

# The World Food Situation: Recent Developments and Prospects

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# The World Food Situation: Recent Developments and Prospects

In a brief presentation it may be helpful if the major conclusions are stated at the beginning to permit you to better evaluate what I have to say. My five main conclusions are:

1. The poor people of the world now have more adequate diets than at any other time in this century.
2. The poor people of the world will have somewhat more adequate diets by the end of this century than they now have.
3. The potential expansion of food production by the end of this century is significantly greater than what will be achieved with a continuation of existing governmental policies; resources, both natural and human, are adequate for a significant increase in the rate of growth of food production.
4. Much of the instability of food prices that we have witnessed during the 1970s-the high prices of 1973 and 1974 and low prices of today-has resulted from governmental policies (the acts of man) and not primarily from instability of production.
5. The rebuilding of world grain stocks, the low international prices for grains and sugar and the recent increases in per capita food production in most developing countries will mean (has meant) that little additional effort will be made to more nearly realize the potentials that exist for expanding the food production and availability in the developing countries of the world.

## FIRST CONCLUSION

Let me first note that by the poor people of the world I refer to the majority of the peoples of Asia, Latin America and Africa. Obviously not all who live in these areas are poor, but by the standards of North America and Europe most are. And most of these poor people live in rural areas and villages; the teeming millions of Calcutta and other cities of the developing world are the minority of the poor. As many as 80 percent of the world's poor population of two billion live in rural areas.

Why do I conclude that the poor people of the world are better fed now than at any other time in this century? The most compelling evidence is the remarkable increase in life expectancy in the developing countries over the past three decades. At the midpoint of this century, life expectancy at birth in the developing world was thirty-five to forty years; today it has reached or surpassed fifty-two years. Japan did not achieve that life expectancy until 1947; the United States until 1910.

Improvements in food consumption were not solely responsible for the increase in life expectancy, but there can be little question the change would not have been possible without some improvements in the level and security of food supply. Much of the increase in life expectancy occurred through a reduction of infant and child mortality, a period of life during which adequacy of food is an important factor in survival.

Whatever else history may record as achievements of the twentieth century, it may say that century saw the elimination of the dread scourge of famine from the face of the earth. Except for famines due to war and civil unrest, famine has already been largely

eliminated. There remain very few pockets of population that do not have access to the world's food supply to largely compensate for shortfalls in local production. Much of the world's accomplishment in nearly eliminating famine is due to revolutionary improvements in communication and transportation and increases in the annual stability of food production.

## **SECOND CONCLUSION**

The available data on per capita food production in the developing world indicate that there has been a modest improvement over the past quarter century. During that period per capita food production has increased by approximately 0.5 percent annually or by about 13 percent. Caloric consumption has increased somewhat more than production due to increased net grain imports by the developing world. While there are those who view the increased level of grain imports by the developing countries as a problem, the increase in net grain imports has increased per capita caloric consumption by more than 100 calories per day or about 5 percent for all developing countries, including China.

The slow growth in per capita food production in the developing countries was not due to a slower growth of total food production than in the industrial countries. The production growth rates were identical. The difference in improvements of per capita food production was due solely to the much more rapid growth of population—approximately 2.5 percent annually in the developing market economies and only slightly more than 1 percent in the high income countries.

It was a major challenge to the agricultures of the developing countries just to keep up with such rapid growth of population.

Similar sustained rates of population growth have never been witnessed before, not even during the period of major immigration into the United States.

I do not want to leave the impression that the improvement in nutrition has been uniform. In general Latin America and East Asia have had the largest increases in per capita food production; South Asia has seen very moderate improvement in the past fifteen years. In much of Africa per capita food production has declined since the early 1960s. Political instability and ideology have been important factors in the poor performance of African agriculture. Fortunately there have been some important success stories in Africa-the Ivory Coast, Morocco, Sudan and Tunisia.

A continuation of recent food production trends and population growth rates for the rest of the century will result in a further small improvement in per capita food production in the developing countries. I have seen no valid evidence that indicates that the production trend cannot be maintained. There are those who believe that the Green Revolution of the late 1960s has had its full effect and there is nothing to take its place. Two comments are in order. First, the rate of growth of food production in the developing countries during the 1950s was at least as high as since 1960; and, second, the new varieties (primarily rice and wheat) developed during the Green Revolution were suitable for only a minority of the cropland of the developing countries, primarily areas with very good quality irrigation, and the improvement and adaptation have by no means come to an end.

There is now evidence that population growth rates have begun to decline in the

developing countries. There are twenty-five countries where the crude birth rate declined by from 15 to 40 percent between 1965 and 1975; included were India, China, the Philippines, Costa Rica and Colombia. Due to age composition and further declines in mortality, it will be some years before there are actual declines in population growth rates, but we could well see some rather dramatic reductions before the end of this century in many countries.

### **THIRD CONCLUSION**

The realizable potential for food production in the developing countries is very much greater than current levels of production or what production will be by the end of the century if the growth rate continues at 2.5 percent annually.

