

Srinivasan, T. N.

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YALE UNIVERSITY

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FOOD SECURITY: INDIAN PERSPECTIVE

T. N. Srinivasan

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Food Security: Indian Perspective

T. N. Srinivasan, Yale University

1. Introduction

Agriculture is still the dominant sector in India's economy. In spite of massive investments in industrialization since independence in 1947, the share of value added by agriculture in gross domestic product at current prices has shown only a slow decline from 50 percent in 1950-51 to 38 percent in 1978-79. The proportion of total labour force depending on agriculture for employment has hardly changed since the days of the first decennial population census more than a century ago. Even though definitions of a "worker" and "occupation" have changed between censuses, allowing for these changes is not likely to alter significantly the stark fact that in 1881, as well as in 1971, more than 70 percent of the working population depended on agriculture.¹ As is to be expected of a poor country, as much as 60 percent of private food consumption expenditure is devoted to food products, this proportion rising to more than 80 percent for the poorer sections of the population. Finally, of the nearly half the population officially declared to be living below the poverty line, a large majority consists of landless agricultural workers and peasants with small holdings. Apart from its direct impact on employment, poverty and the supply of food, agriculture also provides the raw materials for some of India's major industries such as cotton and jute textiles, sugar, vegetable oils, etc., besides contributing a modest share of India's export earnings. It is thus clear that performance of agriculture determines to a large extent the performance of the Indian economy.

It is useful to sketch briefly some of the facts of this performance. Agricultural output (all crops together) grew at a trend rate of around 3.20 percent per annum during the period 1949-50 to 1977-78, the growth rate of food grains being 3.19 percent per annum and that of non-food crops being 3.22 percent.² These growth rates relating to the three decades since independence compare very favourably with the growth rates of 0.37 percent, 0.11 percent and 1.31 percent per annum respectively for all crops, foodgrains and non-food crops during the period 1892-1947 in the then British India.³ Further these rates are certainly not significantly slower than the estimated growth rates of agricultural output of 2.41 per annum during 1953-74 in the People's Republic of China, though such comparisons can be misleading for several reasons.⁴

Although the trend rate of growth of total output was creditable by historical standards, there were also two, not so positive, aspects to the food situation. First, was the acceleration in the rate of growth of population, from a little over 1 percent per annum in the early fifties to over 2.25 percent in the early seventies. Fortunately, there appears to be a slow-down in this growth rate more recently. The second was the substantial year to year fluctuation around the trend. The main reason for this is the fact that even as of 1979 only about 25 percent of gross cropped area is irrigated, the rest depending on rainfall. However, the growth of irrigation, both public and private, has contributed over the years to reduce the adverse impact of monsoon failures. For instance, the severe drought of 1965 resulted in the output of foodgrains falling from 88 million tonne peak in 1964-65 to a low of 72 million tonnes the next year. But, equally if not more serious

drought of 1979-80 resulted in output falling from a peak of 131 to 109 million tonnes, a proportionately lower fall. Further, the stock of foodgrains in the public stock-pile was so substantial in 1979-80 that the economy absorbed the output short fall without much imports and still ended the year with over 17 million tonnes in stock. The contrast with 1965-66 is indeed dramatic--then nearly 10 million tonnes of food were imported, a significant part of which was under PL480. The political cost of these imports was not negligible, in that the Johnson administration reportedly pressured India, unsuccessfully, to change its stance on the Vietnam War by delaying the authorization of these imports and then giving such authorization almost on a shipment by shipment basis.

The rest of this paper will be as follows: Section 2 will provide a disaggregated picture of agricultural performance: variations between crops, regions and time periods. Section 3 will describe the strategy of agricultural development in India, in respect of expansion of inputs such as land, water, plant nutrients and protection measures, in respect of crop technology and finally in respect of institutions, including those relating to land tenure. Section 4 will focus on distributional issues. Section 5 will conclude the paper with a few remarks on future prospects.

