UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Economics

THE WORLD FOOD BUDGET: THE IDEA AND IMPLICATIONS

Talk by Willard W. Cochrane
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One of the first actions of Secretary Freeman in the early days of this Administration was to ask for the preparation of a comprehensive world food budget. Work began in the Foreign Agricultural Service in February of 1961 and resulted in a publication during March entitled "The World Food Deficit - A First Approximation." In April, following a reorganization of the economic functions of the Department, this work was continued in the Economic Research Service.

In October, we published "The World Food Budget - 1962 and 1966". The idea, the findings, and the implications of this study are the subject of my talk today.

World food surveys are not new. The FAO published "The First World Food Survey" in 1946 and a second one in 1952. For a number of years the Foreign Agricultural Service has maintained food balance sheets for most free world countries. However, the World Food Budget is the most comprehensive study of its kind in the world today, and the first to be carried out in such a way that it can serve the purpose of the theme of this Outlook Conference: "Gearing U. S. Agricultural Production to Expanded Domestic and Foreign Use."

On January 24, 1961, President Kennedy said "We must narrow the gap between abundance here at home and hear starvation abroad. Humanity, and prudence alike, counsel a major effort on our part." Obviously, a prerequisite to a major effort on our part is the identification and measurement of the gap, country by country and commodity by commodity. The President, in his first farm message to the Congress on March 16, 1961, stated: "The Secretary of Agriculture and the Food for Peace Director have already initiated a study of the food and fiber needs of other free countries." Also, from the standpoint of the theme of this Outlook Conference, I would like to point out that on August 24, 1959, in my Presidential address to the American Farm Economic Association I spoke of: "The necessary linkage of effective supply control to foreign demand expansion." This, then, is the purpose of the World Food Budget.

Highlights of the Study

The World Food Budget, copies of which are available in the lobby outside of this room, is a study involving three billion people in 100 countries. One-third of these people live in 30 industrialized countries, mainly in the Northern Hemisphere. Only in the past two or three decades have some of these people escaped permanently from the threat of malnutrition and hunger. This is true of Eastern Europe, the Soviet Union, and Japan. This happy situation is a result of the technological revolution in agriculture -- a subject some of you have heard me expound upon at length on other occasions.

Over two billion people live in 70 underdeveloped countries of the world and often suffer from malnutrition and occasionally real hunger and even famine. These countries are located mainly in the Southern or middle regions of the

globe. It is here that we have attempted to measure the difference between total available food including that available under aid programs, and a minimum nutritional standard.

Let me set forth our standard diet and give comparisons with a particular underdeveloped country (Indonesia) and with the U. S. average in 1958.

	Nutritional standard	1958 Consumption	
		Indonesia	U. S.
	(grams per person per day)		
Animal protein	7	4	66
Animal plus pulse protein	17	1414	71
Total protein	60	48	97
Fat	38845	38	149
Total calories	2300-2700	2125	3220

This minimum nutritional standard was arrived at especially for this study. It was developed by a committee of nutritionists drawn from the Agricultural Research Service of the USDA, the FAO, and the International Cooperation Administration. Note that the required calories range from 2300 to 2700. This is because requirements vary by country depending upon climate, body size, and other factors. While not all nutritionists agree on a specific requirement for fat, our committee arrived at a fairly low proportion of 15 percent of total calories from this source. Also, many nutritionists feel that pulse protein can be substituted for animal protein to a greater extent than indicated in the minimum standard.

Calculated on the above basis we arrive at the following world food deficit for 1962, expressed in terms of important U. S. Export commodities. I will also compare these deficits with the U.S. rate of production and export.

	World deficit, 1962	Deficit as percent of U.S. production	Deficit as percent of U.S. exports
Animal protein, as nonfat dry milk	3.3 bil. lbs.	150	450
Pulse protein, as dried beans	3.5 mil. bags	20	100
Fat, as vegetable oil	7.0 bil. lbs.	80	350
Total calories, as wheat	1.1 bil. bu.	90	165

Again, let me remind you that these are <u>remaining</u> deficits on an <u>annual basis</u> after our expanded Food for Peace program. Thus, while we have large stocks of wheat that have been built up over a period of years, they would be sufficient to fill the world deficit for only slightly more than one year.

The relative nutritional gap for 1962 by major areas of the world and with population comparisons is as follows:

Area	Population		Percent of World Deficit 1/
	Million	% of Group	
Latin America	210	10	6
Africa	260	12	6
West Asia	80	4	3
Far East	930	42	60
Communist Asia	720	33	25
	2,200	100	100

1/ Computed by price-weighted tonnages of farm commodities listed above.

The most striking thing about this table is the fact that 42% of the people who are short of food live in the Far East and account for 60% of the world deficit of food. In comparison, the deficit -- in both absolute terms and on a per capita basis -- is not large in Latin America and Africa.

The 1966 outlook is for approximately the same deficit as in 1962. This results from a rate of population growth about equal to the expected increased world production of food. From 1937 to 1960, world agricultural production increased at an average rate of 1.8% per year while population increased only 1.5% per annum. However, from 1962 to 1966, population is projected to increase almost 2% per year, and world agricultural production will probably expand at about the same rate.

The attached charts indicate the magnitude of the food deficit by commodity and by country.

In Figure 1, "Animal and Pulse Protein Deficiency," we see that the animal protein deficit alone is highly concentrated in India, Indonesia and Communist China. Most countries of West Africa are deficient in both animal and pulse protein. A few countries are in need of only additional pulse protein in their diets.

Figure 2, "Fat Deficiency", shows that the fat deficit per capita is largest in the countries of West Africa, Iran, Burma, Bolivia, Ecuador, Pakistan, Korea, and, somewhat surprisingly, Japan. A P.L. 480 agreement with Pakistan, recently announced, will make three quarters of a billion pounds of vegetable oils available to that country over a four-year period. In terms of total tonnage of vegetable oils required to fill the deficit, the highly populated countries of India and Communist China would be dominant.

"Calorie Deficiency per Capita", (Figure 3,) shows that the average calorie deficit per person is largest in Iran, Jordan, and a number of Central and South American countries. It is interesting to note that West African countries, where consumption of certain root crops of high caloric content is large, do not suffer from a caloric deficit whereas there is a large deficit of protein.