Crude comparisons of the agriculture of the United States or Western Europe and of the developing countries depict the latter as backward and inefficient. But modern agriculture as we know it today in the Western World is a recent phenomenon. Animal power was the major form of power in North America as recently as five decades ago and as recently as three decades ago in Western Europe.

Only four decades ago grain yields per hectare in the industrial countries and in the developing countries were the same-1.15 tons per hectare (a corn yield of 18 bushels per acre). By 1973-75 grain yields in the industrial countries were 3.0 tons per hectare; in the developing countries 1.4 tons. Grain yields in excess of 2 tons per hectare are a recent phenomenon-a consequence of the agricultural revolution of the past four decades. In years of average weather during the first half of this century grain yields in the United

States averaged less than 1.5 tons per hectare compared to 3.5 tons in recent years. Corn yields increased even more—from 1.4 tons per hectare prior to 1940 to more than 5.5 tons in recent years. Of the industrial countries only Japan achieved significant grain yield increases in the nineteenth century. Japanese grain yields are now 5 tons per hectare; a century ago only a little more than a quarter of current yields.

Why do such differences in productivity exist? It is not due to differences in basic human characteristics. Farmers, even poor and illiterate farmers, are as smart and intelligent as the rest of us. Poor farmers are at least as interested as the rest of us in a better and fuller life, if not for themselves then for their children. What does distinguish such farmers is that they are often very poor and own little besides their native intelligence and physical capacities.

There is abundant evidence that the poor and illiterate farmers of the developing countries will adopt new ways of doing things if the new ways are superior to the old. One needs only to note the rapid adoption by millions of farmers in the developing countries of the new high yielding varieties of grain (often in response to quite modest yield differentials), the rapid increase in the use of fertilizer, insecticides and herbicides during the past decade, and the numerous studies of supply responses that indicate at least as much response to price changes as do similar studies in the United States and Europe.

Are the differences in productivity due to differences in natural endowments—soils and climate? I have noted the similarity of grain yields in the developing and industrial countries four decades ago. None of the new high



yielding varieties, such as hybrid corn, were then in use to a significant degree. Relatively little fertilizer was applied to grains, and the methods of land preparation and cultivation had changed little in the previous half century. Under these conditions the mix of natural conditions of the country groups resulted in similar yields.

Even if grain yields were similar at one level of knowledge and technology it may not follow that at other knowledge and technology levels the yields would be similar. We know that there have been different rates of growth of yields in the United States since the 1930s. Yields have increased more in the humid than the dry areas and in the warmer than the cooler areas.

While it is possible that there are fundamental restraints on yields in the tropical and semi-tropical areas of the developing countries that do not prevail in temperate zones, there is now evidence that such restraints may not be important. The evidence is the maximum yields that have been obtained under experimental conditions in several tropical areas in recent years. While it may be many years before such yields are obtained on farms, the experimental yields do indicate that natural conditions are not by themselves responsible for the relatively low yields now prevailing in the developing countries. Let me give a few examples. The first of the new wheats developed in Mexico had a yield potential, under irrigated conditions, of 3.6 tons per hectare in 1950. A decade later the yield potential increased to 6 tons and to 8 tons in another decade. Over the same period of time (1950 to 1970) farm yields increased from 1.0 ton to 2.2 tons.

Corn yields, in experimental trials in such widely dispersed areas as Nepal, India, Ivory

Coast, Panama, Costa Rica and Turkey, in 1975 ranged from 4 to almost 9 tons per hectare. This compares to actual farm yields in the United States of 6 to 8 tons. The new varieties of rice grown in South and Southeast Asia have yield potentials of 5 to 8 tons per hectare. These compare favorably with actual yields achieved in Japan and the United States.

If I am correct that the differences in productivity or yields are not due to either human factors or natural conditions, other factors must be responsible for the observed differences. One of the important sources of difference is the much greater investment in research applied to agricultural problems in the industrial than in the developing countries. Agricultural research expenditures in all of South and Southeast Asia are now about equal to what the United States spent in the 1920s; since then our expenditures have increased tenfold. In 1970 only 15 percent of the world's publicly supported agricultural research was undertaken in the developing countries.

The available evidence indicates that the rate of return to investment in research is high. Annual rates of return as high as 50 percent are quite common; a rate as low as 20 percent is unusual. These estimates, which apply to both developing and industrial countries, when related to the very large absolute differences in national investments in research, are consistent with the large differences in productivity.

It was modern science applied to agricultural problems that made possible the highly productive agricultures of North America and Western Europe. There is no reason why the application of modern science, if done on the appropriate scale, will not have the

same revolutionary impact on agriculture and the food supply in the developing countries. As I have noted, modern science has had an influence on our agriculture only within the lifetimes of many of us in this room. I know this from personal experience. When I grew up on a farm the technology that was used was almost wholly the result of the accumulated experience of generations of farmers. Very little that we did was the result of the application of the scientific developments of the previous century. It was only after the 1930s that modern science had a significant impact upon American agriculture.

