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INTELLIGENCE MEMORANDUM

ESTIMATE OF 1953 GRAIN PRODUCTION
IN THE SOVIET BLOC

CIA/RR IM-395

13 September 1954

WARNING

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FOREWORD

A study of grain acreage, yields, and production is most essential to an appraisal of the Soviet Bloc's capability to support its population under conditions of peace or war. Although shifts in the grain production pattern within the Bloc from year to year are not of themselves valid positive indicators of intentions, it is possible that the Bloc countries would not launch a major military campaign during a protracted drought or with an empty granary.

This memorandum deals with the production of grain in the Soviet Bloc as a whole and in each of its major components -- the USSR, the European Satellites, and Communist China. It primarily highlights the current situation regarding acreage, yields, and production of bread grains (wheat and rye), coarse grains (barley, oats, and corn), rice, and several minor grains in 1953 and gives comparisons with pre-World War II and recent postwar years. This memorandum does not analyze the relation of grain production to the economy of each country concerned, but attention is drawn to certain of these relationships, particularly population numbers, in their broadest sense. An analysis of the utilization of the production of each grain (seed, feed, industrial use, human consumption, trade, reserves, and waste), is being made in a separate report on the food balance of each Bloc country.

Although the emphasis of this memorandum is on production in 1953, some consideration has been given to long-term trends and the plans of the Bloc countries to increase grain production. Crop production plans for Communist China are vague and do not seem to have the same degree of importance as they have in the USSR and the European Satellites. Therefore, instead of a section on "Plans" for China, there is presented a section on "Problems of Supply and Distribution."

The numerical data contained in this memorandum do not represent measured or weighed quantities -- they are at best estimates and sometimes approximations. The estimated range of error in most cases is ± 5 percent.

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ESTIMATE OF 1953 GRAIN PRODUCTION
IN THE SOVIET BLOC*

Summary

Considering the Soviet Bloc as a whole, the 1953 total grain production,** estimated at 225 million metric tons,*** was 12 million tons below production in 1952 and 24 million tons, nearly 10 percent, less than the production immediately before World War II. The decline in production is more serious than the absolute figures indicate, when they are considered in relation to the over-all increases in population that have taken place. The European Satellites, considered as a unit area, had the largest decline in absolute tonnage (more than 11 million tons), and production per capita fell from 486 to 376 kilograms, or 23 percent. Per capita production in the USSR decreased 18 percent and in Communist China, 4 percent. For the Bloc as a whole, bread grain production was only 5 percent below prewar production; but coarse grain production was 19 percent lower than prewar production. Per capita production of all grain fell from 325 to 303 kilograms in 1952 and to 286 kilograms in 1953.

The USSR and Communist China have established high goals for grain production in their respective long-range economic plans, but little has been accomplished in actually attaining them. Grain production goals in Eastern Europe have been at about prewar levels and have generally not been achieved.

The USSR, after admitting failure to achieve its agricultural goals, has launched a program to extend grain production to new lands, to idle land in presently cultivated areas, and to lands

* The estimates and conclusions contained in this intelligence memorandum represent the best judgment of the responsible analyst as of 1 July 1954.

** The grain crops considered in this memorandum are wheat, rye, oats, barley, corn, rice, and the miscellaneous minor grains -- millet kaoliang, buckwheat, spelt, and (in the USSR) pulses.

*** Throughout this memorandum tonnages are given in metric tons.

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that have not proved to be well adapted to the production of perennial grasses. Judging from past experience in extending grain production into submarginal areas, the Soviet program of seeding grain crops on virgin lands holds little promise of increasing production by 18 million to 20 million tons as planned. An appraisal of all factors, including climate, which is of paramount importance, indicates that increase in production is more likely to be within the order of 6 or 7 million tons, with a possibility of reaching 9 million tons if climatic conditions are unusually favorable. Some success can be expected from the much more limited program to expand the production of grain on idle land and land formerly used to a considerable extent for grass crops, but this program will have little effect on the total grain production situation in the USSR.

The USSR appears to be in serious difficulty with respect to the production of grain -- not only for food, but also for nonfood use. The new program is a desperate move which may, with favorable weather, stave off the time when the country will no longer be self sufficient in grain production. Unfavorable weather may cause crop production to fall short of the country's requirements in the near future. In that event, imports -- largely from Bloc countries -- will be necessary to maintain the present levels of consumption.

The situation in the European Satellites is also serious. Unfavorable climatic conditions have been a major factor in restricting production during the past few years. Lower production has also resulted from such other conditions as peasant resistance to collectivization, compulsory delivery of products to the State, the low prices paid for those products, and high taxes -- all of which have reduced individual incentives. With normal weather conditions and the successful prosecution of a program of real incentives to peasants, the Satellite area not only could become self-sufficient in grain but also could regain its status as an area of surplus production.

The per capita grain production in China is clouded by the great variation in population estimates. Because of lack of better information, China's population count is presently being held static. As far as production is concerned, there appears to have been less change in China (a decrease of about 4 percent) between the late thirties and 1953 than in the other countries of the Bloc. On the basis of a static population, per capita production of grain in 1953 was about 229 kilograms -- far lower than in other Bloc countries. Moreover,

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population may be greater than that being currently estimated, which would make the grain situation even less favorable than it appears. In spite of internal exhortation designed to increase grain production in Communist China, it is improbable that in the long run any significant increase in per capita production can be attained.

The long-term view of the grain situation in the USSR is not optimistic. The European Satellites probably can improve their situation somewhat, but at best the quantity of their surpluses cannot be expected to equal those enjoyed before the war. The Chinese situation is more or less static with the possibility of becoming worse. Therefore, except in years of unusually favorable climatic conditions, the Soviet Bloc as a whole may be expected to be not more than self sustaining.

I. The Soviet Bloc.

Grain is the most important class of food and feed products in the Soviet Bloc. As food, grain contributes, on the average, more than half the caloric value to the average diet in the European Satellites, about two-thirds in the USSR, and up to nearly three-fourths in Communist China. The importance of grain as feed is greatest in the European Satellites and -- because of human competition for grain as food -- of least importance in China.

Although all of the countries in the Soviet Bloc are allied politically, each has its own economic aspirations, goals, and problems. Inclusion in the Bloc has not resulted in free exchange of goods among the countries, nor has it resulted in "Bloc unity" in economic policy and planning. The production and utilization of agricultural products is not planned for the Bloc as a whole, and there is enough "rigidity" in each country's agricultural economy to preclude a "leveling" of per capita production and utilization.

It must be recognized, however, that in time of emergency the centralized political and military power of the USSR will attempt

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to mobilize the resources of all Bloc countries* for a common cause. It is therefore necessary to consider Bloc capabilities and achievements in the aggregate and to make comparisons when desired between these factors for the Bloc and for the NATO or for other groups of free countries.

A. 1953 Grain Production.**

Total grain production in the Soviet Bloc in 1953, estimated at 225 million tons, was about 5 percent below the production of 237 million tons estimated for 1952 and 10 percent below prewar annual production. The greatest reduction occurred in the USSR, whereas production in China was about the same as in 1952. Production in Eastern Europe was, however, higher than in 1952, an unfavorable crop year.

Although grain acreage in 1953 of 215 million hectares was 1.5 million hectares above 1952, adverse weather in most regions of the USSR and China resulted in less favorable growing conditions for crops in 1953 than in 1952. Yields for 1953, which averaged 10.5 centners per hectare for all grains, were low in comparison with 11.1 and 11.3 centners per hectare in 1952 and in prewar years, respectively.

B. Significance.

Bloc population, estimated at 787 million people in 1953, is 4 million greater than in 1952 and 20 million greater than prewar population for the same area. Because of the increase in population and the decrease in grain production, the supply of grain for food in 1953 was not so favorable as it was in 1952, and much less favorable than in prewar years. For example, the gross grain production per capita*** is estimated at 286 kilograms in 1953,

* The USSR, Communist China, Albania, Bulgaria, Czechoslovakia, East Germany, Hungary, Rumania, and Poland.

** See Table 1, p. 20, below, for grain statistics by major Bloc area and type of grain.

*** Although gross production per capita is a hypothetical concept which is not appropriate for making quantitative deductions concerning actual food supplies, it is a factor that is useful for making comparisons of different years. It is a device that changes the unfamiliar production measure of million metric tons to kilograms

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compared with 303 kilograms in 1952 and 325 in prewar years. (See Table 2.*)

II. The USSR.

A. 1953 Grain Production.

The rainfall pattern in the USSR in 1953 was generally unfavorable for crop production. Drought conditions prevailed in the southern Ukraine, a most important winter-wheat region. The drought, coupled with a continuation of the general shift in acreage from coarse grains to wheat, resulted in a decrease in total production. Production in 1953, estimated at 81 million tons, was about 12 percent below the production of 92 million tons estimated for 1952, and 9 percent below the production of 89 million tons in prewar years. (Tables 3 and 4.***) If the total grain production for 1953 is related to the total USSR population, the resulting factor, gross production per capita, is considerably below similar factors for 1952 and the average for the late prewar period. (Table 5.***)

1. Bread Grains.****

The 1953 production of bread grains was estimated at approximately 53 million tons compared with 61 million tons in 1952. Low yields were the chief cause of the difference in production because the acreage seeded to these crops in 1953 was only slightly less than in 1952. Yields in 1953 were about one centner per hectare, or 12 percent, lower than in 1952. Both the acreage and production of bread grains were still below the prewar***** acreage, the acreage by 7 million hectares and production by about 8 million tons.

2. Coarse Grains.*****

Coarse grain production in 1953 is estimated at about 21 million tons compared with about 25 million tons produced in per person, a smaller measure that is far easier to visualize and one that makes allowance for changes in population.

* Table 2 follows on p. 21.

** Tables 3 and 4 follow on pp. 22 and 23, respectively.

*** Table 5 follows on p. 24.

**** Wheat and rye.

***** 1938.

***** Barley, oats, and corn.

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1952, although the acreage seeded remained the same. Prewar acreage and production were about 7 million hectares and 7 million metric tons larger, respectively, than those estimated for 1953.

Although the acreage and production of all grains have been below late prewar averages, the emphasis placed on the production of wheat in the postwar period by the USSR has been a major cause of the decrease in the acreage utilized for coarse grain production. Unfavorable weather in 1953 was a major cause of the decrease in yields; it is estimated that yields averaged only 7.8 centners per hectare compared with an average yield of 8.8 centners per hectare in 1952.

3. Rice and Other Grains.

From an acreage of about 200 hectares, rice production is estimated to have been about 400,000 tons in 1953, about the same as the acreage and production of 1952 and of late prewar years. Yields in 1953, estimated at 20 centners per hectare, also remained about the same. In comparison with bread and coarse grains, rice production in the USSR is insignificant.

The production of "other" grains* in 1953 is estimated at about 6 million tons. This is about the same production that was estimated for 1952, but it is some 2 million tons below prewar levels. In 1953, however, almost 1 million more hectares were sown to these grains than in 1952. Compared to the 11 million hectares sown during the late prewar years, the 1953 acreage represents a decrease of 2 million hectares.

