

# Feeding India's Growing Billions

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*Ensuring access to quality food by everyone at all times is one of our most challenging tasks, considering that the nation is face-to-face with persistent poverty, hunger and malnutrition and their implications on the nutrition security of the poor*

India faces two major challenges in its food management system—one on the supply side, including risk and variability of food production, and the other is access to quality food by everyone at all times (defined as food security). In addition to unabated population growth, food production has been fluctuating greatly over the decades (Figure 1—all figures by the author). The incremental production/supply of home-grown food since 2010 has reached 28 million tonnes of food grain, which is the level it was at in the 1980s. In contrast, it was a total of 44 million tonnes in the decade of 2000-2010. Can such a variable production feed 182 million new consumers as well as satisfy the food needs of the existing billion plus population? Or will it lead to unsustainable food production and growing food insecurity?

## RICE AS A CRUCIAL INGREDIENT OF THE FOOD BASKET

Rice is the most important staple food in India. This single crop occupies the highest area, covering 45 million ha, with a production of 95 million tonnes in 2010 (second only to China). At the global level, rice is the staple food for more than half the world's population and around two billion people in Asia rely on it for 60 to 70 per cent of their daily calorie intake. Over 90 per cent of the present production and consumption of rice occurs in Asia; two-thirds of it in just three countries (China, India and Indonesia). Most of the rice cultivated in Asia is rain-fed (60 per cent in India), where crop production depends on the vagaries of an erratic monsoon and leads to the endangering of household food security.

A back-of-the-envelope calculation shows that, in India, the per capita annual availability of rice reached a low of 64 kg in 2008 (Figure 2, compiled by the author). According to the National Sample Survey Organization, a standard person requires 84 kg per year, which means that India is at least 20 kg short of its basic food needs. To meet the massive food requirement and reduce this gap, food production has to 'more than double' in the next two decades.

Food production is also highly vulnerable to crop failure due to climatic aberrations. India experienced a drastic reduction of nearly 13 million tonnes in food production due to a severe drought in 2009. This situation assumes greater importance because the states known to be the food bowl of India, particularly Punjab, are diversifying their cropping patterns in favour of horticulture crops and drastically reducing the area under rice and

wheat, on the pretext of climate change. It will be a herculean task to meet India's huge food requirement from a thin world rice trade of 25 million tonnes. Under these circumstances, can the resource-poor, rain-fed areas compensate the food deficit?

Agriculture in India, particularly a rain-fed rice production system, is characterized by:



- ♦ High dependence on the vagaries of the monsoon.
- ♦ Increasing threats due to biotic and abiotic stresses and climate change, putting tremendous strain on the food system and resulting in a more risky production system.
- ♦ Predominance of small and marginal farmers (with operational holdings of less than 2 ha), which account for as much as 84 per cent of the total farmers in the country. A vast majority of these farmers are not only resource poor, but

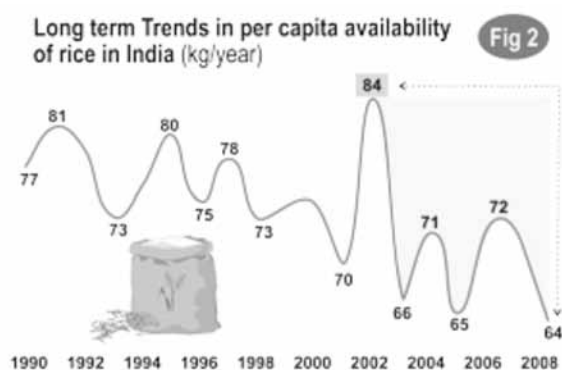
also commonly subjected to under-investment in agriculture, making resource use inefficient. This has almost invariably resulted in poor performance of the staple food—rice—and its growth has decelerated.

- ♦ Most of these farmers, moreover, are basically producer-consumers; due to low productivity, they are vulnerable to poverty and malnutrition, leading to food and nutrition insecurity.
- ♦ They are also unable to benefit from the emerging market system.

Rain-fed areas (nearly 60 per cent of total planted area under rice) have ample untapped potential and under-utilized natural resources; thus there is scope for increasing production and bridging the yield gap. The factors that are inhibiting production need to be identified carefully and the problem addressed with appropriate strategy. Modernizing systems, to enable increase in production through technological solutions, is the second-best solution to household food security.

