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# THE ECONOMIST'S ROLE IN REBUILDING INDIAN AGRICULTURE

SHERMAN E. JOHNSON

## THE CHALLENGE

MUCH of the science of economics as we know it today has developed because of a need to deal with complex problems that required practical solutions. The classical theory as expounded by Ricardo and Mill grew out of the food shortages that were encountered in Britain during the Napoleonic Wars. Keynes developed his "general theory" under the difficult conditions that prevailed in the depression years of the 1930's. The present generation of Indian agricultural economists are facing the challenge of helping to free their country from recurring food shortages.

Food was short in the early Independence years, but a series of good food-grain crops in the middle 1950's dispelled fears of a food shortage. However, the spell of more ample food supplies and low food prices was broken by the disastrous crop year of 1957-58, which again brought food problems to the forefront. The importance of food production in the development of India, therefore, was emphasized in the preparation of the Third Five-Year Plan. At that time, however, there were many who believed that the problem would disappear after another favourable crop year. Fortunately, a bumper foodgrain crop was harvested in 1958-59 which temporarily relieved the shortage but also slackened the pace of the programme to increase food production.

In the immediately succeeding years, the fairly ample crops were supplemented with grain imports from the United States under concessional terms. Thus, food was provided at relatively low prices to meet the needs of a growing population as well as the demands resulting from some improvement

in per capita incomes. Unfortunately, foodgrain production in 1962-63 and 1963-64 was below the levels achieved in the two previous years. Consequently, the spectre of food shortage has reappeared. The inadequacy of food supplies made newspaper headlines almost every day in the summer of 1964. Yet, official statistics indicated that, with imports included, slightly more foodgrain per person was available in 1964 than in 1963. The net availability per person was higher than any year from 1951 to 1959, but it was less per person than in the years 1959 to 1962, inclusive.

Apparently, the current food shortage is partly the result of smaller foodgrain supplies. But it also is a reflection of more consumer purchasing power. People who have higher incomes than in previous years are purchasing more food for their families. Indian consumers are not fully aware of these reasons for the relative shortage.

The rapid growth of population, the increased purchasing power resulting from the construction phase of development, as well as the expanded defense programme, are increasing market demands for food much above the rate of increase in food production. Foodgrain production appears to be increasing at a compound annual rate of about 2 per cent, whereas population is increasing at a compound annual rate of 2.4 per cent. Consequently, the growth of population is outpacing the increase in food production, and the high income elasticity of food in the present stage of Indian development greatly accelerates the demand impact on limited supplies.

It is now evident that if present trends continue, India will be facing a chronic food shortage. The shortage could be intermittently relieved by exceptionally favourable crop years. But it could also reach crisis proportions if a crop year such as 1957-58 is encountered. Foodgrain production in that year dropped 9 per cent below the level of the previous year, and 6 per cent below the average of the three preceding years.

Extraordinary measures must be taken to accelerate agricultural output, especially in production of foodgrains, because they constitute the principal source of food for most of the Indian population. All the easy answers to the food problem have been tried and found wanting. Favourable weather will not solve the problem, although a bumper crop would bring temporary relief. Imports on concessional terms can supplement indigenous food production, but it cannot close the wide gap between food supplies and market demands. Price controls and rationing are poor substitutes for enough food to meet market demands. The only solution is greatly increased food production by India's cultivators. What is the role of the agricultural economist in this endeavour?

#### EMERGENCY ASSISTANCE

In emergencies such as the food shortage in 1964, agricultural economists are called upon to suggest quick remedies. But economists are not magicians. They cannot wave wands to make food shortages disappear. In fact, they are not more competent to suggest remedies than ordinary laymen—unless they can draw on data and analyses to support their conclusions.