B. Plans.

The Fifth Five Year Plan (1951-55) called for an increase of 40 to 50 percent in grain production over 1950. During the first 3 years of the plan, annual production has not increased significantly. In fact, production in 1953 was about 4 million tons, or 4.7 percent, below production in 1950, the base year, despite the fact that approximately 4 million more hectares were seeded in 1953 than in 1950.

Recent decrees which are intended to increase grain production were announced after the 1953 harvest, when production fell to the

* Buckwheat, millet, legumes, and vetch. When reporting grain production, the USSR includes legumes and vetch.

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lowest levels since 1949. The most important decision on the expansion of grain production issued recently was on 2 March 1954, when the plan to reclaim idle land and extend the production of grain in new areas was announced. 1/* The plan provides for an expansion of the grain acreage** by 2.3 million hectares in 1954 and by 10.7 million hectares in 1955, bringing the total expansion to 13.0 million hectares. Envisaged in this acreage expansion is a production increase of nearly 20 million tons.

The following discussion indicates that although the acreage goal may be reached, only exceptionally favorable climatic conditions could result in an increase in production of 20 million tons. If normal conditions prevail, however, production can be anticipated to increase by less than half this amount. In addition, some 4 million hectares more are expected to be seeded to coarse grains and other crops on land that has recently been used for low-yielding perennial grasses. 2/ This is a less ambitious project than the plan to expand seedings on virgin land and is more likely to succeed.

C. Significance.

The USSR depends greatly upon agriculture for food, feed, and fiber: about half of its population depend directly upon agriculture for their living. The failure to increase or even maintain production presents an alarming picture to Soviet leaders. Soviet grain production, in particular, has failed to return to prewar levels. The significance of stagnation in grain production becomes most apparent when it is contrasted with total population which has been increasing by about three and one-half million each year.

With a 1953 population of 214 million, the quantity of grain produced in the USSR in 1953 indicates a gross per capita production of 377 kilograms for the consumption year 1 July 1953 through 30 June 1954. The gross per capita production for 1953 is 13 percent less than the 435 kilograms indicated for 1952 and almost 18 percent below the 461 kilograms produced per capita in the late prewar period.***

*

** Chiefly wheat and millet.

*** Population is estimated at 211 million for 1952 and 192 million for 1939.

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Although not so dramatic as are comparisons of grain to population, similar comparisons of coarse grains to livestock numbers would indicate an even less favorable ratio of feed per animal, which is a factor tending to reduce productivity significantly. Except for hogs, livestock numbers will not be affected as directly by grain shortages as will animal weights and the production of dairy products. Horses, cattle, and sheep -- the roughage consumers -- can subsist with little or no grain if coarse feed supplies are available. Overall decreases in grain production, whether greatest in bread or coarse grains, impinge upon the food supply -- bread grain directly and coarse grain indirectly as it reduces animal productivity.

The program to expand wheat production into the lower Volga (Economic Region VI) and North Kazakh SSR (Economic Region Xa) indicates that the USSR is putting greatest emphasis upon bread grain production. ^{3/} An interlinear reading of recent Soviet decrees, however, indicates that some balance between bread and coarse grains will be maintained by reducing the seeding of bread grains in their traditional areas of production as expansion takes place in the new marginal areas. Part of the land formerly used for wheat in European USSR may be used for coarse grains. A shift strongly in favor of bread grain production would be counter to the aims of the Soviet consumer goods program, which is aimed at improving the level of living by providing higher quality foods. It is axiomatic that more mouths can be fed with the grain produced from an acre of land than with the products from animals fed the same amount of grain, but the latter provide on the whole, a more palatable, and possibly healthful, diet. A balance between these two extremes appears to be the course the USSR is taking.

If, however, expansion of the grain acreages into marginal areas fails, as it is apt to do unless extremely favorable climatic conditions prevail, and population continues to increase as it most likely will for some time to come, the consumer goods program will be hampered. As a result the Soviet planners may be forced into a position of having to produce for survival. This eventuality will demand great increases in the directly consumed crops, chief of which are bread grains, at the expense of indirectly consumed crops, such as coarse grains and other feed crops. Possibly the only alternative under these conditions would be for the USSR to become an importer of staple foodstuffs. As an importer, the USSR would be vulnerable to economic sanctions imposed by the food exporting nations.

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The lower Volga and North Kazakh SSR regions, where most of the expansion is to take place, are in a belt where the soil is poor and rainfall uncertain.* The program, however, entails the re-assignment of manpower, including managers and specialists already employed on productive collective farms. Some machinery being allocated to the new areas could be used effectively in the old areas of production. The new area is supposed to get 120,000 tractors (in 15 horsepower units) in 1954. This compares with 139,000 similar general purpose tractors (15 hp units) which were the total deliveries to all of agriculture in 1953. 4/

The USSR appears, therefore, to be taking a great risk with its manpower and capital. Rainfall in the new area ranges between 12 and 16 inches per year. Experience has shown that two complete crop failures usually occur in each 5-year period in these regions of Russia receiving an annual precipitation of 12 to 20 inches. 5/ In the past, extensions to acreage customarily seeded to spring wheat in Asiatic USSR have proceeded slowly because of low yields and frequent crop failures. Yields have been about 7 centners per hectare in the years when the crop could be harvested. 6/

Increased production from this extension of acreage in 1955 probably will be no more than 6 million to 7 million tons, in contrast to the 18 million to 20 million tons calculated by the Soviet government on inflated and unrealistic yield estimates. Consequently, the cost of this production will be inordinately high. The more modest program to restore grain crops to idle land and land that has recently been used for perennial grass crops in the better agricultural areas of European Russia should be relatively more successful. The scale of this program, however, is too limited to bring about a significant increase in total grain production.

III. The European Satellites.**

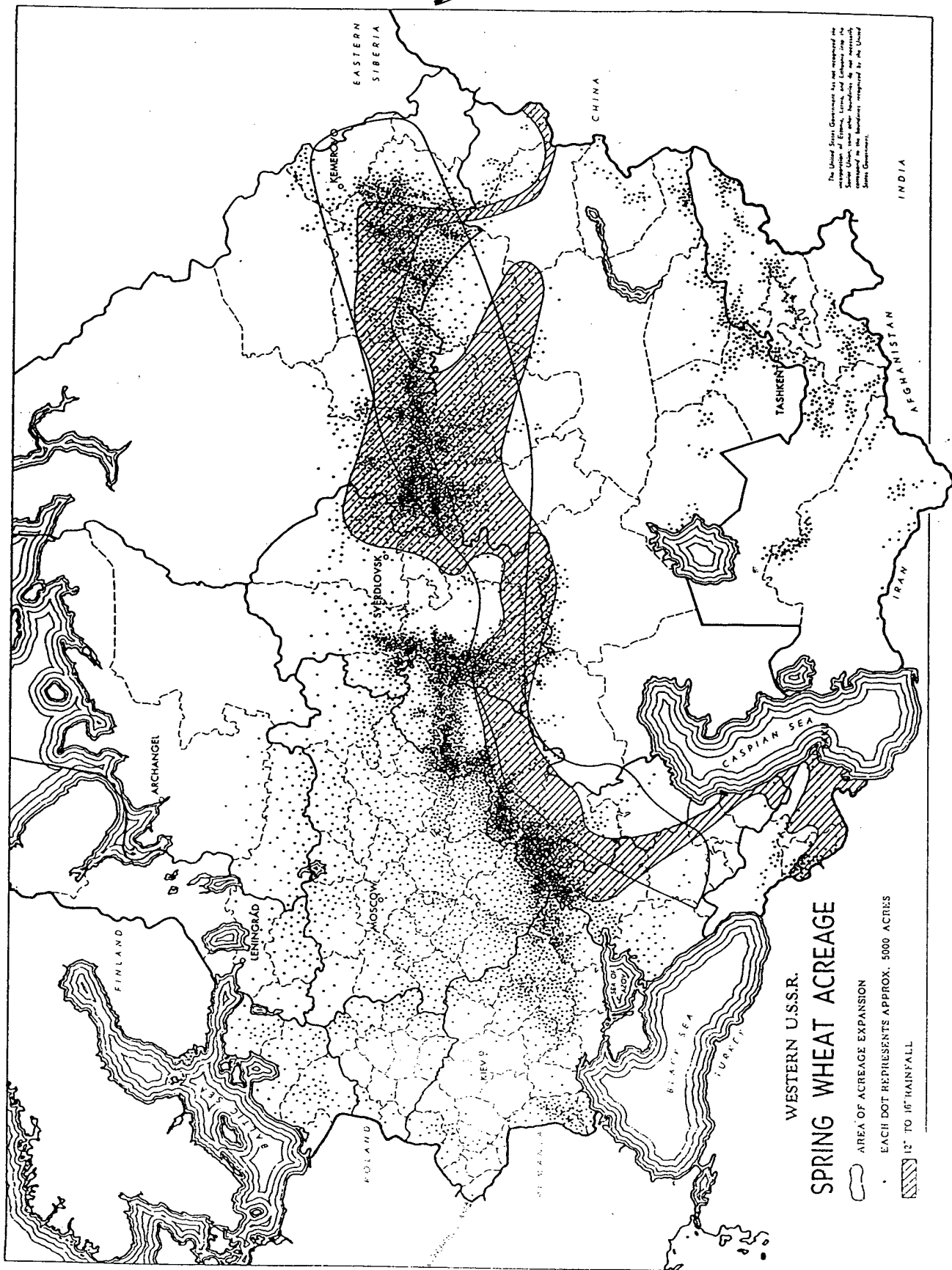
Excessive precipitation in the European Satellites in the autumn of 1952 delayed fall plowing and seeding, which resulted in a decrease in sown area. In addition a dry and cold spring in 1953 reduced the yield of grain below earlier expectations. 7/ In East Germany,

* See the map, Western USSR: Spring Wheat Acreage, following p. 10.

** Include Albania, Bulgaria, Czechoslovakia, East Germany, Hungary, Poland, and Rumania.

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The United States Government has not recognized the independence of Estonia, Latvia, and Lithuania since the latter two countries have been incorporated into the Soviet Union. The United States Government is not responsible for the actions of the Soviet Government.

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SPRING WHEAT ACREAGE
— AREA OF ACREAGE EXPANSION
• EACH DOT REPRESENTS APPROX. 5000 ACRES
▨ 12" TO 167 MILES

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Czechoslovakia, and Poland, root crops are harvested at approximately the same time that fall plowing and sowing occurs. This high seasonal workload combined with a reduction in farm labor that has taken place in recent years has resulted in a serious drop in winter wheat and rye acreage.

Because of the favorable sowing conditions existing during March and April, early estimates indicated that the loss of acreage devoted to winter grains would be made up with spring grains. The shortage of farm labor and machinery, unpopular collectivization programs, and peasant resistance, however, resulted in disorganization in carrying out spring sowing plans. Government announcements of plan fulfillment and its criticism pertaining to support of the "new course" indicated that the planned acreage goal for bread grains was not fulfilled. The 1952 planned acreage of bread grain was also underfulfilled.