Each dot in Figure 4, "Calorie and 'Other' Protein Deficiencies in Terms of Wheat", represents 734,000 bushels of wheat. This gives the best picture of the location of the greater part of the world food deficit in total calories and protein in terms of our largest food resource -- wheat.

In Figure 5, "West Europe: Wheat Imports Decrease but Coarse Grains and Vegetable Oils Rise", no dietary deficit for Western Europe has been projected. By 1966, European imports of wheat are expected to decline because of a general upgrading of the diet. Commercial imports of coarse grains are expected to increase commensurate with a growing output of livestock products. West Europe is also expected to continue to be a major commercial importer of vegetable oils.

The wheat surplus of Eastern Europe in 1962 and 1966 will be sharply less than in 1958, (Figure 6.) However, this is mainly due to the fact that the Soviet Union had an unusually good wheat crop in 1958. Here again, no dietary deficiencies have been projected for this area of the world. Both East and West Europe are able to either produce enough food or other products that can be exchanged for food to meet fully their minimum dietary needs.

The Far East is currently consuming less than 60 percent of its dietary needs for wheat and only about 20 percent of its dietary needs for animal protein as measured in terms of nonfat dry milk, (see Figure 7.) This is after imports of these commodities, including all concessional imports. This is the area of the world that has the greatest deficit in terms of animal protein, other protein, and calories. Despite an expected increase in aid shipments, this area will continue to be seriously deficient in terms of animal protein, other protein, and calories through 1966.

Africa ~~imports~~ consumes a good deal more wheat than it produces. Imports, again including aid imports, are expected to increase by 1966, but may not meet minimum nutritional standards. Production of coarse grains in Africa will continue to exceed consumption by a margin that is widening slightly. This is due primarily to corn production and exports of the Union of South Africa. (See Figure 8). In West Asia, imports of wheat are not expected to fully meet nutritional requirements.

The three countries, Argentina, Mexico, and Uruguay, will continue to have sizeable export availabilities of wheat. (See Figure 9.) However, the remainder of Latin America, although importing considerable quantities of wheat, will still face a substantial nutritional deficit in 1966.

Without attempting to identify causal relationships, I would like to point out some of the characteristics that are associated with food deficit countries. These 70 countries have low per capita income. In 1955-57, income averaged $95 per person compared with $843 for the 30 industrial countries. Yields per acre are generally low and, except in Africa and West Asia, the acreage available per person is small. For

instance, the Far East has only 8/10 acres of arable land per person compared with 1.7 acres for industrialized countries. Communist Asia has only 4/10 acre per person. Many of these countries have a warm and humid climate. Illiteracy and lack of physical vigor is widespread. Some of these people live in a society that does not put the same premium upon acquisition of wealth and success in material matters that are basic to our Western philosophy. Food deficit countries use little or no chemical fertilizers in their agricultural production. For the 70 food-short countries, as a whole, domestic production of chemical fertilizer per person in 1958 was only about 1 pound compared with an average of over sixty pounds for the 30 Northern industrialized countries.

The Implications -- Particularly as Related to Agricultural Outlook

The World Food Budget shows that we can increase substantially our agricultural exports under the food aid programs. We arrived at this conclusion shortly after the study began in February and well before publication of the report in October. As a result, we requested and received a special supplementary authorization from the Congress for sale of an additional $2 billion worth of farm products under Title I of P.L. 480. This authority became effective in May 1961.

Our total agricultural exports in Fiscal Year 1962 are now projected at $5.1 billion compared with $4.9 billion in fiscal 1961 and $4.5 billion in 1960. This increase is due to an expansion of our food aid programs. Our Food for Peace exports are scheduled to increase gradually over the next five years. We are giving special study to the possibility of even further acceleration to this activity.

For particular items, you will be able to obtain detailed projections at the commodity sessions that begin this afternoon and conclude Thursday at noon. However, I would like to mention now that we are projecting total exports of 675 million bushels of wheat in crop year 1961-62 compared with the previous record of 662 million bushels last year. Exports of vegetable oils at 1.9 billion pounds, and nonfat dry milk at 740 million pounds are also expected to be at record high levels. We are giving study to programming large quantities of soybean proteins and dried beans and peas to help meet the large deficit of proteins.

As stated earlier, despite our large Food for Peace programs, there will continue to be a world food deficit over the next five years. Our studies indicate that the world may be able to meet its requirements for pulse protein, but a considerable deficit will remain in terms of animal proteins, fats, total calories, and total protein. This is especially true of the Far East and Communist Asia. On the other hand, a concerted effort could bring diets to the minimum standard by 1966 in Latin America, Africa, and West Asia. But in order to meet the food deficit in the Far East, food production must be increased in the countries where the shortage exists. The Department of Agriculture, in cooperation with others, is ready to offer its technical know-how in agricultural production to these countries -- in addition to our direct aid through shipments of food.

The world deficit of food, although large in terms of our present and prospective surpluses, does not mean that we have no need for supply management programs in our domestic farm policy. We cannot fully solve our surplus problems by simply expanding further our foreign food aid. To attempt to do so would mean very high costs to the U. S. Treasury. It would also create serious problems for other exporting countries. Moreover, there are conditions in the food deficit countries themselves that limit their capacity to receive food aid commensurate with their dietary needs.

In our World Food study we gave much attention to the ability and the willingness of foreign governments to accept food on concessional terms. We found that there are many obstacles. Often, there are insufficient physical facilities for receiving and distributing food once it reaches the shores of the underdeveloped country. Large groups of people do not have enough income to purchase the needed food even when offered under the favorable terms of sale under P.L. 480 programs. Yet most countries are unable or unwilling to establish and operate countrywide free food distribution programs. Some of these obstacles can and must be overcome to reach the level of food aid that we are contemplating.

Another important implication of our World Food Budget is that concerned with the question of shifts in the pattern of U. S. agricultural production. The world's food needs and our ability to fill these needs would be better served, for example, by producing less feed grains and more soybeans and dried beans and peas. Our current stocks of feed grains at 84 million tons is some 30 to 40 million tons in excess of our needs. In addition, we have an annual production capacity of 5 to 10 million tons more than is required. Yet, we do not anticipate being able to ship more than 4 to 5 million tons per year under our Food for Peace program. Large scale indirect use of feed grains for food aid by means of increased livestock production will be limited by cost considerations.