In dealing with emergency conditions, administrators have to base their decisions on the best information available. And, fortunately, Indian agricultural economists in the Ministry of Agriculture and in the universities have collected and analysed data which are being utilized to provide some tentative answers in the present emergency. But the attempts by Indian economists to provide facts and analyses that bear on current problems have revealed wide gaps in data needed for adequate answers. For example, adequate analyses of the current food situation and future prospects require current and forward estimates of (a) foodgrain production, (b) government and private stocks, (c) estimates of imports, (d) population data, (e) purchasing power in the hands of consumers, and (f) estimates of market clearing prices. Some of these data are being compiled by the Directorate of Economics and Statistics in the Ministry of Food and Agriculture, but more resources are needed to fill the gaps in information on the food situation and to provide more timely availability.

When relative shortages of foodgrains developed in different areas in 1964, prices rose because consumers with purchasing power demanded at least their accustomed quantities of food. Hoarding and market manipulation by traders were frequently cited by national leaders as the causes of shortages and high prices. More adequate data on supplies (including private and public stock positions) in relation to increased demand would have revealed the chief reasons for the shortages and high prices. Periodic reports of the prospective food situation to administrators, based on more adequate data, would provide opportunity for more timely action to alleviate acute shortage conditions.

There is great need for general acceptance in the highest levels of government of the principle that an understanding of the casual factors in the food situation is the first requisite for intelligent action. Economists can provide a better understanding of the causes of the present emergency. They can also suggest alternative emergency measures. But these contributions necessarily will be based on fragmentary data now available. Their greatest potential contribution lies in building a firm foundation for tomorrow's agriculture.

#### ECONOMIC ASSISTANCE IN BUILDING TOMORROW'S AGRICULTURE

Adequate understanding of the food situation in India can be obtained only by collection and analysis of data for appraisals of specific problems. This will require hard digging for facts about each problem situation. If adequate research had been available concerning the structure and functioning of foodgrain markets, and if the results of such research had become a part of accepted knowledge, there would have been greater realization of the part played by reduced supplies and increased purchasing power in the 1964 food shortage. In fact, early warning signals could have been given which would have emphasized the need for faster replenishment of storage stocks.

Thorough analytical studies are needed to determine the efficiency of the present marketing system and to suggest alternative means for its improvement. The price-making process should be traced from the sale of foodgrains by cultivators up to the sale to the ultimate consumer. A detailed study is needed of the functioning of "fair price shops," and of their potential place in the marketing

system. First-hand field contacts by researchers will be required to describe and analyse the actual functioning of different segments of the market.

Because increased food production by India's cultivators is the only long-term solution to the nation's food supply and price problems, research attention should be focussed on ways of accelerating increased output. Heretofore, food programmes in India have been largely consumer-oriented. Government regulation of foodgrain prices has been aimed at protecting consumers. The mutual interests of consumers and producers in production of adequate quantities of food has not been sufficiently recognized. Producers need reasonable price incentives to cover additional costs and risks of adopting production-increasing technology. If adequate incentives to producers result in higher consumer prices, the rise should be regarded as a necessary premium charge for insurance against a food shortage.

Producers and consumers also have a common interest in efficient distribution and, therefore, in the above-mentioned studies of prices and marketing. Both groups are interested in reducing the spread between the prices received by cultivators and those the consumers pay in the retail food shops. Their common interests also include avoidance of erratic price swings.

Many actions will need to be taken by Centre and State Governments to accelerate expansion of food production. Adequate resources must be allocated—for trained personnel, for production supplies (fertilizer, pesticides, etc.), and for investment in improvement of land and water resources. These resources must be made available for use by cultivators. Food production will not be increased unless cultivators actually use the new resource combination to expand output. One cannot add up potential increases in food production from new irrigation, more chemical fertilizer, and better seed, and expect those increases to materialize—unless measures are taken to assure large numbers of cultivators that using these resources in effective combinations will result in more food and better incomes for their families. Decisions on food production are made and carried out by the cultivators themselves. Helping them to adopt new technology in their own interests as well as that of the nation is the crucial step in obtaining increased food production.