2. Agricultural Performance: A Disaggregated Picture

The creditable over-all performance of Indian agriculture represents an average of wide variations in the performance of different crops and regions. In addition the growth of output accounted for by growth in inputs and by productivity of inputs varied over time.

While rice and wheat are the main cereal crops, significant proportion of total area under cereals is devoted to other cereals such as jowar bajra and maize. Pulse crops which provide the bulk of protein in vegetarian diets also account for a good chunk of the area under foodgrains. Rice and wheat have led the growth among cereal crops while the output cereals as a whole have far exceeded the growth in output of pulses. These tendencies have been accentuated by the introduction in the mid sixties of high yielding dwarf wheat and rice varieties, as well as hybrid jowar. There were no comparable pulse varieties that plant breeders could provide. A consequence of this has been the virtual stagnation in the output of pulses for over a decade. Since almost all the area under pulse crops as well as most of the area under inferior cereals such as bajra and jowar are unirrigated, not only the trend growth was relatively slow but year to year fluctuations were greater. These fluctuations in output led in part to considerably larger variations in their prices compared to the prices of rice and wheat. Since the inferior cereals are consumed largely by poorer segments of the population, adverse distributional consequences are likely from such price fluctuations.

Since India is a large country with a wide variety of agro-climatic conditions and since the distribution, as well as development of irrigation potential, has been uneven among different regions of the country, it is but natural that agricultural performance varies substantially between regions. The earlier mentioned fact that the new seed-fertilizer-irrigation based technology has been available only for a few crops, also further accentuated the regional differences. Institutional change, particularly in respect of land tenure and credit, has also been uneven.

Thus, in the state of Orissa in the east with an inherited feudalistic agrarian structure, with only 20 percent of land with irrigation and water control, trend rate of growth of output of foodgrains was only 1.5 percent over the period 1961-62 to 1973-74 whereas in the Punjab, (including Haryana) with a progressive agrarian structure and 75 percent of its cropped land irrigated the trend growth was 7.82 percent over the same period.⁵ Since resource movement, particularly of labour and capital between regions has been limited, regional disparities in agricultural growth also meant similar disparities in income growth as well, in the absence of massive fiscal transfers across regions.

Turning now to variations over time, in the period ending in the mid sixties representing the pre green revolution era, expansion of cropped area accounted for more than half the growth in total output, growth in yield per hectare contributing the other half. In the post green revolution era, area expansion accounted for only a fifth of the growth in output and yield increases accounted for the remaining.⁶ As mentioned earlier, this differential contribution of yield increases to growth in the latter period arose from, firstly the higher yield potential of the new varieties, secondly from an increase in the use of plant nutrients (particularly chemical fertilizers), thirdly from the expansion of irrigation, and finally from changes in cropping pattern toward high yielding crops. The use of fertilizers in terms of nutrients (nitrogen, phosphorous and potassium) increased from 1.92 kg. per hectare of cropped area in 1960-61 to 26.2 kg. per hectare in 1977-78. The proportion of cropped area under high yielding varieties of rice, wheat, jowar, bajra and maize was around 40 percent in the latter year compared to negligible levels in the mid-sixties.

3. Strategy of Agricultural Development

India embarked on a path of planned economic development in 1950 when a national planning commission was established and assigned the task of drawing up plans for the optimum utilization of the nation's resources. The first three five year plans covered the period 1951-1966 and ended in the postponement of the fourth plan as one of the consequences of the two successive droughts in 65-66. Three annual plans preceded the fourth five year plan covering the period 1969-74. While the fifth five year plan was ended a year before its completion because of change in government, the new government itself went out of office before the sixth plan was finalized. The present government published its own framework for the sixth plan (1980-85) in August 1980 and the final plan is expected to be published before March 1981.

