OUTLOOK AND PROSPECTS FOR MEETING WORLD FOOD NEEDS

Discussion
by

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The supply response of the economics profession to the food problem has been quite elastic. If the supply response of the food production system shows a comparable degree of elasticity the hunger problem will dissolve in short order. Unfortunately, indications are that the food supply system, particularly in those areas of greatest need, has a fairly low rate of response due to resource scarcities and institutional bottlenecks. Whether or not the supply response of economists and others serves to more clearly elucidate the relevant considerations of the food-nutrition crisis remains to be seen.

Recent visions of the future range from hastily resurrected apocalyptic Malthusian speculations to the overly optimistic views of Colin Clark and others who project a carrying capacity for the planet of somewhere between 16 and 40 billion human beings. Dr. Cummings' paper is mildly comforting to the extent that his analysis does not lead us to the conclusion that mass starvation is inevitable. Still, he leaves little room for complacency or inaction. Dr. Cummings refers to the decreased level of concern in the U. S. with the food crisis. If true, it certainly indicates another bottleneck in the attack on world hunger. The food crisis is only one of the myriad of sensational subjects competing for space in the popular communications media and consequently in the consciousness of the populace. Inflation, unemployment, dramatic changes in the political realities of Indochina, economic debacles in Britain and Italy, and

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sundry natural disasters all clamor for our attention. When faced with too great a demand for understanding complex problems, people experience various levels of incoherence. To eliminate or reduce their frustration they develop cognitive barriers which eventually culminate in apathy. Our inability to sustain a high level of interest in global food problems does not augur well for their solution.

The principal objective of Dr. Cummings' analysis is to give a prognosis of the future of the food-nutrition situation. He begins by looking at the recent historical performance of the food sector and subsequently analyzes the potential for increased food production. As far as aggregative data can illustrate underlying realities, we observe that food production in the developing countries has been increasing faster than in the developed countries, at least in the 1969-71 period. The respective rates of increase were 3.0 percent and 2.7 percent per annum. Since food production performance has been comparatively high, why is there a food crisis? Is the nature of the problem a food production problem per se?

In regard to this question, Dr. Cummings, himself, states that "in fact, even today there is enough total food available in the world." I am therefore tempted to conclude that the food-nutrition problem as it now stands is more a consumption problem than a production problem per se. If this notion is correct, then the concentration of analysis on the production problem is a somewhat wasteful diversion and leads to a more dilatory response than is dictated by the underlying realities.

What about the prospects for the future? For the near future, according to data presented by Dr. Cummings, food production will increase -- wheat by

7 percent and feed grains by 11 percent over the 1974-75 crop. Hence, grain prices will be lower than last year. Perhaps this explains in part the diminished sense of urgency referred to earlier. However, as Dr. Cummings points out, there is no room for complacency:

> In elaborating on the future food situation, I face a dilemma. On the one hand, I want to alert the public that the serious crisis has not gone away, that governments must continue to take action; yet I don't want to give the impression that the situation is hopeless.

Here Dr. Cummings tempers realism with idealism without allowing idealism to obfuscate the seriousness of the situation. By citing the growing consensus of analytical projections of increasing input prices, diminishing returns to land, and the uncertainty of climatic conditions, he alerts us to the gravity of the problem. In other words, a simple extrapolation of yesterday into tomorrow indicates the persistence of malnutrition and starvation among large segments of the world's populations. Yet he adds, "Such a scenario is not inevitable," thus refusing to fall victim to the kind of moral paralysis which attends the exponents of the Garret Hardin "lifeboat" thesis. But does he make a reasonable case for hope?

A positive outcome requires the elimination or significant reduction of the constraints which now militate against solutions to the hunger problem. Some resources are finite. Other constraints are susceptible to manipulation through political and economic action. According to Dr. Cummings' analysis, the potential arable land area is not an immediate constraint. Irrigation can bring much new land into cultivation, and fertilizer can increase the productivity of land already cultivated. But both irrigation and increased fertilizer use require significant outlays of investment and foreign exchange resources. Hence, the

mere existence of unexploited land, in my view, gives us little cause for exultation.