The large deficit of animal protein in world diets suggests that we might increase our production of nonfat dry milk. However, it appears that such action would be limited by the high cost of the accompanying production of butter. Some nutritionists find that pulse protein can be utilized to substitute for animal protein to a larger extent than indicated in our reference standard. In any case, we will have ready outlets in the Food for Peace program for significant quantities of dried beans and peas and soybean proteins. We can also use much soybean oil to fill part of the critical shortage of fats. Due to food preferences, we can make good use of larger quantities of rice to meet emergency calorie deficits in particular countries.

In summary, we now know for the first time the magnitude of the world's needs for food -- nutrient by nutrient, commodity by commodity, and country by country. We know the capacity to produce food in both the underdeveloped and the industrialized countries; and something of the difficulties we face in using all of our excess productive capacity to relieve shortages in all areas abroad. We now have the pertinent facts and I hope we have outlined the major issues involved in the "Gearing of U. S. Agricultural Production to Expanded Domestic and Foreign Uses."

Figure 1

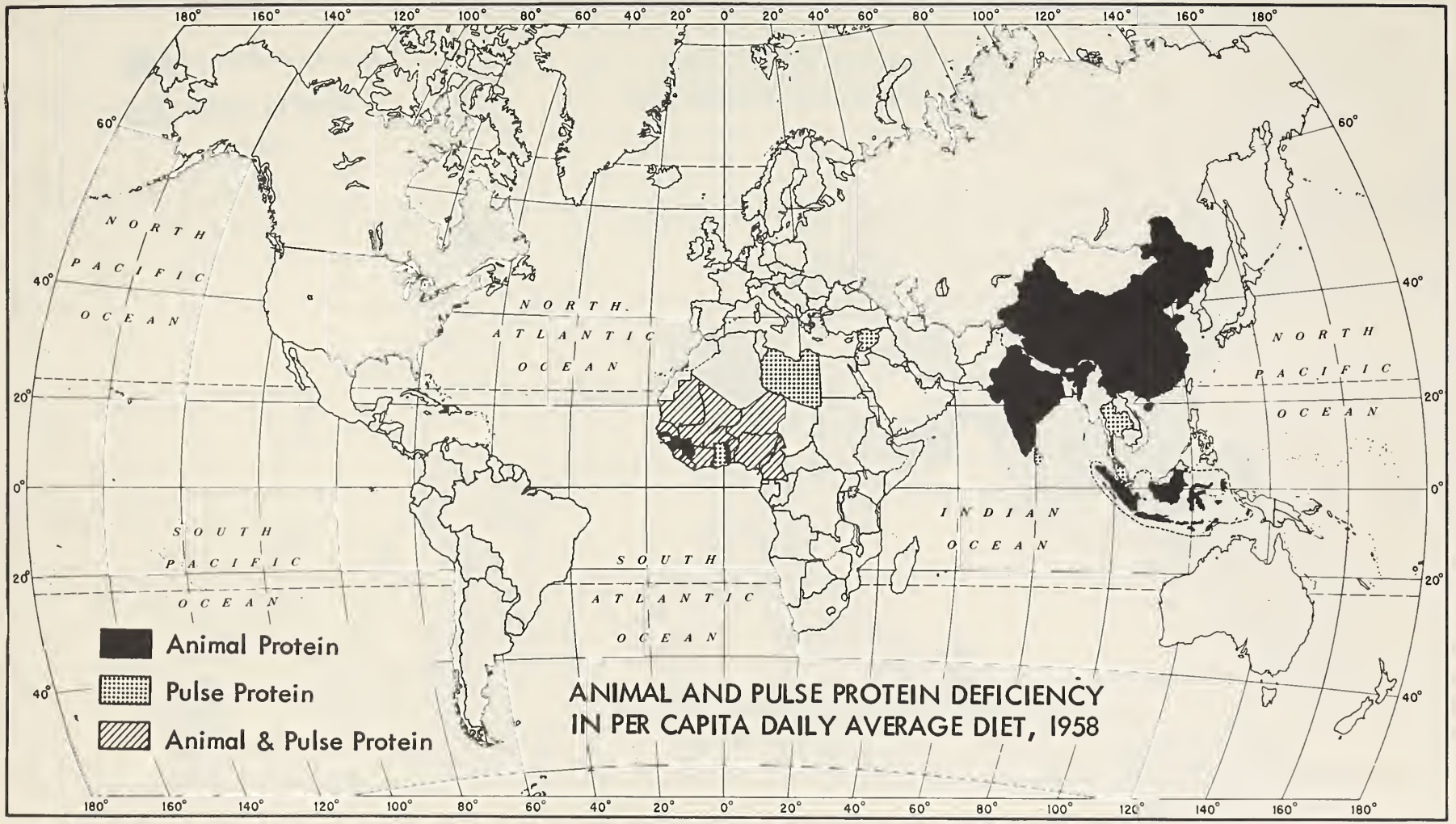

