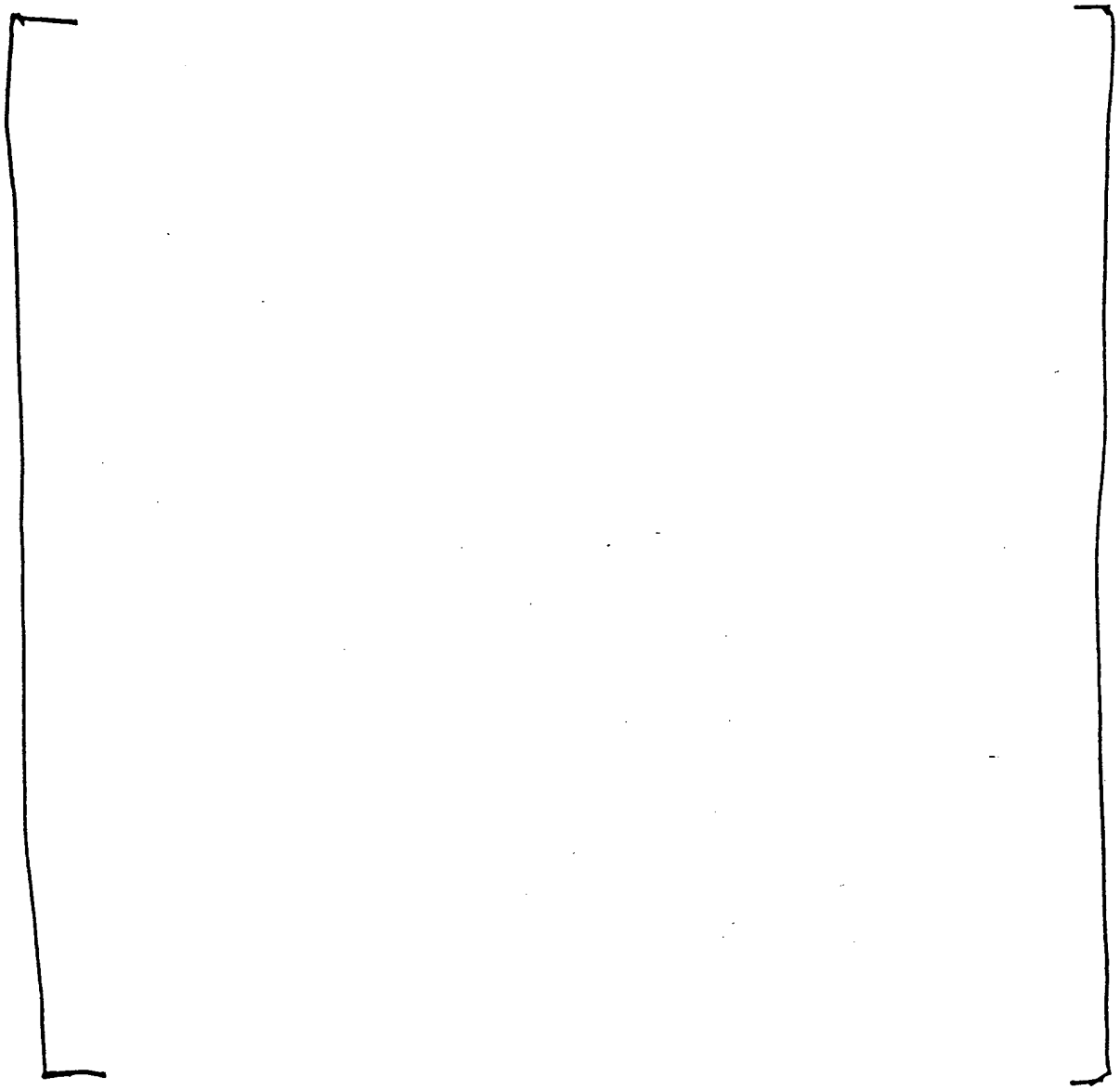
Fall Fieldwork

Fall fieldwork and planting in preparation for the 1982 crop season went well. By early November, winter crops (mostly grain) were reportedly sown on 40 million hectares, virtually all of the targeted area. In addition, some 90 percent of the area normally in winter fallow had been plowed. Failure to complete these activities last fall put a burden on spring activities and contributed to the poor start during the 1981 season.