Since land and capital resources are scarce, and rural labour is plentiful in India, the most important avenue for expanding food production is increased output per acre. This involves increasing the yield of each crop and also growing two or even three crops a year on the same land, especially where year-round irrigation is available or can be developed. These methods of output expansion involve adoption of improved labour-intensive technology, which in turn requires that cultivators learn new skills, use better management, and invest in non-traditional expenditures for chemical fertilizer and other supplies.

What studies need to be undertaken to determine how India's cultivators can be induced to adopt these production-increasing improvements? Recent studies and general observations indicate that large numbers of cultivators do shift acreage in response to price changes between competing crops. But they know the traditional methods of growing cotton, sugarcane, and jute, as well as they do the foodgrains. They do not know what response they will get from a com-



bination of improved technology that includes chemical fertilizer, pesticides, better seed, and improved tillage and water management. Knowledge of such innovations has to be brought to the villages by outsiders. And the results from local application have to be tested and demonstrated. When the production-increasing results of the new technology become well known in a village, the cultivators will need to be convinced that it will pay them to adopt the new ways of farming. To do this, economic analysis will be needed to determine the net gains from adoption, based on varying increases in yields, and different prices for the product as well as for the new inputs.

Determination of the incentives needed for widespread adoption of production-increasing technology is an economic problem crying for solution. It can be tackled with simple analytical tools. Fortunately, data on varying inputs and outputs can be collected from cultivators who have participated in the Intensive Agricultural Districts Programme. This experience is not applicable to areas with widely different production conditions, but it will furnish data for a beginning analysis that can gradually be extended to other areas. The net returns experience of groups of cultivators can be arrayed to arrive at the percentage of cultivators who would cover costs and risks under different price conditions.

Such studies will provide clues as to the level of producer prices that will be needed to induce adoption of new technology, but the actual response experience with the prices that have prevailed in these areas also should be analysed.

Even when knowledge of the results from use of new technology is well known in the village, and favourable price-cost ratios have been established, cultivators may not be able to participate in a programme to increase production because of other obstacles. Supplies of fertilizer, pesticides, and other materials may not be available locally at the time they are needed, or perhaps credit to buy them may not be available at reasonable rates. Economic studies will be needed to determine ways of opening up supply lines, and methods of providing credit at reasonable rates.

In some areas, existing tenure arrangements may prevent participation by tenants. When the tenant pays 50 per cent of the crop to the landlord, and has to pay all production expenses, the extra costs of improved technology are likely to equal or exceed the value of one-half of the yield increase. Where such tenure arrangements prevail, studies are needed of the most expeditious and effective ways of improving tenure arrangements.

Although only a sampling of the many economic problems needing solution has been mentioned, enough has been said to indicate the great need for economic research to help free India from recurring food shortages. The need is great, but trained economists are few in relation to the work to be done. This means that those in charge of research programmes will have to set hard and fast priorities, not only as to the type of research problem to be undertaken, but also as to the research methods to be used.

Many able young economists returning from training in other countries feel frustrated because they cannot utilize the newest and most sophisticated methods

and have access to data processing equipment. Perhaps part of this frustration can be relieved by reflecting that a firm foundation of data collection and analysis was built up in the developed countries before the newer techniques and machine tabulation were invented.

Excellent research can be carried out with the use of simple tools and elementary research methods. Since one of the great needs in India is a better understanding of the functioning of the village economy and of the conditions which induce cultivators to react favourably to suggested changes, studies of this type might well be undertaken by selecting cases of villages and cultivators that are representative of specific situations. Similarly, case studies can be made of the structure and functioning of selected foodgrain markets.

Able younger men with little or no economic training can be recruited to collect field data under trained direction. They can also help to tabulate and summarize data. Performance of these tasks provides intimate acquaintance with the practical problems of production and marketing. The most promising of these recruits can then be encouraged and aided in obtaining academic training in economics.

Much time, effort, and resources will be required to free India from recurring food shortages. The potential contribution of agricultural economists to the solution of this major Indian problem is a challenge worthy of the best efforts of all members of the profession.