

Food-production and food-supply programmes in India

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This paper outlines briefly the growth of India's agriculture and, more recently, the role of food-production programmes in that growth, observing the impact of food-production and also of food-supply programmes on the society at large and, especially, on the diets of poorer families. Inevitably, this first part of the paper is largely descriptive; however, in the last one-third of the paper, there is a brief but more analytical consideration of the two most important aspects of food programmes: namely, the criteria by which food programmes can be judged as successful or unsuccessful, and the structural elements in successful programmes which appear to contribute most to their success.

India's agriculture and the development of food-production and food-supply programmes

A great granary was found in the caves of Harappa, which dates back to 2500–1500 BC (Basham, 1971). Indeed, the culture of the peaceful cultivators of that era stretched from the fertile Punjab Plain to the 'Garden of Gujarat' (Basham, 1971). I emphasize this long history of Indian farming because it has a certain importance to which I shall revert later.

As the sub-continent was repopulated from the north and periodically swept by wars between competing rulers, the farmers were left to develop their land without much interference. No major intervention of the current agricultural era impinged on rural India until the advent of the British administration.

That administration believed, wrongly, that India was surplus in food grains by 5 million t/year; it also believed Adam Smith when he said that market forces were the best means of balancing supply and demand (Bhatia, 1970). Indeed, famines were rare and localized until 1860, after which they occurred at 15-year intervals, with railway transport, land-taxes, monetization and the merchant capital-structure all contributing to the more wide-spread effects of India's famines up to 1914 (Bhatia, 1970).

Only in the period 1915–46 did the administration's confidence in laissez-faire crumble. Cultivation of commercial, non-food crops increased, and while the population grew by 20%, per capita production of food crops declined by 25%. Finally, in 1943, it was officially acknowledged that India suffered from at least a 10 million t shortage of food-grains (Bhatia, 1970). It was in 1943, also, when some 2 million died in the Bengal Famine (Bhatia, 1970): then, for the first time, a comprehensive system of food controls was introduced into India, and a nation-wide food-production programme was started (the 'Grow More Food' campaign) (Bhatia, 1970).

Thus, at independence in 1947, India inherited a vigorous, long-established agriculture, but also a gross food-grain shortage, and an administrative structure for nation-wide food-production and food-supply programmes. The constitution adopted at independence provided that 'agriculture' should be a subject under the control of the States (of which there are now twenty-two), but the central government retained a co-ordinative, path-setting role in agricultural development.

The complexities of modern India's agriculture cannot be detailed here, but some features must be high-lighted. Pre-1940 food-grain imports and subsequent price controls had led farmers to increase their production of non-food commercial crops faster than food-grain production, especially in areas of high agricultural productivity; moreover, it was in these areas that the density of population had also grown and this is still so.

For example, Punjab and West Bengal have high agricultural productivity indices and support five people/cultivated ha, while Maharashtra and Madhya Pradesh have low agricultural productivity indices and support only two people/ha. Bihar State, significantly, is exceptional: it combines a relatively low agricultural productivity index with a population density of five people/cultivated ha. However, in general, one could (simplistically) typify most of India's agricultural zones either as high-population-density-high-agricultural-productivity zones (usually with well-articulated produce markets and considerable emphasis on non-food commercial crops) or as low-population-density-low-agricultural-productivity zones (usually with poor and uncertain rainfall, largely subsistence farming and a very sparse market structure) (Singh, 1974). It was Bihar's combination of the latter features with a rather dense human population which made it so vulnerable in 1966, as we shall see later.

At all events, in 1947, the central government of newly independent India was forewarned by the sub-continent's earlier famines and forearmed with administrative experience in both food-production and food-supply programmes. Its first 5-year plan, launched in 1951, recognized the country's food-grain shortage as a long-term problem. Food-production programmes, in the first and second 5-year-plan periods, promoted multiple cropping with controlled irrigation, plus related improvements in agricultural practices, and food-grain production increased by 10%. Food-supply programmes also grew in importance: by 1966, state procurement of food-grains had risen to 6% of production, imports for public distribution exceeded 10 million t and almost 20% of available food-grains were handled by the public distribution system (Government of India, 1974).

The period 1966-7 was one of crisis. Two successive years of poor rains cost the country some 30 million t food-grain production. Bihar, where less than 7% of the cultivated land had assured irrigation, was least armed to meet the crisis.

