



Food and Nutrition Security in India: Some Contemporary Issues*

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SUMMARY

This paper examines the main elements of Indian food policy in the context of recent economic and agricultural developments. Specifically, implications of recent global food crisis, climate change and shortfall in the agricultural growth are discussed. Given the rapid increase in demand for food grains globally and likely adverse impact of climate change on yield; the policy of self-sufficiency and government interventions to ensure physical and economic access should be strengthened. The country need to pay more attention to nutritional issues as 1/3rd of our people suffer from malnutrition. Concerted efforts should also be made to raise food grain yields not only to meet food requirement but also release some area for cultivation of high value crops like fruits and vegetables. Application of available stock of knowledge and technology for bridging the yield gap, particularly in the eastern region, can have immediate impacts. A long term strategy should also target developing plant varieties and crop management practices for adaptation and mitigation of climate change.

Key words : Trends in foodgrain production, Temporal and spatial trends, Demand projections, Food and nutritional security.

1. INTRODUCTION

India has successfully followed the policy of food security for all sections of the society. The key elements of this policy are self-sufficient in food production and improving physical and economic access of poor to food through appropriate government interventions. This policy has worked both for consumers and producers and also insulated Indian food economy from volatility of the world market. However, some recent developments, global and national, have forced to re-assess the current scenario and strategy to ensure food security. First and foremost is slow down of agricultural growth for a number of years. Likely shortfall in kharif production because of deficit rainfall has raised further concerns. Second important issue is implications of global food crisis seen due to shortfall in foodgrain production, mainly wheat, in some major producing countries. The possibility of such a crisis in future can't be ruled out, and reinforces the need for self-reliance.

Third major issue is fluctuating incentives for diversification of agricultural production, mainly because of increasing demand for high value commodities. Farmers often find remunerative to grow high value crops but in some years high foodgrain prices shift farmers back to rice and wheat crops which also have low market risk. This paper revisits the food security scenario and related policy issues in the present context. Specifically, both supply and demand side factors are taken into consideration. The main premise of the strategy is to ensure required growth in foodgrain production through technological options.

2. TRENDS IN FOODGRAIN PRODUCTION AND AVAILABILITY

Foodgrain production in the country maintained a sharp uptrend since the green revolution era. It increased from 108.4 million tonnes (MT) in 1970-71 to 176.4 MT in 1990-91 which further rose to current

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highest level of 230.8 MT in 2007-08. Area under foodgrains stabilized since 1980s but yield maintained an uptrend and contributed to the growth in production since then (Fig. 1). However, rate of productivity growth and hence production decelerated during the last decade or so. This deceleration in growth could not keep pace with population growth and as a result, per capita production and availability declined in the recent past (Fig. 2). This in some years was lower than what was during the green revolution period. This is most worrying aspect of food security. It is only recently in last two years that food grain production went up sharply and per capita production was restored to a reasonably high level. Although decline in per capita production is a disturbing trend but this should be adjusted with the fact that there is decline in per capita consumption of cereals. The effect of low production is felt sharply when there is a need for import of food grains and there is not adequate stock available in the international market.

Temporal and Spatial Trends in Foodgrain Production

Agricultural production in India has kept pace with the food needs of the growing population owing to