A. 1953 Grain Production.

Grain* production in the European Satellites in 1953 has been estimated to be 34.8 million tons or 103 percent of the poor crop year of 1952, but only 76 percent of prewar. The 1953 grain acreage of 28.5 million hectares was less than 1 percent larger than 1952 and 12 percent below the prewar average of 32.5 million hectares. Acreage of bread grains was below 1952 as a result of adverse sowing conditions in the fall of 1952 and lack of seed in the spring of 1953. Coarse grain acreage increased by 3.4 percent over 1952 as a result of increased plantings of oats and corn.

Yields of bread grain in 1953 averaged approximately the same as for 1952. In the northern area** growing conditions were not as satisfactory for grains as in 1952. These conditions resulted in yields of wheat and rye remaining at or slightly below 1952 levels, while coarse grain yields were unchanged. In the southern area*** yields of all grains were higher than in the poor crop year of 1952. The most significant increases over 1952 were in the yields of corn.

* See Tables 6-13, pp. 25 through 32, below, for acreage, yield, and production by country.

** Eastern Germany, Czechoslovakia, and Poland.

*** Hungary, Rumania, Bulgaria, and Albania.

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The gross per capita production* of grains estimated at 376 kilograms for 1953 is only a slight increase over the 1952 level of 367 kilograms. The prewar average per capita production of grain was 487 kilograms. When compared with 1952 and 1953 this decline readily indicates the failure of the Communist governments to increase the production of grain at a rate commensurate with the growth of population.

1. Bread Grains**

The bread grain acreage in 1953, estimated at 14.9 million hectares, was 300,000 hectares or 2 percent less than the acreage utilized for bread grains in 1952 and 14 percent less than prewar. The greatest reduction in the 1953 acreage occurred in East Germany*** with a 16 percent decrease as compared with 1952.

The average yield of bread grains for 1953 was 12.7 centners per hectare as compared with 12.9 in 1952 and 14.3 in prewar. Rye yields in Poland and East Germany showed the greatest reduction, while wheat yields remained approximately the same as 1952. The yields of wheat and rye in the other European Satellites showed increases over 1952, but they still remained below their prewar average.

Bread grain production for 1953, estimated at 19 million tons, is 650,000 tons or 3 percent less than 1952. The 1953 production was also 5.8 million tons or 23 percent below the prewar average of 24.8 million tons produced in the average prewar year (1935-39 average).

The gross per capita production of bread grain in 1953, estimated at 205 kilograms, is 96 percent of the gross per capita production in 1952 and 78 percent of average prewar years. Difficulty was experienced by some Satellite governments during 1952-53 in adequately supplying their people with bread. With a decrease in per capita production for 1953, as indicated above, it appears probable that the situation will show no improvement unless wheat and rye are imported in sizeable quantities. Poland and Hungary, normally net grain exporters, have been negotiating for significant imports of grain, including bread grain.

* See Table 14, p. 33, below.

** Wheat and rye.

*** See Table 10, p. 29, below.

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2. Coarse Grains.*

The 1953 production of coarse grains, in contrast with bread grain, is estimated to have been larger than 1952, but is still below 1951 and prewar levels. Production is estimated to have been approximately 15 million tons or 13 percent above 1952, but it is still 27 percent below prewar averages. The production of both oats and barley show increases over 1952, but the most significant increase is that of corn, which increased by approximately 33 percent over 1952 as a result of increased acreage and yield.

The total acreage of coarse grains for 1953 is estimated at 12.9 million hectares compared with 12.5 million in 1952 and 14.4 million in prewar years. The increase in 1953 acreage over 1952 came as a result of a favorable spring for sowing and less of a loss in the corn acreage due to summer drought than occurred in 1952.

The average yield of coarse grains in 1953 is estimated at 11.6 centners per hectare or 109 percent of 1952 and 82 percent of prewar yields. Yields of oats and barley in 1953 were approximately the same as 1952, but the corn yield increased by 2.8 percent as a result of more favorable growing and harvesting conditions during 1953.

B. Plans.

Grain production in the Satellites has not been meeting planned goals for the past 2 years. The Five and Six Year Plans for agriculture announced by the various governments, called for grain production to reach and in some areas to exceed prewar levels by the end of the plan.** The increased production of grain was to be accomplished by holding the grain acreage generally below prewar levels and increasing the yields significantly. The plan goals, however, have not been realized to date. The announcement of the "new course" in agriculture by the various governments is taken to mean an admission of previous failures.

The "new course" in agriculture for Eastern Europe places great emphasis upon the necessity for increasing livestock numbers

* Barley, oats, and corn.

** Albania, 1955; Bulgaria, 1953; Czechoslovakia, 1953; Hungary, 1954; Poland, 1955; and Rumania, 1955.

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and slaughter weights of meat animals. Accomplishment requires an increase in the feed supply, in which grain plays a significant role. Although there is to be a slight increase in acreage,* mostly of the bread grains, the increased production of both bread and coarse grains is to be primarily a result of increasing yields per hectare. It is planned that the increased yields will result from increasing the incentives to the peasants, increasing the use of chemical fertilizer and agricultural machinery, and a more cautious collectivization program during the next two years.

C. Significance.

The European Satellites, as a result of a below-average grain harvest for the second year in succession, now find themselves in the position of drawing on reserves and of having to be net importers of grain, if they hope to fulfill recent promises to the population of a higher standard of living. Bread grain production in 1953 in East Germany, Poland, and Czechoslovakia was below 1952. With an increased population, this situation necessitated increasing imports of bread grains for East Germany and Czechoslovakia, and a resumption of imports for the first time since 1947 for Poland** in order to maintain 1952 levels of bread consumption.

Coarse grain production, although more favorable than 1952 because of the increase in corn production in the Balkans, still was below government expectations. Hungary and Poland have negotiated for imports of feed grains from Western countries. Normally these two countries are exporters of feed grains.

The net effects of low grain production in 1953 are estimated to be: (1) an increase of grain imports by Eastern Europe over previous years; (2) a decreased ability of some Satellites to implement fully their consumer goods programs as a result of having to import grains; and (3) inability of most Satellites to replenish state reserves of grain from which withdrawals were made last year without endangering food and fodder supplies.

* Hungary plans to increase the area sown to bread grains by 5 percent. Poland plans to expand grain acreage by some 400,000 hectares. 8/

** The Minister of Agriculture, Jan Dab-Kocial, in December 1953, claimed that "in order to secure the food supply of the country ... we had to import some grain. 9/

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IV. Communist China.

A. 1953 Grain Production.

Estimates of grain production for Communist China include the following: rice, wheat, kaoliang, corn, millet, barley, and oats.* All of these grains excepting kaoliang and millet are shown separately for consolidation into Soviet Bloc totals. (See Table 15.***) Kaoliang, the millets, and a miscellaneous grain class are included under the general classification of "other grains." The area covered by the estimates of grain production exclude the autonomous regions of Tibet and Inner Mongolia, the province of Sikang and, except as noted, Sinkiang.***

Adverse weather in 1953 resulted in less favorable growing conditions for crops than in 1952. During the growing season, rainfall was irregular and apparently below normal in much of the rice growing area. In May and June, for example, drought delayed rice transplanting in no fewer than six provinces. This subnormal rainfall area extended in a rough semicircle from Yunnan in the southwest to Kiangsu on the east coast. In much of the winter wheat area, a generally adverse winter was followed by a late and severe frost that lowered yields in some of the important wheat producing provinces. An expansion in the acreage of both rice and wheat, however, served to compensate for adverse growing conditions.

The tentative estimate of 1953 grain production in Communist China is 109,860,000 tons. This is less than a 2 percent decrease from the 111,885,000 tons estimated for 1952 but is 4 percent below the prewar average of 114,471,000 tons. The rice acreage expanded roughly 4 percent in 1953, and the wheat acreage increased by about 6 percent. The combined production of these grains represented 64 percent of all grain production.

* The Chinese Communists report a grain production tonnage that includes the grains as given here, plus peas, pulses, soybeans, and potatoes. It is not known if the potatoes are included in this aggregation on an absolute or on a grain equivalent basis. Unfortunately many intelligence publications use the same or similar tonnages for China under the same imprecise heading.

** Table 15 follows on p. 34.

*** The wheat production of Sinkiang is included in the grain production estimate for the first time in 1953. As this is less than 500,000 tons, interyear comparisons are not significantly distorted by this addition.

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In terms of total grain production the increases in wheat and rice acreage were extremely important in offsetting the adverse conditions of the 1953 growing season. Wheat and rice constituted about two-thirds of total grain production. As long as this proportion of the total is maintained, the total grain output will tend to remain relatively stable.*

Although the rice and wheat acreage was expanded in 1953, it is unlikely that any of the other grain acreages expanded significantly. Total acreage for the listed grains in 1953 was approximately 7 percent over the prewar average. Moreover, it is difficult to credit an expansion of principal crop acreages larger than the 3 percent expansion that occurred from 1952 to 1953. Under these circumstances the grains other than rice and wheat are carried at 1952 acreage levels. Adverse weather resulted in decreased yields and thus in lower production of grains other than rice and wheat. This decrease was approximately 6 percent.

Grain production in 1953 also was lower than the Chinese Communists had planned. On 4 February 1953, Chou En-Lai in a report to the Chinese People's Political Consultative Conference stated that the grain production goal for 1953 was 109 percent of 1952. 10/ Adverse crop conditions during the spring and summer caused a revision (in September 1953) of this target to 106 percent of 1952 production. 11/ By September 1953 it would seem that even this goal was optimistic. According to CIA estimates, actual grain production in 1953 was only 98 percent of 1952 grain output. Although not all Chinese claims of recent production are known, the Communists have announced that grain production in northeast China in 1953 was only 93 percent of the grain production in 1952. 12/

B. Problems of Supply and Distribution.

On a per capita basis the production of grain in 1953 was 229 kilograms as compared to 233 kilograms in 1952. This is a decrease of about 2 percent and is below the prewar production of grain per capita by about 4 percent. Table 16** gives per capita production for the various types of grain.

* The acreage, yield, and production of grain in Communist China are given for a prewar year and for each year from 1950 through 1953 inclusive in Table 15, p. 34, below.

** Table 16 follows on p. 35.

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Rice production in 1953 reached 100 kilograms per capita for the first time since the Communists gained control of China. The production of wheat per capita has remained relatively stable at about 47 kilograms, or approximately at the prewar level.

It is to be noted that a constant population figure was employed in calculating these per capita production data. If the census currently being conducted by the Chinese Communists indicates a population growth, the per capita grain output figure will be even less favorable than that shown in Table 16.

The quantities of grain produced in 1953 do not in themselves indicate a deteriorated food position. Food shortages in a number of localized country districts apparently have resulted from adverse weather in 1953, but the problems of interprovincial movement of foodstuffs probably have been made more difficult. Food shipments to urban areas may be an even greater problem, since the traditional surplus areas of rice and of coarse grains were affected most adversely in 1953. To supply the urban population, it may have been necessary to draw foodstuffs from areas which normally are more or less self-sufficient.

The government is encroaching to an increasing degree on the food distribution field. Estimates of the numbers of people dependent to some degree upon marketing functions performed by the government range as high as 200 million. Because of the government's assumption of marketing functions and delays in its price stabilization activities, lags in supply adjustment have resulted. A good crop year or a plentiful supply of grain tends to obscure the economic strains resulting from controlled prices and inept distribution. The slight fall in total grain production in 1953 tended to reveal or emphasize the problems inherent in the Communist practice of controlling prices and supply movements.