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Figure 2

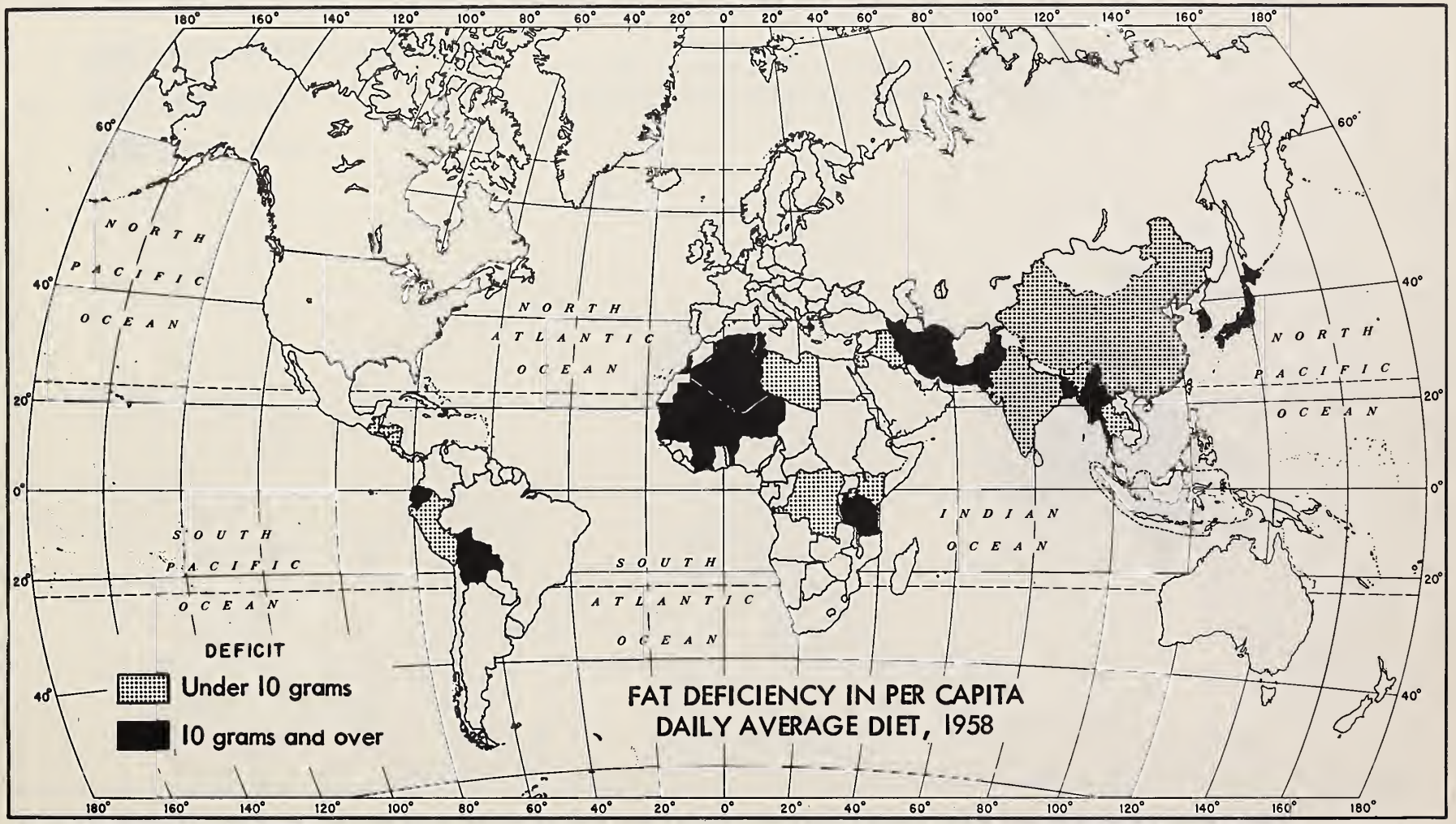

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Figure 3

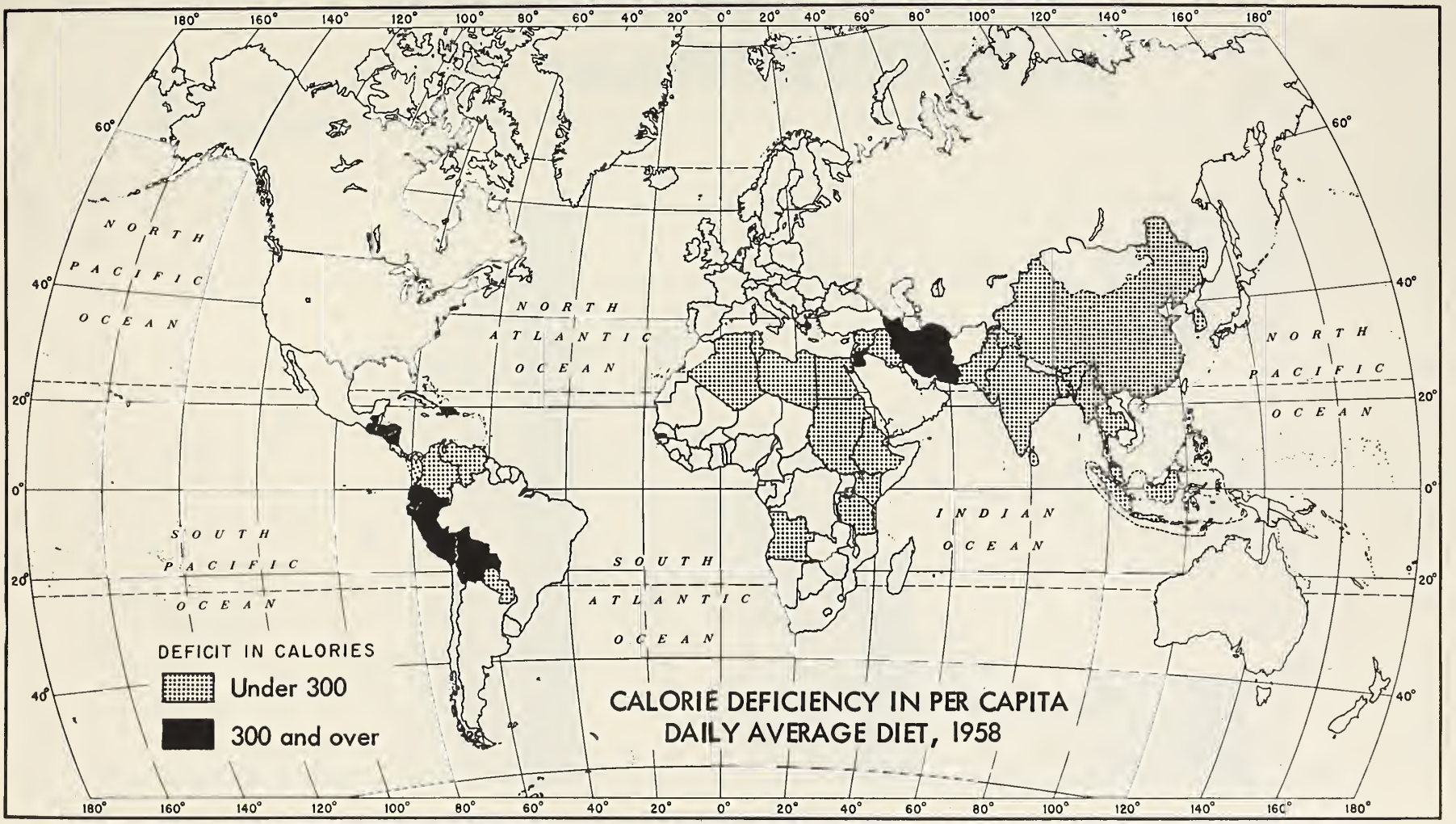

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Figure 4

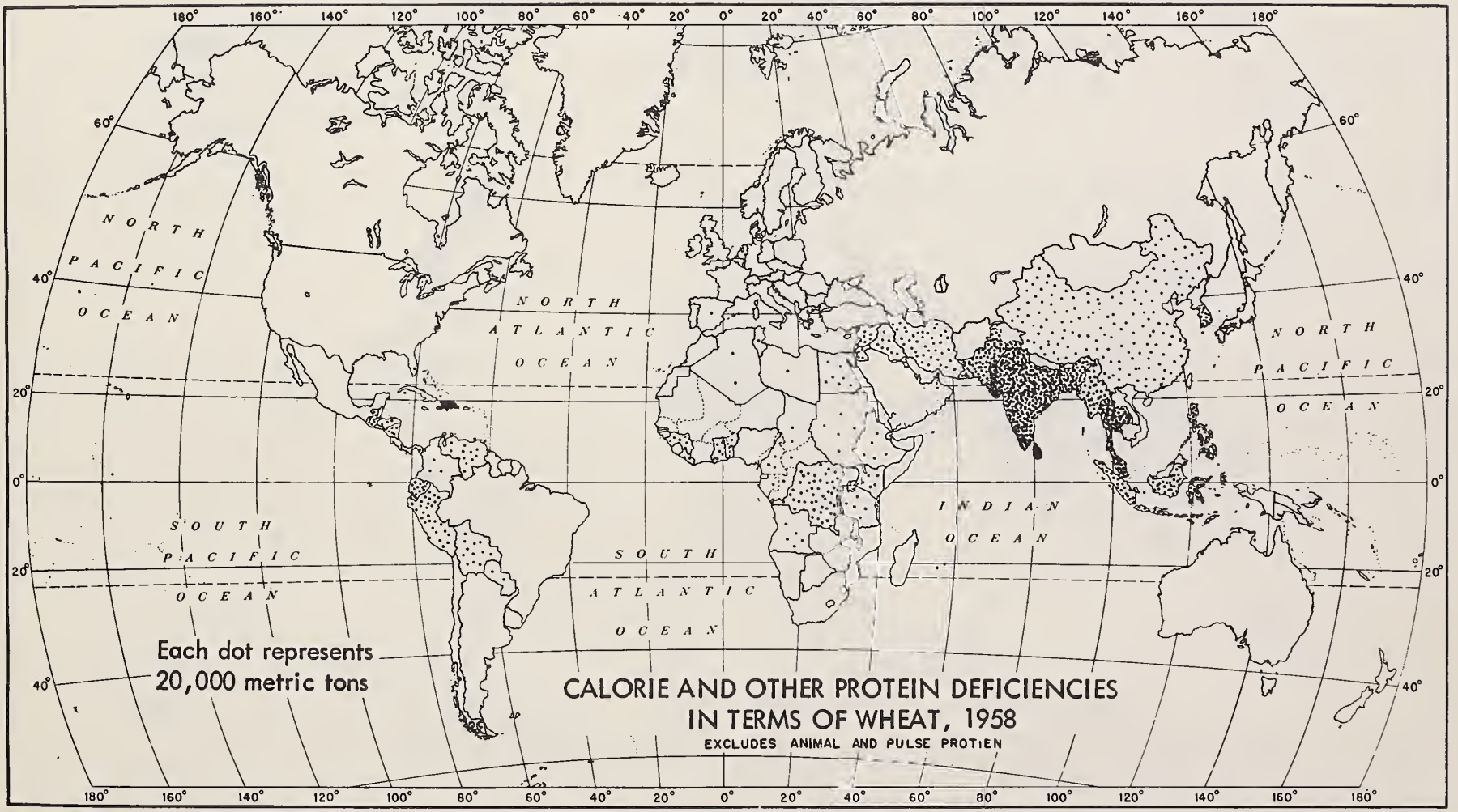

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Figure 5

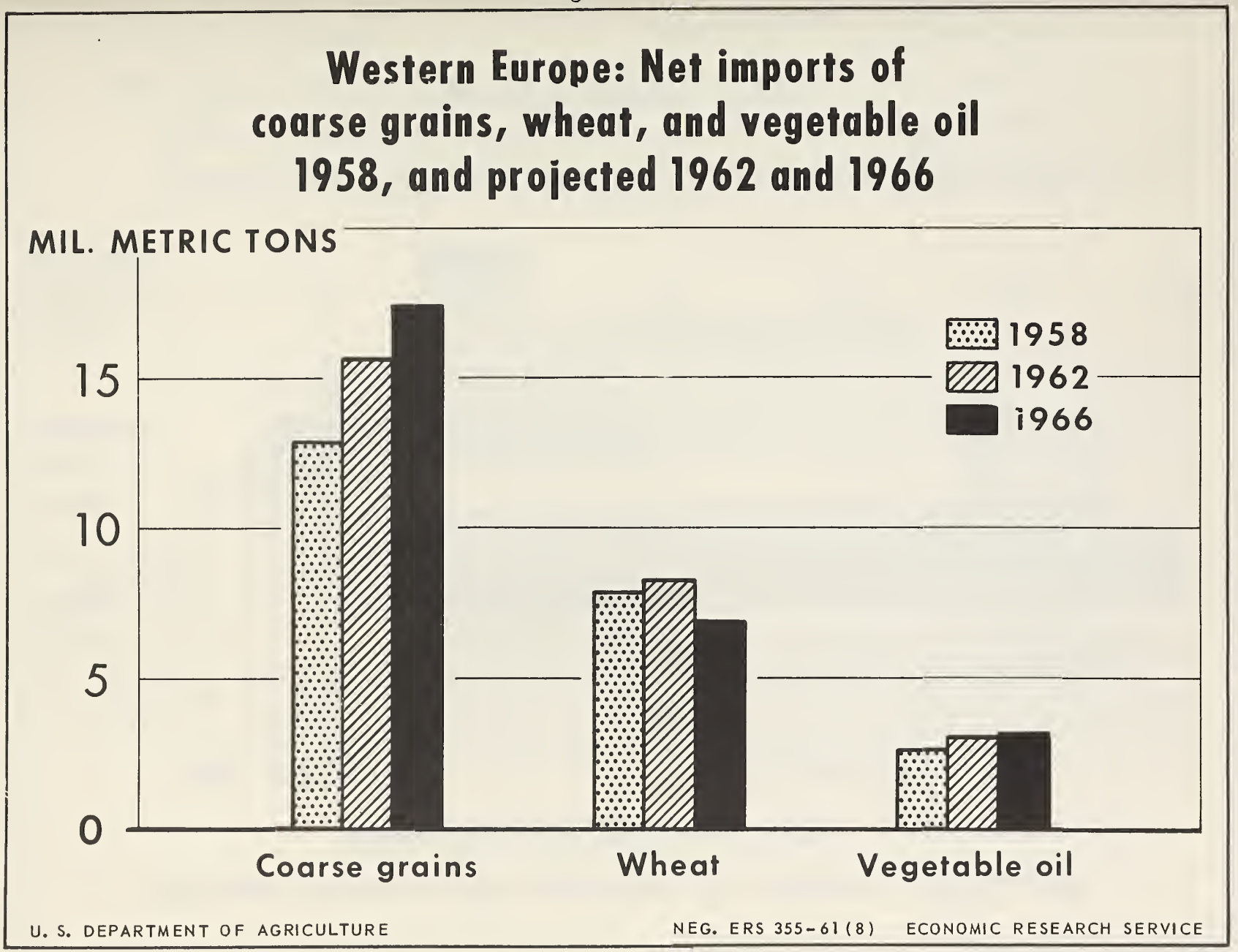
Western Europe: Net imports of coarse grains, wheat, and vegetable oil 1958, and projected 1962 and 1966
MIL. METRIC TONS
15
10
5
0
1958
1962
1966
Coarse grains
Wheat
Vegetable oil
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Figure 6

