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# India's Food Production Policies – Need for Nutrition Orientation

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The announcement by the Finance Minister that agriculture will now be the highest priority is most welcome. So is the announcement of the setting up of a National Agricultural Commission under the Chairmanship of Dr M.S. Swaminathan. A National Nutrition Commission has also been set up under the Chairmanship of the Prime Minister. It is to be hoped that these initiatives signify recognition by the highest echelons of the Government, of the need for a new impetus and direction to our food production and agricultural policies.

## OBJECTIVE

A "Second Green Revolution" is mentioned as being the objective of the new policies in the food/agricultural field. The Green Revolution was successful in bringing about significant improvement in the production of wheat and rice with the result that food grain production had kept nearly ahead of population growth (Figure 1). It did, no doubt, significantly contribute to "Freedom from Hunger". However, it also had its drawbacks, notably the neglect of "quality foods" like pulses, green leafy vegetables and horticultural products. As a result, there has been no significant improvement in the nutritive quality of diets in households across the country.

The time has come when we must raise our sights. Our objective should not be just "Freedom from Hunger" but "Freedom from Undernutrition" – the nutritional well-being of our people. What we need is *not* a "Second Green Revolution", but a Food and Agricultural Policy with a nutrition orientation, which will result in balanced augmentation of not only the conventional food grains, but also of "quality foods" like pulses, green leafy vegetables, fruits, milk, poultry and fish. It is through such a policy that we can ensure that diets in households across the country are balanced and nutritious. There are no shortcuts. A forward-looking food production policy must be based on these considerations.

Unlike most other countries, including our Asian neighbours, large sections of India's population subsist, on vegetarian diets. A vegetarian diet, predominantly based on cereals, is bound to be deficient in a whole range of micronutrients and phytonutrients. A wholesome and nutritious vegetarian diet has to be necessarily based not only on cereals, but also on pulses and vegetables (especially green leafy vegetables) and milk. It is, therefore, important for India to achieve a balanced production of these essential foods in order that the habitual diets in households across the country fulfil basic nutrient needs.

Millions of poor households across the country are now subsisting on "survival rations" based mostly on a single staple. We must now enable them to make the much needed and long awaited transition from "survival" to positive health and nutritional well-being. This can only take place when household diets contain not just a single cereal, but are diversified and include protective foods also. Pulses, legumes, horticultural products and especially green leafy vegetables are a good source of micronutrients, phytonutrients and n-3 fatty acids, which are now known to be essential for the maintenance of health and prevention of disease. Today, millions of households in the country are being denied these protective foods. This situation must change.

We do realise that improvement in the 'quality of diets' in households will involve not merely ensuring adequacy of a range of essential foods, but also enabling *access* to these foods on the part of the poor. We are discussing programmes for improving access to foods on the part of the poor in a separate communication. Programmes for improving access must go hand-in-hand with programmes for increasing the availability of the right mix of foods at affordable prices. The question of promoting access to foods will arise only if availability of these foods is assured. Indeed, an important way of ensuring better access is to promote the availability of foods at affordable costs through the Public Distribution System (PDS).

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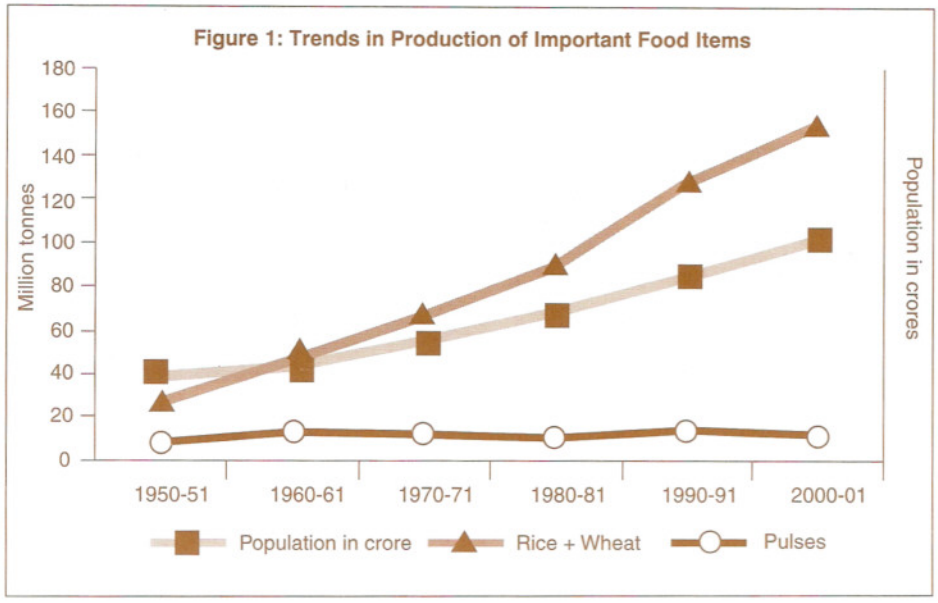



*Source: Agricultural Statistics at a Glance, Ministry of Agriculture*

Today, more than 25 per cent of the babies born in the country are of low birth weight. Nearly, 50 per cent of the children under five years of age are stunted[1] and approximately 70-90 per cent of the pregnant women are anaemic[2]. This picture has not changed for the last 20 years. If poor households continue to subsist on diets based on cereals alone, this picture will not change.