There has been a continuing debate on the importance assigned to agriculture in the plans. Those wishing to assert that it has been neglected, point to the decline in the share of plan outlay devoted to agriculture and irrigation which fell from a high of nearly 37 percent in the first plan to a low of around 20 percent in the next two plans and recovered only to about 26 percent in the sixth plan proposed by the government that lost the 1980 elections.⁷ Those on the opposite side of the argument point out that the first plan was put together from on-going projects that had been initiated earlier and a large number of them were large multi-purpose irrigation cum power projects. Secondly, a constant or declining proportion of a growing total outlay did not mean neglect of agriculture. Thirdly, a distinction needs to be drawn between investment in agriculture and that for agriculture.

A sizeable chunk of investment in industry, transport and communications was for agriculture. Fourthly, the allocation of investment to any sector should depend on the rate of return to such investment in that sector as compared to other sectors. Indeed a strong case can be made that given the availability of food imports under PL480 on easy terms (that hardened substantially by the mid 60's) and the absence of a technological breakthrough, relatively modest investment in agriculture prior to the mid 60's would have been justified.

Broadly speaking one can distinguish three phases in Indian agricultural development. In the first phase which lasted from independence in 1947 to 1959, the emphasis was on institutional reform and investment in large scale irrigation and infra-structure. The main institutional reform attempted was the abolition of intermediaries known as Zamindars who were essentially revenue farmers. They used to collect whatever they could extract as rents from actual cultivators and paid a fixed amount to the state. Though this reform did very little to change the wealth distribution since the erstwhile Zamindars were paid a handsome compensation for the surrender of their revenue-farming rights, it did create a class of owner cultivators with secure rights in land. The other reforms, such as ensuring security of tenure to cultivating tenants, reduction in rents paid by tenants to the landlords, etc., were not entirely successful. For a brief period cooperative farming was promoted as the best form of institutional arrangement that presumably avoided the inefficiencies of collectivization and inequities of capitalist agriculture. But in the face of strong resistance from peasants, the cooperative farming idea was given up. In addition to cooperative farming for agriculture, another institution for rural

development promoted during this period was Community Development. The idea was not only to provide agricultural extension but also ensure popular participation in development through democratic village level institutions which were to draw up village plans for health, education and other activities. Though community development projects did have some impact, by and large, in relation to the resources devoted they must be termed as unsuccessful.

Following on the publication in 1959 of the Ford Foundation sponsored team's Report on India's Food Crisis and Steps to Meet It, an Intensive Agricultural District Programme (IADP) was launched. Initially the programme was intended as a demonstration as to how agricultural growth could be substantially stepped up and was confined to one district in each state. In 1965 a modified and somewhat detailed programme called the Intensive Agricultural Areas Programme replaced IADP and the coverage was expanded to 100 additional districts. The idea behind IADP was that by confining the efforts to a limited geographical area such as a district but expanding coverage to include all aspects of cultivation from improved agricultural practices to the supply of inputs and services, provision of price incentives, marketing arrangements and ensuring the participation of cultivators in an appropriately designed farm plan, much more could be achieved than through wider geographical coverage of uncoordinated programmes. Although not all IADP districts showed similar successful performances in accelerating growth and even successful districts did not do very much better than neighboring non-IADP districts, it is fair to say that the experience gained in IADP and IAAP efforts proved valuable when the technological base of agricultural production programmes

was altered by the introduction of high yielding varieties in the mid sixties.

The New Strategy Agricultural development introduced in 1966 built on the basic idea of geographical concentration of inputs and efforts as in IADP and included, in addition the spread of the new technology to areas with irrigation or assured rainfall. It was expected that a demonstration of dramatic improvements in yields and incomes in the selected areas would spur other areas to adopt the new technology, to generate additional demands for (and absorb) inputs and services. As was discussed in the introduction, this strategy should be considered to have been successful, though to varying degrees in respect of different crops and regions. For instance, output of wheat tripled, rising from an average of 11 million tonnes in the three years ending in 65-66 to an average of 33 million tonnes in the three year period ending in 1979-80. During the same two periods the change in the production of all foodgrains was from 81 million tonnes to 122 million tones.