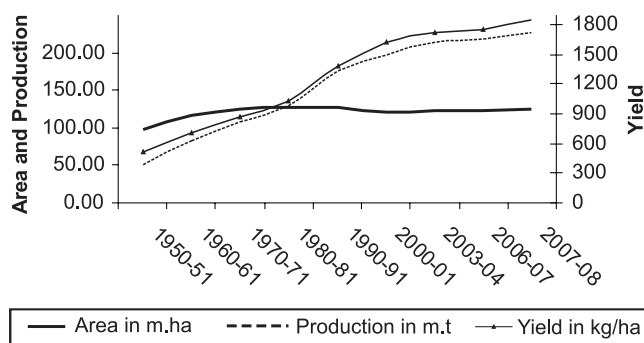


Fig. 1. Area, Production and Yield of Foodgrains in India

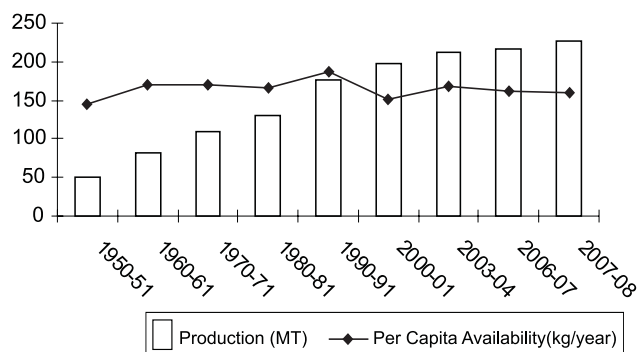


Fig. 2. Foodgrain Production and Per Capita Availability in India

increased yield of almost all crops, especially cereals. Rice production has increased from 74 million tonnes in 1990-91 to 97 million tonnes in 2007-08 showing around 30 per cent increase in production during the period. Wheat, another important staple food of the country showed 44 per cent increase, from 55 million tonnes in 1990-91 to 79 million tonnes in 2007-08. Cereals and pulses together constitute a little more than one third of total value of crops in the country. The acreage under foodgrains to cropped area declined since the early eighties, but there was hardly any decline in the share of area under rice and wheat, against a sharp decline in coarse cereals. Hence, the growth in cereals has been largely accounted for yield growth during the period. The average yield of foodgrains at national level has risen from 1.4 t/ha to 1.8 t/ha during the last two decades showing a consistent increase over the period. Among cereals, rice and wheat showed impressive yield rise in contrast to the stagnancy in pulses productivity (Table 1). There has been an adverse trend in area growth for foodgrains, mainly resulting from diversion of area from coarse cereals to oilseeds, in spite of the fact that there has been significant yield growth in coarse cereals as compared to the superior grains like rice and wheat especially during recent times. This is mainly because of increasing adoption of modern varieties in coarse cereals in rainfed areas of the country.

Among foodgrains, the growth scenario is completely different for pulses as is visible by its declining growth in area in the country. The dismal performance in pulse production, especially during the nineties, has been mainly accounted for by stagnancy in yield growth, which has been hovering around 0.5 to 0.6 t/ha since last two decades. However, during the last decade, there was appreciable acceleration in the growth of pulse production, owing to significant reduction in crop duration, particularly in pigeon pea and chick pea, now grown in the non-traditional areas.

This impressive national growth scenario masks large variation in the crop productivity per unit of cropped area in different states of India, though yields have tended to increase overtime in most of the states. The foodgrains especially cereals productivity was the highest in high growth states like Punjab (4 t/ha) and Haryana (3.4 t/ha) during 2006-07. West Bengal needs special mention as the state showed an impressive rise