Market forces, rather than nutritional considerations, determine the pattern of food production. The production of nutritious foods should be remunerative to the farmer. It is, therefore, important in national interest that through price support and other necessary incentives, nutritional orientation to food production is ensured and the farmer's legitimate interests are protected. This is the challenge for the policy makers.

A broad agenda for food production and agricultural policy with a nutrition orientation is presented below.

## • Food Grains (Wheat and Rice)

The emphasis above on "quality foods" should not be allowed to minimise the urgent and imperative need for continued augmentation of staple food grains like wheat and rice. The seemingly abundant current buffer stocks of food grains should not lull us into a sense of false security. Food grain production estimated at 208 million tonnes in 2001 is expected to increase to at least 266 million tonnes by 2010[3]. Achieving this level of food grain production is going to be a formidable task in the present context of shrinkage of land size holdings, scarcity of water and electric power and declining yields per hectare. New imaginative strategies and new technologies of proven safety will need to be harnessed to achieve these targets. The proposal for the setting up of a mechanism for monitoring biotechnological procedures in agriculture is therefore welcome.

## • Pulses and Legumes

A major distortion of the Green Revolution has been the relative neglect of pulses/legumes production. Pulses, at one time, were less expensive than cereals. The per caput availability of pulses, unlike that of food grains, has declined in recent years[4] (Figure 2). The estimated pulse production in India, which today stands at 14 million tonnes, has to be raised to at least 30 million tonnes by 2010. The near-absence of pulses in diets of poor households in India today, has resulted in the decline of protein quality of diets. The answer to this does not consist in fortification of cereals with lysine, but in overcoming the current bottlenecks to augmentation of pulse/legume production. Pulses are not merely a good source of lysine (deficient in cereals), but a good source of riboflavin, also generally deficient in predominantly cereal-based diets. Legume cultivation, as part of crop rotation, is also beneficial to soil. Agricultural pricing policies, which will make pulse cultivation to farmers attractive, have to be in place.

For over two decades, I have been pleading for special efforts by agricultural scientists towards boosting production of pulses and legumes. One hopes that the recent initiatives will help to lend priority to this neglected programme.

*There is an urgent need for a technology mission for boosting the production of pulses and legumes. This is a neglected area and should now receive priority.*

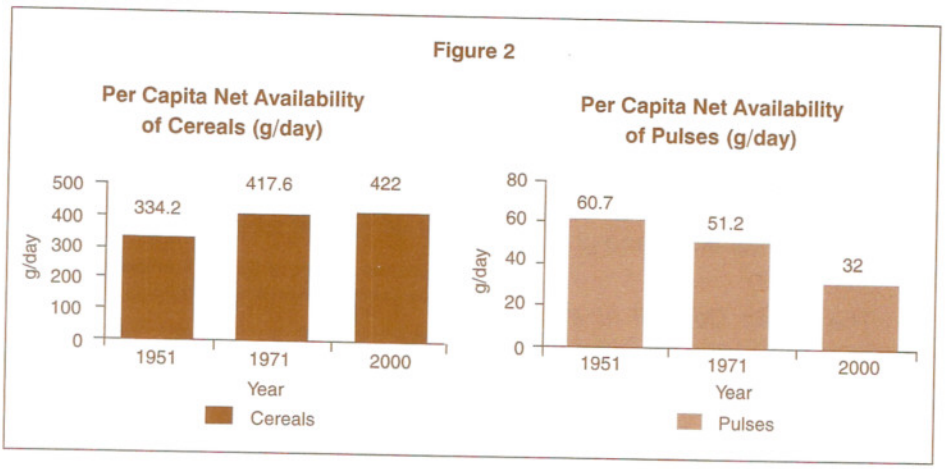
## • Soya Bean Cultivation

A few years ago, there was considerable expansion of soya bean cultivation, especially in Madhya Pradesh. While the soya bean meal was being largely exported, soya oil was available for local consumption. Unfortunately, for various reasons, soya bean cultivation seems to have now languished. Soya bean is a nutritious product. Soya flour can be mixed with whole-wheat flour to make a number of food products. Soya oil is not only a good source of monounsaturated fatty acids, but also a good source of essential fatty acids, particularly n-3 fatty acids. Recent studies, at the Nutrition Foundation of India, indicate that just ½ oz of soya bean oil in the last 100 days of pregnancy could contribute towards combating low birth weights in the offspring. Imaginative new strategies for promotion of soya cultivation, in areas that are suitable for its cultivation, need to be explored.