The production programmes implied in the agricultural development strategies pursued were sought to be influenced by appropriate price policies with respect to inputs and outputs and policies to ensure physical availability of inputs from domestic production and imports. However, since there were other goals to be served besides achieving growth in agricultural output, it cannot be claimed that all government policies that had an impact on agricultural production were mutually consistent purely from the point of view of output growth. Further, in the Federal constitution of the

Indian republic, agriculture is a subject falling under the jurisdiction of state governments rather than that of central government creating additional problems of consistency between central and state government policies.

The conflict among goals can best be illustrated by policy making in respect to prices of major cereals. On the one hand, the prices received by producers have to be sufficiently remunerative for them to undertake the needed investments and purchase the needed inputs to achieve the output goals. On the other hand, given the objective of ensuring that urban consumers, particularly workers in the organized manufacturing sector and the government, were protected from any excessive rise in the prices of foodstuffs, the freedom to set producer prices was circumscribed. The attempt to reconcile these conflicting objectives led to a plethora of administered prices and controls in agriculture at different points in time. It will take too much space to discuss the gyrations in price policy and their impact. Briefly, urban consumers were supplied specified amounts of foodgrains, mainly rice and wheat, and sugar (and at times, vegetable oil as well) through ration or fair price shops. Consumers could augment their rations through purchases in the open market in periods (most of the time) when such markets were allowed to function. The fair price shops were supplied through grain either procured domestically or from imports. No private imports of grain were allowed. Domestic procurement was through a compulsory levy on producers or processors in some periods, through monopoly purchases from producers at other times and through open market purchases at specified prices still other times. Basically four sets of prices (in ascending order) emerged: (1) a set of

support prices, at which the government stood ready to purchase any amount offered. These prices were meant to protect the producers from downside risk of a market collapse in bumper years, (2) a set of procurement prices at which the government acquired a specified amount of grain for public distribution, (3) a set of issue prices at which urban consumers were supplied through ration shops and (4) a set of open market prices. An Agricultural Prices Commission was set up and assigned the task of recommending appropriate set of support and procurement prices prior to each harvest. Until the recent spurt in output, the open market prices tended to be sufficiently above procurement prices that procurement targets could not be achieved without additional controls in the form of a ban on movement of grain across states on private account. Recently, procurement prices have in effect become support prices. There is also the issue whether domestic prices should be allowed to diverge too much from import prices. Given the fact that in all major grain producing countries government intervention in grains markets is ubiquitous and given the fact that international trade in grains is not exactly competitive (and in rice, the market is thin as well), it is not easy to be definitive on this question.

Turning to inputs, apart from public investment in irrigation works, private investment in tube-wells, pump sets etc. was subsidized. In addition, electricity or diesel needed for operating the pump sets were also subsidized. Fertilizer prices were also administered-- there were three sources of supply, domestic private producers, public sector producers and imports. Policies in respect of import

substitution in fertilizers resulted in the establishment of a number of plants, many of them too small in relation to optimal scale, with varying cost structure. The variation in costs were also due to changes in feedstock for the production of nitrogenous fertilizers (naptha, fuel oil, coal, electricity) depending on the vintage of the plant. Again it will take too long to discuss the fertilizer production and pricing policies, the impact of oil crisis etc. on agriculture. Suffice it to say, even though domestic fertilizer production capacity is under utilized, and cost of production exceeds world prices, still the sale price to producers relative to grain prices have not increased too much to blunt the incentives for the use of fertilizers. Indeed, the use of fertilizers has grown at an annual rate exceeding 20 percent since 1975-76 in spite a number of price incerases induced by oil price increases. However, the inefficient distribution and sales network as well as inadequate credit for purchase of fertilizer did raise the real cost, if not to all producers at least to a large number of them, to levels far above the nominal sales price.