India's food-supply system, however, proved itself on this occasion. In essence, what had been evolved was a set of public 'relief works', which paid resourceless rural people a subsistence wage for work done on digging wells etc., and a matching set of 'fair price shops' which sold food-grains (and sometimes other essentials), usually at subsidized prices. During the 1966-7 crisis, the Government operated 153 000 'fair price shops': 20 000 of these served Bihar's 70 000 villages,

where 700 000 people obtained relief work and where 7 million infants, children and destitute adults obtained some help from special feeding programmes. Similar but less intensive programmes were conducted elsewhere in India, sustaining some 10% of the populace (Berg, 1973).

The 1966–7 food crisis was independent India's worst. The fact that tragedy was averted vindicated the Government's food programmes, certainly. Also, much had been learned. In fact, looking back at the evolution of India's post-1966–7 food strategy, one can see how the crisis helped to prompt four major developments.

(1) It was seen that increased multiple cropping alone had not closed the food-grain gap, and therefore the intensive cultivation of new high-yielding varieties was promoted, especially in areas with high agricultural productivity.

(2) It was seen that rural populations in areas of uncertain rainfall and low agricultural productivity could no longer be left so dependent on the vagaries of the monsoon (or on the chance of obtaining food-grains from better-off areas), and therefore a series of integrative programmes was evolved (the Drought-prone Area Programmes and the Dry-land Farming Research and Development Programmes, in particular), which aim at tackling these vulnerable areas' main problem at its roots: namely, by investing massively to improve their farm-resources base.

(3) It was seen that a weak public procurement system could combine with failures of the rains to leave the country dangerously dependent on imported food-grains, and therefore new institutions were created (especially, the Food Corporation of India) to increase the Government's procurement, storage and distribution capacity.

(4) It was seen that relief works properly aimed at a vulnerable region's problems could make a lasting impact on those problems, and therefore a new procedure was adopted, to ensure the continuity of relief-work and its direct contribution to each vulnerable area's food-production capacity. Other developments included the evolution of 'bal-ahar', a specially formulated children's food, the enrolment of private manufacturers into nutrition programmes and the founding of what was to become the Protein Foods and Nutrition Development Association of India.

These post-1966–7 food-production and food-supply strategies have achieved important results: by 1973, high-yielding varieties were grown on 22.5 million ha (some 19% of the food-grain land); the nucleus of investment funds for drought-prone areas will amount to £160 million during the current 5-year plan, and command-area development programmes will cover 15 million ha (8% of cropped land); public procurement in 1972–3 (a poor agricultural year) brought in over 10% of food-grain production, and, in the 5 years, 1968–9 to 1972–3, imports of food-grains were reduced to 3% of production (*v.* almost 10% in the previous 5 years).

Thus, India's post-1966–7 food strategies are producing results; but, in the making of such public policies, hard decisions are involved, and they are bound to be criticized. Most of the criticisms fall into two categories: either that the country's food-production programmes have over-emphasized cereals, especially high-yielding varieties in areas of high agricultural productivity, and that high

cereal prices have depressed other crop production, have penalized urban consumers and kept unproductive people on the land; or that the rural majority's real incomes have been suppressed in favour of the urban minority, that public procurement and urban distribution of cereals, especially, has been conducted at artificially low prices, and that this, in the face of inflationary increases in money supply, has resulted in increasing maldistribution of food at the expense of the poor.

My own view is that it is not useful to make absolute judgements about the 'rightness' or 'wrongness' of such issues. It is better to look at the most relevant outcomes and then constructively consider what can best be achieved next.

The most relevant outcomes of India's post-1966-7 food strategies are: (1) relative stability of food-grain availability (in the recent 'poor' year, 1972-3, per capita availability was barely 6-7% less than in the previous 'good' year, 1970-1); (2) public distribution of some 10% of food-grains, to protect the most vulnerable and deprived; and (3) balanced against these real gains, decreases in the per capita availability of pulses by 34% and of milk by 13% during the decade from 1962-3 to 1972-3 (values for pulses relate to the years 1963 and 1973 (provisional) and those for milk to 1960-2 and 1973-4).