In like manner the failure of the 1953 crop of grains to equal or exceed the 1952 production probably has reacted unfavorably on the government's storage or reserve program. Storage or reserve plans were likely based on the achievement of the foodstuffs output goal in 1953, which was scheduled to be 109 percent of 1952. Since production decreased rather than increased, maintenance of the reserve plan would have further worsened the already precarious food position of the population.

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The size of the reserves that the Communists wish normally to carry are unknown. Various indications have pointed to 20 million to 30 million tons of grains above commercial stocks. Such reserves, however, are believed to be relatively small as yet, and the 1953 crop does not appear to offer a favorable opportunity for their expansion.

C. Significance.

The failure of the 1953 grain crop to increase or even to equal the production of 1952 probably hinders government operations in several ways. Exports to the USSR in payment for industrial capital are made more difficult. Although grain output was not down sufficiently to indicate that the Chinese Communists could not obtain the quantities of grain desired for export, internal discontent with the regime's procurement and export program would probably have been less if a larger grain crop had materialized. Because significant additions to grain reserves are considered to have been unlikely in 1953, price stabilization of basic foodstuffs and the build-up of strategic reserves for military use may have proceeded at a slower than desired pace.

Because the Chinese Communists have firm political control internally, the decrease in grain output in 1953 is not likely to have significant effects on their intentions. Any plans of sufficient importance probably will be carried out. Nevertheless, some delay may result in the implementation of those plans having a low priority in the economic field.

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APPENDIX A

STATISTICAL TABLES

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Table 1
Soviet Bloc: Estimated Acreage, Yield, and Production of Grain
Prewar and 1950-53

| | Prewar a/ | | | 1950 | | | 1951 | | | 1952 | | | 1953 | | |
|------------------------|----------------------------|------------------------------|----------------------------------|----------------------------|------------------------------|----------------------------------|----------------------------|------------------------------|----------------------------------|----------------------------|------------------------------|----------------------------------|----------------------------|------------------------------|----------------------------------|
| | Acreage (Million Hectares) | Yield (Centners per Hectare) | Production (Million Metric Tons) | Acreage (Million Hectares) | Yield (Centners per Hectare) | Production (Million Metric Tons) | Acreage (Million Hectares) | Yield (Centners per Hectare) | Production (Million Metric Tons) | Acreage (Million Hectares) | Yield (Centners per Hectare) | Production (Million Metric Tons) | Acreage (Million Hectares) | Yield (Centners per Hectare) | Production (Million Metric Tons) |
| USSR b/ | | | | | | | | | | | | | | | |
| Bread Grains | 68.1 | 7.7 | 52.4 | 69.1 | 8.3 | 57.2 | 69.7 | 7.8 | 54.6 | 70.8 | 8.6 | 60.9 | 70.2 | 7.5 | 53.4 |
| Coarse Grains | 34.3 | 6.3 | 28.6 | 29.7 | 8.4 | 25.1 | 29.0 | 7.9 | 22.9 | 28.3 | 8.8 | 24.9 | 27.1 | 7.8 | 21.2 |
| Other Grains | 10.8 | 7.0 | 7.6 | 4.0 | 6.3 | 2.5 | 7.5 | 6.5 | 4.9 | 8.2 | 7.3 | 6.0 | 9.3 | 6.6 | 6.1 |
| Subtotal | 113.2 | 7.8 | 88.6 | 102.8 | 8.2 | 84.8 | 106.2 | 7.8 | 82.4 | 107.3 | 8.6 | 91.8 | 106.5 | 7.6 | 80.7 |
| European Satellites c/ | | | | | | | | | | | | | | | |
| Bread Grains | 17.4 | 14.3 | 24.8 | 16.3 | 13.9 | 22.7 | 15.2 | 12.9 | 19.7 | 15.2 | 12.9 | 19.6 | 14.9 | 12.7 | 19.0 |
| Coarse Grains | 14.4 | 14.1 | 20.4 | 13.2 | 13.6 | 18.0 | 12.5 | 10.6 | 13.2 | 12.5 | 10.6 | 13.2 | 12.2 | 11.6 | 15.0 |
| Other Grains | 0.7 | 11.4 | 0.8 | 0.6 | 13.3 | 0.8 | 0.6 | 13.3 | 0.8 | 0.6 | 13.3 | 0.8 | 0.6 | 13.3 | 0.8 |
| Subtotal | 32.5 | 14.2 | 46.0 | 30.1 | 13.8 | 41.5 | 28.3 | 11.9 | 33.7 | 28.3 | 11.9 | 33.6 | 28.4 | 12.3 | 34.8 |
| China d/ | | | | | | | | | | | | | | | |
| Bread Grains | 21.3 | 10.6 | 22.5 | 22.5 | 9.6 | 21.7 | 22.5 | 9.9 | 22.2 | 23.8 | 9.4 | 22.5 | 22.1 | 8.9 | 22.3 |
| Coarse Grains | 14.0 | 12.4 | 17.4 | 15.5 | 11.8 | 18.3 | 15.1 | 11.8 | 17.8 | 15.4 | 12.1 | 16.2 | 12.4 | 11.3 | 17.4 |
| Other Grains | 19.7 | 12.1 | 23.8 | 19.6 | 11.1 | 21.8 | 19.0 | 11.4 | 21.7 | 19.4 | 11.9 | 23.1 | 19.4 | 11.3 | 22.0 |
| Rice | 20.0 | 25.4 | 50.7 | 18.8 | 24.5 | 46.0 | 18.7 | 24.2 | 45.2 | 19.2 | 24.9 | 47.7 | 20.0 | 24.1 | 48.2 |
| Subtotal | 75.0 | 15.3 | 114.4 | 76.4 | 14.1 | 107.8 | 75.3 | 14.2 | 106.9 | 77.8 | 14.4 | 111.9 | 79.9 | 13.6 | 109.9 |
| Soviet Bloc | | | | | | | | | | | | | | | |
| Bread Grains | 106.8 | 9.3 | 99.7 | 107.9 | 9.4 | 101.6 | 107.4 | 9.0 | 96.5 | 109.8 | 9.4 | 103.0 | 110.2 | 8.6 | 94.7 |
| Coarse Grains | 62.7 | 10.6 | 66.4 | 58.4 | 10.5 | 61.4 | 56.6 | 9.5 | 53.2 | 56.2 | 10.1 | 56.7 | 55.4 | 9.7 | 53.6 |
| Other Grains e/ | 51.2 | 16.2 | 82.9 | 43.0 | 16.5 | 71.1 | 45.8 | 15.9 | 72.6 | 47.4 | 16.4 | 77.6 | 49.3 | 15.6 | 77.1 |
| Total Grains | 220.7 | 11.3 | 249.0 | 209.3 | 11.2 | 234.1 | 209.8 | 10.6 | 223.0 | 213.4 | 11.1 | 237.3 | 214.9 | 10.5 | 225.4 |

a. See respective country tables for years contained in prewar average.
 b. See Table 3 for USSR estimates.
 c. See Table 6 for European Satellite estimates.
 d. See Table 15 for China estimates.
 e. Other grains include rice for China.

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Table 2

Soviet Bloc: Per Capita Production of Grains
Prewar and 1950-53 ^{a/}

| Grain Type | Kilograms ^{b/} | | | | |
|---------------|-------------------------|------------|------------|------------|------------|
| | Prewar | 1950 | 1951 | 1952 | 1953 |
| Bread Grains | 130 | 131 | 124 | 132 | 120 |
| Coarse Grains | 87 | 79 | 69 | 72 | 68 |
| Other Grains | 108 | 92 | 93 | 99 | 98 |
| Total Grains | <u>325</u> | <u>302</u> | <u>286</u> | <u>303</u> | <u>286</u> |

a. Population estimated as follows:

USSR - prewar (1939), 192 million; 1950, 204 million; 1951, 207 million; 1952, 211 million; and 1953, 214 million.

China - A constant population of 480 million has been used to establish per capita data.

European Satellites - prewar, 95 million; 1950, 90 million; 1951, 91 million; 1952, 92 million; and 1953, 93 million.

Soviet Bloc - prewar, 767 million; 1950, 774 million; 1951, 778 million; 1952, 783 million; and 1953, 787 million.

b. 1 Kilogram = 2.2046 pounds.

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Table 3
USSR: Estimated Acreage, Yield, and Production of Grain
Prewar ^{g/} and 1950-53 ^{g/}

| Grain Type | 1950 | | | | | 1951 | | | | | 1952 | | | | | 1953 | | | | |
|----------------------------------|----------------------------|------------------------------|----------------------------------|--|--|----------------------------------|--|--|----------------------------------|--|--|----------------------------------|--|--|----------------------------------|--|--|----------------------------------|--|--|
| | Acreage (Million Hectares) | Yield (Centners per Hectare) | Production (Million Metric Tons) | Acreage ^{d/} (Million Hectares) | Yield ^{g/} (Centners per Hectare) | Production (Million Metric Tons) | Acreage ^{d/} (Million Hectares) | Yield ^{g/} (Centners per Hectare) | Production (Million Metric Tons) | Acreage ^{d/} (Million Hectares) | Yield ^{g/} (Centners per Hectare) | Production (Million Metric Tons) | Acreage ^{d/} (Million Hectares) | Yield ^{g/} (Centners per Hectare) | Production (Million Metric Tons) | Acreage ^{d/} (Million Hectares) | Yield ^{g/} (Centners per Hectare) | Production (Million Metric Tons) | | |
| Wheat | 43.7 | 7.6 | 33.1 | 49.0 | 8.0 | 39.2 | 42.8 | 7.3 | 31.3 | 46.2 | 8.4 | 38.8 | 48.2 | 7.2 | 34.7 | 48.2 | 7.2 | 34.7 | | |
| Rye | 24.4 | 7.9 | 19.3 | 20.1 | 9.0 | 18.0 | 20.8 | 8.7 | 23.3 | 24.6 | 9.0 | 22.1 | 22.0 | 8.5 | 18.7 | 22.0 | 8.5 | 18.7 | | |
| Total Bread Grains | 68.1 | 7.7 | 52.4 | 69.1 | 8.3 | 57.2 | 63.6 | 7.8 | 54.6 | 70.8 | 8.6 | 60.9 | 70.2 | 7.6 | 53.4 | 70.2 | 7.6 | 53.4 | | |
| Barley | 10.7 | 8.3 | 8.9 | 9.0 | 8.1 | 7.3 | 8.8 | 8.0 | 7.0 | 8.6 | 8.8 | 7.6 | 8.2 | 8.2 | 6.7 | 8.2 | 8.2 | 6.7 | | |
| Oats | 19.8 | 7.9 | 15.7 | 17.7 | 8.2 | 14.5 | 17.3 | 7.6 | 13.1 | 16.8 | 8.5 | 14.3 | 16.1 | 7.4 | 11.9 | 16.1 | 7.4 | 11.9 | | |
| Corn | 3.0 | 10.5 | 4.0 | 3.0 | 10.5 | 3.3 | 2.9 | 9.5 | 2.8 | 2.9 | 10.5 | 3.0 | 2.8 | 9.2 | 2.6 | 2.8 | 9.2 | 2.6 | | |
| Total Cereals Grains | 14.3 | 8.3 | 28.6 | 29.7 | 8.4 | 29.1 | 29.0 | 7.9 | 22.9 | 29.3 | 8.8 | 24.9 | 27.1 | 7.8 | 21.2 | 27.1 | 7.8 | 21.2 | | |
| Total Other Grains ^{f/} | 10.6 | 6.8 | 7.2 | 3.2 | 5.9 | 2.3 | 7.3 | 6.2 | 4.5 | 8.0 | 7.0 | 5.6 | 9.1 | 6.3 | 5.7 | 9.1 | 6.3 | 5.7 | | |
| Rice (Paddy) | 0.2 | 20.0 | 0.4 | 0.1 | 10.0 | 0.2 | 0.2 | 20.0 | 0.4 | 0.2 | 20.0 | 0.4 | 0.2 | 20.0 | 0.4 | 0.2 | 20.0 | 0.4 | | |
| Total Grains | 113.2 | 7.8 | 88.6 | 102.8 | 8.2 | 84.8 | 106.2 | 7.8 | 82.4 | 107.3 | 8.6 | 91.8 | 106.6 | 7.6 | 80.7 | 106.6 | 7.6 | 80.7 | | |

