

Agriculture and Food Management

8 CHAPTER

Pioneering work by agriculture scientists and the efforts of farmers had helped achieve a breakthrough in the agriculture sector in the 1960s, popularly known as the 'Green Revolution'. High agricultural production and productivity achieved in subsequent years has been the main reason for attaining food security to a large extent. The country has not witnessed any big technological breakthrough in agriculture since then. The food safety net for each and every of the over a billion citizens—a number that is growing—requires enhanced agricultural production and productivity in the form of a Second Green Revolution. Further, special attention is required for achieving higher production and productivity levels in pulses, oilseeds, fruits, and vegetables, which had remained untouched in the First Green Revolution but are essential for nutritional security. In this regard, achieving high production of poultry, meat and fisheries is also essential. The relatively weak supply responses to price hikes in agricultural commodities, especially food articles, in the recent past brings back into focus the central question of efficient supply chain management and need for sustained levels of growth in agriculture and allied sectors. The choice before the nation is clear—to invest more in agriculture and allied sectors with the right strategies, policies, and interventions. This is also a 'necessary' condition for 'inclusive growth' and for ensuring that the benefits of growth reach a larger number of people.

8.2 The growth of agriculture and allied sectors is still a critical factor in the overall performance of the Indian economy. As per the 2010-11 advance estimates released by the Central Statistics Office (CSO) on 07.02.2011, the agriculture and allied sector accounted for 14.2 per cent of the gross domestic product (GDP), at constant 2004-05 prices. During

the period 2004-05 to 2007-08, the GDP for agriculture and allied sectors had increased from ₹ 5,65,426 crore to ₹ 6,55,080 crore, at constant 2004-05 prices; thereafter it stagnated at this level for two years (2008-09 to 2009-10) (Figure 8.1). In 2009-10, it accounted for 14.6 per cent of the GDP compared to 15.7 per cent in 2008-09 and 19.0 per cent in

Figure 8.1 GDP for agriculture and allied sectors

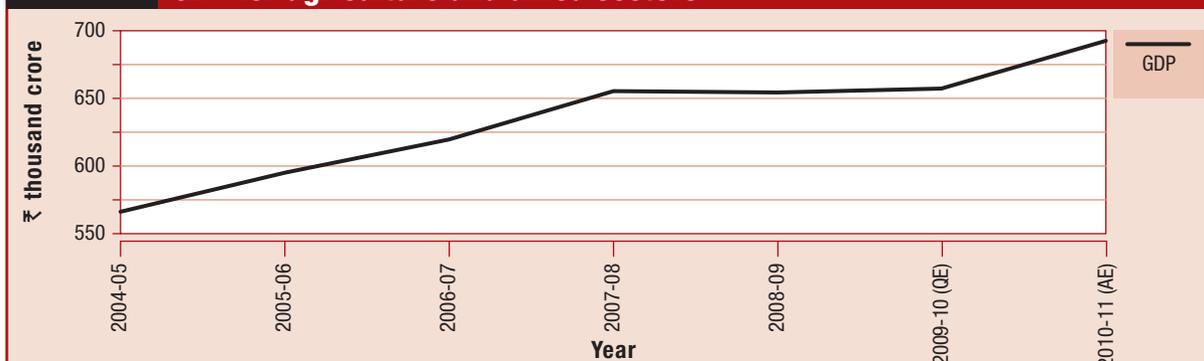


Table 8.1 : Agriculture Sector: Key Indicators

		(per cent)		
Sl. No.	Item	2008-09	2009-10	2010-11 (Advance Estimates)
1	GDP—Share and Growth (at 2004-05 prices)			
	Growth in GDP in agriculture & allied sectors	-0.1	0.4	5.4
	Share in GDP—Agriculture and allied sectors	15.7	14.6	14.2
	Agriculture	13.3	12.3	
	Forestry and logging	1.6	1.5	
	Fishing	0.8	0.8	
2	Share in Total Gross Capital Formation in the Country (at 2004-05 prices)			
	Share of Agriculture & Allied Sectors in total Gross Capital Formation	8.3	7.7	
	Agriculture	7.7	7.1	
	Forestry and logging	0.07	0.06	
	Fisheries	0.56	0.54	
3	Agricultural Imports & Exports (at current prices)			
	Agricultural imports to national imports	2.71	4.38	
	Agricultural exports to national exports	10.22	10.59	
4	Employment in the agriculture sector as share of total workers as per census 2001	58.2		

Source : Central Statistics Office and Department of Agriculture and Cooperation.

2004-05. Its share in GDP has thus declined rapidly in the recent past. This is explained by the fact that whereas overall GDP has grown by an average of 8.62 per cent during 2004-05 to 2010-11, agricultural sector GDP has increased by only 3.46 per cent during the same period. The role of the agriculture sector, however, remains critical as it accounts for about 58 per cent of employment in the country (as per 2001 census). Moreover, this sector is a supplier of food, fodder, and raw materials for a vast segment of industry. Hence the growth of Indian agriculture can be considered a necessary condition for 'inclusive growth'. More recently, the rural sector (including agriculture) is being seen as a potential source of domestic demand, a recognition that is even shaping the marketing strategies of entrepreneurs wishing to widen the demand for goods and services. In terms of composition, out of a total share of 14.6 per cent of the GDP in 2009-10 for agriculture and allied sectors, agriculture alone accounted for 12.3 per cent followed by forestry and logging at 1.5 per cent and fisheries at 0.8 per cent (Table 8.1).

PERFORMANCE OF THE AGRICULTURE SECTOR DURING THE CURRENT FIVE YEAR PLAN (2007-2012)

8.3 During the first three years of the current Five Year Plan, the agriculture sector (including allied

activities) recorded an average growth of 2.03 per cent against the Plan target of 4 per cent per annum. In the first year, 2007-08, of the current Plan the agriculture sector had achieved an impressive growth of 5.8 per cent. However, this high growth could not be maintained in the following two years and agriculture-sector growth fell into the negative zone of - 0.1 per cent in 2008-09, although this was a year of a record 234.47 million tonnes food production. The decline in growth of agricultural GDP was primarily due to the fall in the production of agricultural crops such as oilseeds, cotton, jute and mesta, and sugarcane. In 2009-10, despite experiencing the worst south-west monsoon since 1972 and subsequent significant fall in kharif foodgrain production, the growth marginally recovered to 0.4 per cent primarily due to a good rabi crop. Several advance measures taken by the government to salvage the rabi crop had the desired effect of checking the impact of the drought situation on the rabi crop. Things are looking bright in the current year with a relatively good monsoon and the agriculture-sector is expected to grow at 5.4 per cent as per the 2010-11 advance estimates. The agriculture sector growth in the first four years of the Plan is estimated at 2.87 per cent. In order to achieve the Plan target of average 4 per cent per year, the agriculture sector needs to grow at 8.5 per cent during 2011-12.

Table 8.2 : GCF in Agriculture and Allied Activities (₹ crore at 2004-05 prices)

Year	GDP	Agriculture & allied activities		GCF/GDP in agriculture & allied activities	GCF in agriculture as per cent of total
		GCF	GDP		
2004-05	29,71,464	76,096	5,65,426	13.46	2.56
2005-06	32,54,216	86,611	5,94,487	14.57	2.66
2006-07	35,66,011	90,710	6,19,190	14.65	2.54
2007-08	38,98,958	1,05,034	6,55,080	16.03	2.69
2008-09P	41,62,509	1,28,659	6,54,118	19.67	3.09
2009-10QE	44,93,743	1,33,377	6,56,975	20.3	2.97

Source : Central Statistics Office.

Notes: P- provisional.

Q-quick estimates.

GROSS CAPITAL FORMATION (GCF) IN AGRICULTURE AND THE ALLIED SECTOR

8.4. The GCF in agriculture and allied sectors as a proportion to the GDP in the sector stagnated around 14 per cent during 2004-05 to 2006-07. However, there is a marked improvement in this figure during the current Five Year Plan. It increased to 16.03 per cent in 2007-08 and further to 19.67 per cent in 2008-09 (provisional) and to 20.30 per cent in 2009-10 (quick estimates [QE]). However, the GCF in agriculture and allied sectors relative to overall GDP has remained stagnant at around 2.5 to 3.0 per cent (Table 8.2). As a result the share of GCF in agriculture and allied sector in total GCF has remained in the range of 6.6 to 8.2 per cent during 2004-05 to 2009-10 (Table 8.3). There is need to significantly step up investment in agriculture, both by the private and public sectors to ensure sustained target growth of 4 per cent per annum.

CROP PRODUCTION

8.5 For four consecutive years from 2005-06 to 2008-09, foodgrains production registered a rising trend and touched a record level of 234.47 million

Table 8.3 : Share of Agriculture & Allied Sectors' GCF in total GCF (per cent) (at 2004-05 prices)

2004-05	7.5
2005-06	7.3
2006-07	6.6
2007-08	6.5
2008-09	8.3
2009-10	7.7

tonnes in 2008-09. The production of foodgrains declined to 218.11 million tonnes during 2009-10 (final estimates) due to the long spells of drought in various parts of the country in 2009. The productivity of almost all the crops suffered considerably, which led to decline in their production in 2009. As per the second advance estimates released by Ministry of Agriculture on 9.2.2011, production of foodgrains during 2010-11 is estimated at 232.07 million tonnes compared to 218.11 million tonnes last year (Table 8.4). This is only marginally below the record production of 234.47 million tonnes of foodgrains in 2008-09. The country is likely to achieve record production of wheat (81.47 million tonnes), pulses (16.51 million tonnes) and cotton (33.93 million bales of 170 kg. each) this year. This high level of production has been achieved despite crop damage due to drought in Bihar, Jharkhand, Orissa and West Bengal and the effects of cyclones, unseasonal and heavy rains, and cold wave and frost conditions in several parts of the country.

GROWTH RATES OF AREA, PRODUCTION AND YIELD OF AGRICULTURAL CROPS

8.6 Growth in the production of agricultural crops depends upon acreage and yield. Given the limitations in the expansion of acreage, the main source of long-term output growth is improvement in yields. Trends in indices of area, production, and yield of different crops for two periods 1980-81 to 1989-90 and 2000-01 to 2009-10 (base triennium ending [TE] 1981-82=100) are given in Table 8.5. An analysis of growth rates of area, production, and yield of various crops based on their respective indices has been made in the following paragraphs.

Table 8.4 : Agricultural Production 2010-11

(million tonnes)

Crops	2nd Advance Estimates 2010-11	Target 2010-11	Percentage of 2010-11 production to target set for 2010-11	2009-10 (final estimates)	Percentage change in 2010-11 compared to 2009-10
Rice	94.01	102.00	92.17	89.09	5.52
Wheat	81.47	82.00	99.35	80.80	0.83
Coarse Cereals	40.08	44.00	91.09	33.55	19.46
Pulses	16.51	16.50	100.06	14.66	12.62
Total Foodgrains	232.07	244.50	94.92	218.11	6.40
Oilseeds	27.85	33.20	83.89	24.88	11.94
Sugarcane	336.70	315.00	106.89	292.30	15.19
Cotton*	33.93	26.00	130.50	24.22	40.09
Jute and Mesta**	10.08	11.50	87.65	11.82	-14.72

Notes : *million bales of 170 kg each

**million bales of 180 kg each

Table 8.5 : Compound Growth Rates of Area, Production and Yield

(as per cent per annum with base TE 1981-82=100)

Crop	1980-81 to 1989-90			2000-01 to 2009-10		
	Area	Production	Yield	Area	Production	Yield
Rice	0.41	3.62	3.19	-0.03	1.59	1.61
Wheat	0.46	3.57	3.10	1.21	1.89	0.68
Jowar	-0.99	0.28	1.29	-3.19	-0.07	3.23
Bajra	-1.05	0.03	1.09	-0.42	1.68	2.11
Maize	-0.20	1.89	2.09	2.98	5.27	2.23
Ragi	-1.23	-0.10	1.14	-3.03	-1.52	1.57
Small millets	-4.32	-3.23	1.14	-5.28	-3.58	1.78
Barley	-6.03	-3.48	2.72	-1.41	-0.25	1.17
Total Coarse Cereals	-1.34	0.40	1.62	-0.76	2.46	3.97
Total Cereals	-0.26	3.03	2.90	0.09	1.88	3.19
Gram	-1.41	-0.81	0.61	4.34	5.89	1.48
Tur	2.30	2.87	0.56	0.26	1.82	1.56
Other Pulses	0.02	3.05	3.03	-0.34	-0.32	0.02
Total Pulses	-0.09	1.52	1.61	1.17	2.61	1.64
Total Foodgrains	-0.23	2.85	2.74	0.29	1.96	2.94
Sugarcane	1.44	2.70	1.24	0.77	0.93	0.16
Oilseeds	1.51	5.20	2.43	2.26	4.82	3.79
Cotton	-1.25	2.80	4.10	2.13	13.58	11.22

8.7 Rice and wheat: During the 1980s the growth in area in rice was marginal at 0.41 per cent but growth in production and yield was above 3 per cent. From 2000-01 to 2009-10 the situation changed with growth in area turning negative and in production and yield standing at 1.59 per cent and 1.61 per cent respectively. In wheat too, during the 1980s the growth in area was marginal at 0.46 per cent but in production and yield was above 3 per cent. During 2000-01 to 2009-10 the growth in area in wheat was 1.21 per cent and in production and yield was 1.89 per cent and 0.68 per cent respectively. This

suggests that in these two crops the yield levels have plateaued and there is need for renewed research to boost production and productivity (Figures 8.2 and 8.3). Given the constraints in area expansion, there is no other alternative. Both public and private-sector investment in research and development (R&D) needs to be encouraged. Figure 8.4 shows changes in the index of area, production, and yields of rice during 2003-04 to 2009-10, Figure 8.5 shows changes in the index of area, production, and yield of wheat during 2003-04 to 2009-10.