Criteria for appraising food programmes

First, in trying to appraise food programmes, we must be practical. It is impractical, for example, to say that famine relief should be 'triggerred' only when a deficiency of a certain number of kJ/d is proven in an area; to seek objectively to 'allocate the risk of instability (of food production)', and to determine whether the 'allocation ... of resources to drought-prone areas is the most efficient way to increase the social output' (Morris, 1975). Most of us yearn for quantitative answers to qualitative questions, but we cannot avoid the task of making judgements, and it is impractical to depend on over-sophisticated information systems which may prove inoperable or biased under the pressures of scarcity. Of course, we need the best information available, but adequate information may come only after a modernizing system starts to operate.

Turning then to our search for practical criteria by which we can appraise food-production and food-supply programmes, I suggest that there are three. Most of India's food problems stem from low agricultural productivity, from unequal access to inputs for improving agricultural productivity, and from income-induced deficiencies in the diets of the poorest families. Food-production and food-supply programmes must therefore be judged by their combined effects on these three problems.

Structural elements contributing to success in food-production and food-supply programmes

My own conviction is that both food-production and food-supply programmes must contain certain elements if they are to be successful. I will briefly describe these elements, and then try to illustrate them.

First, although food programmes are directly concerned with the physical systems of food production and consumption, they also involve the economic and social systems, and to be successful, a food programme must have dynamic elements which will tend to make the programme's interventions in the food system, the economic system and the social system support each other. Secondly, all programmes have to be implemented through institutions: that is, through organizations, governed as they are by the laws and rules which pertain to them; a programme stands or falls according to the success with which its implementing institutions are adapted to the particular tasks involved.

In effect, there are three interacting systems: the food, economic and social systems; and there are institutions, which provide the joints and cog-wheels in the structure, whereby the three systems interact, develop and change. So much for generalization. I will now try to illustrate my meaning by examples from dairying programmes in India, with which I happen to be familiar.

The food system and food-production programmes

Farming is the means whereby we try to manipulate and control our ecology to the better support of man. Farming involves two unique kinds of investment: first, over the millennia, farmers improve the land; they dig ditches, make wind-breakers, adjust contours etc. (stable farmland is seldom made in a hurry); secondly, as they develop their land, farmers accumulate an intimate knowledge of its response to crops and weather, and they build on that knowledge, and pass it on, from generation to generation. When a country has a long farming tradition, it is wasteful for a food-production programme not to use the farmer's unique knowledge of his own land as an input or to ignore each farming generation's extraordinary ability to improve the crop-land relationships on his farm.

Also, it may be a source of confusion to view land as fixed in quantity: the 'average' plot in India grows 1.2 crops yearly (refers to cropping intensity, calculated by dividing total cropped area by net sown area). What the farmer seeks, and what food-production programmes seek, are new combinations of inputs to the land which are synergetic, so that the value of the output as a whole is greater than the separate values of the inputs.

For example, it is meaningless to say (as is now the fashion) that Indian farmers should not 'divert land' to grow fodder for milk production, because that is not really what happens. India's draught and milch animals are sustained mainly on herbage which would otherwise be wasted. In a successful dairy project, a farmer gets one or two animals which are better converters than his previous animals: during the monsoon season, there is plenty of fodder; after the monsoon crop, using residual moisture, he may grow, say, 0.05 ha of a leguminous crop for each of his milch animals, but he increases milk production per animal by 50–80 l. He increases his income by as much as 30–50%. He increases the viability of his farm and his ability to invest in irrigation. He does not 'divert land' from food production. He simply makes his farm more productive. This is what I mean by a food-production programme which makes a synergetic intervention in the food system.

The food system and food-supply programmes

Obviously, selective food-supply programmes for the destitute are necessary, but their scope and stability will always depend on the productivity of the country's food system (discussed above). In India, the next step in benefiting the urban poor is probably the application of modern techniques of food processing and marketing (including the production of high-value analogues), to decrease the handling margins on urban food and to provide a bigger nutritional 'bang for the buck'. For example, in India, modern processing technology and marketing methods can bring milk from quite distant milksheds to big cities, and this alone can reduce the retail price of milk by 30%.