## • Vegetables and Fruits

There is an urgent need for concerted efforts towards the augmentation of production of vegetables and fruits. Although India produced over 25 million tonnes of fruit and 45 million tonnes of vegetable in 1992, and was the third largest producer of horticultural products in the world (next to Brazil and the USA), the per caput daily availability of fruits and vegetables (60 gm and 75 gm, respectively) falls far short of the minimum requirement. Given our natural biodiversity and with the application of new tools of biotechnology, it should be possible for India to substantially augment the overall production of horticultural products.

Vegetables and fruits are good sources of micronutrients and of several phytonutrients, which have now been shown to promote health and prevent disease. It is generally being assumed that the problem of




*Source: Directorate of Economics & Statistics, Department of Agriculture*

micronutrient deficiencies can be solved through the distribution of pills, tablets or capsules. The importance of vegetables, not just from the point of view of prevention of micronutrient deficiencies, but also from the point of view of prevention of diseases and overall maintenance of health, has not as yet been adequately recognised.

Taking note of the new knowledge with regard to the wholesome effects of fruits and vegetables, the US Recommended Dietary Allowance for fruits and vegetables has been raised to 450 gm/day – that in a country where several other sources of micronutrients are available from non-vegetarian diets. The Indian Council of Medical Research (ICMR) had recommended a minimum intake of 50 gm of leafy vegetables, 60 gm of other vegetables and 50 gm of roots and tubers for a low cost balanced diet[5]. Unfortunately, these levels of intake have not been achieved in practice. According to the National Nutrition Monitoring Bureau (NNMB) data, the average intake of vegetables as well as tubers in Indian households remained unchanged in the last two decades, being 118 gm/day in 1975-79 and 106 gm/day in 1996-97, even in the better-off South Indian states. The average intake of green leafy vegetables in Indian households does not exceed 21 grams per day in the urban and 11 grams per day in the rural households[6]. This would imply that a considerable number of household diets of the poor do not contain green leafy vegetables at all.

At present, there is insufficient focus on the cultivation and marketing of low-cost, locally acceptable green leafy vegetables, yellow vegetables and fruits. As a result, these vegetables are not available at affordable cost throughout the year. Health and nutrition education, emphasising the importance of consuming these inexpensive, but rich sources of micronutrients will not result in any change in food habits unless the horticultural resources in the country are harnessed and managed effectively to meet the growing needs of the people at an affordable cost. Horticultural products provide higher yields per hectare and sell at higher prices. The processing, storage and transportation for horticultural products in a manner that avoids glut and distress sales will make their production economically attractive to farmers and improve availability to the consumers.

Currently, nearly 25 per cent of horticultural products are lost due to poor post-harvest management. With improved harvesting practices, and better packing, storage and processing facilities, these losses could be greatly minimised. Inexpensive cold storage facilities in rural and semi-rural areas would be useful in increasing shelf life.

Simple technologies for dehydration of green leafy vegetables (without significant losses of β-carotene) have now been developed in a number of centres. Since, presently, there are marked seasonal fluctuations in vegetable production, it is important to ensure that surplus production in glut seasons becomes useful in tiding over lean seasons. It has now been demonstrated that a whole range of green leafy vegetables can be rapidly dehydrated and preserved; the dehydrated products have been shown to have reasonable shelf life, if cold stored. Such dehydrated products available in bulk could also be used with minimal cooking in national supplementary feeding programmes.

Simple village or town based technologies for preservation and processing of green leafy vegetables could create income-generating jobs for women in the countryside. With an assured off-take of such processed products for state sponsored operations, including Mid-Day Meals in schools, such programmes will become economically viable.

In an earlier publication, an outline of a large-scale food based programme for boosting production and consumption of fruits and vegetables has been provided[7].

*There is an imperative need for a technology mission charged with the task of promotion, storage, preservation, consumption and utilisation of green leafy vegetables.*

- **Milk**

Milk has been traditionally valued as a nutritious food item, more so in India than other countries of Asia. Thanks to Dr Kurien, there has been a significant augmentation of milk production in last few years. But the current milk production, which stands at 75.4 million tonnes[8], has to be considerably increased to meet minimal national requirements. Milk intake in the diets of poor households as per the NNMB data hardly exceeds 95 grams and falls short of even the modest Recommended Dietary Allowance requirement of 150 grams[6]. The Co-operative Movement, so successfully pioneered by Dr Kurien in Gujarat, seems to have not succeeded, to the same extent, in some other states. Other strategies for augmentation of milk production, if necessary, should be evoked.