The introduction of new varieties, some of which have a shorter duration of cultivation, has made it possible to increase the cropping intensity (that is, the number of crops grown in a year) in some adequately irrigated areas. With increasing cropping intensity, requirements for labour at peak periods have increased and seasonal shortages have begun to emerge. Partly in response to this and partly for other reasons, investment in tractors has become attractive in some areas of the country. While indiscriminate mechanization agriculture prior to the absorption of available labour and draft animals productively may be socially harmful, private profitability of investment in tractors seems to be attractive in spite of increasing

fuel costs.⁸ The domestic tractor manufacturing industry and tractor service and repair shops have been profitable.⁹

It was mentioned earlier that co-operative farming as an institution was sought to be promoted but had to be given up. The National Commission on Agriculture which reported in 1976 came to the conclusion that among three alternatives, namely large scale capitalist farming, collective farming and peasant proprietorship, the last was the most desirable in the context of India, though it did make formal obeisance to the cooperative idea by stating that "Indian Agriculture is to develop as a strong and well balanced peasant proprietorship, strengthened and supplemented by cooperative and joint enterprises in specific areas of production."¹⁰ It arrived at this recommendation in part because of its view that "it is now a recognized fact that given the necessary conditions, small farms are no less efficient than large farms."¹¹ Ever since the early farm management surveys in India suggested an inverse relationship between size and yield per hectare, a voluminous literature has emerged on the topic, with some contributions accepting the relationship as established and attempting to provide economic rationale for it, and with others questioning the existence of the relationship either on grounds of statistical methodology or on the basis of fresh data contradicting the relationship.¹² Even without getting deeply into this controversy, one could argue that in the context of the new seed-fertilizer-water

technology, it is not enough if the technology itself is scale-neutral or even biased in favour of small farms, if the access to credit, fertilizers, quality seeds, public subsidies to investment in irrigation, etc. are not scale-neutral and in fact biased towards large farms. We now turn to a discussion of this and other distributional issues.

4. Distributional Aspects of Agricultural Development

In a society in which the most important source of employment and income generation is agriculture, arable land is perhaps the most important asset. If the distribution of owned land (and more generally if access to land is through renting or leasing) happens to be highly concentrated, it is clear that income distribution (among households or persons) is likely to be concentrated as well. The National Sample Survey data relating to 1971-72 show that nearly 10% of rural households owned no land. The more than three quarters (to be precise 78 percent) of all rural households who owned less than a hectare of land accounted for a quarter of all land owned. At the other end of the distribution a mere 3 percent of all rural households owning more than 8 hectares of land accounted for 30 percent of all land.¹³ The distribution of operational holdings which reflect the effects of leasing in and leasing out, shows a similar picture of concentration though, as is to be expected, it is less concentrated than the distribution of ownership holdings. The various studies on poverty in India also show that among those rural households classified as having real per capita consumption levels below a normatively defined poverty line, a majority consist of (i) agricultural labour households with no land, (ii) cultivating households with some land but with agricultural labour as their main source of income, and (iii) cultivating households with less than 0.5 hectares of land.¹⁴ While it appears that until the early seventies there was no significant time trend in the proportions of rural population living below the poverty line, the fluctuation in this proportion seem to mirror the fluctuations in agricultural output

per capita. Since there was no trend in the latter variable either, the correlation between poverty in agricultural output could be interpreted as suggesting that if a clear upward trend in agricultural output per capita emerged (as it seems to have in the late seventies), a downward trend in poverty can be expected to emerge as well.¹⁵

Whether or not faster growth in agriculture will have a favourable effect on poverty reduction, at least in political rhetoric redistribution of land so as to reduce concentration and poverty has been a constant policy objective even during the days of the struggle for independence. The post-independence era saw a whole host of legislation on agrarian reform (apart from the Zamindari abolition mentioned earlier) covering ceilings on holdings, abolition of tenancy in some states, protection of tenure and fair shares for tenants, etc. In addition disciples of Mahatma Gandhi launched the "land-gift (Bhoodan) and village-gift (Gramdan)" movements to induce landowners to donate land or even whole villages to be redistributed among the landless and the needy. The net effect of all this official and non-official activity has been more in the nature of evasion of laws than any real and significant redistribution, though it is hard to deny that some redistribution has indeed taken place in differing degrees in different regions of the country.