a. The year 1950 has been used as a prewar acreage base because CIA considers this to be the most representative year for a comparison of 1950 with 1933-37 and 1935-39 (bases used by some analysts), see Table 4.
b. Production figures are estimates of grain actually harvested.
c. Data relate to postwar boundaries. Prewar production was derived by applying average yields (1900-15) to 1938 adjusted acreages.
d. Acreages derived in most cases from Soviet published material.
e. Yields for 1950-53 bear the same relation to selected weather factors reported for each of those years as yields bore to similar selected weather data for the historical series 1883-1915. 13/
f. Includes buckwheat, millet, legumes, and vetch.

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USSR: Estimated Acreage, Yield, and Production of Grain a/
Selected Prewar Periods

Table 4

| Grain Type | 1938 b/ | | | 1933-37 c/ | | | 1935-39 d/ | | |
|---------------------|----------------------------------|------------------------------------|--|----------------------------------|------------------------------------|--|----------------------------------|------------------------------------|--|
| | Acreage (Million Hectares) | Yield (Centners per Hectare) | Production (Million Metric Tons) | Acreage (Million Hectares) | Yield (Centners per Hectare) | Production (Million Metric Tons) | Acreage (Million Hectares) | Yield (Centners per Hectare) | Production (Million Metric Tons) |
| Wheat | 43.7 | 7.6 | 33.1 | 37.2 | 7.7 | 28.8 | 42.1 | 8.0 | 33.8 |
| Rye | 24.4 | 7.9 | 19.3 | 23.2 | 8.3 | 19.2 | 24.6 | 9.1 | 22.4 |
| Total Bread Grains | 68.1 | 7.7 | 52.4 | 60.4 | 8.6 | 48.0 | 66.7 | 8.4 | 56.2 |
| Barley | 10.7 | 8.3 | 8.9 | 8.0 | 8.6 | 7.0 | 10.8 | 8.6 | 9.3 |
| Oats | 19.8 | 7.9 | 15.7 | 17.7 | 8.6 | 15.3 | 20.0 | 8.5 | 16.9 |
| Corn | 3.8 | 10.5 | 4.0 | 3.4 | 10.0 | 3.4 | 4.0 | 10.8 | 4.3 |
| Total Coarse Grains | 34.3 | 8.3 | 28.6 | 29.1 | 8.8 | 25.7 | 34.8 | 8.8 | 30.5 |
| Total Other Grains | 10.6 | 6.8 | 7.2 | 13.6 | 5.6 | 7.6 | 12.0 | 7.2 | 9.0 |
| Rice (Paddy) | 0.2 | 20.0 | 0.4 | 0.1 | 30.0 | 0.1 | 0.2 | 15.0 | 0.3 |
| Total Grains | 113.2 | 7.8 | 88.6 | 103.2 | 7.9 | 81.6 | 113.7 | 8.4 | 96.0 |

a. Production figures are estimates of grain actually harvested. All data relate to postwar boundaries, except 1933-37, which relates to prewar boundaries.
b. Prewar production was derived by applying average yields (1900-15) to 1938 adjusted acreages.
c. 14/
d. 15/

Table 5

USSR: Per Capita Production of Grain
Prewar and 1950-53 a/

| Grain Type | Kilograms | | | | |
|---------------------|------------|------------|------------|------------|------------|
| | Prewar | 1950 | 1951 | 1952 | 1953 |
| Wheat | 172 | 192 | 151 | 184 | 162 |
| Rye | 101 | 88 | 113 | 104 | 87 |
| Total Bread Grains | <u>273</u> | <u>280</u> | <u>264</u> | <u>288</u> | <u>249</u> |
| Barley | 46 | 36 | 34 | 36 | 31 |
| Oats | 82 | 71 | 63 | 68 | 56 |
| Corn | 21 | 16 | 14 | 14 | 12 |
| Total Coarse Grains | <u>149</u> | <u>123</u> | <u>111</u> | <u>118</u> | <u>99</u> |
| Total Other Grains | <u>39</u> | <u>12</u> | <u>24</u> | <u>29</u> | <u>29</u> |
| Total Grains | <u>461</u> | <u>415</u> | <u>399</u> | <u>435</u> | <u>377</u> |

a. Population estimated as follows: Prewar (1939), 192 million; 1950, 204 million; 1951, 207 million; 1952, 211 million; and 1953, 214 million.

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Table 6

European Satellites a/: Estimated Acreage, Yield, and Production of Grain
1935-39 Average, 1952, and Preliminary 1953

| Grain Type | 1935-39 Average | | | 1952 | | | Preliminary 1953 | | |
|-----------------------|-----------------------------------|---------------------------------------|---|-----------------------------------|---------------------------------------|---|-----------------------------------|---------------------------------------|---|
| | Acreage (Thousand Hectares) | Yield b/ (Centners per Hectare) | Production (Thousand Metric Tons) | Acreage (Thousand Hectares) | Yield b/ (Centners per Hectare) | Production (Thousand Metric Tons) | Acreage (Thousand Hectares) | Yield b/ (Centners per Hectare) | Production (Thousand Metric Tons) |
| Wheat | 8,647 | 14.6 | 12,604 | 7,880 | 12.3 | 9,656 | 7,712 | 12.6 | 9,751 |
| Rye | 8,753 | 13.9 | 12,211 | 7,348 | 13.6 | 9,998 | 7,233 | 12.9 | 9,295 |
| Total Bread Grains | 17,400 | 14.3 | 24,815 | 15,228 | 12.9 | 19,654 | 14,945 | 12.7 | 19,046 |
| Barley | 3,696 | 14.9 | 5,511 | 3,125 | 13.0 | 4,054 | 3,179 | 13.5 | 4,293 |
| Oats | 4,496 | 15.3 | 6,862 | 3,864 | 13.1 | 5,065 | 4,021 | 13.0 | 5,233 |
| Corn | 6,257 | 12.8 | 8,028 | 5,484 | 7.4 | 4,062 | 5,707 | 9.5 | 5,426 |
| Total Coarse Grains | 14,449 | 14.1 | 20,401 | 12,473 | 10.6 | 13,181 | 12,907 | 11.6 | 14,952 |
| Total Other Grains c/ | 641 | 11.1 | 714 | 602 | 11.9 | 717 | 592 | 11.6 | 695 |
| Rice (Paddy) | 18 | 25.5 | 31 | 36 | 23.6 | 85 | 37 | 24.6 | 91 |
| Total Grains | 32,508 | 14.1 | 45,961 | 28,339 | 11.9 | 33,637 | 28,488 | 12.2 | 34,784 |

a. Includes Albania, Bulgaria, Czechoslovakia, East Germany, Hungary, Poland, and Rumania.
 b. Calculated by dividing the production by the area.
 c. Includes buckwheat, millet, meslin, and spelt.

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Albania: Estimated Acreage, Yield, and Production of Grain
1935-39 Average, 1952, and Preliminary 1953 g/

Table 7

| Grain Type | 1935-39 Average b/ | | | 1952 g/ | | | Preliminary 1953 g/ | | | 1955 Plan | | |
|---------------------|-----------------------------|------------------------------|-----------------------------------|-----------------------------|------------------------------|-----------------------------------|-----------------------------|------------------------------|-----------------------------------|-----------------------------|---------------------------------|--------------------------------------|
| | Acreage (Thousand Hectares) | Yield (Centners per Hectare) | Production (Thousand Metric Tons) | Acreage (Thousand Hectares) | Yield (Centners per Hectare) | Production (Thousand Metric Tons) | Acreage (Thousand Hectares) | Yield (Centners per Hectare) | Production (Thousand Metric Tons) | Acreage (Thousand Hectares) | Yield f/ (Centners per Hectare) | Production g/ (Thousand Metric Tons) |
| Wheat | 40.0 | 10.2 | 4.1 | 85.0 | 8.3 | 7.0 | 98.0 | 10.5 | 103.0 | N.A. | 11.5 | N.A. |
| Rye | 4.0 | 7.5 | 3.0 | 4.0 | 7.5 | 3.0 | 4.0 | 8.3 | 3.3 | N.A. | 9.0 | N.A. |
| Total Bread Grains | 44.0 | 10.0 h/ | 44.0 | 89.0 | 8.3 h/ | 74.0 | 102.0 | 10.4 h/ | 106.3 | N.A. | N.A. | N.A. |
| Barley | 8.0 | 6.3 | 5.0 | 12.0 | 5.8 | 7.0 | 12.0 | 7.1 | 8.5 | N.A. | 10.5 | N.A. |
| Oats | 12.0 | 8.3 | 10.0 | 12.0 | 7.5 | 9.0 | 12.0 | 7.9 | 9.5 | N.A. | N.A. | N.A. |
| Corn | 95.0 | 13.6 | 129.0 | 124.0 | 7.7 | 95.0 | 97.0 | 12.9 | 125.0 | N.A. | 12.5 | N.A. |
| Total Coarse Grains | 115.0 | 12.5 h/ | 144.0 | 148.0 | 7.6 h/ | 111.0 | 121.0 | 11.8 h/ | 143.0 | N.A. | N.A. | N.A. |
| Rice (Paddy) | 0.5 | 20.0 | 1.0 | 2.0 | 17.6 | 3.0 | 2.3 | 17.6 | 4.0 | 15.7 | 25.0 | 39.2 |
| Total Grains | 159.5 | 11.8 h/ | 189.0 | 239.0 | 7.9 h/ | 189.0 | 225.3 | 11.2 h/ | 253.3 | N.A. | N.A. | 284.0 f/ |

a. Based on information available as of 15 April 1954.
b. 16/.
c. CIA estimate.
d. Estimated.
e. 17/.
f. 18/.
g. 19/.
h. Weighted average yield; total production divided by total area.
i. Probably includes wheat, rye, barley, corn, and rice.