There are other factors that have held back the growth of yields and food production in the developing countries. In all too many countries farmers are mercilessly exploited by their government. Low procurement prices, export taxes, price controls and high prices for modern farm inputs such as fertilizer are imposed in order to protect inefficient domestic industries. For example, in India from 1968 to 1972 the price of rice was held to more than a third below the then low world price. For nearly two decades the Government of Thailand has taxed the export of rice. A study that we undertook indicated that the export tax reduced rice production in Thailand by 15 percent. In other countries, such as South Korea, policies have favored farmers through relatively high output prices and moderate prices for modern farm inputs. Korean rice yields are now the second highest in Asia, falling short of Japanese yields by less than a ton per hectare.

#### **FOURTH CONCLUSION**

During the 1970s there has been a great deal of price instability in international markets. The usual explanation is that instability

of production caused the price instability. This is, at best, a half truth. A major factor in the price increases in 1973 and 1974 and the price declines since 1975 was the agricultural policies of numerous governments. At least half of the grain in the world is consumed in countries that stabilize their internal prices to consumers and producers by varying their net trade. Thus they insulate their consumers and producers from virtually all variations in world supply and demand variations. When international prices are high, their consumers have no incentive to reduce consumption and their producers no incentive to expand production. Similarly when international prices are low, consumers are not encouraged to increase consumption since their prices do not change nor are producers given a signal to reduce production. All of the variability in supply and any random shocks to demand (such as those that result from business cycles) are imposed upon those countries whose domestic prices vary with international prices.

Which countries follow policies that impose such burdens on the rest of the world? They include the European Community, most of the rest of Western Europe, Japan, the Soviet Union and China as well as a number of developing market economies. In a very real sense they are free riders on the world food economy. The most disruptive of the group is the Soviet Union, not because it is any more immoral or less sensitive to the impacts of its policies upon the poor people of the world, but because its production variability is so great. The hardship that was imposed upon many of the world's poor people in 1973 through 1975 due to high prices of grain was due at least as much to

governmental policies as it was to the small decline in world grain production.

#### **FIFTH CONCLUSION**

International grain prices are low. In some months in the latter half of 1977 U.S. export prices, if adjusted for inflation, came close to the levels reached during the Great Depression. World grain stocks have almost returned to the absolute levels that were considered burdensome in the early 1960s and the early 1970s. Fertilizer supplies are ample at deflated prices, almost as low as the prices of the late 1960s, and well below those of the mid-1960s. There is no large population anywhere in the world faced with a significant deterioration of their food supplies.

The world food situation looks pretty good. Is it reasonable that we should turn our attentions to other more pressing matters? In my opinion the answer is an emphatic "no." The food problems of the poor people of the world are long-run problems, and only continuous and significant efforts will make any significant difference in how adequate their diets are in the future.

In 1965 and 1966 there were poor crops in South Asia. Had it not been for massive food aid shipments, primarily from the United States, there would have been mass starvation in India and Pakistan. The new high yielding varieties introduced into the area in 1966 spread quickly and food production reached new peak levels. International grain prices fell; new technology drastically reduced the price of nitrogen fertilizer. At the time, Norman Borlaug, who received the Nobel Peace Prize for his contributions to the development of high yielding varieties of grain suitable for the developing countries, told us that the Green Revolution "has won

a temporary success in man's war against hunger and deprivation; it has given man a breathing space."

Relatively little was done to take advantage of the opportunities to improve the nutrition of the world's poor people after 1967 and before the food difficulties of 1973.

Once again the world has some "breathing space." Will it be used more effectively than it was a decade ago? I fear that it is much more likely that the current seeming ease in the world food situation will lead to complacency. Developing countries will see no need to significantly change their priorities with respect to investment and low prices for urban consumers. There is no evidence that the industrial countries that give a high priority to their domestic price stability have modified their views. Nor have any of the industrial countries taken significant steps to reduce their barriers against the agricultural and manufactured exports of the developing countries. In fact, in all too many cases, such as those of textiles, shoes and sugar, protectionism has increased during the past year. In spite of the attention given at the World Food Conference in Rome to ways and means for increasing food production in the developing countries, I know of no new initiatives that have been taken in the three intervening years.

#### CONCLUDING COMMENTS

There are no quick fixes that will make a difference in the long-run improvement of nutrition for the world's poor people. Continuous concern and action are required. In almost everything that is undertaken, measurable results come years later. When there is no crisis, it is difficult to mobilize attention and effort for results that will not be

apparent until well after the next election.

Yet I do not want to end on an entirely pessimistic note. The nutrition of the world's poor people has improved and will continue to improve in the years ahead. This does not mean that progress will be uninterrupted nor that it will be uniform among countries. But the outstanding performance of the farmers in the developing countries over the past three decades in the face of exploitation and bureaucratic interference is a basis for optimism for the future. And there are some indications that developing countries are gradually modifying some of their policies in the direction of providing more adequate incentives for their farmers.

There will be substantial improvements in per capita food supplies and in incomes in the developing countries if there is the political will to give appropriate priority and continuing commitment to efforts to expand food production and agricultural productivity. Approaches must be pragmatic and not ideological. The decision makers must recognize that the most important resource of their rural areas is not their forests, mines, oil, or land but rural people. Not only are rural people an important resource, but the improvement of their welfare is one of a very limited number of important objectives. If this be the case, we can be realistically optimistic about the future of food supplies in developing countries.