Figure 8.2 Compound growth rate of area, production and yield of rice

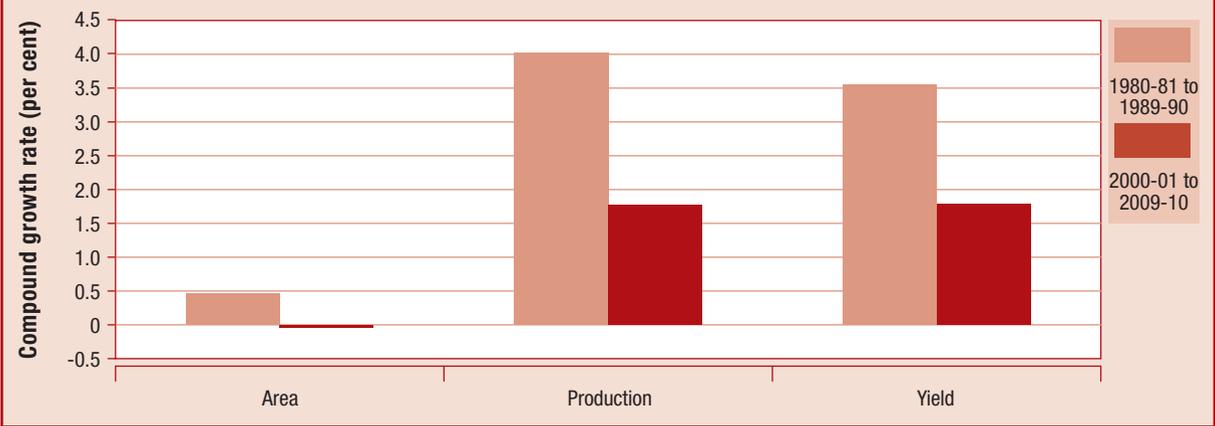


Figure 8.3 Compound growth rate of area, production and yield of wheat

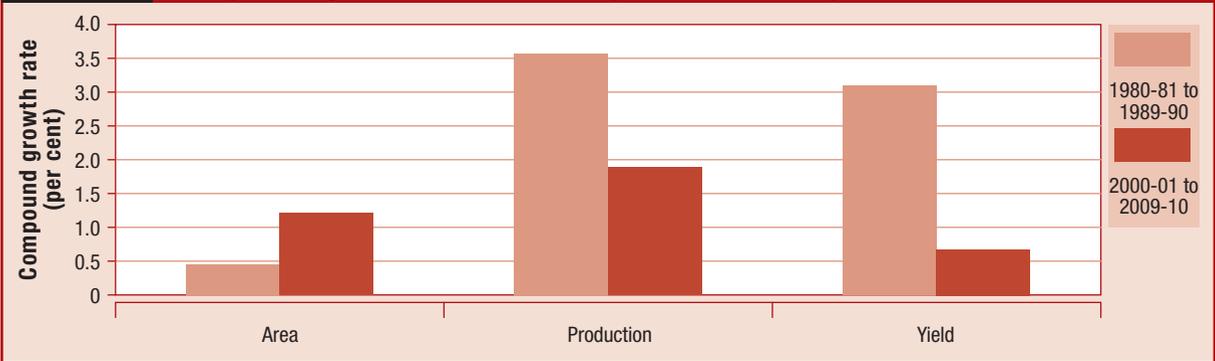


Figure 8.4 Index of area, production and yield of rice

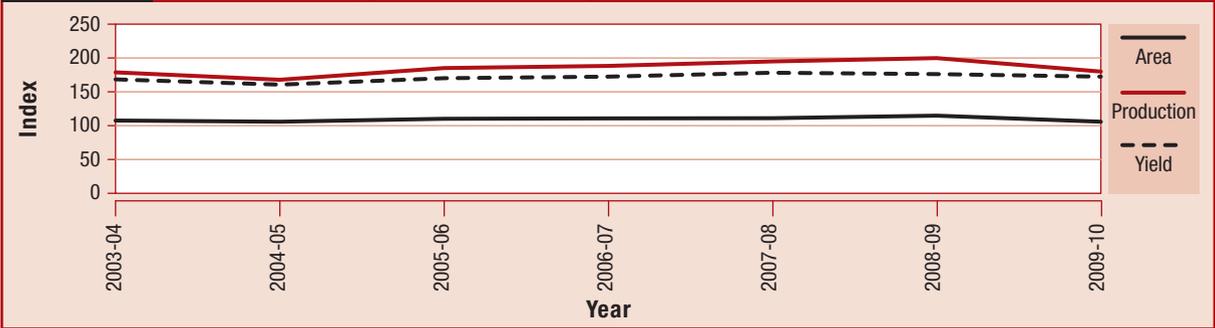
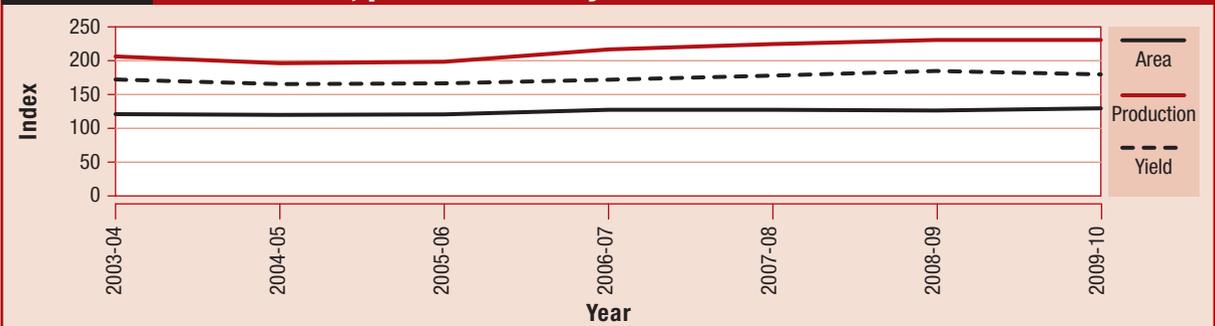


Figure 8.5 Index of area, production and yield of wheat



8.8 Coarse Cereals: In coarse cereals the situation is totally different. Since there was no technological breakthrough in these crops, the growth rate in area of total coarse cereals, in both the periods (1980-81 to 1989-90 and 2000-01 to 2009-10) was negative reflecting either shift to other crops or relatively dry area remaining fallow. In all the major coarse cereals there was negative growth in area during both the periods except for maize, which recorded a growth rate of 2.98 per cent in the 2000-01 to 2009-10 period. However, growth in production and yield for coarse grains which was 0.40 per cent and 1.62 per cent respectively in the 1980s improved significantly to 2.46 per cent and 3.97 per cent respectively in the 2000-01 to 2009-10 period (Figure 8.6). This increase is primarily driven by maize and bajra. Figure 8.7 illustrates changes in the index of area production and yield of total coarse cereals during 2003-04 to 2009-10. Special effort is required to promote production and productivity of all coarse cereals to ensure food security (Box 8.1)

8.9 Pulses: Pulses are the main source of protein for a large section of population in India. Gram and Tur are the major contributors to the total production

Box 8.1 : Coarse cereals

The food and nutritional security of India currently depends to a great extent on the production of wheat and rice. These two crops together constituted 78 per cent of total foodgrains production in 2009-10, whereas coarse cereals constitute only 15 per cent in the same year. The area under coarse cereals has shown a decline over the years whereas their yield has shown significant improvement despite decrease in area in all the major coarse cereals except maize. The nutritional value of coarse cereals is also gradually being realized. There is every reason to promote the production of these crops and help them realize their full potential with increased investment in research and schemes to promote their cultivation particularly in rain-fed areas.

of pulses in the country. During the 1980s there was negative growth in total area under pulses and growth in production and yield was 1.52 per cent and 1.61 per cent respectively. During 2000-01 to 2009-10, whereas area and production have grown by 1.17 per cent and 2.61 per cent respectively, growth in yield at 1.64 per cent has remained at about the

Figure 8.6 Compound growth rate of area, production and yield of coarse cereals

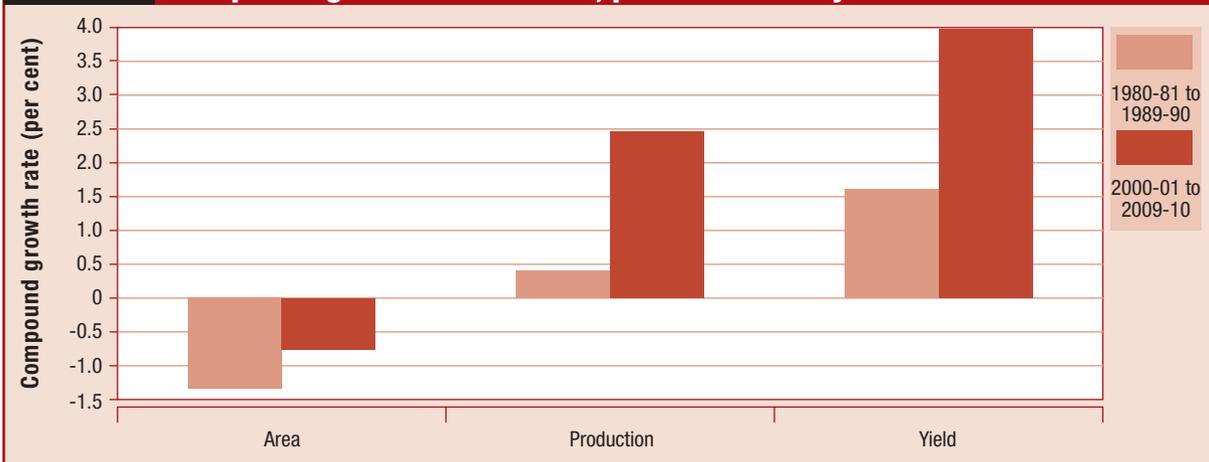
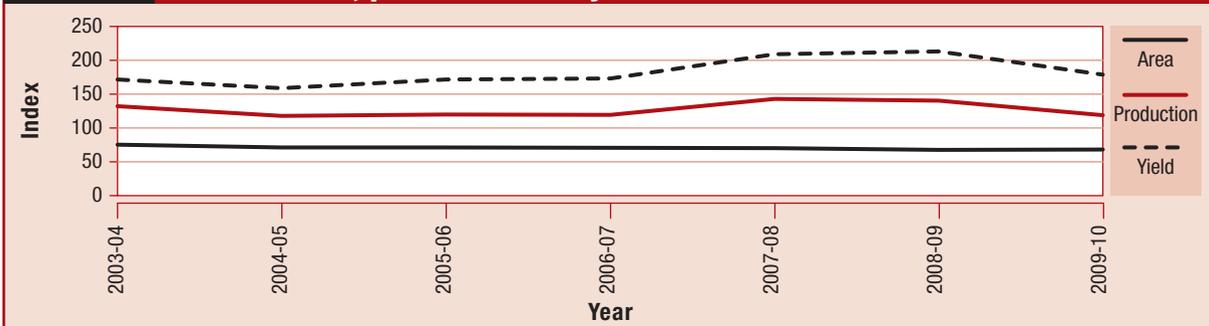


Figure 8.7 Index of area, production and yield of coarse cereals



same level reflecting that the growth in production is primarily because of increase in area (Figure 8.8). A technological breakthrough in pulse production is necessary to keep pace with rising demand for this commodity. Figure 8.9 illustrates changes in the index of area, production, and yield of total pulses during 2003-04 to 2009-10.