Bulgaria: Estimated Acreage, Yield, and Production of Grain
1935-39 Average, 1952, Preliminary 1953, and 1957 Plan ^{a/}

| Grain Type | 1935-39 Average ^{b/} | | | 1952 ^{c/} | | | Preliminary 1953 ^{c/} | | | 1957 Plan | | |
|----------------------------------|-------------------------------|------------------------------|---|-----------------------------|------------------------------|---|--------------------------------|------------------------------|---|-----------------------------|--|-----------------------------------|
| | Acreage (Thousand Hectares) | Yield (Centners per Hectare) | Production ^{d/} (Thousand Metric Tons) | Acreage (Thousand Hectares) | Yield (Centners per Hectare) | Production ^{d/} (Thousand Metric Tons) | Acreage (Thousand Hectares) | Yield (Centners per Hectare) | Production ^{d/} (Thousand Metric Tons) | Acreage (Thousand Hectares) | Yield ^{e/} (Centners per Hectare) | Production (Thousand Metric Tons) |
| Wheat | 1,361.0 | 13.9 | 1,880.0 | 1,500.0 | 11.7 | 1,755.0 | 1,500.0 | 12.7 | 1,905.0 | N.A. | 18.3 | N.A. |
| Rye | 257.0 | 11.0 | 283.0 | 240.0 | 9.9 | 238.0 | 240.0 | 10.5 | 252.0 | N.A. | N.A. | N.A. |
| Total Bread Grains | 1,618.0 | 13.3 ^{f/} | 2,163.0 | 1,740.0 | 11.5 ^{f/} | 1,993.0 | 1,740.0 | 12.4 ^{f/} | 2,157.0 | N.A. | N.A. | N.A. |
| Barley | 274.0 | 13.8 | 378.0 | 295.0 | 11.6 | 342.0 | 295.0 | 13.6 | 401.0 | N.A. | 21.5 | N.A. |
| Oats | 147.0 | 8.9 | 131.0 | 155.0 | 6.7 | 104.0 | 155.0 | 8.0 | 124.0 | N.A. | N.A. | N.A. |
| Corn | 825.0 | 11.0 | 906.0 | 800.0 | 5.5 | 440.0 | 800.0 | 9.3 | 744.0 | N.A. | 18.5 | N.A. |
| Total Coarse Grains | 1,246.0 | 11.3 ^{f/} | 1,415.0 | 1,250.0 | 7.1 ^{f/} | 886.0 | 1,250.0 | 10.1 ^{f/} | 1,269.0 | N.A. | N.A. | N.A. |
| Total Other Grains ^{g/} | 103.0 | 12.3 | 127.0 | 60.0 | 9.8 | 59.0 | 60.0 | 10.0 | 60.0 | N.A. | N.A. | N.A. |
| Rice (Paddy) | 8.0 | 26.3 | 21.0 | 10.0 | 23.0 | 23.0 | 10.0 | 24.0 | 24.0 | N.A. | 38.0 | N.A. |
| Total Grains | 2,975.0 | 12.5 ^{f/} | 3,726.0 | 3,060.0 | 9.7 ^{f/} | 2,961.0 | 3,060.0 | 11.5 ^{f/} | 3,510.0 | N.A. | N.A. | N.A. |

a. Based on information available as of 15 April 1954.
b. ^{20/} CIA estimate.
c. Rounded to nearest thousand.
d. Weighted average yield; total production divided by total area.
e. Speltz, millet, and meslin.

Czechoslovakia: Estimated Acreage, Yield, and Production of Grain
1935-39 Average, 1952, Preliminary 1953, and 1953 Plan g/

Table 9

| Grain Type | 1935-39 Average b/ | | | 1952 c/ | | | Preliminary 1953 c/ | | | 1953 Plan d/ | | |
|---------------------|-----------------------------|------------------------------|--------------------------------------|-----------------------------|------------------------------|--------------------------------------|-----------------------------|------------------------------|-----------------------------------|-----------------------------|------------------------------|-----------------------------------|
| | Acreage (Thousand Hectares) | Yield (Centners per Hectare) | Production e/ (Thousand Metric Tons) | Acreage (Thousand Hectares) | Yield (Centners per Hectare) | Production f/ (Thousand Metric Tons) | Acreage (Thousand Hectares) | Yield (Centners per Hectare) | Production (Thousand Metric Tons) | Acreage (Thousand Hectares) | Yield (Centners per Hectare) | Production (Thousand Metric Tons) |
| Wheat | 873 | 17.7 | 1,550 | 800 | 17.7 | 1,416 | 780 | 17.7 | 1,380 | 795 | 19.6 | 1,558 |
| Rye | 961 | 16.4 | 1,577 | 650 | 17.4 | 1,131 | 645 | 17.4 | 1,122 | 560 | 17.8 | 999 |
| Total Bread Grains | 1,834 | 17.1 f/ | 3,127 | 1,450 | 17.6 f/ | 2,547 | 1,425 | 17.6 f/ | 2,502 | 1,355 | 18.9 f/ | 2,557 |
| Barley | 648 | 17.4 | 1,128 | 620 | 17.2 | 1,067 | 645 | 17.5 | 1,129 | 685 | 18.5 | 1,267 |
| Oats | 740 | 16.7 | 1,234 | 600 | 16.0 | 960 | 610 | 16.6 | 1,013 | 615 | 18.5 | 1,137 |
| Corn and Mixtures | 160 | 17.9 | 287 | 140 | 16.0 | 224 | 135 | 16.2 | 219 | 125 | 22.0 | 275 |
| Total Coarse Grains | 1,548 | 17.1 f/ | 2,649 | 1,360 | 16.6 f/ | 2,251 | 1,390 | 17.0 f/ | 2,361 | 1,425 | 18.8 | 2,679 |
| Total Grains | 3,382 | 17.1 f/ | 5,776 | 2,810 | 17.1 f/ | 4,798 | 2,815 | 17.3 f/ | 4,863 | 2,780 | 18.8 f/ | 5,236 |

a. Information available as of 15 April 1954.
 b. CIA estimate.
 c. The new Five Year Plan for 1956-60 is to be announced in 1954 or 1955. An interim program for 1954 and 1955 is under way, but no plan data for agricultural production are available.
 d. Rounded to nearest thousand tons.
 e. Weighted average yields; production divided by area equals yield.

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East Germany: Estimated Acreage, Yield, and Production of Grain
1935-39 Average, 1952, Preliminary 1953, and 1955 Plan g/

Table 10

| Grain Type | 1935-39 Average b/ | | | 1952 c/ | | | Preliminary 1953 | | | 1955 Plan | | |
|---------------------|-----------------------------------|------------------------------------|--|-----------------------------------|------------------------------------|--|-----------------------------------|------------------------------------|--|-----------------------------------|------------------------------------|---|
| | Acreage (Thousand Hectares) | Yield (Centners per Hectare) | Production d/ (Thousand Metric Tons) | Acreage (Thousand Hectares) | Yield (Centners per Hectare) | Production d/ (Thousand Metric Tons) | Acreage (Thousand Hectares) | Yield (Centners per Hectare) | Production d/ (Thousand Metric Tons) | Acreage (Thousand Hectares) | Yield (Centners per Hectare) | Production (Thousand Metric Tons) |
| Wheat | 605 | 26.3 | 1,589 | 450 | 23.4 | 1,053 | 275 e/ | 23.5 | 646 | | | |
| Rye | 1,198 | 17.8 | 2,134 | 1,300 | 17.1 | 2,223 | 1,200 f/ | 16.2 | 1,944 | | | |
| Total Bread Grains | 1,803 | 20.6 g/ | 3,723 | 1,750 | 18.7 g/ | 3,276 | 1,475 | 17.5 g/ | 2,590 | N.A. | | N.A. |
| Barley | 433 | 24.9 | 1,078 | 264 h/ | 22.0 | 581 | 272 g/ | 22.0 | 598 | | | |
| Oats | 732 j/ | 23.1 | 1,691 | 553 k/ | 19.6 | 1,084 | 709 k/ | 18.3 | 1,297 | | | |
| Other Grains l/ | N.A. | | N.A. | 152 m/ | 19.3 | 293 | 149 n/ | 19.0 | 283 | | | |
| Total Coarse Grains | 1,165 | 23.8 g/ | 2,769 | 969 | 20.2 g/ | 1,958 | 1,130 | 19.3 g/ | 2,178 | N.A. | | N.A. |
| Total Grains | 2,968 | 21.9 g/ | 6,492 | 2,719 | 19.2 g/ | 5,234 | 2,605 | 18.3 g/ | 4,768 | 2,927 o/p/ | 25.0 | 7,317 o/ |

a. Based on information available as of 15 April 1954.
 b. CIA estimate.
 c. Production has been rounded to nearest whole number.
 d. See methodology section, acreage.
 e. Weighted average; total production divided by total area.
 f. Includes mixed grains.
 g. Summer mixed grain and corn.
 h. Summer mixed grain and corn.
 i. Summer mixed grain and corn.
 j. Summer mixed grain and corn.
 k. Summer mixed grain and corn.
 l. Summer mixed grain and corn.
 m. Summer mixed grain and corn.
 n. Summer mixed grain and corn.
 o. Summer mixed grain and corn.
 p. Probably includes pulses.

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Hungary: Estimated Acreage, Yield, and Production of Grain
1935-39 Average, 1952, Preliminary 1953, and 1956 Plan g/

Table 11

| Grain Type | 1935-39 Average b/ | | | 1952 c/ | | | 1953 Preliminary c/ | | | Plan 1956 d/ | | | Calculated Production (Thousand Metric Tons) |
|---------------------|-----------------------------|------------------------------|--------------------------------------|-----------------------------|------------------------------|--------------------------------------|-----------------------------|------------------------------|--------------------------------------|-----------------------------|------------------------------|---------|--|
| | Acreage (Thousand Hectares) | Yield (Centners per Hectare) | Production e/ (Thousand Metric Tons) | Acreage (Thousand Hectares) | Yield (Centners per Hectare) | Production e/ (Thousand Metric Tons) | Acreage (Thousand Hectares) | Yield (Centners per Hectare) | Production e/ (Thousand Metric Tons) | Acreage (Thousand Hectares) | Yield (Centners per Hectare) | | |
| Wheat | 1,656 | 14.9 | 2,482 | 1,357 d/ | 13.0 | 1,764 e/ | 1,302 d/ | 14.3 | 1,862 e/ | 1,467.5 d/ | 18.2 f/ | 2,670.9 | |
| Rye | 641 | 11.6 | 746 | 502 d/ | 11.3 | 567 e/ | 482 d/ | 11.8 | 569 e/ | 512.2 d/ | 11.8 f/ | 758.1 | |
| Total Bread Grains | 2,297 | 14.1 f/ | 3,228 | 1,859 g/ | 12.5 f/ | 2,331 e/ | 1,784 g/ | 13.6 f/ | 2,431 e/ | 1,979.7 | 17.3 f/ | 3,429.0 | |
| Barley | 471 | 13.9 | 657 | 445 h/ | 13.0 | 579 h/ | 445 h/ | 13.2 | 587 | 460.4 | N.A. | N.A. | |
| Oats | 226 | 12.9 | 291 | 210 | 10.9 | 229 | 230 | 12.0 | 276 | N.A. | N.A. | N.A. | |
| Corn | 1,183 | 19.7 | 2,337 | 1,105 | 11.0 | 1,215 | 1,105 | 16.0 | 1,768 | N.A. | N.A. | N.A. | |
| Total Coarse Grains | 1,880 | 17.5 f/ | 3,285 | 1,760 | 11.5 f/ | 2,022 | 1,780 | 14.9 f/ | 2,631 | | | | |
| Rice (Paddy) | 0 | 0 | 0 | 16 h/ | 23.3 | 37 | 16 h/ | 23.3 | 37 | N.A. | N.A. | N.A. | |
| Other i/ | 2 f/ | 8.9 | 8 j/ | 25 | 9.0 | 22 | 25 | 10.0 | 25 | N.A. | N.A. | N.A. | |
| Total Grains | 4,186 | 15.6 f/ | 6,521 | 3,660 | 12.0 f/ | 4,413 | 3,605 | 14.2 f/ | 5,124 | | | | |

a. Information available as of 15 April 1954.
 b. 31/.
 c. CIA estimate.
 d. Calculated from total bread grains on basis of 73 percent of bread grain area for wheat and 27 percent for rye. For 1956 Plan, 75 percent and 25 percent, respectively. 32/
 e. Calculated on basis of CIA estimated yields.
 f. Minimum yields.
 g. 33/.
 h. 34/.
 i. Millet and buckwheat.
 j. 1933-37 average.

