

Sustainable Agriculture & Food Security: Crises and Challenges

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Abstract

The India's strategy of agricultural development and approach to food security has proved its resilience in the wake of recent global food crisis, which has created political and social unrest in several countries of the developing world. Though India's performance in terms of reducing hunger and malnutrition has not been remarkable given the political and socio-cultural milieu, the achievements have indeed been significant. Indian agriculture has undergone a phenomenal transformation during the past five decades. The metamorphosis was brought by not only technological changes such as the green revolution, but also by institutional innovations in delivering farm inputs and marketing of output. Contract farming is one such institutional initiative undertaken in recent years to address some of the problems faced by Indian farmers. The National Agricultural Policy (2000) announced by the Government of India, seeks to promote contract farming by involving the private sector to accelerate technology transfer, capital inflow and assured marketing of crop production. In order to be effective, the food security policy must evolve as a basic element of a social security policy with proper coordination among the various government departments, private sector and non-government organizations. Centralized and state-level anti-poverty schemes should give way to local initiative and local participation based on the principles of efficiency, equity and environmental conservation. Therefore, India has to play a major role not only to maintain its own self-sufficiency in food production but also to meet the additional requirement of its neighboring countries. The right research priorities and production strategies will promote future growth in agriculture and ensure sustainable food and nutritional security. Malnutrition is nothing new for many Indians. According to the International Food Policy Research Institute's 2011 Global Hunger Index, the upshot of this perennial problem is that about 58 million children in India are underweight and malnourished, while 19 percent of the population as a whole general is malnourished. Unfortunately, this problem is unlikely to change anytime soon, with the recent introduction of the National Food Security Bill threatening to continue market inefficiencies in food supply and extend the problem of malnutrition far into the future.

Introduction

In the past agriculture has played and will continue to play a dominant role in the growth of Indian economy in the foreseeable future. It represents the largest sector producing around 28 percent of the GDP, is the largest employer providing more than 60 percent of the jobs and is the prime arbiter of living standards for seventy percent of India's population living in the rural areas. These factors together with a strong determination to achieve self-sufficiency in food grains production have ensured a high priority for agriculture sector in the successive development plans of the country. These challenges have profound implications for the way farmers' problems are conceived, researched and transferred to the farmers. The success of India's agriculture is attributed to a series of steps that led to availability of farm technologies which brought about dramatic increases in productivity in 70s and 80s often described as the Green Revolution era. The major sources of agricultural growth during this period were the spread of modern crop varieties, intensification of input use and investments leading to expansion in the irrigated area. In areas where 'Green Revolution' technologies had major impact, growth has now slowed. New technologies are needed to push out yield frontiers, utilize inputs more efficiently and diversify to more sustainable and higher value cropping patterns. At the same time there is urgency to better exploit potential of rain fed and other less endowed areas if we are to meet targets of agricultural growth and poverty alleviation. On the one hand agricultural research will increasingly be required to address location specific problems facing the communities on the other the systems will have to position themselves in an increasingly competitive environment to generate and adopt cutting edge technologies to bear upon the solutions facing a vast majority of resource poor farmers.

India's Food Security and Influenced the Production Potential.

India's Food Security both at the national and household levels has been the focus of agricultural development in India ever since the mid-sixties when import dependence for cereals had gone up to 16 per cent and the country faced severe drought continuously for two years. The new approach intended at maximizing the production of cereals and involved building a foundation of food security on three key elements, namely, provision of an improved agricultural technology package for the farmers, delivery of modern farm inputs, technical know-how and institutional credit to the farmer. For achieving these objectives, several policy instruments were used that influenced the production potential. The developmental repercussions of this situation are dramatic, not only for individuals who suffer numerous health issues resulting from malnutrition, but also for the economy at large. Malnutrition results in a loss of productivity, indirect losses from impaired cognitive development, and losses from increased long-term healthcare costs.

According to a report by the World Bank, productivity losses in India due to stunted growth, iodine deficiencies, and iron deficiencies are equivalent to almost 3 percent of GDP. While during the colonial era famine was the primary result of "food insecurity," malnutrition has replaced it as the chief concern of legislators and economists.

The last great famine in India occurred in 1943, and served as a case study for Amartya Sen, the Nobel Prize winning Indian economist, in his groundbreaking work *Poverty and Famines*, in which he showed that famine was rarely the result of a lack of food, but rather the result of intervening economic factors, such as unemployment, declining wages, and, as is often the case in India, poor food distribution systems.

Current Sustainable Agricultural Scenario

Agriculture is the basis of economy and sustenance of life of the people of India. Sustainable agriculture may be regarded as the successful management of resources for agriculture to satisfy the changing human needs while maintaining or enhancing the quality of environment and conserving natural resources. Sustainable agriculture integrates three main goals: environmental health, economic profitability fronts, namely, crop diversification, genetic diversity, integrated nutrient management, integrated pest management, sustainable water management, post-harvest technology and sound extension programmes (FAO, 1991).