8.10 Sugarcane: The compound growth rate of area, production, and yield of sugarcane during 2000-01 to 2009-10 has declined compared to the 1980s. The decline in growth rate of yield during this period is because of relatively higher decline in growth rate of production compared to decline in growth rate of area (Figure 8.10). Concerted effort is required to increase yield rate of this crop to avoid fluctuations in production and spikes in price of sugar. Figure 8.11 displays changes in the index

of area, production, and yield of sugarcane during 2003-04 to 2009-10.

8.11 Oilseeds: The significant improvement in annual growth in indices of yield and area under oilseeds during 2000-01 to 2009-10 as compared to the 1980s has resulted in increase in the annual growth rate of production of oilseeds. India, however, still imports a significant proportion of its requirement of edible oil (Figure 8.12). The current growth rate needs to be maintained to ensure a reasonable level of self-sufficiency in this crop. Figure 8.13 shows changes in the index of area, production, and yield of oilseeds during 2003-04 to 2009-10.

8.12 Cotton: A significant improvement in yield has resulted in an increase in growth rate of cotton production from 2.80 per cent during the 1980s to 13.58 per cent per annum during 2000-10 (Figure

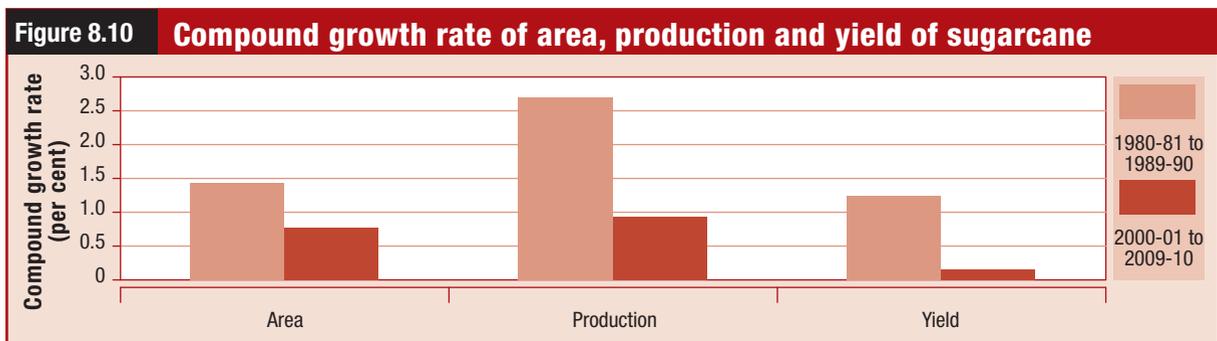
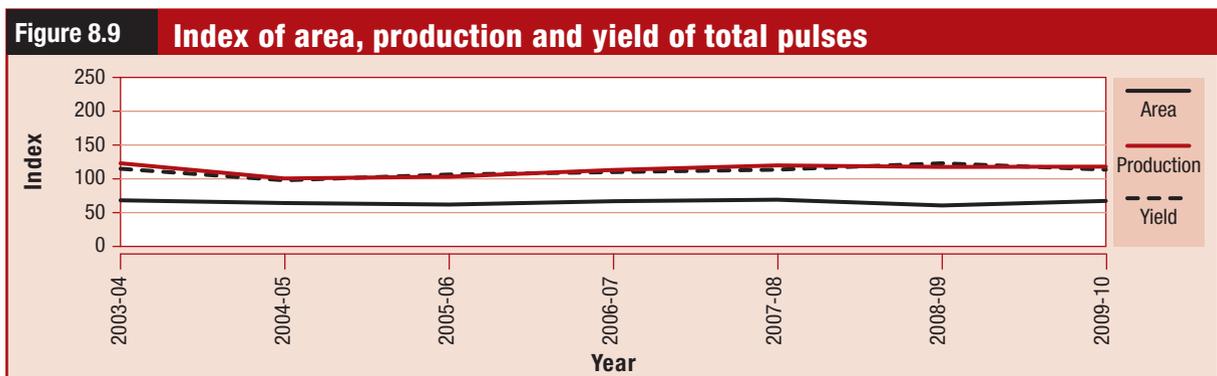
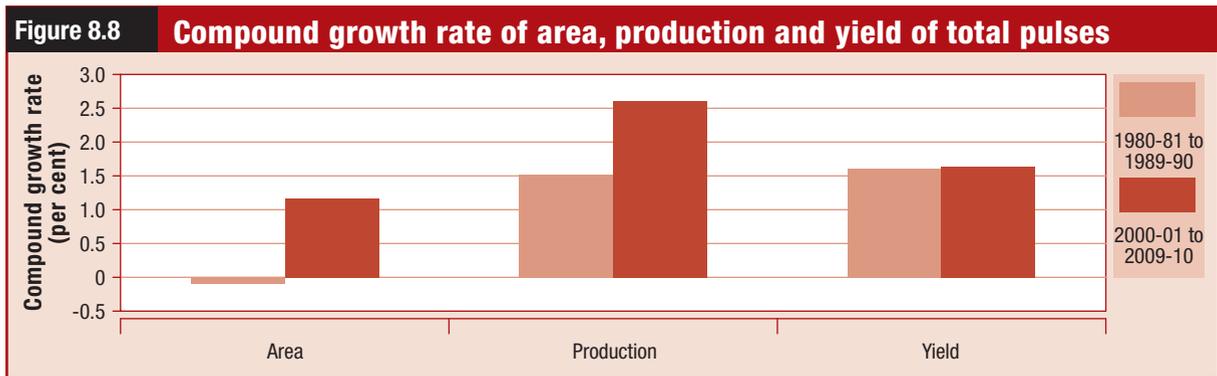


Figure 8.11 Index of area, production and yield of sugarcane

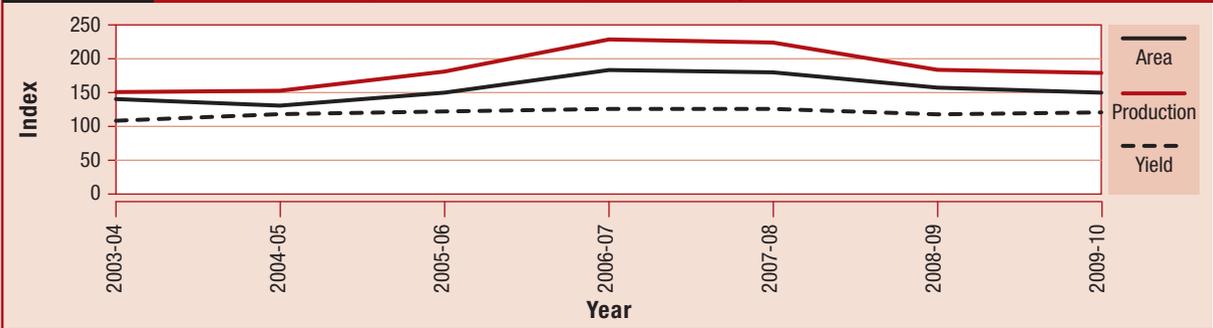


Figure 8.12 Compound growth rate of area, production and yield of oilseeds

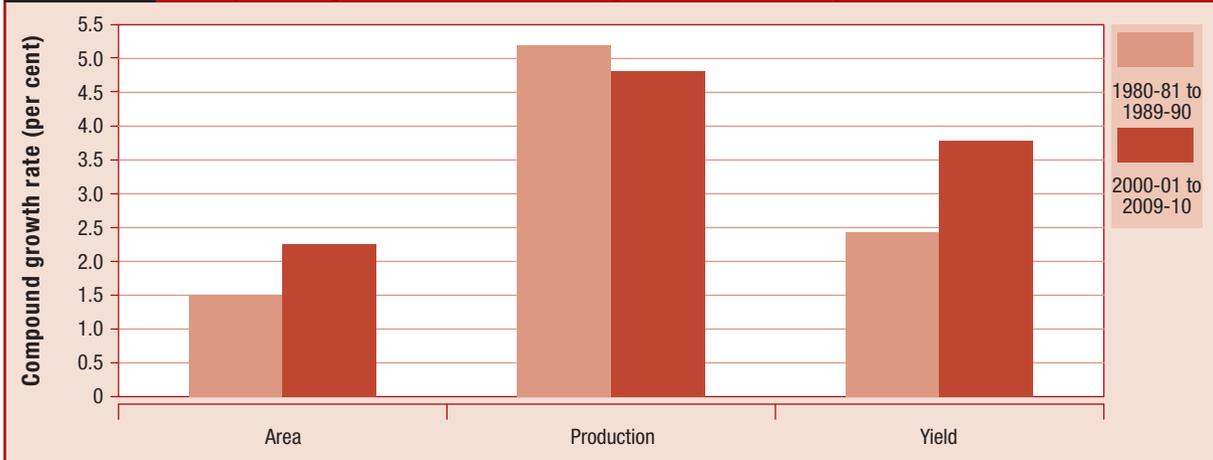


Figure 8.13 Index of area, production and yield of oilseeds

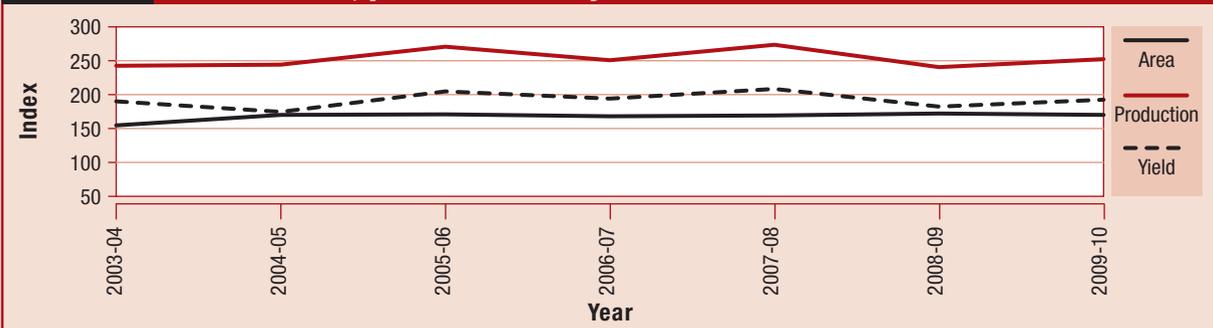


Figure 8.14 Compound growth rate of area, production and yield of cotton

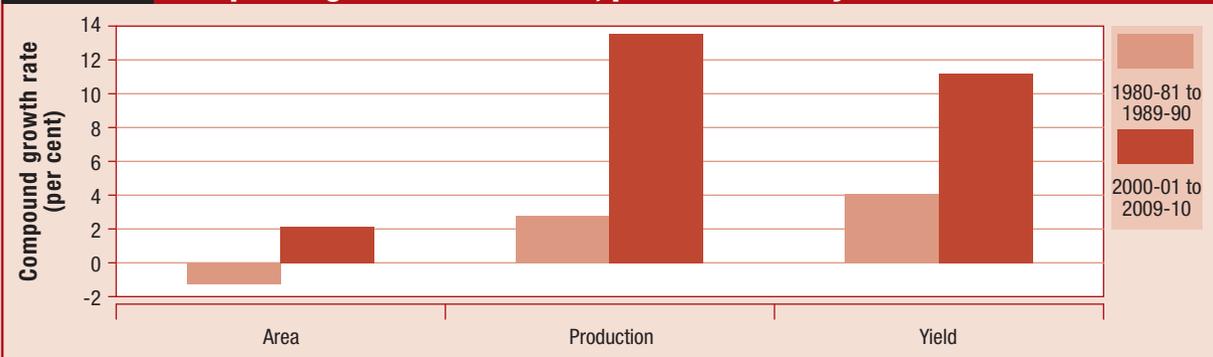
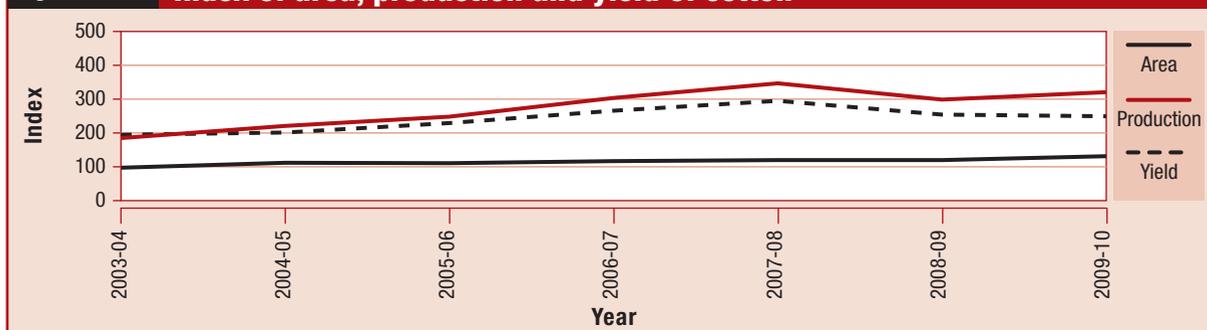


Figure 8.15 Index of area, production and yield of cotton

8.14). Figure 8.15 shows changes in the index of area, production, and yield of cotton during 2003-04 to 2009-10.