The economic system

The economic implications of what I have said (above) about the food system are clear. Regarding the criterion of improved productivity, however, one economic aspect must be emphasized: that many food programmes simply add a relatively small public investment to the farmer's own, larger investment, and thereby improve the returns on the whole. Indian farmers already invest, for example, about £200 million in rearing draught and milch animals. A dairy programme, which enables them to apply this investment to the rearing of animals which are improved converters, can thereby enable them also to increase their own unique investments in the over-all productivity of their land.

The social system and the institutional structure

Clearly, food-production and food-supply programmes impinge on the social system most directly in their effects on the equality of access to improved productivity and on improved diets for the poor. However, it is easier to deal with these distribution effects with reference to the institutional structure: and that structure is always a reflexion of the society as a whole. The main contribution which food-production and food-supply programmes can make, toward ensuring a more equal distribution of these programme's benefits, is simply this: they can build on the energies and motivations of the people who wish to work for a more equal distribution of benefit. India, for example, is modernizing its dairying through co-operatives, which enable villages to discard old prejudices and to develop new leadership, and thereby to satisfy the criteria of more equal access to the benefits of the programme. Small farmers and landless people thereby obtain new, productive employment: some even double their incomes (Vyas, Tyagi & Misra, 1969). They produce and consume more milk, and their children can stay on the land.

Mutually supportive interventions

I have suggested above that a successful food programme's interventions in the food, economic and social systems must be mutually supportive, and that there has to be a built-in dynamic which will lead the programme to its implementation. This structural element can be illustrated by the dairy programme which I have

mentioned above. Its interventions in the economic system start with India's strong urban demand for milk, on the one hand, and, on the other hand, the country's milk-production base, which is vast and highly susceptible to synergetic improvement. Modern dairy technology can bring rurally produced milk economically to the cities, and urban consumer-rupees can be directed back to the rural milksheds through dairy co-operatives, for investment in improved production. By the programme's interventions in the food system, city-produced milk is replaced by milk produced in rural areas, where food-conversion systems are more efficient, and high-yielding milch animals are no longer moved into the cities, thereby further improving milk production in the milksheds. By the programmes' interventions in the social system, rural milk producers run their own co-operatives, employing their own veterinary surgeons and other services, and therefore get access to modern technology more efficiently and more equally than before. Thus, the programme's interventions in the food, economic and social systems are mutually supportive, and, together, they develop a dynamic leading to implementation.

Conclusion

Within the limits of space, I have described the major developments in India's food-production and food-supply programmes; I have suggested three criteria for judging the success of these programmes, and I have discussed certain structural elements which, I believe, largely determine their success. I have explained that the 'mix' of objectives, which food programmes pursue, is such that absolute judgements about their 'rightness' are not practical. However, it is useful to review every country's set of food programmes, to see whether the criteria usefully apply to them, and thereby judge whether one has identified correctly the structural elements which contribute to success.

Briefly, it is clear that important advances have been made in productivity, especially in cereal production. Equal access to productivity-improving inputs is harder to judge; regionally, there has been some success: for example, Bihar's cereal production stood up particularly well in 1972-3, which was generally a poor year. Within each region, however, there is the question of equality of access by class, and there is wide agreement that poor rural cultivators and labourers have benefited least from the new, intensive technology of cereal production, but in milk production, a more productive technology is evolving to which the rural poor have far greater access. Such improvements enable the rural poor to improve their diets, of course, and the beneficiaries are doing so. In the less productive dry-land zones, however, the diets of the rural poor are at least qualitatively deficient. To what extent there is success in improving the diets of the urban poor, I am not sure. Many are protected from gross deprivation by the improved stability of cereal supplies and by the 'fair price shop' system, and their access to milk is now being improved by a set of dairy development programmes. Nevertheless, there is substantial evidence of energy and protein deficiencies in the diets of the poorest 40-50% of urban families.

In summary, it is clear that India's food programmes are scoring significant successes. What is needed now are improvements in productivity of protective-food technologies and improvements in dry-land staple-food and protective-food technologies. These improvements will enable the most deprived urban and rural poor to enjoy better diets, and, indeed, a better life altogether.

It is perhaps desirable to close by stressing that the majority of the poor are rural people. Urban industrialization will not be available to most of them for many years, nor does the present state of the West's industrialized cities suggest that urban industrialization offers a satisfying social alternative to rural life. The Indian village, on the contrary, is socially viable. The major objective must now be to enable the village to become as viable in its agricultural production as it is in its social structure.

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