Table 1. State-wise trend in foodgrain yields, tonne/ha

Sl. No.	State	Year	Rice	Wheat	Pulses	Total foodgrains
1	Andhra Pradesh	1990-91	2.4	0.9	0.4	1.6
		2000-01	2.9	0.6	0.6	2.1
		2006-07	3.0	0.9	0.7	2.2
2	Assam	1990-91	1.3	1.3	0.4	1.3
		2000-01	1.5	1.2	0.6	1.4
		2006-07	1.3	1.1	0.6	1.3
3.	Bihar	1990-91	1.2	1.8	0.8	1.3
		2000-01	1.5	2.1	0.9	1.7
		2006-07	1.5	1.9	0.7	1.7
4	Gujarat	1990-91	1.5	2.0	0.7	1.1
		2000-01	1.5	2.3	0.3	1.2
		2006-07	1.9	2.5	0.6	1.4
5	Haryana	1990-91	2.8	3.5	0.7	2.4
		2000-01	2.6	4.1	0.6	3.1
		2006-07	3.2	4.2	0.8	3.4
6	Karnataka	1990-91	2.1	0.6	0.3	0.9
		2000-01	2.6	0.9	0.5	1.4
		2006-07	2.5	0.8	0.4	1.3
7	Madhya Pradesh	1990-91	1.1	1.5	0.6	1.0
		2000-01	0.6	1.4	0.6	0.9
		2006-07	0.8	1.8	0.8	1.2
8	Maharashtra	1990-91	1.5	1.1	0.4	0.9
		2000-01	1.3	1.3	0.5	0.8
		2006-07	1.7	1.3	0.6	0.9
9	Orissa	1990-91	1.2	1.6	0.6	1.0
		2000-01	1.0	1.5	0.4	1.0
		2006-07	1.5	1.5	0.4	1.4
10	Punjab	1990-91	3.2	3.7	0.7	3.5
		2000-01	3.5	4.6	0.7	4.0
		2006-07	3.9	4.2	0.9	4.0
11	Rajasthan	1990-91	1.2	2.4	0.5	0.9
		2000-01	0.9	2.4	0.3	0.9
		2006-07	1.6	2.8	0.5	1.1
12	Tamil Nadu	1990-91	3.1		0.4	1.9
		2000-01	3.4		0.5	2.5
		2006-07	3.4		0.5	2.6
13	Uttar Pradesh	1990-91	1.8	2.2	0.9	1.7
		2000-01	2.0	2.7	0.8	2.1
		2006-07	1.9	2.7	0.7	2.1
14	West Bengal	1990-91	1.8	2.0	0.6	1.7
		2000-01	2.3	2.5	0.9	2.2
		2006-07	2.6	2.3	0.7	2.5
15	All India	1990-91	1.7	2.3	0.6	1.4
		2000-01	1.9	2.7	0.5	1.6
		2006-07	2.1	2.7	0.6	1.8

Source: Ministry of Agriculture data

in rice yields from 1.8 t/ha in 1990-91 to 2.6 t/ha in 2006-07. This was mainly due to late spread of modern varieties and increase in area under summer (*boro*) paddy, which was taken under better irrigation and input management conditions. Maize is one of the crops showing exceptional productivity growth because of rapid spread of modern hybrids. The area under this crop continued to expand even in non-traditional maize growing states of southern India. Much of the produce was for poultry feed coming up in a major way in the southern states.

Although there is growth in yield and production of foodgrains in most of the states, there are some worrisome trends. First is low food grain yield in all the eastern states, except West Bengal which has shown significant growth. These states experience all production constraints, including low use of inputs, low seed replacement rate etc. These states also witness frequent weather fluctuations. The second disturbing factor is recent decline or no increase in wheat yield in several states, including north-west region. This is mainly because of higher temperature but lack of superior varieties could not be ruled out. Third most disquieting feature is continued low productivity of pulses in all the states, pushing total foodgrain yield downward. The reasons for the low productivity are well documented-high yield loss to biotic stress, low input use, high risk, low seed replacement rate etc. Increasing pulse productivity is essential for nutritional security.

3. ELEMENTS AND EFFECTIVENESS OF FOOD POLICY

Government Interventions in Foodgrain Markets

Government intervention in foodgrain markets has been an integral part of Indian food policy. Since the green revolution era, the government procures food grains at the predetermined price, now minimum support price (MSP). This is mainly done for rice and wheat in surplus states of Punjab, Haryana and Uttar Pradesh. Some rice is now also procured from Andhra Pradesh and eastern states. This procurement is to meet the requirement of public distribution at a price lower than the ruling market price and also to meet requirement of special welfare or employment schemes.

Part of the stocks is also used to maintain buffer stock to moderate year-to-year fluctuations in food grain production. The procurement of food grains is open ended depending upon level of production and market prices, while public distribution is governed by the scale of allocation and its offtake by the beneficiaries. Excess stock if any is disposed through open market sale or exports.