AREA COVERAGE IN 2010-11

8.13 The total cropped area under foodgrains, oilseeds, sugarcane, and cotton during kharif 2010 is higher by 2.33 lakh ha as compared to that in kharif 2009. Owing to drought in major rice-producing areas, i.e. Bihar, Jharkhand, West Bengal, and eastern Uttar Pradesh, the area under rice during kharif 2010 is lower by about 5.40 lakh ha. While the area under coarse cereals has gone down by 3.42 lakh ha, there has been significant increase of 6.11 lakh ha in the area under pulses with the result that total area under foodgrains in kharif 2010 is only marginally lower by 2.71 lakh ha than that in kharif 2009. In oilseeds, while area under groundnut has gone up by 4 lakh ha, seasmum, soyabean, and sunflower have recorded lower acreage; consequently the overall area under oilseeds during kharif 2010 is lower by 8.27 lakh ha as compared to kharif 2009. However, there is significant increase in the area under sugarcane (6.53 lakh ha) and cotton (6.90 lakh ha). Thus there appears to be some shift in the cropping pattern in kharif 2010.

Exports and Imports

8.14 Depending on domestic availability, Government allows exports and imports of food items especially wheat, rice, and pulses. Government has reduced the import duty on wheat to nil from 9 September 2006 to augment its supply. Export of wheat has been prohibited since 8 October 2007. The import duty on semi-milled or wholly milled rice has been reduced to nil from 20 March 2008 to augment its supply. Export of non-basmati rice has been prohibited since 15 October 2007 except for a quantity of 10,000 tonnes per annum of organic non-basmati rice permitted since 7 December 2009.

Further, export of non-basmati rice is permitted on diplomatic/humanitarian considerations. Export of basmati rice is permitted with a minimum export price (MEP) of US \$ 900 per ton or ₹ 41, 400 per ton. Government has reduced the import duty on pulses to nil from 8 June 2006 to augment their supply. Export of pulses except kabuli chana (chickpeas) has been prohibited with effect from 1 April 2008.

AGRICULTURAL INPUTS

8.15 Agricultural inputs play a crucial role in determining yield levels and in turn augmentation of level of production in the long run. Improvement in yield depends on application of technology, use of quality seeds, fertilizers, pesticides, micronutrients and irrigation.

Seeds

8.16 Seeds are a critical input for long-term sustained growth of agriculture. In India, more than four-fifths of farmers rely on farm-saved seeds leading to a low seed replacement rate. Hence the Central Government has been addressing this issue through various programmes/schemes. This includes the Indian Seed Programme involving the participation of Central and State Governments, the Indian Council of Agricultural Research (ICAR), State agricultural universities, cooperatives and the private sector, and farmers and plant breeders. Year-wise details of production of breeder and foundation seeds and distribution of certified seeds are given in Table 8.6.

8.17 The Ministry of Agriculture has been implementing the Central- sector Development and Strengthening of Infrastructure Facilities for Production and Distribution of Quality Seeds scheme since 2005-06 with the aim of ensuring timely availability of quality seeds of various crops at affordable prices. The major thrusts of the scheme

Table 8.6 : Production of Breeder and Foundation Seeds and Distribution of Certified Seeds

Year	Production of breeder seeds (quintals)	Production of foundation seeds (lakh quintals)	Distribution of certified/quality seeds (lakh quintals)
2004-05	66,460	6.9	113.10
2005-06	68,654	7.4	126.74
2006-07	73,829	7.96	155.01
2007-08	91,960	8.22	179.05
2008-09	74,361	9.69	215.81
2009-10	94,410	11.46	257.11 (Anticipated)

Source : Department of Agriculture and Cooperation.

are improving quality of farm-saved seeds through seed village programmes to enhance seed replacement rates, boosting seed production in the private sector, and helping public-sector seed companies contribute to enhanced seed production. Since the inception of the scheme in 2005-06, 1,31,023 seed villages have been covered across the country and 183.10 lakh quintals of certified/quality seeds produced till 2009-10, which is a significant achievement. This effort needs to be further promoted.

8.18 Under the component of assistance for boosting seed production in the private sector, credit-linked back-ended capital subsidy of 25 per cent of project cost subject to a maximum limit of ₹ 25 lakh per unit is provided on seed infrastructure development. In order to establish/strengthen infrastructure facilities for production and distribution of quality seeds, States/UTs and State Seeds Corporations are provided financial assistance for creating facilities for seed-processing plants and machinery for seed cleaning, grading, treating, and packing. Assistance is also provided for creation/strengthening of seed-processing plants. The Protection of Plant Varieties and Farmers' Rights (PPV&FR) Authority established in November 2005 at New Delhi has been mandated to implement provisions of the PPV&FR Act, 2001.

8.19 Considering the vital importance of the seed industry in promoting agricultural growth, the Ministry of Agriculture has been proposing replacement of the existing Seeds Act 1966 by suitable legislation.

The new Act is expected to (i) create a facilitative climate for growth of the seed industry, (ii) enhance seed replacement rates for various crops, (iii) boost the export of seeds and encourage import of useful germ plasm, and (iv) create a conducive atmosphere for application of frontier sciences in variety development and for enhanced investment in R&D. The Seeds Bill was introduced in the Rajya Sabha in 2004. It was referred to the Parliamentary Standing Committee on Agriculture which recommended several modifications in 2008. These will be taken up for further consideration.

Fertilizers

8.20 India is meeting 85 per cent its urea requirement through indigenous production but depends heavily on imports for its phosphatic and potash (P & K) fertilizer requirements. Urea, 21 grades of P & K fertilizers, and 15 grades of NPK (nitrogen, phosphorus, and potash) complex fertilizers are provided to farmers at subsidized prices. Farmers pay only 25 to 40 per cent of the actual cost and the rest of the cost is borne by the Government in the form of a subsidy, which is reimbursed to the manufactures/importers.

Production

8.21 The domestic production of urea, Diammonium phosphate (DAP), and complex fertilizers in the year 2009-10 has increased compared to 2008-09. The production of urea is estimated at 215.37 lakh tonnes in 2010-11 and that of DAP and complexes at 39.58 lakh tonnes and 91.66 lakh tonnes, respectively (Table 8.7). Availability of raw material/intermediates has been a major bottleneck in the increase in production of fertilizers.

8.22 Timely import of urea and other fertilizers was arranged to ensure timely availability of fertilizers in required quantity (Table 8.8).

Table 8.7 : Production of Urea, DAP and Complex Fertilizers

(in lakh tonnes)					
Year	2006-07	2007-08	2008-09	2009-10	2010-11*
Urea	203.10	198.60	199.20	211.12	215.37
DAP	48.52	42.12	29.93	42.46	39.58
Complex fertilizers	74.64	58.50	68.48	80.38	91.66

Note: *Estimated

Table 8.8 : Import of Urea, DAP and MOP

(in lakh tonnes)

	Urea	DAP	MOP
2006-07	47.18	28.76	34.48
2007-08	69.28	29.90	44.20
2008-09	56.67	61.91	56.72
2009-10	52.09	58.89	52.86
2010-2011*	45.83	68.12	47.84

Note : *(April-November 2010).
DAP : di-ammonium phosphate
MOP : muriate of potash.

8.23 Chemical fertilizers play a significant role in the development of the agricultural sector. In India, the per hectare consumption of fertilizers in nutrient terms has been increasing (Table 8.9).

8.24 There have been major policy initiatives in the fertilizer sector. A few recent ones are as follows:

- (i) Introduction of nutrient-based subsidy scheme with effect from 1 April 2010. Under the nutrient-based subsidy scheme (NBS), Government has amended subsidy per kg of nutrients N, P, K and S contained in P & K fertilizers as well as per MT of fertilizers. Maximum retail prices (MRPs) of the decontrolled P&K fertilizers have been kept open and companies are free to announce their MRPs. However, manufacturers/importers of fertilizers are required to print MRPs along with applicable NBS on each bag of fertilizer clearly. The failure to do so invites action under the Essential Commodities Act 1955.
- (ii) A uniform freight subsidy policy has been announced under which rail freight is paid on actual and road freight on a normative average district lead for urea.
- (iii) Government has included three new grades of complex fertilizers under the NBS.

Table 8.9 : Per Hectare Consumption of Fertilizers in Nutrient Terms

(in lakh tonnes)

Product	2006-07	2007-08	2008-09	2009-10	2010-11*
Nitrogenous(N)	137.73	144.19	150.90	155.80	80.56
Phosphatic (P)	55.43	55.15	65.06	72.74.	41.72
Potash (K)	23.35	26.36	33.13	36.32	17.13
Total (N+P+K)	216.51	225.70	249.09	264.86	139.41
Per Hectare Consumption (kg)	111.8	116.50	127.2	135.3	

Note : *Relates to estimated kharif 2010.

- (iv) Distribution and movement of fertilizers are monitored through the online web-based fertilizer monitoring system (FMS), which tracks the import, production, movement, availability, distribution, and sale of fertilizers in all States.
- (v) Government has placed 20 per cent of the produced/imported decontrolled P & K fertilizer under the Movement Control Order of the Department of Fertilizers as per the Essential Commodities Act 1955 with the objective of making fertilizers available in the difficult areas.
- (vi) The manufacturers of customized and mixture fertilizer are allowed by the Government to source the subsidized fertilizers from the manufacturers/importers after their receipt in the districts.
- (vii) Government has put the export of (DAP) and MOP in the restrictive category to discourage export and illegal diversion.

Irrigation

8.25 Irrigation is one of the most important inputs for enhancing productivity and is required at different critical stages of plant growth of various crops. The Government of India has taken up irrigation potential creation through public funding and is assisting farmers to create potential on their own farms. Substantial irrigation potential has been created through major and medium irrigation schemes. The total irrigation potential in the country has increased from 81.1 million hectares in 1991-92 to 108.2 million hectares in March 2010.

8.26 The Central Government initiated the Accelerated Irrigation Benefit Programme (AIBP) from 1996-97 to extend assistance for the completion of incomplete irrigation schemes. Under this programme, projects approved by the Planning Commission are eligible for assistance. Further, the assistance, which was entirely a loan from the Centre in the beginning, was modified by inclusion of a grant component with effect from 2004-05. AIBP guidelines were further modified in December 2006 to provide enhanced assistance at 90 per cent of the project cost as grant to special category States, Drought Prone Area Programme (DPAP) States/tribal areas/flood-prone areas, and Koraput-Balangir-Kalahandi (KBK) districts of Orissa. Under the AIBP, ₹ 41,729.37 crore of Central loan assistance (CLA)/grant has been released up to 31 March 2010. As on 31 March 2010, 281 projects have been covered

under the AIBP and 120 completed. Irrigation potential of 9.82 lakh ha is estimated to have been created from major/medium /minor irrigation projects during 2009-10.

RAINFALL AND RESERVOIR LEVELS

8.27 Rainfall influences crop production and productivity in a big way in India, with agriculture still being largely rainfed. More than 75 per cent of annual rainfall is received during the south-west monsoon season (June-September). During the south-west monsoon season of 2010, the country as a whole received 2 per cent more rainfall than the long period average (LPA). Central India, north-west India, and the southern peninsula experienced 4 per cent, 12 per cent, and 17 per cent more rainfall respectively. North-east India received 18 per cent less rainfall than the LPA. At district level, 28 per cent of districts received excess rainfall, 41 per cent normal, 29 per cent deficient, and 2 per cent scanty rainfall. During south-west monsoon 2010, out of 36 subdivisions, 5 recorded deficient rainfall and the remaining 31 excess/normal rainfall. Out of 597 meteorological districts for which data are available, 413 (69 per cent) received excess/normal rainfall and the remaining 184 (31 per cent) deficient/scanty rainfall during the season. The performance of the south-west Monsoon during 2001-10 (June-September) is given in Table 8.10.