Thus far, conditions for development of the fall-sown grains, which usually account for about one-third of the total grain crop, have been ideal. Soil moisture reserves, low in many areas after the prolonged drought this summer, have now been largely replenished. Most areas in the northern European USSR have benefited from a series of rainshowers since mid-August, and newly emerged winter grains are developing well. Conditions are also good in the southern winter grain regions. Soil moisture conditions during planting and the early stage of development were adequate, and subsequent rainshowers have almost totally recharged soil moisture capacity.

[1] By mid-July, with half the Soviet forage harvest completed, 80 percent of harvested forage met class I or class II standards. In Moldavia, 87 percent of hay and 83 percent of haylage met these standards. By late September, Ukrainian farmers had harvested hay 12 percent above plan levels, of which 88 percent met class I or II quality standards. Forages rated class III or below contain 66 percent or less of the average nutrient value of class I and II crops. The following hypothetical calculation shows the potential impact of quality differences. If 1981 procurement plans for hay were met and if 80 percent of the hay crop meets class I and II quality standards, the increase over last year in nutrients available from hay would be equivalent to 6 million tons of grain.

USSR: 1981 Grain Harvest



Secret

Table 1

Million Metric Tons

USSR: Crop Production

	1971-75 Average	1978	1979	1980	1981 Estimate
Grain Production [a]	181.6	237.2	179.2	189.1	170
Wheat	88.9	120.8	90.2	98.2	85.0
Barley	43.3	62.1	47.9	43.5	43.0
Rye	11.5	13.6	8.1	10.2	8.5
Oats	14.8	18.5	15.2	15.5	14.0
Corn	10.2	9.0	8.4	9.5	8.5
Other [b]	12.8	13.3	9.4	12.2	11.0
By Republic					
RSFSR	102.9	136.3	91.8	105.1	87
Ukraine	40.0	50.6	34.0	38.1	41
Kazakhstan	21.7	27.9	34.5	27.5	24
Other	17.0	22.6	18.9	18.4	18
Other crops					
Potatoes	89.8	86.1	91.0	67.0	80
Sugarbeets	76.0	93.5	76.2	79.6	75-80
Sunflower seed	6.0	5.3	5.4	4.7	4.8
Vegetables	23.0	27.9	27.2	25.9	26
Cotton	7.7	8.5	9.2	10.0	9.2

[a] Components may not add to totals shown because of rounding.
[b] Includes millet, buckwheat, rice, pulses, and miscellaneous grains.

Impact of the Harvest Shortfall

Grain Imports

To sustain meat output, Moscow will probably import grain during the rest of this year and all of 1982 at the maximum rate that port capacities will allow. This would be true even if the Soviets were able to harvest a grain crop in 1982 of some 215 million tons.[1] Grain imports for 1981 could reach a record 38 million tons with the level rising to 45 million tons in 1982.

The Soviets will have little difficulty in buying all the grain they want on the world market. Global grain output prospects are good, primarily because of the excellent coarse grain harvest anticipated in the United States. Worldwide demand for grain will be strong, but plentiful supplies should keep grain prices at or near their current low levels. Even with record-high Soviet imports, by the end of June 1982 world grain stocks are forecast to be 12 percent above those of June 1981. Most of the rebuilding will occur in the United States, reinforcing its dominance in the world market. The United States will supply about 30 percent of Soviet grain imports in 1981; this share may rise to 40 percent in 1982

Port Capacity

Our estimate of Soviet capacity to unload grain at Soviet ports has been revised from 36 million tons per year to 45 milion tons per year based on the effective use of four floating pneumatic unloaders added to

[1] A grain crop of some 215 million tons is consistent with a long-term trend in Soviet grain production
[2] About 28 million tons of grain moved through Soviet ports between January and September 1981. Loading schedules suggest roughly 3 million per month will move during the final quarter

Soviet ports since February. These unloaders, purchased from Italy, are in operation at four main Soviet grain ports and could add as much as 12 million tons of capacity per year to Moscow's grain lift potential. Actual capability in use will probably be considerably smaller, however, because of problems with maintenance, management, scheduling, and the inability to use the new equipment on a sustained basis in the winter. The Soviets are currently negotiating with Italy for purchase of at least two more floating unloaders for delivery by the fall of 1982.