There has been an extensive debate on whether the agrarian structures prevailing in different parts of India have or have not prevented the full exploitation of the opportunities opened up by the new seed-fertilizer-water technology. The empirical evidence seems to suggest that neither the small farmer nor the tenant or share cropper lags

behind others in adopting the new technology. However, having adopted, it would appear that there are differences in the dosage of fertilizer used or the extent of area fertilized or devoted to growing high yielding varieties between small farmers (or tenants) and large farmers. In other words, the small size of the farm or its tenancy status are not necessarily barriers to adoption--but the gains from adoption could be much less for small farmers because of their inadequate use of critical inputs. And this inadequate usage is attributed to the biased functioning of institutions that dispense credit, distribute fertilizers, etc.

There is another aspect to this lack of adequate access to credit and other inputs on the part of small farmers. There is increasing evidence that many of them are leasing out their land to middle peasants with and becoming agricultural workers. It is possible and indeed likely that their combined income from rent on leased out land and wages exceeds what they could have earned as small cultivators had they not rented out their land. And to the extent the appearance of the new technology has increased the returns from the use of new inputs, those who have privileged access to credit and these inputs are in a much better position to exploit the new technology. There is some evidence that it is the middle peasant group which is in this privileged position and not those at either tail of the land holding distribution. There is also some evidence suggesting that the middle group is leasing in land from both small and large land holders. To a considerable extent the emergence of the middle peasantry is also attributable to their being in the middle of the caste hierarchy as well. In spite of legislation and others efforts, the social position

of the lower castes including the former untouchables and tribals who constitute an over whelming proportion of landless agricultural labour as well as very small holders has not appreciably changed. At the other end, the upper castes who were the wielders of power in the past are facing competition. Again it will take us too far to analyze the socio-political-economic implications of this phenomenon. There is no doubt that the middle peasants represent a potent political force and they are beginning to flex their political muscles in different parts of the country as witnessed by recent so called "farmers' agitations" for higher output prices, lower input prices, cancellation of past dues for electricity used in irrigation as well as debts.¹⁶

The available evidence on the impact of new technology on the position of landless agricultural labourers is ambiguous. On the one hand, it is clear that seasonal shortages of labour have emerged in areas like Punjab which spearheaded the green revolution, thus inducing not only some mechanization, but raising the real wages of agricultural labour. The rise in the real wages has also attracted seasonal migration for other less fortunate states, particularly Bihar. On the otherhand, the Rural Labour Enquiry data seem to suggest that the average number of days of employment of agricultural workers as well as their real earnings have gone down in 1974-75 as compared to 1964-65.¹⁷ While economic theory of labour surplus economies would suggest that there would be increases in employment with no change in real earnings until the absorption of labour surplus, a fall in both may seem puzzling in view of the increase in output during the decade. However, without a further

analysis of the labour supply side, as well, it is difficult to interpret this evidence.

At this stage a brief reference should be made to two government programmes: the Small Farmers Development Agency and the Agency for Farm and Agricultural Labourers. The "chief functions of the agencies is to identify the participants, study their problems, draw up suitable programmes for them, locate institutional support, arrange extensive services and provide supervision for the adoption and implementation of the programme."¹⁸ There is increasing evidence that the performance of these agencies has been uneven and to the extent they are expected to work through existing institutions that are controlled by the rural rich and powerful, the programmed benefits may not percolate down to the needy. Indeed the bureaucratic and other procedures that govern the allocation of the subsidies and other benefits serve as devices that enable the functionaries to extract a large part of the benefits intended for the ultimate beneficiary. Indeed, one could argue that the success of Taiwan and Korea in agriculture is in large measure due to the thoroughgoing land reforms imposed after the war. These reforms had prevented the continuation of old or the emergence of new foci of local power based on large land holdings.