Reservoir storage status

8.28 The total designed storage capacity at full reservoir level (FRL) of 81 major reservoirs in the country monitored by the Central Water Commission (CWC) is 151.77 billion cubic metres (BCM). At the end of monsoon 2010, the total live storage in these reservoirs was 115.23 BCM which is more than the live storage of 89.84 BCM at the end of the monsoon in 2009 and also more than 100.25 BCM which is the average of the last 10 years.

PRICE POLICY FOR AGRICULTURAL PRODUCE

8.29 The price policy for agricultural commodities seeks to ensure remunerative prices to growers for their produce with a view to encouraging higher investment and production and safeguarding the interest of consumers by making sure that adequate supplies are available. The price policy also seeks to evolve a balanced and integrated price structure in the perspective of the overall needs of the economy. With this aim, the Government announces minimum support prices (MSPs) for major agricultural commodities each season and organizes purchase operations. The designated Central nodal agencies intervene in the market for undertaking procurement operations with the objective of ensuring that the market prices do not fall below the MSPs fixed by the Government. Over the years, the MSPs have been raised reasonably to ensure that farmers are incentivized to enhance production of their crops.

Table 8.10 : Monsoon performance : 2001 to 2010 (June – September)

Year	Number of meteorological subdivisions			Percentage of districts with normal/excess rainfall	Percentage of long period average rainfall for the country as a whole
	Normal	Excess	Deficient/scanty		
2001	29	1	5	67	92
2002	14	1	21	39	81
2003	26	7	3	77	102
2004	23	0	13	56	86
2005	23	9	4	72	99
2006	20	6	10	60	99
2007	17	13	6	72	105
2008	30	2	4	76	98
2009	10	3	23	41	77
2010	17	14	5	69	102

Source : India Meteorological Department.

Note: Excess: +20 per cent or more of LPA; Normal: +19 per cent to -19 per cent of LPA;

Deficient: -20 per cent to -59 per cent of LPA; Scanty: -60 per cent to -99 per cent of LPA.

These operations involving high costs have put considerable fiscal strain on the economy. The MSPs of kharif and rabi crops of 2009-10 and 2010-11 are given in Table 8.11.

8.30 In addition, Government has also notified the MSPs of commercial crops like copra, raw jute, de-husked coconut, and toria. The MSPs for fair average quality (FAQ) variety of milling copra and FAQ variety of ball copra for 2010 season have been fixed at ₹ 4450 per quintal and ₹ 4700 per quintal respectively. The MSP for de-husked coconut for 2010 season has been fixed at ₹ 12 per kg, for TD-5 variety of ex-Assam raw jute for

2010-11 season at ₹1575 per quintal, and for toria of FAQ variety for 2010-11 to be marketed in 2011-12 at ₹ 1780 per quintal.

8.31 The National Agricultural Cooperative Marketing Federation of India Ltd. (NAFED), the Central Nodal Agency for implementing price support operations for commercial crops, entered the markets with a view to safeguarding the interest of coconut growers and procured 44,418 quintals of milling copra and 480 quintals of ball copra up to 4 October 2010, as the wholesale prices ruled below their MSPs for 2010 season. During the marketing season 2010-11, month-end wholesale price of

Table 8.11 : Minimum support prices

(₹ per quintal)

	2009-10	2010-11	Difference between 2010-11 and 2009-10 Prices (in ₹)
Kharif Crops			
Paddy (common)	950	1000	50
Paddy (Gr.A)	980	1030	50
Jowar (Hybrid)	840	880	40
Jowar (Maldandi)	860	900	40
Bajra	840	880	40
Maize	840	880	40
Ragi	915	965	50
Arhar (Tur)	2300	3000*	700
Moong	2760	3170*	410
Urad	2520	2900*	380
Groundnut in shell	2100	2300	200
Sunflower	2215	2350	135
Soyabean (black)	1350	1400	50
Soyabean (yellow)	1390	1440	50
Seasum	2850	2900	50
Nigerseed	2405	2450	45
Cotton (F-414/H-777/J34)	2500	2500	0
Rabi crops			
Wheat	1100	1120	20
Barley	750	780	30
Gram	1760	2100	340
Masur (lentil)	1870	2250	380
Rapeseed/Mustard	1830	1850	20
Safflower	1680	1800	120

Note: * An additional incentive at the rate of ₹ 5 per kg is also available for tur, moong, and urad sold to procurement agencies during the harvest/arrival period of two months.

TD-5 grade raw jute ruled above the MSP and therefore no procurement was made under the Price Support Scheme.

SCHEMES/PROGRAMMES IN THE AGRICULTURE SECTOR

8.32 Agriculture is a State subject. Hence the primary responsibility for increasing agricultural production, enhancing productivity, and exploring the vast untapped potential of the sector rests with the State Governments. Central Government supplements the efforts of the State Governments through a number of centrally sponsored and Central-sector schemes. The major schemes/programmes are as follows:

National Mission for Sustainable Agriculture

8.33 While agricultural productivity is adversely affected by climate change, agricultural activity itself contributes to global warming. The adoption of 'ecological agriculture', which integrates natural regenerative processes, minimizes non-renewable inputs, and fosters biological diversity, has tremendous scope for reducing emissions and enhancing soil carbon sequestration. At the same time, many ecological agricultural practices also constitute effective strategies for adapting to climate change, which is a priority for developing countries. This calls for more investment and policy support to be devoted to this productive and sustainable form of farming. Recognizing the challenge of climate change to Indian agriculture, the National Mission for Sustainable Agriculture (NMSA), which is one of the eight Missions under the National Action Plan on Climate Change (NAPCC) has been conceptualized. It seeks to address issues regarding 'sustainable agriculture' in the context of risks associated with climate change by devising appropriate adaptation and mitigation strategies for ensuring food security, enhancing livelihood opportunities, and contributing to economic stability at national level. While promotion of dry-land agriculture would receive prime importance by way of developing suitable drought and pest resistant crop varieties and ensuring adequacy of institutional support, the Mission would also expand its coverage to rainfed areas for integrating farming systems with livestock and fisheries, so that agriculture continues to grow in a sustainable manner. The Mission identifies ten key dimensions for promoting sustainable agricultural practices, which will be realized by implementing a programme of action

(PoA). The Mission also emphasizes the need to harness traditional knowledge and agricultural heritage for in-situ conservation of genetic resources.

8.34 The PoA would be operationalized by mainstreaming adaptation and mitigation strategies in ongoing R&D programmes and in flagship schemes including the Rashtriya Krishi Vikas Yojana (RKVY), National Horticulture Mission (NHM), and National Food Security Mission (NFSM) through a process of selective upscaling and course correction measures. This would further be supplemented by introduction of new programmatic interventions and by seeking convergence with other National Missions and collaborations with key Ministries/Departments for institutionalizing linkages in order to address cross-sectoral issues.

Macro Management of Agriculture

8.35 The Macro Management of Agriculture (MMA) scheme was revised in 2008 to improve its efficacy in supplementing / complementing the efforts of the States towards enhancement of agricultural production and productivity and provide opportunity to draw upon their agricultural development programmes relating to crop production and natural resource management, with the flexibility to use 20 per cent of resources for innovative components. The revised MMA Scheme has formula-based allocation criteria and provides assistance in the form of grants to the States/UTs on 90:10 basis except in case of the north-eastern States and Union Territories where the Central share is 100 per cent. MMA assistance during 2010-11 has been used to treat 3.02 lakh ha of land under the National Watershed Development Project for Rainfed Areas (NWDPA) and 1.94 lakh ha under River Valley Projects (RVP) sub-schemes and for financing acquisition of 10,208 tractors and 5766 power-tillers among other farm machinery.

The National Food Security Mission (NFSM)

8.36 The NFSM was launched in rabi 2007-08 with a view to enhancing the production of rice, wheat, and pulses by 10 million tonnes, 8 million tonnes, and 2 million tonnes respectively by the end of the Eleventh Plan. The Mission aims to increase production through area expansion and productivity; create employment opportunities; and enhance the farm-level economy to restore confidence of farmers. The NFSM is presently being implemented in 476 identified districts of 17 States of the country.

Besides, a series of activities for more vigorous promotion of pulse crops has been adopted under the NFSM to intensify the pulse production programme from 2010-11. These are:

- i) Merging of the pulse component of the Integrated Scheme of Oilseeds, Pulses, Oil Palm and Maize (ISOPOM) with the NFSM so as to increase the scope and area coverage of the pulses programme. Jharkhand and Assam have also been included under the programme since there is immense potential for pulse promotion in rice fallows.
- ii) Through a new programme under the NFSM called the Accelerated Pulses Production Programme (A3P), 1000 block demonstrations of technology have been launched from 2010-11. This programme will essentially promote plant nutrients- and plant protection-centric technologies in compact blocks of 1000 ha each for five major pulse crops, namely, tur, moong, urad, gram, and lentil.

8.37 Focused and target-oriented technological intervention under the NFSM has made significant impact since its inception, reflected in the increase in production of rice and wheat in 2008-09 and 2009-10.

8.38 From 2010-11, as a new initiative, the A3P has been launched as a part of NFSM Pulses. Under the A3P, one million ha of potential pulses area, covering tur, urad, moong, gram, and lentil, has been taken up for large-scale demonstration of technology in compact blocks. A total of 600 A3P units of tur, urad, moong, gram, and lentil have been proposed for 2010-11. For organizing A3P units at the farmers' fields, an amount of ₹ 54.66 lakh per unit has been proposed.

8.39 Further, an amount of ₹ 300 crore has been provided in the Union Budget 2010-11 for promoting dry-land farming in 60,000 pulses and oilseeds villages in rainfed areas. These funds have been provided as additional Central assistance under the ongoing RKVY to the States of Andhra Pradesh, Gujarat, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan, and Uttar Pradesh.

8.40 Another programme, namely Bringing Green Revolution in the Eastern States is operational in seven states—Uttar Pradesh, Jharkhand, Bihar, West Bengal, Assam, Orissa, and Chhattisgarh. The Rice Development and Organizing Pulses and Oilseeds Villages is another programme, beside the

pulses promotion strategies and other initiatives undertaken to boost agricultural productivity in these states.

8.41 The progress reports received from the States indicate significant achievements under the NFSM during the course of its implementation in the last four years, i.e. during 2007-08 to 2010-11 (till date). New farm practices have been encouraged through 3.24 lakh demonstrations of improved package of practices. As many as 63,273 demonstrations of the system of rice intensification (SRI), and 32,344 demonstrations of hybrid rice have been conducted. Nearly, 96.84 lakh quintals of high yielding variety seeds of rice, wheat, and pulses and hybrid rice have been distributed. About 72.27 lakh ha of area has been treated with soil ameliorants, such as gypsum/lime/micro nutrients to restore soil fertility for higher productivity. An area of about 29.25 lakh ha has been treated under Integrated Pest Management (IPM). Further, nearly 21.27 lakh improved farm machineries, including water-saving devices have been distributed. As a capacity-building initiative, 33,205 farmers' field school (FFS) - level trainings have so far been held. In addition, about 353 (3.53 lakh ha) block demonstrations have been conducted during the 2010 kharif under the A3P.

The Rashtriya Krishi Vikas Yojana (RKVY)

8.42 The RKVY was launched in 2007-08 with an outlay of ₹ 25,000 crore for the Eleventh Plan to incentivize States to enhance public investment so as to achieve a 4 per cent growth rate in agriculture and allied sectors during the Plan. During the three-year period 2007-10, an amount of ₹ 7895.12 crore was released under the RKVY. Out of the budget provision of ₹ 6722 crore for implementation of the RKVY in the States, an amount of ₹ 3986.76 crore has been released as on 25 November 2010. Specific allocation has to be made for the following three new initiatives introduced under the RKVY in 2010-11:

- (i) Extending the Green Revolution to the eastern region of the country, covering the States of Assam, Bihar, Chhattisgarh, Jharkhand, Orissa, eastern UP, and West Bengal, with the objective of increasing the crop productivity of the region by intensive cultivation through recommended agricultural technologies and package of practices.
- (ii) Special initiatives for pulses and oilseeds in dry-land areas by organizing 60,000 pulses and oilseeds villages in identified watersheds

where pulse and oilseed farmers are provided farm machinery and equipment on custom-hiring basis. These initiatives dovetail with other schemes of the Government of India having components for promotion of oilseeds and pulses production.