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Table 12

Poland: Estimated Acreage, Yield, and Production of Grain
1935-39 Average, 1952, Preliminary 1953, and 1955 Plan g/

| Grain Type | 1935-39 Average b/ | | | 1952 | | | Preliminary 1953 | | | 1955 Plan | | |
|---------------------|-----------------------------------|------------------------------------|--|-----------------------------------|------------------------------------|--|-----------------------------------|------------------------------------|--|-----------------------------------|------------------------------------|---|
| | Acreage (Thousand Hectares) | Yield (Centners per Hectare) | Production g/ (Thousand Metric Tons) | Acreage (Thousand Hectares) | Yield (Centners per Hectare) | Production g/ (Thousand Metric Tons) | Acreage (Thousand Hectares) | Yield (Centners per Hectare) | Production g/ (Thousand Metric Tons) | Acreage (Thousand Hectares) | Yield (Centners per Hectare) | Production (Thousand Metric Tons) |
| Wheat | 1,319 | 15.3 | 2,014 | 1,348 | 12.1 | 1,631 | 1,375 | 12.1 | 1,664 | | | |
| Rye | 5,433 | 13.3 | 7,214 | 4,512 | 12.7 | 5,730 | 4,512 | 11.7 | 5,279 | | | |
| Total Bread Grains | 6,752 | 13.7 d/ | 9,228 | 5,860 | 12.6 d/ | 7,361 | 5,887 | 11.8 d/ | 6,943 | N.A. | | N.A. |
| Barley | 1,040 | 15.9 | 1,655 | 1,000 | 12.2 | 1,220 | 900 | 13.1 | 1,179 | | | |
| Oats | 1,983 | 14.9 | 2,961 | 1,815 | 13.1 | 2,376 | 1,730 | 12.1 | 2,093 | | | |
| Other g/ | 480 | 11.2 | 540 | 305 | 10.0 | 305 | 305 | 9.3 | 284 | | | |
| Total Coarse Grains | 3,503 | 14.7 | 5,156 | 3,120 | 12.5 | 3,903 | 2,935 | 12.1 | 3,556 | N.A. | | N.A. |
| Total Grains | 10,255 | 14.0 d/ | 14,384 | 8,980 | 12.5 d/f/ | 11,264 | 8,822 | 11.9 b/f/ | 10,499 | 9,000 f/ | 13.2 g/ | 11,900 h/ |

- a. Based on information available as of 15 April 1954.
- b. Postwar boundaries.
- c. Production rounded to nearest whole number.
- d. Weighted average, total production divided by total area.
- e. Includes millet, meslin, buckwheat, and corn (in centners).
- f. Yields of four principal grains given as 12.8 for 1952 and 11.9 for 1953. See source 35/.
- g. Calculated: Production divided by total area.
- h. Original Six Year Plan goal was 14,457,000 MT grain. 36/

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Table 13

Rumania: Estimated Acreage, Yield, and Production of Grain
1935-39 Average, 1952, Preliminary 1953, and 1955 Plan a/

| Grain Type | 1935-39 Average b/ | | | 1952 c/ | | | Preliminary 1953 c/ | | | 1955 Plan d/ | | |
|---------------------|-----------------------------------|------------------------------------|--|-----------------------------------|------------------------------------|--|-----------------------------------|------------------------------------|--|-----------------------------------|------------------------------------|---|
| | Acreage (Thousand Hectares) | Yield (Centners per Hectare) | Production e/ (Thousand Metric Tons) | Acreage (Thousand Hectares) | Yield (Centners per Hectare) | Production e/ (Thousand Metric Tons) | Acreage (Thousand Hectares) | Yield (Centners per Hectare) | Production e/ (Thousand Metric Tons) | Acreage (Thousand Hectares) | Yield (Centners per Hectare) | Production (Thousand Metric Tons) |
| Wheat | 2,793 | 10.9 | 3,048 | 2,340 | 8.4 | 1,966 | 2,382 | 9.2 | 2,191 | N.A. | 12.5 | N.A. |
| Rye | 259 | 9.8 | 254 | 140 | 7.6 | 106 | 150 | 8.4 | 126 | N.A. | N.A. | N.A. |
| Total Bread Grains | 3,052 | 10.8 f/ | 3,302 | 2,480 | 8.3 f/ | 2,072 | 2,532 | 9.1 | 2,317 | N.A. | N.A. | 3,740 |
| Barley | 822 | 7.4 | 610 | 489 | 5.3 | 259 | 610 | 6.4 | 390 | N.A. | N.A. | N.A. |
| Oats | 656 | 8.3 | 544 | 519 | 5.8 | 301 | 575 | 7.3 | 420 | N.A. | N.A. | N.A. |
| Corn | 3,994 | 10.9 | 4,369 | 3,315 | 6.3 | 2,088 | 3,570 | 7.2 | 2,570 | 2,878.5 | 14.0 | 4,030 |
| Total Coarse Grains | 5,472 | 10.1 f/ | 5,223 | 4,323 | 6.1 f/ | 2,648 | 4,755 | 7.1 f/ | 3,380 | N.A. | N.A. | N.A. |
| Other g/ | 49 | 7.9 | 39 | 60 | 6.4 | 38 | 60 | 7.2 | 43 | N.A. | N.A. | N.A. |
| Rice | .2 | Negligible | 1 | 8 | 27.0 | 22 | 9 | 29.3 | 26 | N.A. | 31.5 | N.A. |
| Total Grains | 8,573.2 | 10.3 f/ | 8,865 | 6,871 | 6.9 f/ | 4,780 | 7,356 | 7.8 f/ | 5,766 | N.A. | N.A. | N.A. |

a. Based on information available as of 15 April 1954.
 b. 37/.
 c. ODA estimate.
 d. 38/.
 e. Rounded to nearest thousand.
 f. Weighted average yield; total production divided by total area.
 g. Mixed grain, buckwheat, and meslin.

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Table 14

European Satellites: Per Capita Production of Grain a/
Prewar, 1952, and 1953

Kilograms

| | <u>Albania</u> | <u>Bulgaria</u> | <u>Czechoslovakia</u> | <u>East Germany</u> | <u>Hungary</u> | <u>Poland</u> | <u>Rumania</u> | <u>Total</u> |
|------------------------|----------------|-----------------|-----------------------|---------------------|----------------|---------------|----------------|--------------|
| <u>Bread Grains b/</u> | | | | | | | | |
| Prewar <u>c/</u> | 44 | 331 | 214 | 233 | 363 | 296 | 208 | 263 |
| 1952 | 58 | 266 | 201 | 181 | 247 | 283 | 123 | 214 |
| 1953 | 82 | 284 | 195 | 145 | 255 | 261 | 136 | 205 |
| <u>All Grains d/</u> | | | | | | | | |
| Prewar <u>c/</u> | 189 | 569 | 395 | 406 | 712 | 461 | 558 | 487 |
| 1952 | 148 | 396 | 378 | 290 | 469 | 433 | 284 | 367 |
| 1953 | 195 | 462 | 379 | 266 | 541 | 395 | 339 | 376 |

- a. Grain production of selected area divided by the population in year under consideration.
- b. Wheat and rye.
- c. 1935-39 average.
- d. Bread grain, corn, barley, oats, miscellaneous, and rice.

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Table 15
Communist China: Estimated Average, Yield, and Production of Grain
Prewar and 1950-53 a/

| Grain Type | 1950 | | | 1951 | | | 1952 | | | 1953 | | | | | |
|------------------------|-----------------------------|------------------------------|-----------------------------------|-----------------------------|------------------------------|-----------------------------------|-----------------------------|------------------------------|-----------------------------------|-----------------------------|------------------------------|-----------------------------------|---------------|-------|----------------|
| | Average (Thousand Hectares) | Yield (Centners per Hectare) | Production (Thousand Metric Tons) | Average (Thousand Hectares) | Yield (Centners per Hectare) | Production (Thousand Metric Tons) | Average (Thousand Hectares) | Yield (Centners per Hectare) | Production (Thousand Metric Tons) | Average (Thousand Hectares) | Yield (Centners per Hectare) | Production (Thousand Metric Tons) | | | |
| Wheat | 21,288 | 10.57 | 22,508 | 22,505 | 9.64 | 21,690 | 22,497 | 9.86 | 22,189 | 23,813 | 9.44 | 22,481 | 22,126 | 8.88 | 22,385 |
| Coarse Grains | | | | | | | | | | | | | | | |
| Corn | 6,217 | 13.99 | 8,696 | 8,372 | 12.91 | 10,808 | 7,808 | 13.00 | 10,285 | 8,042 | 13.41 | 10,783 | 8,042 | 12.30 | 9,892 |
| Barley | 6,779 | 9.77 | 7,871 | 6,283 | 9.19 | 6,751 | 6,285 | 10.72 | 6,719 | 6,390 | 10.95 | 6,997 | 6,390 | 10.40 | 6,616 |
| Oats | 1,432 | 11.68 | 1,811 | 949 | 7.72 | 1,133 | 959 | 8.26 | 792 | 978 | 8.32 | 814 | 978 | 8.32 | 814 |
| Other Grains | 19,077 | | 23,801 | 19,558 | | 21,847 | 19,001 | | 21,789 | 19,431 | | 23,084 | 19,431 | | 21,984 |
| Subtotal Coarse | 33,669 | | 42,272 | 35,082 | | 40,139 | 34,133 | | 39,522 | 34,841 | | 41,678 | 34,841 | | 39,336 |
| Rice | 19,996 | 25.36 | 50,714 | 18,776 | 24.49 | 45,976 | 18,773 | 24.14 | 45,177 | 19,178 | 24.89 | 47,786 | 19,971 | 24.13 | 48,199 |
| Total Grains | 74,952 | | 111,471 | 76,363 | | 107,805 | 72,343 | | 106,891 | 77,832 | | 111,895 | 79,238 | | 109,860 |

a. See Methodology, Appendix B.
b. Broad Grains in Communist China consist almost exclusively of wheat.