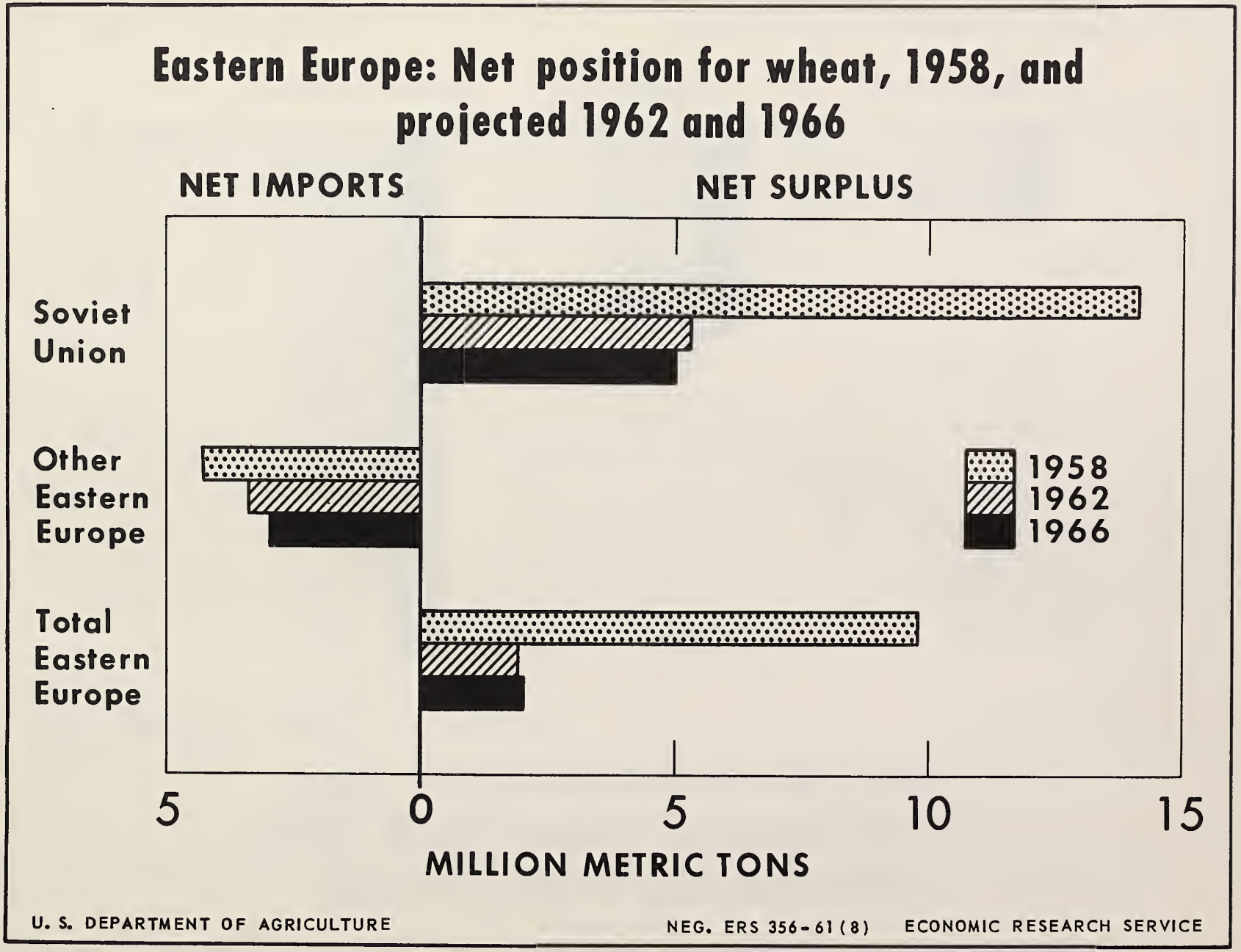
Eastern Europe: Net position for wheat, 1958, and projected 1962 and 1966
NET IMPORTS
NET SURPLUS
Soviet Union
Other Eastern Europe
Total Eastern Europe
1958
1962
1966
5
0
5
10
15
MILLION METRIC TONS
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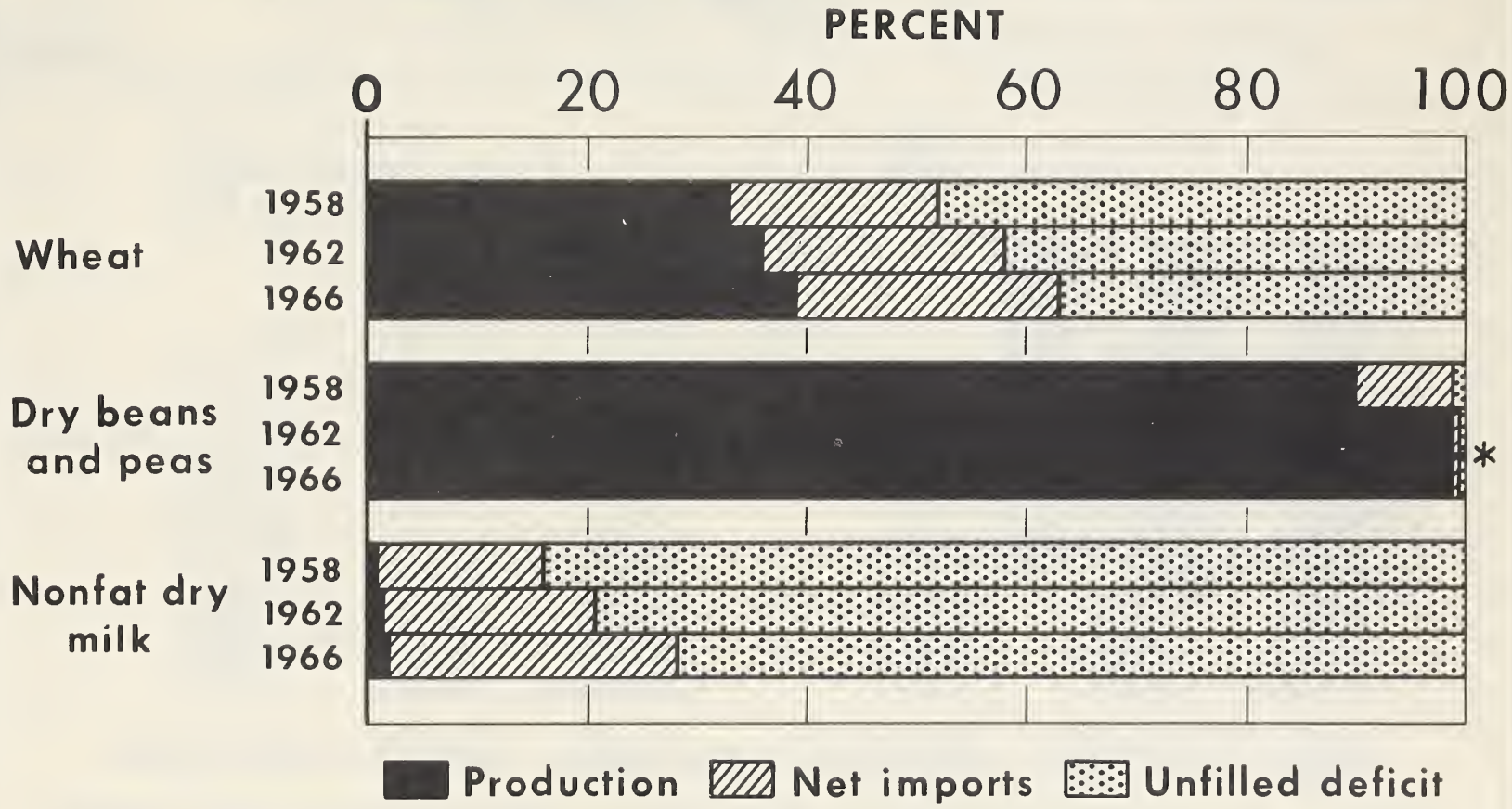
Figure 7

Far East: Production, net imports and unfilled deficit as percentages of requirements to meet nutritional standards for 1958, and projected 1962 and 1966



*IMPORTS 0.5 PERCENT AND UNFILLED DEFICIT 0.5 PERCENT IN 1962 AND 1966.

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Figure 8

Africa and West Asia: Production and consumption of wheat and coarse grains, 1958, and projected 1962 and 1966