- (iii) Implementation of the National Mission on Saffron – Economic Revival of Jammu & Kashmir Saffron Sector during 2010-11.

8.43 The RKVY has linked 50 per cent of Central assistance to the percentage of State Plan expenditure on agriculture and allied sectors. This has incentivized States to step up allocation to agriculture and allied sectors, which was 5.11 per cent of total State Plan Expenditure in 2006-07, to 6.29 per cent in 2009-10. The RKVY has emerged as the principal instrument in financing development of agriculture and allied sectors in the country. Its convergence with other schemes like the Mahatma Gandhi National Rural Employment Scheme (MGNREGA) is expected to boost development of the agrarian economy. The States will take up projects under the RKVY primarily from amongst those that appear in their District and State Agriculture Plans. There will be increased synergy between agricultural planning and implementation of schemes in the coming years, which will play a crucial role in promoting holistic development of agriculture and allied sectors.

The Integrated Scheme of Oilseeds, Pulses, Oil Palm and Maize (ISOPOM)

8.44 The ISOPM is being implemented in 14 major States for oilseeds and pulses, 15 for maize, and 10 for oil palm. The pulses component has been merged with the NFSM with effect from 1 April 2010. The Scheme provides flexibility to the States in implementation based on a regionally differentiated approach to promoting crop diversification. Under the Scheme, assistance is provided for purchase of breeder seed, production of foundation seed, production and distribution of certified seed, distribution of seed minikits, plant protection chemicals, plant protection equipment, weedicides, gypsum/ pyrite/ liming/ dolomite, sprinkler sets, and water carrying pipes, supply of rhizobium culture/ phosphate solubilizing bacteria and improved farm implements, publicity, etc. The Oil Palm Development Programme under the ISOPOM is being implemented in the States of Andhra Pradesh, Karnataka, Tamil Nadu, Gujarat, Goa, Orissa, Kerala, Tripura, Assam, and Mizoram. Its Maize

Development Programme is under implementation in 15 States, viz. Andhra Pradesh, Bihar, Chhattisgarh, Himachal Pradesh, Jammu and Kashmir, Gujarat, Karnataka, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh, and West Bengal.

Drought Management

8.45 Due to deficit rainfall during south-west monsoon 2010 in Bihar, Jharkhand, Orissa, and West Bengal, the Central share of the State Disaster Response Fund (SDRF) for 2010-11 has been released to enable these States to expeditiously take the necessary drought-mitigation measures. In view of drought/deficit rainfall in certain regions, it was decided to implement a Diesel Subsidy during kharif 2010 (14 July 2010 to 30 September 2010) in drought/deficit rainfall areas to save the standing crops in the field.

ALLIED SECTORS

The National Horticulture Mission (NHM)

8.46 The Ministry of Agriculture has been implementing the centrally sponsored NHM for the holistic development of the horticulture sector since 2005-06, duly ensuring forward and backward linkages, and with the active participation of all the stakeholders. All the States and the three Union Territories of Andaman and Nicobar Islands, Lakshadweep, and Puducherry are covered under the Mission except the eight north-eastern States including Sikkim and the States of Jammu and Kashmir, Himachal Pradesh, and Uttarakhand. The latter are covered under the Horticulture Mission for the North East and Himalayan States (HMNEH). The scheme is being implemented in 372 districts in the country. During 2005-06 to 2009-10, an additional 16.57 lakh ha of identified horticulture crops has been covered. Apart from establishment of 2192 nurseries for production of quality planting materials, 2.78 lakh ha has been covered under rejuvenation of old and senile orchards. Organic cultivation of horticultural crops has been adopted in an area of 1.37 lakh ha.

8.47 With the implementation of the NHM and other schemes, the production of horticulture crops has increased from 170.8 million tonnes in 2004-05 to 214.7 million tonnes in 2008-09. The per capita availability of fruits and vegetables has increased from 391 gram/day in 2004-05 to 466 gram/day in 2008-09.

Technology Mission for Integrated Development of Horticulture in North Eastern States, Sikkim, Jammu and Kashmir, Himachal Pradesh, and Uttarakhand

8.48 The Technology Mission for Integrated Development of Horticulture was launched in 2001-02 to address issues related to production and productivity, post harvest handling, marketing, and processing of horticultural crops in the north-eastern States. The Mission was extended to the three Himalayan States, namely Himachal Pradesh, Jammu and Kashmir, and Uttarakhand in 2003-04. It covers the entire spectrum of horticulture development right from production to consumption through backward and forward linkages. During the course of its implementation, it was realized that some additional components need to be introduced to achieve the objective of holistic growth of the horticulture sector. Accordingly, some new components such as high density planting, vegetable seed production, and horticulture mechanization have been included in the Mission. This has now been renamed the Horticulture Mission for North East and Himalayan States (HMNEH) along with revision of the cost norms so as to incentivize investment and supplement income generation for the beneficiaries.

8.49 The implementation of the Mission has helped bring an additional 5,12,614 ha under various horticulture crops (fruits, vegetables, spices, plantation crops, medicinal plants, aromatic plants, root, and tuber crops) in these States. In addition, 26,571 ha of senile and unproductive orchards have been rejuvenated to increase productivity. The Mission has succeeded in bringing 54,938 ha under organic farming. Major infrastructure which has come up under the Mission includes 974 nurseries, 10,979 community tanks, and 12,758 tube wells. Drip irrigation has been extended to 16,303 ha. Twenty-five model floriculture centres, fifty-nine herbal gardens, twenty-five tissue culture units, and twenty-two disease forecasting units have also been set up. The Mission gave special thrust to protected cultivation of high-value crops like tomato, coloured capsicum, strawberry, and flowers to ensure quality production. Special attention has been given to promoting and popularizing mechanization in horticulture. So far 5,785 power tillers, 4,64,595 manually operated machines, 12,542 power operated implements, and 12,887 diesel engines have been distributed among the farmers of the region. To strengthen the hands of women farmers, self-help groups (SHGs) have been promoted. Till now 8527

SHGs have been formed that are involved in the promotion of floriculture and in exports. For proper handling and marketing of horticultural produce, 47 wholesale markets, 344 rural primary/Apni Mandies, 35 cold storages, and 64 processing units have been set up. Under the Mission 2,65,435 persons, including 53,276 women, have so far been trained.

Micro Irrigation

8.50 The Centrally sponsored National Mission on Micro Irrigation (NMMI) was launched in June 2010 in addition to the earlier Micro Irrigation Scheme launched in January 2006. The Mission is being implemented during the Eleventh Plan period for enhancing water-use efficiency by adopting drip and sprinkler irrigation systems in all States and Union Territories for both horticulture and agricultural crops. The scheme provides assistance at 60 per cent of the system cost for small and marginal farmers and at 50 per cent for general farmers. Since 2005-06, a sum of ₹ 2739 crore has been released by the Government of India under the scheme and 2.27 lakh ha brought under micro-irrigation. The system is beneficial for farmers in increasing crop productivity and water-use efficiency; reducing fertilizer consumption (fertigation through drip system) and electricity and labour consumption; and enhancing income.

National Bamboo Mission (NBM)

8.51 With a view to harnessing the potential of the bamboo crop in the country, the Ministry of Agriculture has been implementing the centrally sponsored NBM in 27 States in the country with a total outlay of ₹ 568.23 crore. The Mission aims to promote holistic growth of the bamboo sector by adopting an area-based, regionally differentiated strategy and to increase the area under bamboo cultivation and marketing. Under the Mission, steps have been taken to increase the availability of quality planting material by supporting the setting up of new nurseries/tissue culture units and strengthening of existing ones. To address forward integration, the Mission is taking steps to strengthen the marketing of bamboo products, especially handicraft items. During the current year (2010-11), 7946 ha forest and 2079 ha non-forest area has been covered under bamboo plantation.

Rubber

8.52 India is the fourth largest producer of natural rubber (NR) with a share of 8.5 per cent in world production in 2009. Despite not having the best of

geographically favourable regions for growing NR, India continued to record the highest productivity among major NR-producing countries. The production of NR in 2010-11 is projected at 851,000 tonnes, which is an increase of 2.4 per cent over 2009-10. India has emerged as the second largest consumer of NR, overtaking the United States with a share of 9.6 per cent in world consumption in 2009. Consumption of NR in 2010-11 is projected at 948,000 tonnes, which is an increase of 1.9 per cent over the previous year. Given the relatively higher domestic prices prevailing in the last many months, exports of NR are expected to be lower and imports higher in 2010-11.

Coffee

8.53 India ranks sixth in coffee production after Brazil, Vietnam, Columbia, Indonesia, and Ethiopia. It produces both Arabica and Robusta varieties of coffee in a proportion of 33:67. Coffee is cultivated in about 3.99 lakh ha mainly confined to the southern States of Karnataka, Kerala, and Tamil Nadu, which form the traditional coffee tracts. To a lesser extent, coffee is also grown in non-traditional areas like Andhra Pradesh, Orissa, and the north-eastern States, the main emphasis being tribal development and afforestation. Coffee is predominantly an export-oriented commodity in India with 65 to 70 per cent of the production being exported, thereby earning considerable foreign exchange. For the past five to six years, the productivity in India has been around 800 kg/ha. The production of coffee stood at 2,89,600 MT in 2009-10. For the year 2010-11, the post monsoon crop estimate is placed at 2,99,000 MT.

Tea

8.54 India is the largest producer and consumer of black tea in the world. Tea is grown in 16 States in India. Assam, West Bengal, Tamil Nadu and Kerala account for about 96 per cent of the total production. The teas originating from Darjeeling, Assam, and the Nilgiris are well known for their distinctive flavours the world over. Tea production in India during the year 2009-10 has been estimated at 991.18 million kg against 972.77 million kg achieved in 2008-09.

ANIMAL HUSBANDRY, DAIRYING, AND FISHERIES

8.55 The livestock & fisheries sector contributed over 4.07 per cent to the total GDP during 2008-09 and about 29.7 per cent to the value of output from total agricultural and allied activities. The Eleventh

Table 8.12 : Production and per capita availability of milk

Year	Per capita availability (grams/day)	Production (million tonnes)
1990-91	176	53.9
2000-01	220	80.6
2005-06	241	97.1
2006-07	246	100.9
2007-08	252	104.8
2008-09	258	108.5
2009-10	263	112.5

Source: Department of Animal Husbandry, Dairying and Fisheries.

Five Year Plan envisages an overall growth of 6-7 per cent per annum for the sector. In 2009-10, this sector produced 112.5 million tonnes of milk, 59.8 billion eggs, 43.2 million kg wool, and 4.0 million tonnes of meat. The result of the 18th Livestock Census (2007), derived from village-level count, has placed the total livestock population at 529.7 million and poultry birds at 648.8 million.

8.56 India ranks first in world milk production, increasing its production from 17 million tonnes in 1950-51 to about 112.5 million tonnes in 2009-10 (Table 8.12). The per capita availability of milk has also increased from 112 grams per day in 1968-69 to 263 gram per day in 2009-10. It is however still low compared to the world average of 279.4 grams/day, as per FAOSTAT (Food and Agriculture Organization Statistical Database) 2009 data. Box 8.2 gives some details of the milk situation in India.

8.57 A major programme for genetic improvement called the National Project for Cattle and Buffalo Breeding (NPCBB) was launched in October 2000 to be implemented over a period of 10 years in two phases of five years each. The NPCBB envisages genetic upgradation and development of indigenous breeds on priority basis. At present, 28 States and one Union Territory are participating in the project.

Livestock insurance

8.58 A Centrally sponsored scheme of livestock insurance is being implemented in all the States with twin objectives: providing protection mechanism to the farmers and cattle rearers against any eventual loss of their animals due to death; and demonstrating the benefits of insuring livestock to the people. The scheme, which was introduced in 100 selected districts on pilot basis during 2005-06, has now been

Box 8.2 : Milk Scenario in India

Annual milk production in India has grown more than six times since independence. The average annual growth rate in the production of milk in recent years has been close to 4 per cent. Even though the level of per capita availability at 263 gram/day for India in 2009-10 is much lower than that in developed countries, it is well above the developing country average. The Eleventh Five Year Plan envisages an overall growth of 6-7 per cent per annum for the sector. As per an assessment made by the Planning Commission, the domestic demand for milk by 2021-22 is expected to be 172.20 million tonnes. As projected under the proposed National Dairy Plan, the production of milk in the country is required to increase to 180 million tonnes by 2021-22 to meet the demand. However, the country has not been able to keep pace with the domestic demand for milk. The domestic demand for milk is growing at about six million tonnes per year whereas annual incremental production over the last ten years has been about 3.5 million tonnes per year. With higher growth of the economy, increase in population, and increased health consciousness among the populace, it is only natural that the demand for milk and milk products will increase leading the proportion of income spent on milk and milk products to increase. Further, urban centres will demand more and more processed and packaged dairy products but in the rural areas people may still prefer to purchase from the local milkmen.