Since procurement is ruled by market conditions, there are considerable year-to-year variations in the stocks held by the Food Corporation of India. The stocks varied between 45 to 58 million tonnes during 2001-2003 when rice and wheat production was comfortable. The stocks reduced to 17-19 million tonnes during 2006-2008, especially due to low stocks of wheat (Fig. 3). In fact, procurement of wheat during this period reduced by 4-5 million tones, owing to better open market prices. Under such condition, offtake of rice and wheat for public distribution also increases - it increased from 24.2 million tonnes in 2003-04 to 33.5 million tonnes in 2007-08 and most of this increase was due to higher distribution to the beneficiaries which are Above the Poverty Line. The allocation of Below the Poverty Line households has been around 15 million tonnes during the last few years (GoI 2009).

The government operations have been successful in improving access of the poor to food, reducing year-to-year fluctuations in the availability and providing remunerative price to farmers. However, there are few issues which need some discussion. First, now size of foodgrain economy is too large and government alone can't manage the size of operation needed. It is suggested that private trade should be encouraged,

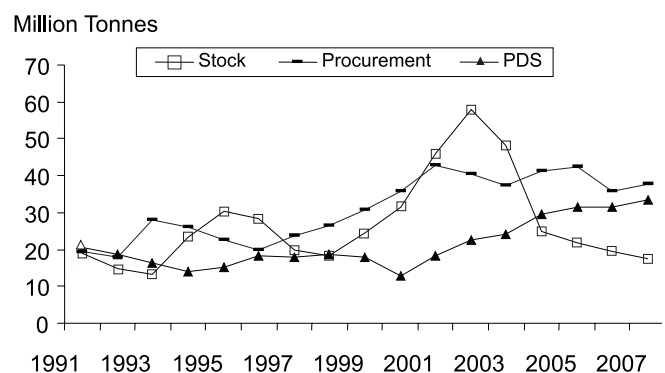


Fig. 3. Procurement, PDS and Stock of Cereals

especially in the surplus states, and if necessary, regulations on procurement and storage of food grains should be relaxed for participation of private sector. These regulations should be invoked or applicable during the year scarcity. The government should focus on those areas where surplus is emerging now so that farmers are able to get benefit of MSP. The second issue relates to procurement through levy on rice mills. This is sometimes taxing for the mills when there is shortage of production and does not benefit farmers. This, as suggested by the Sen Committee, should be replaced by custom milling of paddy procured under MSP.

4. CONSUMPTION AND FUTURE REQUIREMENT OF FOODGRAINS

Trends in Foodgrain Consumption

Although foodgrains continue to be staple food in India, there are some important changes in the consumption pattern which have significant implications for the national food and nutrition security. There has been a persistence decline in per capita consumption of cereals since the green revolution period. Annual per capita consumption of total cereals decreased from 173.8 kg in 1973-74 to 139.8 kg in 2004-05. This trend was more drastic for coarse cereals due to increase in income level. Per capita consumption of rice also decreased but this was noticed during the last two decades or so. On the other hand, per capita consumption of wheat rose significantly since the 1980s. These trends in cereal consumption are seen in both rural and urban areas. Currently in 2004-05, per capita annual consumption of food grains is 148.8 kg, of this 139.9 kg is cereals and 9 kg is pulses. The consumption of rice and wheat is 73.8 kg and 53.8 kg/year, respectively (Fig. 4).

In addition to direct demand of foodgrains as human food, there is indirect food demand as animal feed. Some amount of production is also used as seed and wasted during transportation, storage etc. There are no reliable estimates for these demand components. Conventionally, official estimates used for this purpose is 12.5 per cent of the total production. This estimate is used since 1950s and there could be some under estimation with respect to feed demand in view of rapid growth in livestock industry. Therefore, an objective assessment about feed demand could help better manage the food economy.