Although monthly grain shipments are up in 1981, averaging a record 3.4 million tons from April through September, the current lift has had a number of problems. These include:

- Port congestion because of the large number of ship arrivals (with a corresponding increase in demurrage payments for longer waiting times).
- Lack of sufficient railcars to clear the grain efficiently from ports.
- Improper use or excessive downtime for the new pneumatic unloaders

Imports of 38 million tons in 1981 and 45 million tons in 1982 will not allow Moscow to achieve planned output of livestock products this year or next. To import substantially more than 45 million tons would severely complicate current transportation problems. If necessary, however, low priority seaborne trade such as timber exports could be delayed to free berthing space for some increased grain deliveries. Odessa and Leningrad, the main ports, have a total of 126 berths, of which 20 have been used in the past to handle grain during peak lift periods. Although all the berths are not suitable for handling grain, additional berthing space for grain ships could probably be made available. The Soviets could also increase their surge capacity by purchasing or leasing additional high-capacity unloading equipment such as the pneumatic unloaders. Supply of this equipment is tight, however, and it would probably take several months to arrange a lease and even longer—perhaps as long as a year—to contract for a new unit

Meat Production

Our estimates show little change from 1980 in feed availability, meat production, and per capita meat consumption. The projections for 1981 and 1982 are based on the average historical relationship among grain crops, feed supplies, and performance in the livestock sector.[a] Key assumptions incorporated into the estimates are:

- A grain crop of 170 million tons this year and a crop of 215 million tons next year.
- Meat imports of 1 million tons per year in both 1981 and 1982.
- Growth in livestock inventories of 1 percent in both 1981 and 1982

We also assume that the normal historical relationships between supplies of nongrain feeds and the size of the grain crop and between meat production in the socialized sector and in the private sector will prevail in 1981. This year, however, forage crops may be slightly better than the average relationship would indicate.[b] Furthermore, the tight feed situation in early 1981 may have hit the private sector relatively more heavily.[c] These two sources of error tend to offset each other, and probably cause only a small net error in the estimates

Performance in the livestock sector during January-September 1981 shows no signs of serious trouble and suggests that Moscow believes the feed situation to be under control. Meat production on state and collective farms ran 2 percent above January- September 1980. In addition, Soviet policymakers have continued to

[a] The appendix explains the derivation of the estimates.

[b] Grain accounts for slightly less than one-third of livestock feed in nutritive terms. Forage crops make up more than half. The remainder includes pasture, nongrain concentrated foods such as milling byproducts and oilseed meals, and animal-based foods such as milk and meat and bone meals. A good correlation has existed in the past between the grain and forage harvests. Feed from nongrain concentrates has historically had a fairly constant relationship with grain fed, even in poor harvest years, and is assumed to continue in the same ratio.

[c] Our estimates of meat production do not account explicitly for private-sector output (see the appendix). Although the private sector contributes nearly one-third of meat production, no data are available to assess current trends in output of private producer

Table 2

Million Metric Tons (Except Where Noted)

Livestock Feed and Meat Production

	1980	1981 Forecast	1982 Forecast [a]
Grain imports	28	38	45
Grain for feed [b]	104	103	113
Total feed available [c]	398	397	412
Meat production, including slaughter fats	15.0	15.0	15.5
Per capita meat consumption [d] (*kilograms*)	49.3	49.6	50.8

[a] Assumes a trend grain crop in 1982 of 215 million tons.
[b] Adjusted for waste and losses.
[c] Expressed in oat equivalents.
[d] Excludes slaughter fats and includes imports of 1 million tons both in 1981 and 1982.

stress the importance of increasing livestock inventories.[1] Data through September show that livestock inventories on state and collective farms were up about one-half of 1 percent over the comparable period last year. While this is a small increase, any gain during the tight feed situation represents a strong policy commitment to avoid herd reductions even though such reductions would supplement normal meat production. Sharp cuts in livestock inventories in August would have added substantially to 1981 meat production, but the smaller herds and the rebuilding process would have forced 1982 meat output down to about 15 million tons, even with a grain crop of 215 million tons next year.[2]

Moscow will maintain output of meat this year mainly by importing record quantities of grain. A fair harvest of forage crops and potatoes will add to feed supplies. Other factors are also contributing to stability in meat production and maintenance of herd levels:

- The share of usable grain from this year's gross harvest will be higher than last year because of drier harvesting conditions.[3] Although gross grain output is expected to drop 10 percent this year, we estimate that quantities of grain remaining after cleaning and drying will be only about 5 percent less than the amount available after the 1980 harvest.

- Soviet farmers are stretching feed supplies by emphasizing animals that use grain most efficiently—hogs and poultry—while maintaining cattle largely on roughages. This is confirmed by downward trends in milk production and the shifting composition of meat production. During January-September 1981, beef production rose slightly compared with the same period last year while pork production rose by 3 percent and poultry by 9 percent.