It is generally believed that India has maintained a satisfactory level of food production in the 1980s. Food grain production in India has witnessed a steady increasing growth rate during the 1970s and 1980s from the rate of the previous decades, but the 1990s has witnessed a sharp fall in the growth rate. In fact, the growth rate of food grain production during the 1990s has been close to the annual population growth rate, which implies a stagnant per capita production level (Rao, 1997; Sawant, 1997). A comprehensive analysis of agricultural performance and productivity of Indian agriculture by Kumar (2001) has revealed that the changes in cropping pattern have been taking place as a result of substitution of low productivity crops by those which have shown impressive performance in productivity growth. Some of these crops are paddy, wheat, maize, groundnut, rapeseed and mustard and sugarcane. Coarse cereal and pulses have shown a steady decline in their area.

Production Performance of Indian Agriculture System

Increased availability of food is a crucial and essential condition for achieving food security in food deficit countries. Since continued dependence on imports to ensure availability is not desirable based on economic, social and political considerations, enhanced agricultural production has been a stated objective of the national policy of many developing countries including India. In this context, it is important to review the production performance of Indian agriculture with a view to understanding the trends and identifying the major constraints in achieving physical access to food.

Since agriculture today is constrained by the less availability of land, productivity remains the most crucial factor based on which is the future of India's food security. In the past, the major sources of growth in agricultural production were area and yield. However, the future growth has to be essentially driven by increase in yields. The evidence is that rapid growth in public investment in irrigation and other infrastructure, research and extension along with crop production system and policy support have helped to increase yield and agricultural production. Long-term food security goal can only be attained if there is sustainable agriculture. A sustainable farming system is a system in which the natural resources are managed so that potential yield and the stock of natural resources do not decline over time (Kumar and Mittal, 2006). At the farmers' level, sustainability concerns are being expressed that the input levels have to be continuously increased in order to maintain the yield level. This poses a threat to the economic viability and sustainability of crop production.

Agriculture in the Changing Global Scenario

The diversity of India's agro-ecological setting, high bio-diversity and relatively low cost of labour provide potential for agricultural competitiveness in a globalized economy. It is expected that with increasing globalization of markets over the years there will be demands for agricultural intensification. This will also be favored because of greater backward and forward linkages between agriculture and food industry. Therefore, increase in production and productivity is bound to be strategically important to economy.

Intensification will not only favor alleviation of rural poverty but will also improve resource conservation particularly in the small farming sector where farmers can be encouraged to take up organized production of high value crops such as fruits, specialty vegetables, flowers medicinal and aromatic herbs etc. Stronger demands for crops of the small farmers' will not only improve incomes and welfare but will also make investments in technology and resource conservation more attractive.

Towards a Food Secure in India

Ever since independence in 1947, agricultural development policies in India have aimed at reducing hunger, food insecurity, malnourishment and poverty at a rapid rate. Keeping this overarching goal in mind, the emphasis which was initially on keeping food prices low, shifted to macro food security and subsequently to household and individual food security. Later, the food security of vulnerable, sustainable use of natural resources, and equity between rural and urban or farm and non-farm population became the issues of dominant discourse related to agricultural development. Several new initiatives have been taken during the last few years to tackle the situation and to bring back farmers' confidence in farming in general and cereal production in particular. Indices for economic and social status are composite indicators of the economic and social well-being at the community, state and national levels. These social indicators are used to monitor the social system and help in the identification of problem areas that need policy planning and require intervention to alter the course of social change.

The following are suggested for not only improving productivity but also for ensuring food security.

- Education and literacy
- Integrated Nutrient Management
- Water for sustainable food security
- Enhancing yield of major commodities
- Increase in productivity/
- Making dry areas as green
- Emphasis on empowering small farmer
- Targeted programmers
- Safety net to small farmers and the poor
- Support for risk management

Conclusion

Indian agriculture is facing a policy paradox. In areas where 'Green Revolution' technologies had major impact, growth has now slowed. New technologies are needed to push out yield frontiers, utilize inputs more efficiently and diversify to more sustainable and higher value cropping patterns the food security policy must evolve as a basic element of a social security policy with proper coordination among the various government departments, private sector and non-government organizations. Centralized and state-level anti-poverty schemes should give way to local initiative and local

participation based on the principles of efficiency, equity and environmental conservation.. Therefore, India has to play a major role not only to maintain its own self-sufficiency in food production but also to meet the additional requirement of its neighboring countries. The right research priorities and production strategies will promote future growth in agriculture and ensure sustainable food and nutritional security.

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