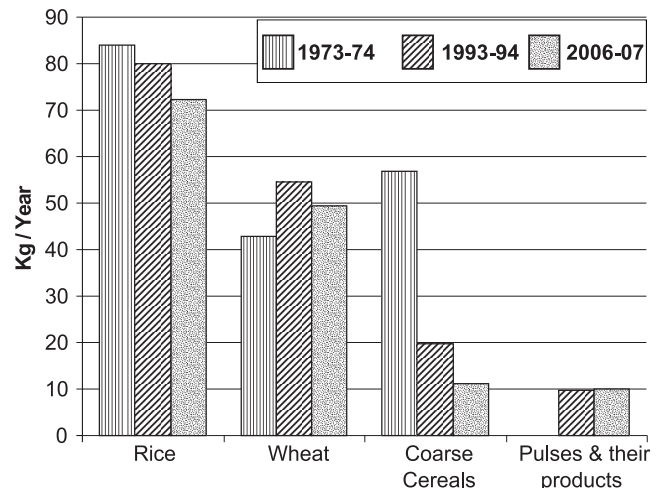


Fig. 4. Trend in per capita consumption of foodgrains in India

Demand Projections for Foodgrains

Demand for food grains comprises of two parts. First is direct food demand. This demand is influenced by trends in population growth, per capita income and change in food taste and preferences due to urbanization and other demographic changes. The second component is 'other demand' mainly for feed, seed and industrial and other uses. Several projections are made using different assumptions about population and income growth. Chand (2009) assumes an annual growth in per capita income more than seven per cent and population growth 1.2 per cent. Total demand for food grain as household food is project as 179.1 million tonnes (MT) in 2020-21. Adding to this indirect demand for food (i.e. feed) and other uses, total demand for food grains will be 280.6 million tonnes. This will comprise 261.5 MT cereals and 19.1 MT pulses. This means that the country need to produce another 50 MT of food grains in 11 years, needing annual increase of 5 MT which is rather challenging given the trend during the last decade. On demand side also these estimates looks on higher side. In another study, Kumar *et al.* (2009) projected total demand for food grains as 253 MT in 2021. The Planning Commission (2002) maintains a projected demand of 247 MT in 2020. Of this, 129 MT is for rice, 92 MT for wheat, 16 MT for coarse cereals and 20 MT for pulses. These projections look within the reach and food grain production should increase about 2 MT every year, which is a reasonable target.

Diversification of Production

Agricultural diversification is driven by rising income levels and urbanization process. There is

increasing consumption of high value products like fruits, vegetables and livestock products. This trend is reflected in markets and farmers have responded to higher prices of these commodities. As a result, growth in these commodities during tenth Plan has been three per cent or more against 1.3 per cent in cereals. This growth rate will be higher if we take recent three years or so.

Besides demand side consideration, there has been significant development on the supply side. Growth of vegetables could also be attributed to adoption of improved hybrids through the seed policy reforms in the late 1980s. Seed of foreign hybrids and planting material were permitted resulting in high productivity growth. In livestock, much of higher growth could be attributed to poultry sector and development of dairy industry, owing to improved breed, feeding and health practices. Also, there has been extension of market infrastructure and institutional development under cooperative sector, which really contributed to increased milk production and now the country is the largest producer of milk in the world. Livestock now contributes to 27 per cent of total value of agricultural output in 2006-07, as against 17 per cent by fruits and vegetables (Fig. 5). Foodgrains contributes 25 per cent to the total value and in absolute terms (at 1999-2000 prices), it increased from Rs 152 thousand crore in 1999-2000 to Rs 157 thousand crore in 2006-07 (CSO 2008).

Malnutrition, Poverty and Gender

Nearly half of the population still suffers from chronic under-nutrition. The most vulnerable sections of the society are children, women and the elderly, especially among the lower income groups. While the

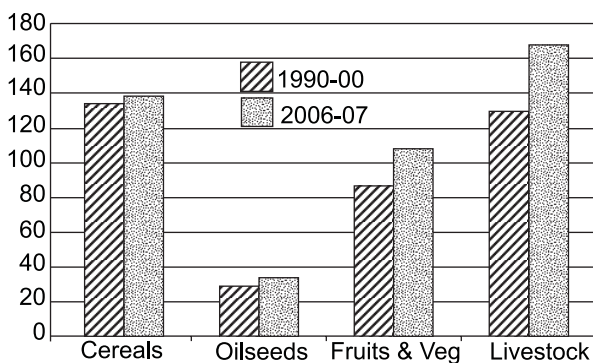


Fig. 5. Trends in value of agriculture output, 1999-2000 ('000 crore Rs)