- We estimate that Moscow will import 4 million tons of soybeans and soybean meal between June 1981 and July 1982. Soybean meal will provide a concentrated source of protein, thereby improving the nutritional balance and efficiency of livestock rations. The Soviet press has campaigned vigorously for greater use of nutritionally balanced mixed feeds instead of "straight" grain and for substitution of other feeds for grain wherever possible, especially in cattle rations.

Large imports of meat will enable a slight rise—less than 1 percent—in per capita meat consumption in 1981; next year, we anticipate an increase of just over 2 percent. In the USSR per capita meat consumption is a key indicator of well-being, and gains on this scale are likely to be imperceptible, particularly when compared with gains posted in the 1960s and early 1970s. Moreover, as long as current policies of steady income growth and stable retail prices continue, the gap between the amount of meat demanded and the amount supplied will grow.

[1] Reduction of livestock inventories has been a traditional Soviet device to cut the total feed requirement in the face of a large feed shortfall. As recently as 1975, animal inventories were sharply cut—particularly hogs—when it became obvious that the 1975 grain crop, even with large grain imports, would be too small to sustain existing herds through the fall and winter months.

[2] A reduction in hog inventories of 5 percent, for example, would add about 250,000 tons to 1981 meat production.

[3] Official Soviet grain output statistics measure the harvest prior to cleaning and drying. They include excess moisture and extraneous matter not found in harvested grain in most countries. Our estimate of 1981 grain production is consistent in definition with Soviet gross output statistics. Waste fluctuates primarily according to the amount of precipitation at harvest time. Although Soviet post-harvest cleaning and drying is intended to restore wet grain to full value, the wetter the harvesting conditions, the more difficult this becomes. Mishandled wet grain may be grossly damaged or entirely spoiled for one or more of its intended uses.

Appendix

Estimating Soviet Meat Production

Soviet meat production in a given year depends on many factors including (1) the grain crop in the present and in the preceding years, (2) the size of carryover stocks of grain, (3) the nongrain feed crops in these two years, (4) the size of the livestock inventory, (5) official policy on growth or reductions in livestock inventories, and (6) the efficiency with which feed is converted into meat products. Methods for estimating Soviet meat production vary in the degree to which these factors are explicitly treated in the estimation process. The meat production estimates for 1981 Soviet meat production in this paper reflect a consensus of estimates derived from three alternative approaches. All three methods give similar results:

Method	Million Metric Tons
Economic model	15.0
Monthly production	15.1
FCR method	15.0

The *economic model* approach deals with most of the relevant factors in an explicit way. Annual historical data are used to estimate a set of statistical relationships among these factors, and the relationships become the basis for sizing the likely meat production in the current year. In general, under this approach:

> Meat output(t) = f(Grain for feed(t), Nongrain feed(t), Livestock inventory(t), Livestock inventory(t-1), Grain crop(t-1)),
> where (t) represents a given calendar year and (t-1) the preceding calendar year.

The *monthly production* method focuses on monthly data on meat sales of livestock and poultry in liveweight for slaughter on state and collective farms, which account for about two-thirds of total meat production in the USSR. This approach uses the most up-to-date information to estimate meat output for the year, but treats the factors affecting meat production in the least explicit way. The monthly method relies primarily on patterns in the relationship between cumulative state and collective farm meat production through a given month, past and current grain crops, and total meat production for the year. With data through a particular month (m), the estimate of meat output for the year (t) follows from:

> Meat output(t) = f(Grain crop(t), Grain crop(t-1), Cumulative meat output(t,m)).

The *feed conversion ratio* (FCR) method emphasizes the process of conversion of feed into meat products and it depends on a separate estimate of livestock feed supplies. This feed figure is combined with an average FCR that reflects both the mix of types of meat and the average conversion efficiency for each type of livestock:

> Meat output(t) = f(Average FCR(t), Grain for feed(t), Nongrain feed(t)).

All three of the methods rely on average patterns among the factors affecting meat production. They assume, for example, that the private-sector share in total meat production will continue to be about 30 percent. In addition, each assumes a grain crop of 170 million tons, and 1 percent growth in herds in 1981 and 1982. Also, the influence of the nongrain component of livestock feed on meat output is based on past correlations between the grain and nongrain feed crops. Of course, the events in a particular year could deviate from these normal relationships, although frequently such deviations will be partially offsetting.