Rural public works programmes as a means of employment creation have been part of Indian planning from the beginning, though the resources devoted to them have been modest. However the accumulation of sizeable stocks of foodgrains in the hands of the public distribution agency, since the late seventies, has enabled the government to launch in 1976-77 what is called "food for work" programme.

It is expected that about 2.5 million tonnes of foodgrains are likely to have been utilized in 1979-80 under this programme on development works such as minor irrigation, construction of field channels and land levelling, soil conservation and afforestation, flood protection and construction and repair of roads, community buildings, etc.¹⁹

Finally, a few words about the public distribution programme may be in order. It is intended to supply a minimum quantity of foodgrains at subsidized prices to a section of the community. The coverage of population is complete in metropolitan areas, significant in other urban areas and negligible in rural areas (other than in the state of Kerala). It is true that urban poor take advantage of the programme but it is by no means the case that they or the other urban beneficiaries could be termed poorer in comparison to the rural poor left out of the programme. Further, in so far as the new technology made growing rice and wheat more profitable, the output of and the resources devoted to the cultivation of inferior cereals consumed by the poor have been stagnant. What is more, on the one hand with increasing incentives to producing more food and with procurement prices continually being raised and increasingly acting as support prices, public procurement and stock of foodgrains have been rising. On the other hand, the off-take from the public distribution programmes has not increased significantly, though this is in part a reflection of relatively plentiful supplies of foodgrains in the open markets. It may also reflect, as some claim, a deterioration in the income distribution resulting in the poor not having adequate purchasing power even to buy from the ration shop. Even the government admits that "... it was rather anomalous that a large section of the rural community should remain idle and

suffer from hunger and malnutrition at a time when the country was no longer deficit in the supply of foodgrains.²⁰

However the extent of malnutrition should not be exaggerated and the causes of prevailing malnutrition must not be misunderstood. Every since the FAO/WHO published their energy and protein requirements, a whole host of studies has been published claiming to estimate the extent of malnutrition of various populations. Most of these studies are based on a complete misunderstanding of the energy-balance mechanisms of the human body.²¹ Of course, FAO has been careful to point-out that the use of their energy requirements for assessment of the nutritional status of a whole population is invalid but this warning has been observed only in its breach! At any rate, the probable extent of malnutrition in India is of the order of ten to fifteen percent of the population and not fifty to sixty percent as some of these misguided studies would have us believe.²² However, even this ten to fifteen percent would mean that over 65 million persons are malnourished. Although inadequate food intake is one of the main causes of malnutrition, equally important are the effects of gastro-intestinal and other diseases attributable to lack of safe drinking water, adequate sewerage and sanitation. It is not at all obvious that a policy towards eliminating malnutrition will necessarily focus on the supply of food, except perhaps in the case of very young children and pregnant and lactating mothers. Thus malnutrition is more a reflection of the problem of lack of general development and poverty than of inadequate food supplies. And its elimination will lie in accelerating development.

5. Some Problems and Future Prospects

Some of the problems in Indian agriculture have already been touched upon in earlier sectors. Briefly these are: (i) non-availability as yet, of varieties comparable to the new wheat and rice varieties in terms of yield potential in respect of most other crops including in particular pulse crops. (ii) disparities in exploiting the new technology among regions and among land holding classes (iii) problems of landless agricultural labourers and very small farmers (iv) year to year fluctuations in output. With the emphasis that is currently being given to research, extension and above all to investment in irrigation some of these problems are capable of being solved. But the distributional issues are much more difficult to address in the short and medium run.