number of children suffering from severe malnutrition declined significantly in the 1990s, the prevalence of mild and moderate under-nutrition, especially among the low income group is still high. Estimates show that about 40 per cent of the undernourished children in the world are in India although India accounts for less than 20 per cent of the children in the world. Within the country, nearly half of the children are below three years age are undernourished and about one-fifth of them are severely affected. There are substantial inter-state variations in the malnutrition levels of children. The per centage of moderately and severely malnourished children in 1998-99 varied between 27.4 per cent in Kerala and 55.7 per cent in Madhya Pradesh among the major states. In terms of nutritional status of children, middle income states such as Kerala (27.4 per cent), Tamil Nadu (37.7 per cent) and Andhra Pradesh (38.7 per cent) performed better than states with higher per capita SDP, such as Maharashtra (50.7 per cent) and West Bengal (49.7 per cent). Malnutrition in Kerala and Tamil Nadu declined by about half in the past 25 years while in other states, the decline was much less. Not surprisingly, poorer states such as Madhya Pradesh, Bihar and Orissa showed the worst performance. North-eastern states showed better performance in terms of nutritional status (Radhakrishna and Ravi 2004).

The extent of malnutrition among the adults was high though lower than that of children. Malnutrition among women of developed states like Maharashtra (40 per cent), and West Bengal (44 per cent) were of a similar order of magnitude as the less developed states like Bihar (40 per cent), Madhya Pradesh (39 per cent) and Orissa (48 per cent). About 37.4 per cent of adult males and 39.4 per cent of adult females in 2000-01 suffered from Chronic Energy Deficiency (CED) in rural areas of India [Arnold *et al.* 2003]. Gender differences seem to exist in some states, particularly in Tamil Nadu where it was extreme and was comparatively higher in West Bengal and Kerala. North eastern states other than Assam had lower CED among females. Malnutrition was high among women in households with low standard of living and child malnutrition was associated with mother's CED. Furthermore, intra-family distribution of food is inequitable in the poor households and the pre-school children get much less than their physiological needs as compared to adult males and females (Radhakrishna 2006).

Thus there is unacceptable level of malnutrition among children and women which cannot simply be addressed by increase in food production. Targeted food for work programmes and nutrition programmes have addressed the problem temporarily. A long term solution could be to ensure employment opportunities for increasing the purchasing power of the poor to meet their nutritional requirements. Thus, employment or livelihood security becomes an essential and inseparable component of a comprehensive strategy for national food security and therefore should be accorded high priority.

5. EMERGING ISSUES IN FOOD AND NUTRITIONAL SECURITY

Continued growth of the agriculture sector is particularly important not only for ensuring the national food and nutritional security but also because of its vital role in enhancing purchasing power of the rural population. Spread of the green-revolution technologies in new regions and continued growth of productivity in the north-western states, enabled India to achieve a 3.8 per cent annual growth rate in agricultural production during the 1980s. The overall growth slowed to 2.7 per cent in the 1990s, which was associated with a reduction in public investment in agriculture, slower growth and imbalanced use of fertilizer and depletion of soil fertility. The Planning Commission has set a growth target of 4 per cent per annum for agriculture sector which has been rather an elusive goal so far. For maintaining self-sufficiency in foodgrain production, the country needs to produce at least another 20 MT of additional foodgrains and for this target, foodgrain yield should increase by one-third of the current level. This requires reassessment of our development priorities and evolving a strategy to meet this growth target. Here some of important elements of the strategy are spelled out. The main argument is that it is technology-centric approach supported with adequate rural infrastructure will help unleash growth potential of Indian agriculture.