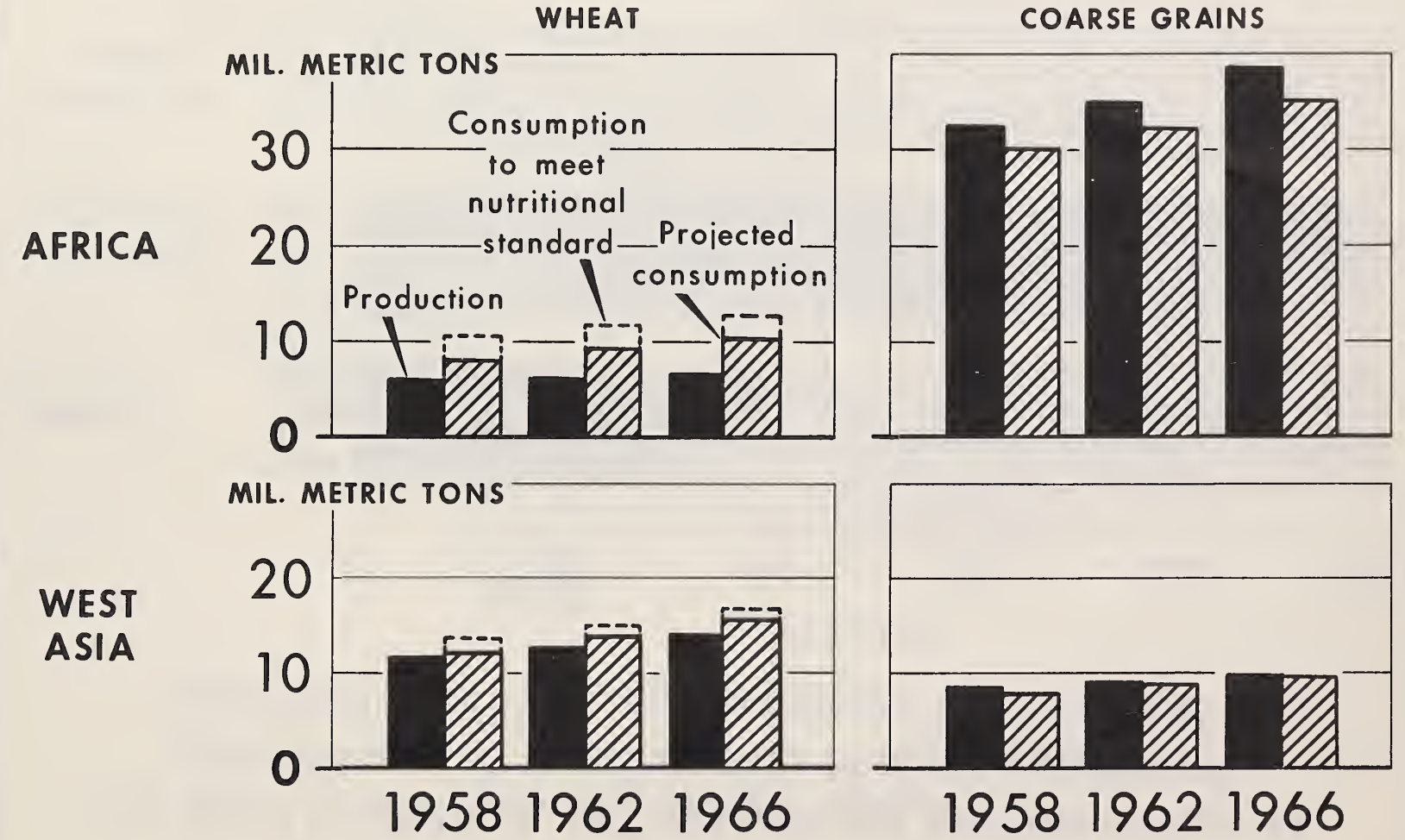

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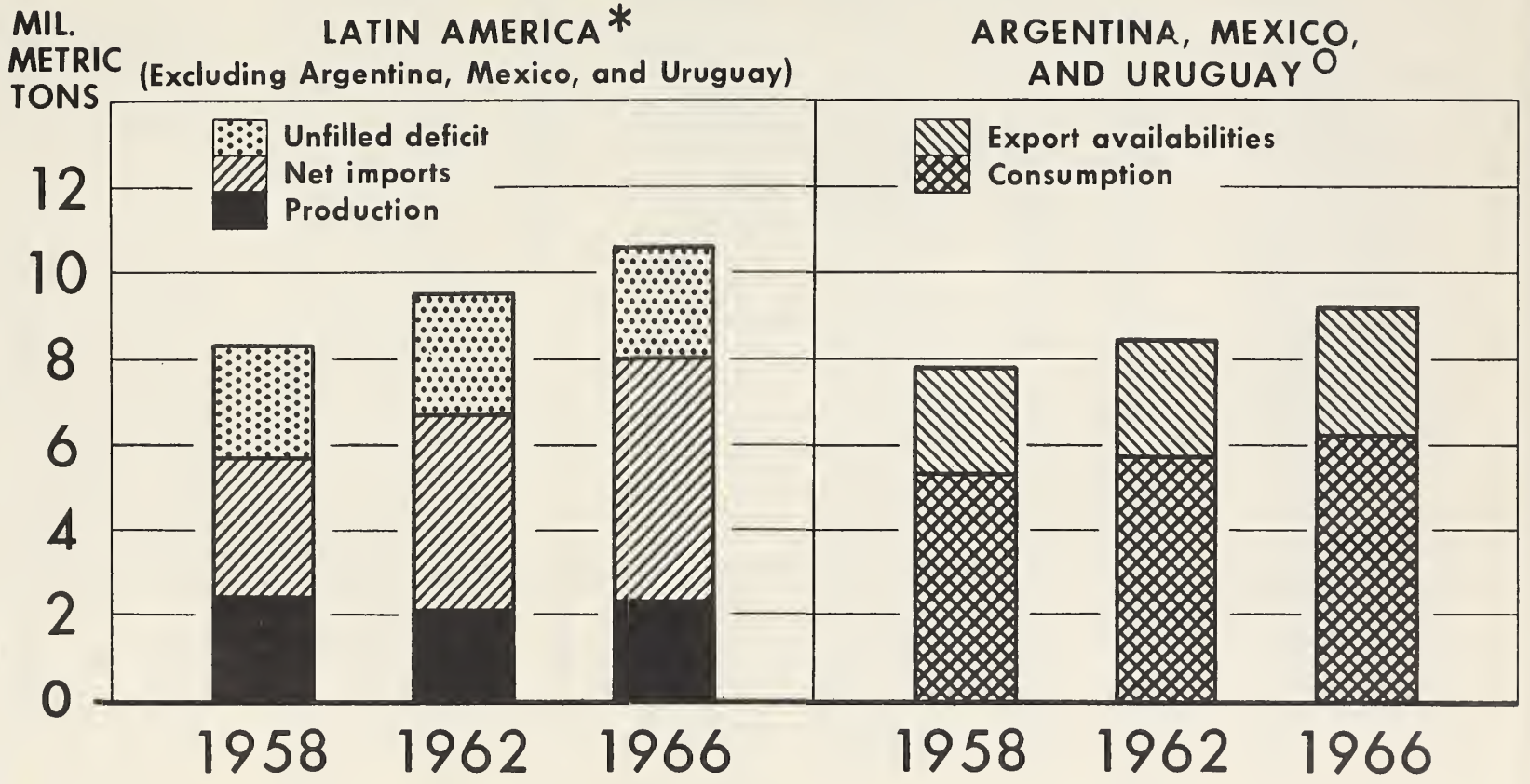
Figure 9

Latin America: Wheat production and requirements to meet nutritional standards, 1958, and projected to 1962 and 1966



*CONSUMPTION EQUALS PRODUCTION AND NET IMPORTS.

O PRODUCTION EQUALS CONSUMPTION AND EXPORT AVAILABILITY.

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