History shows us that the spread of the Green Revolution has been iniquitous and limited to rice and wheat only, and that too in irrigated tracts only. The Green Revolution was backed by a supportive nation-wide preparation in infrastructure building, high yielding modern varieties, institutional reforms and matching policies on the institutional side. A moot point

in the circumstance is why such a supportive strategy would not work in today's context of stagnating yields and severe ecological crises. Punjab, which contributes significantly to India's food pool, is now facing serious ecological problems, in which three-fourths of the 137 blocks of the state confront an acute shortage of groundwater. The state government and Planning Commission are jointly considering ways to wean farmers away from rice to save water, as an ameliorating measure. Sustaining productivity gains in the existing system is not going to come easily even as the government is contemplating shifting the emphasis to the eastern region of the country for increased production. Can this 'look-east' policy shift be of any help? A carefully charted strategy is needed within a historical perspective of the production system.

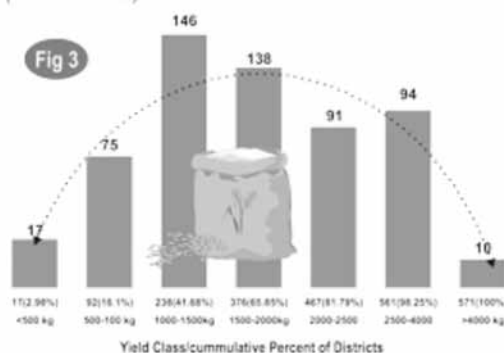


A long-term series analysis shows that the performance of 571 rice growing districts is precarious; there are wide inter-regional and inter-district disparities in rice productivity, which is particularly skewed towards rain-fed areas, where productivity is also persistently low (Figure 3). That the average productivity is less than 2 tonnes per ha in as many as two-thirds of India's rice districts (376 districts), which is less than the national average of 2.2 tonnes per ha (Figure 3), is alarming. The

urgent need today is to prioritize an actionable strategy for productivity enhancement and bridging the yield gap in targeted districts and regions.

It is a point to be noted that the household food security (rather than National Food Security) is more crucial among the small farmers because most of them, including the poor, are deprived of food access, technology knowledge empowerment, institutional

Performances of Rice Districts by Productivity Classes in India  
(No. of Districts)



infrastructure and support. This implies that the issues of inter-regional disparities in yield and yield gap need to be addressed at the macro- as well as micro-level planning.

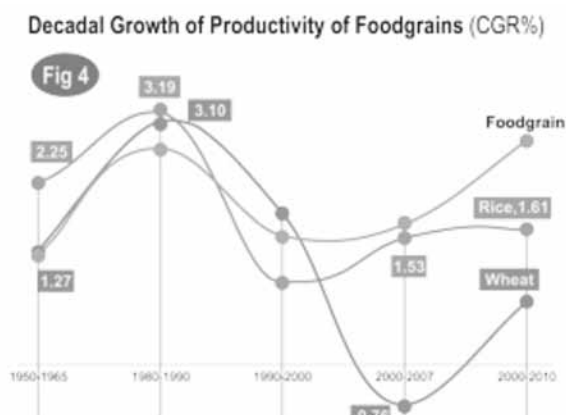
The picture is equally distressing when we look at productivity growth dynamics. Productivity growth reached over three per cent in the 1970s and 1980s but hovered around one per cent in the 1990s, and remained unaltered thereafter (Figures 4 and 5, compiled by the author). The year-on-year growth pattern during the past decade is even more disappointing. The fluctuation in production has been lessening over the years but overall production is at a level of low growth. The situation has become alarming as the cost of production has increased whereas productivity has declined. As farmers adopt input-intensive modern agricultural technologies, they suffer from several externalities due to the indiscriminate use of agro-chemicals and galloping price escalation. As a result, farm income erodes, soil degrades, water levels get stressed and biodiversity gets depleted, making production unsustainable.

On the whole, two important policy signals come out of the above analysis. First, there is an uneven production of rice in the spatio-temporal space, signifying regional disparity,

and second, despite bumper harvests, there is an inequitable access to food for the people (who deserve it most), endangering household food security. Persistent poverty and incidence of hunger and malnutrition remain crucial concerns. These indicate direct implications on poverty and nutrition security of the poor. A calculation based on the recent round of NSSO consumption data shows that most of India's population (nearly 720 million) needs food security coverage.

