

## **FOOD AND FERTILIZER ARE NEEDED NOW**

**by**

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I have travelled about eight months of this past year, looking at the food problems of twenty-five countries, of which all but four are food-deficit nations. My own feeling is that the shortage of food is worse than most governments are willing to admit. We all know that there is very little grain reserve anywhere in the world. The situation is compounded by the shortage of fertilizers, which makes it very difficult to bring about any immediate remedy. We

are all now paying the consequences of very unwise social, economic and agricultural policy over the past two and a half decades, during which we listened to the lullaby of cheap food. This includes the developing nations, which were primarily concerned with industrialization and gave little thought to the importance of agriculture. During this time of depressed agricultural prices, these countries were—or should have been—trying to develop policies to keep their own small farmers from being driven off the land and into the slums of their own cities.

Technological know-how and the capabilities of food producers are such that we would not be where we are today had we any kind of planning rather than the confusion that has prevailed during these past fifteen years or so. Now what can we do? In the next two or three years, there will have to be more emergency food aid, either in kind or money, or we will face disaster of a magnitude such as the world has never seen before.

We have all learned with dismay of the tens of thousands—I dare say hundreds of thousands—who have perished from famine and malnutrition in the Sahelian countries. But unless we act soon we will be talking not of hundreds of thousands but of millions who will perish from famine and malnutrition. Whether this will be 1 or 2 million, whether it will be 10 million, or tens of millions, no one can predict at this time. As others have pointed out, the critical area for the immediate future is South Asia, where the greatest population density exists. This is not to minimize the problem in Africa or to imply that certain Latin American countries are not close to the danger point.

For the longer run, we must begin taking steps now to ensure better reporting on crop production and storage in every nation. A major difficulty is that at least two of the very large countries do not report regularly or in enough detail to be of any value in trying to analyze the world food situation at any point in time. If we do not know the situation in such major agricultural countries, then how can we prepare any meaningful plans to avoid disasters?

As soon as possible, we have to rebuild and maintain an adequate reserve for protection against the vagaries of weather in different parts of the world. We are many more people now, and it is all the more important therefore to build *an adequate reserve*. Financing this will never again be done by the food-exporting

countries alone. It is political wishful thinking to imagine that the constituents of those countries will permit their governments to carry the whole burden of financing these stocks.

Obviously we will also have to stimulate agricultural production in the developing nations. It is most unfortunate that agriculture is on the lowest rung of the social, economic and political scale. Despite the truth of the old Mexican proverb, "A full stomach assures a contented heart," the importance of food to political stability is today generally overlooked. Since the urban sector is organized and visible, political leaders believe that by keeping it quiet they can maintain their seats of power, while ignoring the disorganized and remote majority in the countryside. Time is running out on this notion.

I think it would be very beneficial if, when agricultural policy is being debated, all cabinet ministers, including the heads of planning commissions, were locked in a room for fourteen days without food, and without water for the last three days. Then, perhaps, we would get more realistic agricultural policies. I am sorry to say that I feel frustrated and even bitter about the inadequacy of these policies in many countries. I have battled ineffectively for thirty years with policy-makers, cabinet ministers and heads of state in an attempt to improve agricultural policies and the resources to support them. On second thought, I believe it might be enlightening if heads of state, too, were included in our proposed fourteen-day fast.

A great deal more can be done by the introduction of the proper kind of technology. According to Dr. Raymond Ewell, the world will need to invest annually somewhere between 6 and 8 billion dollars in new plants, raw materials, operating costs and infrastructure to provide the fertilizer required for adequate agricultural growth. Much of the new fertilizer production capacity should be installed in food-deficit, Third-World nations (not merely the OPEC nations). To achieve this goal some way must be found to finance these projects.

Some theoreticians are so upset about the current energy crisis that they insist it is impossible to justify the use of gas or crude oil for nitrogenous fertilizer production. This is nonsense. When one flies over the Persian Gulf and Arabian Peninsula or over parts of South America at night, it looks like the "land of the midnight sun" because of the flaring of gas from the wellheads and

refineries. My patience runs out. This wasted raw material is the essential ingredient in the expansion of food production.