Implications of Global Food Scenario

Food deficit countries faced food crisis in the recent past and food prices increased sharply in the world market. But with improved production performance because of higher price incentives, global food prices started to decline. A long-term trend will

depend upon demand and production scenario in developing countries where most of the increase in population will take place. IFPRI (1999) study has shown that the world needs to produce 40 per cent more cereals to feed the growing population in 2020. Also, there will be deficit in many developing countries and therefore food important will double by 2020. This implies that any shortfall in production may deplete food stocks and prices may again rise. In case this shortfall occurs in large country like China and India, there may not be adequate stock to meet the import demand. Therefore, it would be advisable to follow the policy of self-reliance in food production. If necessary, storage of food grains may be increased and there should not be problem of disposing the stocks in international market, if required.

Government Support for Food Production

There are a number of areas which continue to demand government support in a substantial manner. First is the public investment for expansion of agriculture and other rural infrastructure. There was some complacency in terms of public investment during the 1990s and as a result, there was significant slowdown of agricultural growth since the mid-1990s. This was corrected to some extent recently and real public investment maintained uptrend (Fig. 6), resulting into positive agricultural growth, including in foodgrain production. However, there is a need for sustaining this uptrend in public investment and also take appropriate measures to increase efficiency of public investment

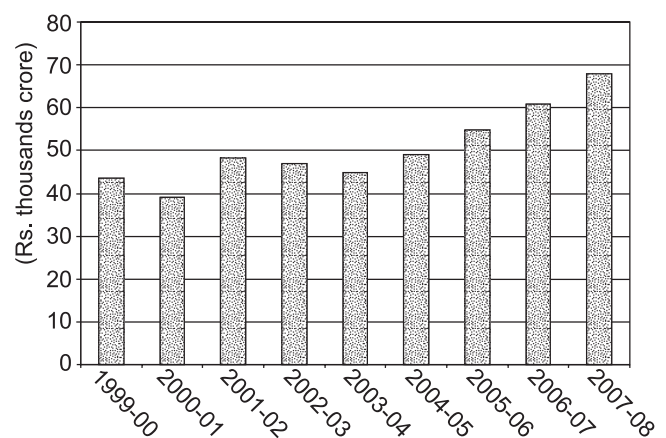


Fig. 6. Trend in Gross Capital Formation in Agriculture in India, 1999-00 prices

through targeting in high-payoff areas and promoting institutional innovations to manage the resources and infrastructure so created (Roy and Pal 2002). Surface irrigation is one area where most of public investment has been made and institutional reforms can help modernize this and other sources of surface irrigation, e.g. irrigation tanks. It is also suggested that part of input subsidies could also be diverted to long-term investment which will also encourage private investment and thereby contribute to higher food grain production.

Delivery of farm inputs and services is another area which needs government attention. There is increasing participation of private sector in delivery of inputs like fertilizer, seeds, pesticides etc which needs to be encouraged. However, there is lot of information asymmetry and quality problems in input markets which should be addressed through appropriate regulatory measures. Improved seed needs especial attention because of its immediate impact on crop productivity. There is a need to address quality issues, increased information flow and now encourage early flow of protected varieties into farmers' seed system. Planning material for horticultural crops needs adequate attention of the government as not many players are action in this area and farmers need not only planting material but also reliable information to make varietal choice involving long-term investment decisions (Pal and Tripp 2002).

Bridging yield gap which varies between 60 to 100 per cent depending upon crop and region, is a high payoff option. The gap is especially high in the eastern region, both for rice and wheat, and bridging this yield gap will contribute to substantial increase in foodgrain production. For dryland area, yield gap is an issue but more importantly raising yield level through water conservation measures can contribute to higher productivity of cereals and pulses. For this watershed development approach is followed but this needs effective participation of farming community for ensuring its success. Of course, revitalization of state extension system with more resources, accountability to stakeholders and linkages with NARS needs immediate attention. Since this revitalization process

may take some time and there frontline extension system (KVKs) and state agricultural universities (SAUs) should take proactive steps to fill the gap. Some of the SAUs need funding and other support which should be accorded high priority (NAAS 2009).

The government has also taken some important steps to accelerate agricultural growth and meet the target of foodgrain production. The National Food Security Mission is being implemented by the Government in XI plan in 312 districts of 17 states with a budget of Rs 4882 crore. The target is to produce additional 20 MT of food grains during XI Plan. Efforts made by the government have successfully raised food grain production during 2006-07 and 2007-08. The government is also encouraging state governments to step investment in agriculture through Rashtriya Krishi Yojana. This scheme essentially focuses on decentralized planning and implementation of agricultural development in the country.