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Table 16

Communist China: Per Capita Production of Grain ^{a/}
Prewar and 1950-53

| Grain Type | Kilograms | | | | |
|----------------------------|--------------|--------------|--------------|--------------|--------------|
| | Prewar | 1950 | 1951 | 1952 | 1953 |
| <u>Bread Grains</u> | | | | | |
| Wheat | 46.9 | 45.2 | 46.2 | 46.8 | 46.5 |
| <u>Coarse Grains</u> | | | | | |
| Corn | 18.1 | 22.5 | 21.4 | 22.5 | 20.6 |
| Barley | 16.4 | 14.1 | 14.0 | 14.6 | 13.8 |
| Oats | 1.8 | 1.5 | 1.6 | 1.7 | 1.7 |
| Other | 49.6 | 45.5 | 45.3 | 48.1 | 45.8 |
| Subtotal Coarse Grains | <u>85.9</u> | <u>83.6</u> | <u>82.3</u> | <u>86.8</u> | <u>81.9</u> |
| Rice | 105.7 | 95.8 | 94.1 | 99.4 | 100.4 |
| Total Grains ^{b/} | <u>238.5</u> | <u>224.6</u> | <u>222.7</u> | <u>233.1</u> | <u>228.9</u> |

a. A constant population of 480 million has been used to establish per capita data.
b. Individual items may not add to total due to rounding.

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APPENDIX B

METHODOLOGY

I. Soviet 1938 Production and Yields, 1950-53 Yields.

A. Prewar Methodology.

The prewar acreage of the Soviet Union is the sum of the 1938 ^{39/} regional distribution of acreages (republics, krays, and oblasts adjusted to 1945 boundaries) plus the 1938 acreages of each of the acquired territories (Rumania, ^{40/} Poland, ^{41/} Czechoslovakia, ^{42/} Baltic States, ^{43/} Germany, ^{44/} Finland, ^{45/} and Japan ^{46/}). The acreages of the acquired territories have been allocated to the new Soviet administrative regions (1945 boundaries) formed after the acquisition of these new territories. The production in each of the newly acquired territories for 1938 was also taken from official sources and adjusted to new Soviet administrative regions.

The prewar production of grain for the Soviet Union (other than the acquired territories) was arrived at by multiplying the acreage for each administrative region by an average yield of each grain. This average yield was formulated by taking the average for 1900-15. ^{47/} The following reasons are given in using this average for the regional yields of 1938. (1) The calculated production for the country, obtained by the use of 1938 regional acreages and 1900-15 regional yields, falls between two independent estimates for the actual 1938 production of grain. The calculated total of 88.6 million tons is one percent above Jasny's estimate of 87.6 million tons* and one percent below Volin's** estimate of 89.4 million tons.

* Jasny's estimate for prewar was based on prewar boundaries. His statistic of 76 million tons ^{48/} was adjusted to postwar boundaries by adding on the 11.6 million tons produced in 1938 for the acquired territories.

** Volin gives estimates for the five major grains ^{49/} (wheat, rye, oats, barley, corn) for the prewar territory. The differential between biological yields and barn yields indicated by Volin for his major spring grains has been applied to the minor spring grain (buckwheat, millet, spelt, and the like) yields and pulse yields (peas, beans, lentils). This implied discount is nearly 16 percent.

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(2) A study of grain yield trends over a 30-year period (1900-15, 1925-40) indicates no upward trend but rather a slight downward one. For this reason it is felt that the utilization of the 1900-15 regional yields represents 15-year averages that can realistically be used as yield averages in calculating a prewar production base.

B. Postwar Methodology.

For the postwar period the production estimation problem has become more difficult. In the first place, it is believed that the percentage discount between "biological" (gross) and "barn" (net) yields has increased so that the prewar computed discounts are not valid in calculating the differential between the published "biological" production and actual "barn" harvest.

Apparently the most valid method for estimating postwar grain yields results from a comparison of past yield performance related to weather conditions and the use of these historical relationships to make current yield estimates. These yield estimates are based not only on current weather data but also on crop conditions reports gathered from field observers and Soviet publications.

After individual yield estimates are made for the five major grains in each oblast, kray, or republic, the national average yield for each of the major grains is calculated by applying 1938 regional acreages to each of the estimated yields. These acreages act as weights in arriving at national averages. To arrive at the production of the five major grains for the years 1950-53, the yields obtained by the above method are multiplied by total acreages for each grain.*

The production of the minor grains and pulses is estimated by assuming that the magnitude of departure of the major spring-sown grain estimated yields from the average yields (1900-15) also

The adjusted production of 78.8 million tons for the prewar territory plus 11.6 million tons for the acquired territory gives an estimated 89.4 million tons from Volin's basic calculations.

* These acreages have either been obtained from Soviet publications or are estimated.

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applies to the degree of departure from the average for the minor grains and pulses. Acreages of these grains and pulses are obtained as indicated in footnote, page 37 .

II. Eastern European Satellites.

The problem of estimating grain production has become more difficult since 1949 when all production statistics were classified as state secrets by the Satellite governments. Inasmuch as there have been no violent fluctuations in grain acreage, the annual problem has been primarily one of determining yields of the individual grain to be applied against acreage data.

Yields have been computed on the basis of current weather data, crop condition reports as available from field reporting, and official publications. This information is then correlated against historical information to obtain yearly deviations. The result is a yield estimate for each of the five major grains. These are applied against acreages to obtain total production.

Changes in acreages of grain crops from year to year are obtained by analyzing government plans and criticism of winter and spring sowing programs. This information is then combined with what field observation reports are available to make any changes. Where "spotty" checking or past estimates have been available as a result of announcements under the "new course," the above method of estimating has proved reliable.

III. China.

This methodology covers the data which appear in Table 15.

Explanation of table: Communist China -- excludes the Autonomous Regions of Tibet and Inner Mongolia and the Chinese province of Sikang. The province of Sinkiang is excluded from all data except the wheat acreage, yield, and production data of 1953. Inclusion of Sinkiang in 1953 wheat estimates alters acreage and production data by less than 500,000 hectares and 500,000 tons, respectively. 50/

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A. Prewar Data.

For China Proper data are the 1931-37 average. For Manchuria data are the 1935-39 average. These averages have been combined in a single prewar average figure.

1. Wheat. 51/

2. Coarse grains - corn, barley, and oats are listed separately. Other grains include millet, proso-millet, kaoliang, and miscellaneous grains. All prewar yields are statistical ones obtained by dividing production by acreage. Each grain is listed separately below for source reference.

a. Barley. 52/

b. Oats. 53/

c. Corn. 54/

d. Millet 55/ - average millet production for Manchuria is 1931-36.

e. Proso-millet. 56/

f. Kaoliang 57/ - average kaoliang production for Manchuria is 1931-36.

g. Miscellaneous grains 58/ - the miscellaneous grains amount to less than 1.5 million tons and are estimated for Manchuria only. They consist of buckwheat, rye, spelt, small quantities of oats and barley, some legumes, and meslin (mixed grains).

3. Rice 59/ - non-glutenous and glutenous rice. Glutenous rice acreage and production, with the exception of prewar acreage, are in all cases less than 10 percent of the total.

B. Data for 1950, 1951, and 1952.

Estimates of individual grains are made separately for China and Manchuria. Generally, within the frame of reference provided by prewar acreage and production, the estimates in the postwar years were made on an analysis of Communist claims, weather reports, and reports of refugees. The yield is a statistical yield obtained by dividing production by acreage. Each grain is listed separately below for source references.

1. Wheat. 60/

2. Coarse grains - see 2 under prewar reference.

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a. Barley. 61/
b. Oats. 62/
c. Corn. 63/
d. Millet. 64/
e. Proso-millet. 65/
f. Kaoliang. 66/
g. Miscellaneous grains 67/ - no information was available on which to base a 1952 estimate. The estimate carried for 1952 was the prewar average.

3. Rice 68/ - see 3 under prewar reference.

C. Data for 1953.

Estimates for individual grains are preliminary. For rice and wheat, statistical yields were obtained by dividing production by acreage. For the other grains, decreases in yields were calculated on the basis of weather reports and Communist production claims. These yields were then applied against 1952 acreages of the various grains. Each grain is listed separately below for source references.

1. Wheat. 69/

2. Coarse grains - see 2 under prewar reference.

a. Barley - the estimated 1952 production 70/ was adjusted to reflect 1953 crop conditions. Inasmuch as wheat yield was reported about 6 percent below 1952, 71/ the barley yield of 1952 was lowered 5 percent to reflect generally poorer crop conditions. The acreage was maintained at the 1952 level because of lack of information on which to base a change.

b. Oats - acreage, yield, and production carried at 1952 levels. 72/

c. Corn - the estimated 1952 production 73/ was adjusted to reflect 1953 crop conditions. Moderate to severe drought was indicated in 1953 for various corn growing areas. 74/ Acreage was maintained at the 1952 level because of lack of information on which to base a change. Yields were decreased by roughly 8 percent, this decrease approaching the previously lowest yield.

d. Millet and kaoliang - the estimated 1952 data 75/ were adjusted to reflect 1953 crop conditions. Reports indicated that general grain production in Northeast China was down about

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7 percent, or 1.4 million tons. 76/ This decrease was subtracted from millet and kaoliang on the basis of their relative 1952 output after the previously estimated corn output decrease for the Northeast had been considered. The net decrease in the production of millet and kaoliang totaled 1.1 million tons.

e. Proso-millet - acreage, yield, and production carried at 1952 levels. 77/

f. Miscellaneous grains 78/ - no information was available on which to base a 1953 estimate. The estimate carried for 1953 is the prewar average.

3. Rice 79/ - see 3 under prewar reference.

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APPENDIX C

SOURCES AND EVALUATION OF SOURCES

1. Evaluation of Sources.

The sources used in the preparation of this report represent all degrees of reliability. gives precise current information on acreage, yields, or production of crops. Starting from this base of varying reliability and questionable accuracy, it has been necessary for all analysts working on this project to weigh suspect information against that found in sources known to be reasonably reliable and against known agricultural and economic experience. An evaluation of the source is given on all sources in the following list where it is thought to be of value.

Some of these data are in published form while others are worksheets or tabulations.

2. Sources.

Evaluations, following the classification entry and designated "Eval.," have the following significance:

| <u>Source of Information</u> | <u>Information</u> |
|------------------------------|--------------------------------|
| Doc. - Documentary | 1 - Confirmed by other sources |
| A - Completely reliable | 2 - Probably true |
| B - Usually reliable | 3 - Possibly true |
| C - Fairly reliable | 4 - Doubtful |
| D - Not usually reliable | 5 - Probably false |
| E - Not reliable | 6 - Cannot be judged |
| F - Cannot be judged | |

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Evaluations not otherwise designated are those appearing on the cited document; those designated "RR" are by the author of this report. No "RR" evaluation is given when the author agrees with the evaluation on the cited document.

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