Increasing the productive land area by 6 to 7 million hectares would require approximately $30 billion each year. The simple renovation of 46 million hectares of existing irrigation would cost $21 billion. We are told that if we exclude the cost of land a fertilizer ~~irrigation~~ plant with an output level of 1,667 tons of urea per day or 250,000 tons of nitrogen per year would cost about $100 million and in order to meet the demands of the global food production system, the industry would need to invest over $100 billion in the next ten years. And these are in yesterday's prices. Yet Dr. Cummings maintains that fertilizer supply will come into balance with demand over the longer run. Of course, equilibrium can be established simply through the contraction of demand in response to price increases. But I suspect that even if fertilizer supplies in the aggregate were fairly ample the disparities which now obtain in regard to fertilizer usage would persist and, in fact, the gap might widen. Consequently, increased production of fertilizer does not in and of itself portend a solution to the world hunger problem.

In discussing the constraints posed by environmental degradation, energy requirements, and the choice of technology, Dr. Cummings treats these factors in the traditional economic manner -- as discrete variables. However, among economists and ecologists alike there is an increasing willingness to adopt a holistic approach to the complex relationship between technology, energy use, and the environment. Some even question the level of capital intensity and energy requirements of U. S. agriculture. They believe these high levels of capital intensity are based on inaccurate calculations of efficiency to the extent that many costs are externalized by the firm.

While these questions provide adequate material for debate in North America, they take on an urgent significance in the Third World where the

margin for error is so narrow. For example, the adoption of capital intensive, energy intensive technology by capital poor/labor surplus economies could have disastrous effects when energy costs rise or social and environmental effects ensue. The challenge, therefore, is not simply one of maximizing output per unit of input in the short run but rather one of developing technological patterns which are consistent with basic factor endowments. As Daniel Janzen maintains (Science, 182:1212), tropical agroecosystems should be managed with the objective of "sustained yield" rather than short run maximization. Hence, there is justified skepticism about the efficacy of technological transfers from energy rich/capital rich economies to those characterized by low savings and scanty foreign exchange.

Having developed his thesis that "the potential exists -- in terms of physical capacity, technology, and administrative knowhow -- to increase the food supply several times above present levels," Dr. Cummings goes on to indicate the requirements for the actualization of this potential. As far as the research needs of the Third World nations are concerned, he makes several cogent observations and recommendations. For example, the fact that research has to move in the direction of greater specificity; and the fact that developing nations need to invest more in research. The first point supports his view that developing countries' research and production units will have an increasingly primary role, with the international institutes and developed country research units playing secondary and supportive roles. It will be interesting to observe whether the unprecedented degree of unanimity displayed at the World Food Conference in regard to research needs translates into fiscal support for research by the governments of developing nations. The last few years have witnessed a

growing disillusionment with the "Green Revolution." But if the dramatic outputs of the new high yielding varieties heighten interest in and support for agricultural research in general the revolution will qualify as a success.

Dr. Cummings cites recent studies which question whether the U. S. research community is organized and administered most effectively to contribute to increasing agricultural productivity, even in the U. S. Casual observation suggests that these questions are not groundless. The reward system and peer approval have combined to encourage research effort which responds more to the imperatives of the discipline than to the needs of society. This is another reason for encouraging research units in the developing nations. They offer a chance to utilize different, perhaps more relevant, incentive and reward systems.