Moreover, there is a growing number of theorists who say that some way must be found to increase yields on small farms without the use of expensive fertilizer. These are well-meaning people who live isolated from the realities of the biological world, who do not come down into the mud, dust and sweat of the battle where food is produced. I have little patience with this point of view; for how can you make land, which has been depleted of nutrients over the decades, or even centuries, produce high yields without replenishing the soil with those nutrients that have been removed by cropping? We do not have the additional land, suitable for cultivation, to produce the 25 to 27 million metric tons of increased cereals required every year in order to keep pace with population growth. Consequently, much of the growth in production will have to come from increased yields. Those who believe it is possible in the foreseeable future to cultivate cereal crop varieties that are capable of producing high yields without the addition of plant nutrients to the soil are wrong; they live in a fool's paradise.

Another important stopgap form of help to ease the food crisis would be to divert more nitrogen and phosphate fertilizer into the Indian subcontinent. This would pay far bigger dividends in increased food production than if the same amount of fertilizer were used in those parts of the world where application is already very heavy. A ton of fertilizer applied in a country such as India is likely to produce 20 to 25 tons of additional food per ton of nutrient, whereas an additional ton applied in western Europe or the United States would produce only about 10 additional tons.

We have talked about cutting back the consumption of animal products in order to release more grain for human consumption, but I recognize that the political difficulties are formidable. Alternatively, we might give greater emphasis not only to increasing grain production but also to improving the nutritional value of cereals themselves. We have seen what can be done to better nutrition by genetic improvements of lysine and tryptophane levels in maize, which is now entering the first stages of commercial production. The same sort of improvement can be achieved in sorghum and barley, and eventually it may be possible in other basic cereals. This approach has not received adequate

research support, even though it offers a way of at least alleviating protein malnutrition and improving diets.

Looking ahead twenty to twenty-five years, I am very gravely concerned about our capacity to produce food for an additional 2 to 3 billion people. These numbers are frightening. The amount of additional food that we will have to produce just to maintain the completely inadequate levels of nutrition we have today is overwhelming. Yet most political leaders are still reluctant to face up to and try to tame the population monster before it destroys world civilization.

Norman Borlaug's emphasis on the importance of fertilizer warrants some further background. The use of chemical fertilizers has increased five-fold since 1950, yet it is estimated that 80 percent of small farmers in the developing countries are still without any. World consumption is now more than 80 million metric tons annually, but whereas Japan and several countries of Western Europe use more than 300 pounds per arable acre, India uses 14 pounds, Bangladesh 7, and Nigeria 1 (1972 figures).

After a period of surplus in the mid-sixties, chemical fertilizers are in acutely short supply. In all probability this situation will be corrected in two or three years, but additional production capacity is not likely to bring down prices substantially. Since 1972, the cost of chemical fertilizers has tripled or quadrupled. This is partly due to higher raw-material and labor costs, but it also stems from the many unhealthy and almost monopolistic tendencies and practices of the world fertilizer market. For example, in the first half of 1974, farmers in France and Germany paid from 165 to 180 dollars for a ton of urea at their farm gates because of domestic price controls; but the average FOB export price at that time for developing countries was 370 dollars per ton. In other words, farmers in Bangladesh or Sri Lanka were expected to pay about three times more for urea than their more well-to-do counterparts in France and Germany. This kind of a situation must not be allowed to recur.

Clearly, the higher cost of fertilizer has adversely affected the economics of modern agricultural technology with its emphasis on heavy use of fertilizers to increase yields. Can the developing

countries adopt modern technology to obtain higher yields without such high doses of fertilizer?

Thorkil Kristensen, the former Secretary-General of OECD, presented to the Forum an Assessment of the "Assessment" in which he questioned one of the most important assumptions of that preparatory document—that as a minimum the average rate of food production in developing countries attained in the past ten years (2.6 percent per annum) can be sustained for the next ten years. This, according to Kristensen, is a dangerous simplification. The rate of growth of food production in developing countries had already slowed down from 3.1 percent in the period between 1952 and 1962 to 2.6 percent in the next ten years, between 1962 and 1972, and there is much evidence to suggest that the rate could slow down further. This would mean a much larger food gap and import requirements beyond the financial capacity of the poorest countries. It would also become extremely difficult, if not impossible, to increase food aid sufficiently and at the same time to build up stocks. On the basis of his assessment, Thorkil Kristensen, in the following paper, reaches the conclusion that the only immediate solution is to restrict consumption of cereals in the rich countries.