As for future prospects, there have been several studies looking both at supply and demand for food up to year 2000,²³ including a set of projections by the National Commission on Agriculture. The broad conclusion that emerges is that with the expected slow down in population growth and assuming a somewhat accelerated income growth than in the recent path with no significant change in income distribution, demand is likely to grow around 2.5 percent per annum till 2000. And with supply growing at a rate exceeding this even on pessimistic assumption, on the whole India should certainly be able to feed herself, of course with appropriate private and public storage programmes to even out fluctuations. But under reasonable rather than pessimistic assumptions about supply

and unchanged demand projections, a real possibility exists of India becoming a grain exporter. There are several possible responses to such a possibility. Those who feel that the recent growth has been achieved at increasing real resource costs in terms of investment in irrigation, and a whole set of subsidies, may wish to moderate the growth in supply by shifting resources to other sectors. Others may wish to explore the possibilities of entering the world markets as an exporter and gear the supply growth towards this end. Still others may wish to operate on the demand side to augment it, on the assumption that the above demand projections do not sufficiently allow for augmenting the food consumption of the needy poor through income transfers and/or subsidized food. Also, the possibility of diverting area away from foodgrains to the cultivation of feed-grains, oil seeds and fibre is yet another option. Whichever options are chosen, the fact that there are options to choose from is a sea change for Indian agriculture.

Footnotes

¹Daniel and Alice Thorner: Land and Labour in India, Bombay, Asia Publishing House, 1962.

²T.N. Srinivasan: "Trends in agriculture in India, 1949-50 1977-78", Bombay, Economic and Political Weekly, Special Number, August 1979.

³George Blynn: Agricultural Trends in India 1891-1947, Output Welfare and Productivity, Philadelphia, University of Pennsylvania, 1961.

⁴Joint Economic Committee: China: A Reassessment of the Economy, Washington, U.S. Government Printing Office, 1975.

⁵Planning Commission, Govt. of India: Studies in the Structure of Indian Economy, New Delhi, May 1977.

⁶T. N. Srinivasan, op. cit.

⁷M. L. Dantwala: "Agricultural Policy in India Since Independence", in C. H. Shah (Ed.): Agricultural Development of India-Policy and Problems, Bombay, Orient Longmans, 1979. The other papers in this volume are also of interest.

⁸On tractorization see Hans Binswanger: The Economics of Tractors in South Asia, New York, Agricultural Development Council, 1978.

⁹Ward Morehouse: "Technology and Enterprise Performance in the Indian Tractor Industry: Dow Self-Reliance Measure up?" Bombay, Economic and Political Weekly, December 20, 1980.

¹⁰Government of India: Report of the National Commission on Agriculture, New Delhi, Controller of Publications, 1976, Part XV, pp. 154-157.

¹¹Ibid, p. 157.

¹²For a recent summary, see Ashok Rudra and A. K. Sen: "Farm Size and Labour Use: Analysis and Policy" Bombay, Economic and Political Weekly, Annual Number, February 1980.

¹³National Sample Survey, Report No. 215, Tables on Landholdings: 26th Round, 1971-72, New Delhi, Ministry of Planning, Government of India, 1976.

¹⁴There is an extensive literature on this topic. See T. N. Srinivasan and P. K. Bardhan: Poverty and Income Distribution in India, Calcutta, Statistical Publishing Society, 1974.

¹⁵M. S. Ahluwalia: "Rural Poverty and Agricultural Performance in India". Journal of Development Studies, 1977.

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¹⁷Ministry of Labour: "Rural Labour Enquiry: 1974-75", New Delhi, Government of India, 1979.

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¹⁹Department of Economic Affairs: Economic Survey 1979-80, New Delhi, Ministry of Finance, Government of India.

²⁰Department of Economic Affairs, op. cit.

²¹A very influential study based on this wrong methodology see, Reutlingor S. and M. Selowsky, Malnutrition and Poverty, Washington, D.C., World Bank, Occasional Paper No. 23. The nature of the misunderstanding is explained in T. N. Srinivasan's "Malnutrition: Some Measurement and Policy Issues," Journal of Development Economics (forthcoming).

²²P. V. Sukhatme: "Malnutrition and Poverty", Ninth Lal Behadur Shastri Memorial Lecture, New Delhi, Indian Agricultural Research Institute, 1977.

²³Other studies include:

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