Milk, apart from being a source of good quality protein, is also a good source of calcium (Ca). As against a daily intake of 1,000-1,500 mg of calcium in Western diets, the daily Ca intake in Indian diets hardly exceeds 500 mg. The intake in poor households is even lower. Earlier studies by Aykroyd and Krishnan[9] had shown that daily supplementation of Ca could help reverse stunting in school children. While this finding has not been widely confirmed, the need to increase milk intake, especially for children cannot be disputed.

- **Poultry and Fish**

While India's population is predominantly vegetarian, there is a considerable consumption of fish and marine products in coastal areas. Considering the vast coastline of India, it will be prudent and necessary to develop and harness this natural resource for augmenting fisheries. Poultry development makes minimal demands on land resources. Our food production policies should, therefore, include intensification of production of these items.

- **Food Safety**

It is important that foods that are made available are not only wholesome from the nutritional point of view, but also free from contaminants and toxic factors. The deleterious effects of intensive use of pesticides in agricultural technology are now recognised. The indiscriminate discharge of industrial effluents containing potential toxic pollutants into rivers is contributing not only to the diminition in fish catches but also to metallic and toxic contamination of fish and marine products.

*A policy with regard to ensuring food safety is therefore important. A recent workshop on 'National Strategy for Ensuring Food Safety', organised by the Nutrition Foundation of India, considered this question in detail and has submitted a blueprint for ensuring food safety. It is hoped that the recommendations of this report get due consideration.*

- **Scientific Infrastructure**

**Systematic analysis of nutritive value of foods:** Any meaningful food production policy has to be guided and based on sound scientific infrastructure. We ought to have authentic and reliable data with regard to the nutritive value of different foods. This is especially necessary since we now know that there are enormous varietal and locational differences with respect to micronutrient and phytonutrient content of foods. Data on the nutritive value of foods grown in different locations with different farming practices will help in formulation of nutrition-friendly agricultural technologies. Sophisticated analytical methods are now available.

The systematical analysis of nutritive value of food groups figured as a priority item in the programme of the National Institute of Nutrition (NIN); and the publication *Nutritive Value of Indian Foods*[9] that emerged from this institute is still the bestseller amongst the books of nutrition. This programme, which seems to have slackened somewhat in recent years, now needs to be fostered and intensified and given the highest priority.

*The Indian Council of Medical Research (ICMR) and the Departments of Food and Agriculture could jointly fund a strong and well-equipped Food Analysis Division in the National Institute of Nutrition, which has traditionally played a major part in the analysis of foods in this country.*

**Identification of special health promoting plant foods:** There is also need for encouraging research into the identification and propagation of foods that have special health promoting and disease preventing properties. The discovery of ivy gourd leaves as a rich source of β-carotene; of purslane being a rich source of n-3 fatty acids and of the disease preventing properties of fenugreek and turmeric are examples. Work of this kind needs to be encouraged.

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It is fortunate that the Departments of Food, Agriculture and Public Distribution are now unified under the charge of a senior Cabinet Minister. This should facilitate the formulation and implementation of coherent policies with regard to the chain of farm-to-home operations involved in the production of foods and their consumption.

*The author is President, Nutrition Foundation of India*

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# FOUNDATION NEWS

## Study Circle Lectures

- Dr C. Chandrasekhar (PO Department SPMG, UNICEF, New Delhi) presented the results of the 'Nutrition Data from District Level Household Survey (DLHS) – Phase I' on May 20.

- Dr Prakash Shetty, Chief Nutrition Planning, Assessment & Evaluation (ESNA), Food & Nutrition Division, FAO, Rome delivered a talk on 'Assessing Human Energy Requirements' on June 28.

## Workshop

The recommendations of the workshop on 'Nutrition in the Medical Curriculum' (held on April 28-30, 2004) have been drawn up and will be published shortly.

## Director's Engagements

- Attended workshop on 'India Country-level Development Market-place' organised by World Bank, on June 21, 2004.

- Attended workshop organised by Department of Family Welfare on 'Effective Strategy to Improve Child Survival and Nutrition in India' on June 7-8, 2004.

- Lecture on 'Bridging the Patient Care-Public Health Divide for Health, Family Welfare and Nutrition' at the regional-level RCH orientation workshop for the Faculty of Medical Colleges at NIH and FW on June 4, 2004.

- Interaction with the interns on 'Public Health and Human Rights' at the summer course of National Human Rights Commission on May 27, 2004.