Strategies for achieving sustainable food security

- ◆ *An effective food management system and procurement policy (public distribution system—PDS).* This has been the most talked-about subject because farmers are unable to market their produce on the one hand and food-grain is rotting in the government godowns on the other hand. A user friendly, equitable and reformed PDS is needed.
- ◆ *Identification of food security needs and people below the poverty line (BPL).* This has been debated intensely for a long time due to the lack of a comprehensive method of measurement. The rural

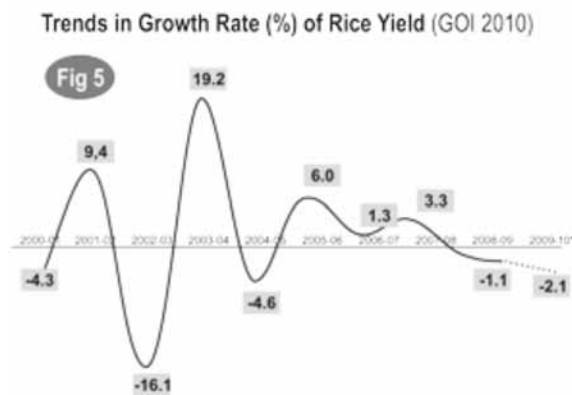


poverty head count ratio was 41.8 per cent, 25.7 per cent for urban areas, and 37.2 per cent all-India in 2004–05. The Planning Commission updated the poverty lines for 2009–10, as per the recommendations of the Tendulkar Committee. The poverty line at the all-India level was estimated at MPCE of 673 for rural areas and 860 for urban areas. Thus, the reduced head count ratio is estimated at 29.8 per cent at the all-India level, 33.8 per cent in rural areas and 20.9 per cent in urban areas. However, the consensus on the number of households to be included in the priority list at the state level is yet to be fixed. Rather than sticking to a controversial single-factor, consumption-expenditure-based measure of poverty, Rajesh Shukla in his article 'The Great Poverty Debate' in *Inclusion* (Jan–Mar 2012) suggested a comprehensive measure of effective, multi-dimensional poverty. We need to arrive at a consensus and agreed systematic methodology, which is easy to comprehend by the common man at large.

- ♦ *Increased investment in agriculture and a performance indicator that can be monitored easily.* Studies show that investment in agriculture lagged behind (at less than half a per cent of the agricultural GDP) for a long time. In its response, the government earmarked reasonable investments for the sector in recent years; the achievements, however, instead of showing improvement, remain unchanged. This calls for strict monitoring and accountability.
- ♦ *Sustainable food production and conservation of natural resources.* Available evidence indicates that the practice of System of Rice Intensification (SRI) provides scope for enhancing productivity to break the yield barrier of smallholder farms. The novelty is that the SRI produces more rice with less input while conserving precious water and other resources, which is an important pre-requisite for climate-smart agriculture. The SRI is a pro-poor option for household food security. It is satisfying to note that it has already gained popularity among millions of farmers; yet it has many more miles to go.

- ♦ *Farmer-friendly agricultural research and development (R&D) systems and eco-friendly technology practices.* The impact of a large number of modern varieties developed by the agricultural R&D system has been very minimal at the farmers' field level. Barely a fraction of these have reached their target, due to the lack of an effective transfer of technology policy. An innovative institutional framework for the transfer of technology is needed.

The Food and Agriculture Organization (FAO) of the United Nations has proposed an interesting alternative that needs to be considered as part of the policy options. It suggests: (i) identifying the high food-stress regions and districts across the country and (ii) a composite index of 'spread of agriculture', 'agricultural (cereal) productivity', 'irrigation intensity', 'presence of agricultural markets' and 'social practices' that influence local-area food production and markets.



The most debated National Food Security bill focuses on issues of measuring food needs and on identifying the number of BPL people at the state level. In order to bring unanimity in using acceptable measuring tools, it is essential to identify a flexible set of variables that predicts their impact on a household's expenditure. Using appropriate statistical models, an extended index of livelihood may be calculated by assigning scores, which are unique to each household but differ according to the socio-economic and environmental characteristics of

a region, state or district. Such indices may be used to identify the target households.

Thus a win-win solution for food security of a billion plus population is to integrate both the supply-side and demand-side requirements in the advancement of agro-ecological innovation systems.

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