Climate Change and Food Security

Climate change is a global phenomenon and needs a global response for addressing this challenge. Agriculture is contributing to this climate change, mainly through changes in land use pattern, which in turn will have far reaching impacts on agriculture, especially in developing countries. Although the specific impacts and their magnitude of climate change will be known during its tipping point, but some broad directions are well understood. These include water shortages due to shrinking of glaciers, increased risk due to erratic weather, increased pest problems, and impact on crop yields and crop distribution. Indian agriculture is already prone to weather events and further intensification of erratic events will make it more vulnerable. IPCC has projected 1-3°C increase in temperature which may reduce yield up to 10 per cent in 2020 for Asia (IPCC 2007). Recent Indian study indicates 5-7 per cent decline in wheat yield for every degree Celsius increase in temperature given that current level of irrigation does not erode (Aggarwal 2008). Some of these adverse impacts are already seen on wheat yield due to changes in temperature. These yield impacts, coupled with reduced availability of

water will have tremendous pressure on productivity of irrigated system like rice-wheat system. Obviously, this will have significant implications for the national food security. A long term adaptation and mitigation strategy has to be evolved for Indian agriculture. This should entail development of heat tolerance varieties, change in land use and management practices, risk management, efficient use of water resources, and carbon sequestration. For ensuring food security there are some other implications which shall need urgent attention. This will include storage of more food grains which have cost implications for the government.

Agricultural Diversification

The trend of agricultural diversification towards high value commodities will further intensify after revival of the economy from current slowdown. Demand for Indian agricultural products in world market will further intensify this trend. This raises the question of food grain security versus diversification. But a rational approach could help realize both these objectives. Self-sufficiency in foodgrain production is a must given the global food scenario and therefore foodgrain production should be increased. This will be mainly yield driven. Increase in yield of food grains is also essential to release some area for high value commodities which are in high demand. In addition, there is considerable area under rice-fallow in eastern region which could be brought under cultivation by adopting better moisture management practices. Technological options like single cross hybrids in maize, hybrid rice, system of rice intensification, water saving technologies (drip and sprinkler irrigation), IPM in pulses and site-specific nutrient management can contribute significantly to yield improvement of food grain crops.

Management of Food Economy

Current policy of government interventions in foodgrain markets should continue; in fact, its need will be felt more in the years to come. This is because private trade is not well developed in large part of the country and farmers should be ensured remunerative price of their products. This coverage, as mentioned earlier should be extended to other food surplus areas.

Secondly, variability in foodgrain production may increase because of erratic weather events and year-to-year changes in food grain production in absolute quantity may be quite high. This implies more storage of food grains which will need more resources for creating storage capacity and carrying stocks. The need for such an intervention is underscored by likely shortfall in rice production in 2009-10. Official statistics on first advance estimate just released pointed a shortfall to the order to 15 MT of rice. In order to minimize the cost, the feasibility of community food storage should be explored.

6. CONCLUDING REMARKS

We may conclude from the foregoing discussion that India has successfully achieved self-sufficiency in food grain production and ensured physical and economic access of the poor to food. All sign points to continuation of this policy and ability to meet the growing demand for food. However, there are some concerns which need attention for avoiding any adverse scenario. First is paying more attention to pulse crop for raising their productivity to a reasonable level. Second issue is maintaining uptrend in wheat productivity which has slipped for few years because of adverse weather conditions, particularly rise in temperature. This also raises the issue of breeding and crop management strategy for adaptations and mitigation of climate change. But immediate impact in terms of higher yield will be seen through application of available stock of knowledge and technology for bridging the yield gap and wherever possible raising yield potential. Finally, increasing food production and making it available to people may not solve the problem of hunger and malnutrition, which will require increasing income of poor through creation of employment opportunities and promoting agricultural diversification towards high value commodities like fruits and vegetables.

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