About 80 per cent of milk produced in the country is still handled in the unorganized sector and only the remaining 20 per cent is equally shared by cooperatives and private dairies. Despite the appreciable growth in the milk production in the last six decades, the productivity of our animals is still low. Our marketing systems are also not modernized or developed to a satisfactory level. Other issues in this sector are ineffective breeding programmes, limited availability and affordability of quality feed and fodder, improper veterinary infrastructure, lack of vaccinations, inadequate access to formal credit mechanisms, inadequate research capacity, limited processing capacity, and lack of transport. Considering that the requirement of milk in 2021-22 is expected to be 180 million tonnes and the current level of milk production is 112 million tonnes, the milk production must increase at around 5.5 per cent per annum in the next 12 years. If it fails to do so, India may need to resort to imports from the world market. A large consumer like India entering the international market would have the potential to cause international prices to spurt. Hence it is prudent that we depend on the domestic market and develop the milk sector with the right attention and focus and the required investment. Recent hikes in prices of milk and milk products have been a matter of concern. The gap between domestic demand for milk and production of milk has put upward pressure on milk prices in the country. A strong supply response with focus on production and productivity can only keep the prices stable.

extended to 300 selected districts covering all states. The scheme benefits farmers and cattle rearers having milch cattle and buffaloes. In 2010-11, ₹. 20.12 crore has been released up to December 2010 and 20.63 lakh animals were insured from 2006-07 to 2009-10.

Poultry

8.59 Poultry development is one of the most resilient sectors in the country, fast adapting itself to the changing biosecurity, health, and food safety needs. India produces more than 59.8 billion eggs per year, with per capita availability of 51 eggs per annum. The poultry meat production is estimated to be 1.85 million tonnes in 2008-09. To provide necessary services to the farmers, four regional Central Poultry Development Organizations (CPDOs) have been restructured on the principle of one-window service. These are located at Chandigarh, Bhubaneswar, Mumbai, and Hessarghatta. They

impart training to farmers to upgrade their technical skills. The Central Poultry Performance Testing Center (CPPTC), located at Gurgaon is entrusted with responsibility of testing the performance of layer and broiler varieties. This Center gives valuable information relating to different genetic stocks available in the country. The Centrally sponsored Poultry Development scheme has three components, Assistance to State Poultry Farms, Rural Backyard Poultry Development, and Poultry Estates. Assistance to State Poultry Farms aims at strengthening existing State poultry farms to enable them to provide improved stocks suitable for rural backyard rearing. The main objective of the Rural Backyard Poultry Development component is to provide supplementary income and nutritional support to below poverty line (BPL) people. Poultry Estates are aimed primarily at educated, unemployed youth and small farmers with some margin money, to make profitable ventures out of

various poultry-related activities. The Central-sector, Poultry Venture Capital Fund scheme encourages entrepreneurship skills of individuals, covering various poultry activities.

Livestock health

8.60 Animal wealth in India has increased manifold prompting the animal husbandry sector to adopt modern practices. With increased trade activity and extensive cross-breeding programmes, the chances of ingress of exotic diseases into the country have increased. To ensure disease-free status and be compatible with the standards laid down by the World Animal Health Organization, many animal health schemes have been initiated, which provide financial assistance to States/UTs to control major livestock and poultry diseases and strengthen veterinary services including reporting of animal diseases. All avian influenza outbreaks reported were effectively controlled and the country declared free from avian influenza in June 2010.

Fisheries Fisheries

8.61 Fish production increased from 7.14 million tonnes in 2007-08 to 7.85 million tonnes in 2009-10. Fishing, aquaculture, and allied activities are reported to have provided livelihood to over 14 million persons in 2008-09, apart from being a major foreign exchange earner (Table 8.13).

Feed and fodder

8.62 Adequate availability of feed and fodder for livestock is very vital for increasing milk production and sustaining the ongoing genetic improvement programme. The estimated green fodder shortage in the country is about 34 per cent. The Department of Animal Husbandry & Dairying has been implementing a modified centrally sponsored Fodder

and Feed Development Scheme with effect from 1 April 2010 to supplement the efforts of the States to improve fodder production. Financial assistance to the tune of ₹ 2903.04 lakh (up to December 2010), has been provided to the States in 2010-11. Under the Central Minikit Testing Programme, fodder seed minikits of latest high-yielding fodder varieties are distributed free of cost to farmers. During the current year (2010-11) 11.79 lakh fodder seed minikits have been allotted to the States for distribution to farmers.

CREDIT AND INSURANCE

Agricultural Credit

8.63 From Kharif 2006-07 to 2008-09, farmers were receiving crop loans up to a principal amount of ₹ 3 lakh at 7 per cent interest. In the year 2009-10, Government provided an additional 1 per cent interest subvention to those farmers who repaid their short-term crop loans as per schedule. The Government has raised this subvention for timely repayment of crop loans from 1 per cent to 2 per cent from the year 2010-11. Thus the effective rate of interest for such farmers will be 5 per cent per annum.

Revamping of Cooperative Credit Structure

8.64 In January 2006, the Government announced a package for revival of the Short-term Rural Cooperative Credit Structure involving financial assistance of ₹ 13,596 crore. The National Bank for Agriculture and Rural Development (NABARD) has been designated the implementing agency for the purpose. States are required to sign memorandums of understanding (MoUs) with the Government of India and NABARD, committing to implementation of the legal, institutional and other reforms as envisaged in the revival package. So far

Table 8.13 : Production and export of fish

Year	Fish production (million tonnes)			Export of marine products	
	Marine	Inland	Total	Qty ('000 tonnes)	Value (₹ crore)
1990-91	2.3	1.5	3.8	140	893
2000-01	2.8	2.8	5.6	503	6288
2005-06	2.8	3.8	6.6	551	7019
2006-07	3.0	3.8	6.8	612	8363
2007-08	2.9	4.2	7.1	541	7620
2008-09	3.0	4.6	7.6	602	8608
2009-10	2.98	4.87	7.85	664	9921

twenty-five States have executed such MoUs. This covers 96 per cent of the primary agricultural cooperative societies (PACS) and 96 per cent of the Central cooperative banks (CCBs) in the country. As of November 2010, an amount of ₹ 8009.75 crore has been released by NABARD as Government of India share for recapitalization of 49,983 PACS.

Rehabilitation Package for Distressed Farmers

8.65 The Government is implementing a rehabilitation package for 31 suicide-prone districts in the States of Andhra Pradesh, Karnataka, Kerala, and Maharashtra involving a financial outlay of ₹ 16,978.69 crore. Special packages are being implemented in Kerala for the development of Kuttanad wetland ecosystem and mitigation of agrarian distress in Idukki district with an outlay of ₹ 1840.75 crore and ₹ 764.45 crore, respectively.

Kisan Credit Card (KCC) Scheme

8.66 The KCC scheme was introduced in August 1998. About 970.64 lakh KCCs have been issued up to September 2010. The scheme includes reasonable components of consumption credit and investment credit within the overall credit limit sanctioned to the borrowers to provide adequate and timely credit support to the farmers for their cultivation needs.

Task Force on Private Moneylenders

8.67 A Task Force has been constituted under the chairmanship of Chairman, NABARD, to look into the issue of a large number of farmers who had taken loans from private moneylenders in the country. The Task Force has submitted its report in June 2010. This has been circulated to stakeholders for furnishing their comments/ views.

Agricultural Insurance

8.68 Four crop insurance schemes, namely the National Agricultural Insurance Scheme (NAIS), Pilot Modified NAIS (MNAIS), Pilot Weather Based Crop Insurance Scheme (WBCIS), and Pilot Coconut Palm Insurance Scheme (CPIS) are under implementation in the country.

i) The National Agricultural Insurance Scheme (NAIS)

The NAIS is being implemented in the country from rabi 1999-2000 season. The Agriculture Insurance

Company of India Ltd. (AIC) is the implementing agency (IA) for the Scheme. The main objective of the scheme is to protect farmers against crop losses suffered on account of natural calamities. The scheme is available to all the farmers—loanee and non-loanee—irrespective of their size of holding. It is operating on the basis of an area approach. It envisages coverage of all the food crops, oilseeds, and annual commercial/horticultural crops in respect of which past yield data are available for adequate number of years. Premium rates for food and oilseeds crops are ranging between 1.5 per cent and 3.5 per cent. In case of annual commercial/horticultural crops, actuarial premiums are being charged. A 10 per cent subsidy is available for small and marginal farmers. All financial liabilities under the scheme are shared by the Central and State Governments on 50: 50 basis. The scheme is at present being implemented by 25 States and two UTs.

ii) The Pilot Modified NAIS (MNAIS)

Keeping in view the limitations/shortcomings of the existing scheme, the Government has approved the Modified NAIS for implementation on pilot basis in 50 districts from rabi 2010-11 season. The major improvements made in the MNAIS are: actuarial premium with subsidy in premium at different rates, i.e. 40 per cent to 75 per cent depending upon the slab, provided to farmers, all claims liability on the insurer, unit area of insurance reduced to village panchayat level for major crops, indemnity for prevented/sowing/planting risk and for post harvest losses due to cyclone, payment up to 25 per cent advance of likely claims as immediate relief, more proficient basis for calculation of threshold yield, minimum indemnity level of 70 per cent instead of 60 per cent, and private-sector insurers with adequate infrastructure allowed (at present, ICICI-Lombard, IFFCO-Tokio and Cholamandalam-MS). Only upfront premium subsidy is shared by the Central and State Governments on 50: 50 basis and claims are the liability of the insurance companies. Seven States have already notified the areas for implementation of the scheme during rabi 2010-11. It is expected that the scheme will be notified by 14-15 States.

iii) Weather Based Crop Insurance Scheme (WBCIS)

Efforts have been made to bring more farmers under the fold of crop insurance by introducing a Weather Based Crop Insurance Scheme (WBCIS) as announced in the Union Budget 2007 in selected

areas on pilot basis. The WBCIS is intended to provide insurance protection to farmers against adverse weather incidences, which are deemed to unfavourably impact crop production. It has the advantage of settling claims within the shortest possible time. The WBCIS is based on actuarial rates of premium but to make the scheme attractive, premium actually charged from farmers have been restricted on a par with the NAIS. In addition to the Agriculture Insurance Company of India Ltd. (AIC), private insurers have also been included for implementing the scheme in selected areas. During kharif 2007 to kharif 2010, about 81 lakh farmers have been covered under the pilot scheme.

iv) Coconut Palm Insurance Scheme (CPIS)

The CPIS is being implemented on pilot basis since 2009-10 in selected areas of Andhra Pradesh, Goa, Karnataka, Kerala, Maharashtra, Orissa, Tamil Nadu, and West Bengal. The scheme is administered by the Coconut Development Board (CDB) through the AIC. As on 30 July 2010, 14.33 lakh palms of about 27,023 farmers have been covered under the scheme.

Agricultural Marketing

8.69 Organized marketing of agricultural commodities is being promoted in the country through a network of regulated markets. Most of the

States and Union Territories have enacted legislations (the Agriculture Produce Marketing Committee [APMC] Act) to provide for regulation of agricultural produce markets. Seventeen States/ UTs have amended their APMC Acts and the remaining are in the process of doing so (Table 8.14). There are 7157 regulated markets in the country as on 31 March 2010. The country has 21,221 rural periodical markets, about 15 per cent of which function under the ambit of regulation. The advent of regulated markets has helped mitigate the market handicaps of producers/ sellers at wholesale assembling level. Internet connectivity is being provided to important agricultural markets in the country to establish a nationwide information network for speedy collection of prices and market-related information. Presently, wholesale prices of 300 commodities and about 2000 varieties are being reported on the Agricultural Marketing Information Network (AGMARKNET) portal from more than 1900 markets. But rural periodic markets in general and tribal markets in particular have remained outside the ambit of the APMC Act.