In emphasizing research we need to exercise caution, avoiding the inherent tendency to concentrate on production. We need much more in the way of a systematic search for viable alternatives in other areas such as marketing, nutrition, nutrition education, transportation, the organization and management of human resources, and institutional forms. For example, the food deficits of India could be substantially reduced if the percentage of their food supply now lost in storage could be significantly reduced. Currently about 7 percent of India's food production is lost during the post-harvest period. Food wastage also takes place in the home. An examination of garbage in Tucson, Arizona led Dr. William Rathje (Archaeology, 27:236) to conclude that middle class households waste an average of $100 worth of beef each year or about $500,000 for the City of Tucson. This indicates that programs in nutrition education, in particular, and consumer education, in general, could have a substantial impact on the food problem.

Much of the food-nutrition problem in India can be traced to the distribution system -- specifically, the transportation system. A substantial increase in production at the farm level would serve to exacerbate the transportation and storage bottlenecks. Further, the behavior of some of the intermediaries in the food distribution system has contributed in no small measure to the recurring food crises in India. There may be some important implications here for the institutional organization of the food delivery system.

We also need to correlate nutritional achievement to patterns of development. We are beginning to understand that the food-nutrition problem is a manifestation of the income distribution problem. Dr. Cummings alludes to this somewhat parenthetically. But in my view, this observation should appear in bold type. This hypothesis can be tested by systematic observation and measurements of nutritional achievement in different developmental settings. For example, we could compare average nutritional achievement in areas of differing average capital/labor ratios. This might help to explain the impact of alternative developmental patterns on the hunger problem. In agricultural settings, we might compare nutritional achievement in export-based cash crop economies with those in domestically oriented food production systems. These kinds of data could provide meaningful information to guide decisionmakers in their resource allocation decisions.

My own studies have indicated that in many cases when industrialization has been encouraged through government incentives, it has led to distortion in factor prices and factor incomes. It has not only channelled savings away from the rural sector, but has created substantial disparities in the relative rates of remuneration of agricultural labor and the urban, industrial labor

force. The demonstration effect has contributed to sharp increases in the reserve price of rural labor, a decline in the rural labor force, and a loss of production among marginal farmers. To me the most powerful argument against the Hirschman disequilibrium model of development is the impact on human resources. I suspect that an excess supply of labor in agriculture may be a problem which is correctible by the expansion of non-farm opportunities while the reverse is much less likely.

Another factor which Dr. Cummings pinpoints as necessary to unlock the potential for world food solutions is government action. Unquestionably, government programs and policies constitute the "bottom line" in the struggle for increased food consumption. Leadership and coordination are crucial ingredients in the food-nutrition equation, and no other institution has the potential of the government for exerting influential action. However, exclusive reliance on government programs per se would fail to exploit the tremendous potential inherent in social, religious, and professional organizations. So far the governmental response has been hampered by a combination of inertia, political expediency, and what is called the 'colonial mentality'. In many cases, these factors have precluded a consistent, rational, and determined approach to the challenge of food production and consumption. But we also must remember that the primary images of development which were foisted on Third World nations during the nineteen-fifties and nineteen-sixties were not those of agricultural development but rather those of industrialization. Economists do not stand blameless in this instance. It is highly possible that the questionable results of those government programs and policies which were implemented were due as much to poor conceptualization as to poor implementation. And I think a very

significant point which Dr. Cummings makes is the lack of accountability of economists with regard to their proposals. This is in distinct contrast to most other professions where liability is a normal part of all transactions.

If I have found any noticeable gaps in Dr. Cummings' paper, they occur in his cursory treatment of the role of food and farm policy in the major grain-producing nations. In the short run, their decisions in regard to acreages under cultivation, reserves, farm income policies, food aid and the like will do more to affect how the world eats or does not eat than the collective decisions of the entire Third World. Nonetheless, I think the observations on research, technology design, and teaching are very sound building blocks upon which to base a superstructure which can guarantee the long term stability of our food supply system.

One final word -- as we begin to view the world food issue as a multi-disciplinary problem rather than a narrowly defined, economic problem per se, we will find more and more use for other social sciences, including psychology, sociology, and anthropology. The absence of integrative mechanisms for these seemingly discrete bodies of knowledge is one of the major causes of so many 'empty boxes'.