8.70 Other major initiatives include setting up of terminal market complexes (TMC) for fruits, vegetables, and other perishables in important urban centres in those States which provide for market reforms as per the Model Act. These markets will

Table 8.14 : Progress of Reforms in Agricultural Markets (APMC Act) (as on 31 October 2010)

Sl. No.	Stage of reforms	Name of State/ Union territory
1.	Reforms to the APMC Act have been done for Direct Marketing; Contract Farming and Markets in Private/Coop. Sectors.	Andhra Pradesh, Arunachal Pradesh, Assam, Chhattisgarh, Goa, Gujarat, Himachal Pradesh, Jharkhand, Karnataka, Madhya Pradesh, Maharashtra, Mizoram, Nagaland, Orissa, Rajasthan, Sikkim, and Tripura
2.	Reforms to APMC Act have been done partially	(a) Direct Marketing: NCT of Delhi (b) Contract Farming: Haryana, Punjab and Chandigarh (c) Private Markets: Punjab and Chandigarh
3.	There is no APMC Act and hence not requiring reforms	Bihar*, Kerala, Manipur, Andaman & Nicobar Islands, Dadra & Nagar Haveli, Daman & Diu, and Lakshadweep
4.	The APMC Act already provides for reforms	Tamil Nadu
5.	Administrative action has been initiated for the reforms	Meghalaya, Haryana, J&K, Uttarakhand, West Bengal, Pondicherry, NCT of Delhi and Uttar Pradesh

Note: * APMC Act has been repealed with effect from September 1, 2006.

provide state-of-the-art infrastructure facilities for electronic auction, cold chain and logistics, and operate through primary collection centres conveniently located in producing areas to allow easy access to farmers.

Extension Services

8.71 A scheme called Support to State Extension Programmes for Extension Reforms was launched in 2005-06, with the aim of making the extension system farmer driven and farmer accountable. For this purpose new institutional arrangements are being made for technology dissemination in the form of an Agricultural Technology Management Agency (ATMA) at district level to operationalize the extension reforms with the active participation of farmers/ farmer groups, non-government organizations (NGOs), Krishi Vigyan Kendras, Panchayati Raj Institutions and other stakeholders operating at district level and below. Up to October 2010, 591 district-level ATMAs have been established. Gender concerns are being mainstreamed by mandating that 30 per cent of resources on programmes and activities are allocated for women farmers and extension functionaries.

8.72 The Mass Media Support to Agriculture Scheme focuses on use of Doordarshan infrastructure for providing agriculture-related information and knowledge to the farming community. Audio/ video spots on emerging issues/ schemes such as rabi/kharif campaign, Kisan Call Centre Scheme, and KCC are publicized using free commercial time. Live 'crop seminars' on Doordarshan involving farmers and experts have also been organized. The mass media initiative also includes the use of 96 All India Radio FM transmitters to broadcast 30-minute area-specific agricultural programmes six days a week. With a view to creating awareness about assistance available under various schemes, a 'Focused Publicity Campaign' has been launched during 2010-11. Under this campaign publicity through newspapers as well as electronic media was carried out.

8.73 The Kisan Call Centre scheme was launched in 2004 to provide agricultural information to the farming community through toll-free telephone lines. A country-wide common 11-digit number—1800-180-1551—has been allocated for KCCs. Replies to the queries of the farming community are being provided in 22 local languages. Calls are attended to from 6.00 am to 10.00 pm on all seven days of the week.

8.74 The Agri-clinic and Agri-business Centres Scheme was launched in 2002 to provide extension services to farmers on payment basis through setting up of economically viable self-employment ventures. Selected trainees are provided agri-preneurship training. NABARD monitors the credit support to Agri-Clinics through commercial banks. Provision of credit-linked back-ended subsidy at 33 per cent of the capital cost of the project funded through bank loan as well as full interest subsidy for the first two years on the bank credit has recently been approved under the scheme. From the inception of the scheme 22,158 unemployed agriculture graduates have been trained up to September 2010.

8.75 Information dissemination through agri fairs/ exhibitions is an excellent mechanism for showcasing latest technological advancements and dissemination of information to the farming community and also promoting business opportunities in agriculture and allied sectors. Agri fairs are promoted/ organized at national, State, district, and block levels.

FOOD MANAGEMENT

8.76 The main objectives of food management are procurement of foodgrains from farmers at remunerative prices, distribution of foodgrains to consumers, particularly the vulnerable sections of society at affordable prices and maintenance of food buffers for food security and price stability. The instruments used are MSP and Central issue price (CIP). The nodal agency which undertakes procurement, distribution, and storage of foodgrains is the Food Corporation of India (FCI). Procurement at MSP is open-ended, while distribution is governed by the scale of allocation and its offtake by the beneficiaries. The offtake of foodgrains is primarily under the targeted public distribution system (TPDS) and other welfare schemes of the Government of India.

Procurement and Offtake of Foodgrains

8.77 During rabi marketing season (RMS) 2010-11, 22.52 million tonnes of wheat was procured against 25.38 million tonnes in RMS 2009-10. In kharif marketing season (KMS) 2009-10, the total procurement of rice was 31.46 million tonnes against 33.69 million tonnes in KMS 2008-09. Procurement of coarse grains in 2009-10 stood at 4.07 thousand tonnes compared to 13.75 thousand tonnes in 2008-09. Procurement of foodgrains in States like Punjab, Haryana, Uttar Pradesh, Madhya Pradesh, Andhra

Pradesh, and Chhattisgarh is higher than in other States. In fact, Punjab and Haryana make the maximum procurement. Increased MSP along with various other steps taken by the Government has resulted in higher levels of procurement of foodgrains. This has paved the way for comfortable levels of food stocks to meet the TPDS needs and buffer stocks norms. Offtake of wheat and rice from the Central pool for the TPDS and other welfare schemes) has gone up in the last many years (Table 8.15).

Decentralized Procurement Scheme

8.78 A number of States have opted for implementation of the Decentralized Procurement Scheme (DCP) introduced in 1997, under which foodgrains are procured and distributed by the State Governments themselves. Under this scheme, the designated States procure, store and issue foodgrains under the TPDS and welfare schemes of the Government of India. The difference between the economic cost fixed for the State and the CIP is passed on to the State Government as subsidy. The decentralized system of procurement has the objectives of covering more farmers under MSP operations, improving efficiency of the PDS, providing foodgrains varieties more suited to local tastes and

reducing transportation costs. As on 22 December 2010, a total of ₹ 9376 crore of food subsidy has been released to various States under DCP operations in 2010-11. States under DCP operations have shown a healthy trend of increase in procurement of rice (94.9 lakh tonnes in KMS 2006-07 to 119.5 lakh tonnes in 2009-10). In KMS 2008-09 and 2009-10, the rice procurement by DCP states was 135.4 and 119.5 lakh tonnes respectively. In the case of wheat, however, the procurement in DCP States, particularly Uttar Pradesh and Madhya Pradesh was rather low in RMS 2006-07 and 2007-08 primarily due to aggressive purchases by private companies on expectation of higher market prices, lower rates of taxes and levies than Punjab and Haryana and proximity to markets in southern and eastern States of the country. However, there was record procurement of wheat in RMS 2008-09 and 2009-10. Under the decentralized system of procurement, the procurement of wheat has increased from 0.5 lakh tonnes in 2006-07 to 60.7 lakh tonnes in 2009-10. In 2010-11, the wheat procurement in DCP states has gone down primarily due to Uttar Pradesh withdrawing from the DCP scheme.

Table 8.15 : Procurement and offtake of wheat and rice (million tonnes)

	2005-06	2006-07	2007-08	2008-09	2009-10			
Procurement of Wheat and Rice								
Rice	27.66	25.11	28.74	33.69	31.46			
Wheat	14.8	9.2	11.1	22.7	25.4			
Total	42.5	34.3	39.8	56.38	56.9			
Offtake of Wheat and Rice for the TPDS*								
	2005-06	2006-07	2007-08	2008-09	2009-10	2009-10	2010-11	
							April-September	
Rice	19.1	21.1	22.5	22.1	23.4	12.1	12.4	
Wheat	12.0	10.3	10.8	12.5	19.0	9.5	9.5	
Total	31.1	31.4	33.3	34.6	42.4	21.6	21.9	
BPL (rice + wheat)	15.7	14.2	15.1	15.6	16.5	8.3	8.7	
APL (rice+ wheat)	8.0	8.5	8.7	9.5	16.1	8.4	8.2	
AAY (rice + wheat)	7.4	8.7	9.5	9.5	9.8	4.9	5.0	
Offtake of Wheat and Rice for Other Schemes								
Welfare Schemes	10.1	5.4	4.1	3.7	5.2	1.8	3.0	
Open/Tender Sales/Exports	1.1	0.0	0.0	1.2	2.1	0.0	0.3	
Total	42.3	36.8	37.4	39.5	49.7	23.4	25.2	

Notes:* Revised.

BPL : below poverty line;

APL : above poverty line;

AAY : antyodaya anna yojana

Buffer Stock

8.79 The stock position of foodgrains in the Central pool as on 1 October, 2010 is 46.2 million tonnes comprising 18.4 million tonnes of rice and 27.8 million tonnes of wheat. This is adequate for meeting the requirements under the TPDS and welfare schemes during the current financial year (Table 8.16).

Economic Cost of Foodgrains to the FCI

8.80 The economic cost of foodgrains consists of three components, namely MSP (and bonus if

applicable) as the price paid to the farmers, procurement incidentals, and the cost of distribution. The economic cost for both wheat and rice witnessed a significant increase during the last few years due to increase in MSPs and proportionate increase in the incidentals (Table 8.17 and Figure 8.16).

Food Subsidy

8.81 Provision of minimum nutritional support to the poor through subsidized foodgrains and ensuing price stability in different States are the twin objectives of the food security system. In fulfilling its obligation

Table 8.16 : Buffer Stock Norms and Actual Stocks

(lakh tonnes)

As on	WHEAT		RICE		TOTAL	
	Minimum Buffer Norms	Actual Stock	Minimum Buffer Norms	Actual Stock	Minimum Buffer Norms	Actual Stock
January 2008	82	77.12	118	114.75	200	191.87
April	40	58.03	122	138.35	162	196.38
July*	201	249.12	98	112.49	299	361.61
October	140	220.25	52	78.63	192	298.88
January 2009*	112	182.12	138	175.76	250	357.88
April	70	134.29	142	216.04	212	350.33
July	201	329.22	118	196.16	319	525.38
October	140	284.57	72	153.49	212	438.06
January 2010	112	230.92	138	243.53	250	474.45
April	70	161.25	142	267.13	212	428.38
July	201	335.84	118	242.66	319	578.50
October	140	277.77	72	184.44	212	462.21

Notes:* Buffer norms include Food Security Reserve of 30 lakh tonnes of wheat from 1 July 2008 and 20 lakh tonnes of rice from 1 January 2009 onwards.

Table 8.17 : Economic cost of Rice and Wheat

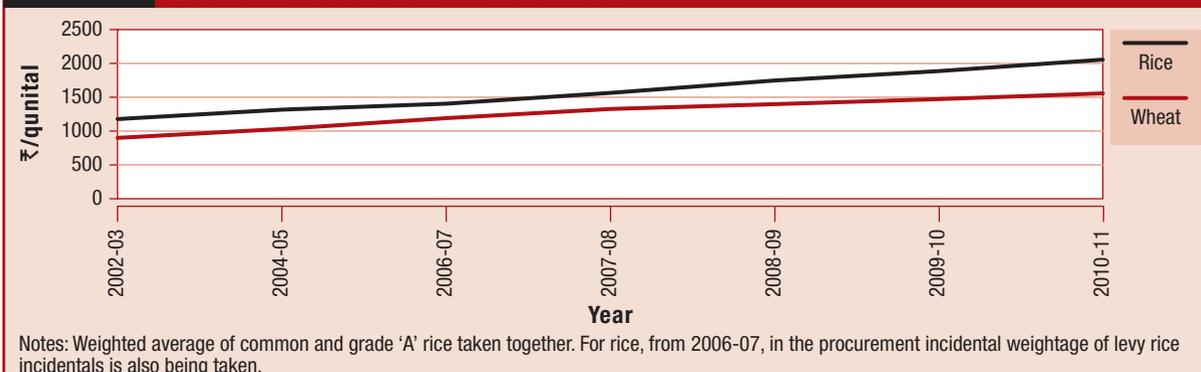
(₹/quintal)

Year	2002-03	2004-05	2006-07	2007-08	2008-09	2009-10 (RE)	2010-11 (BE)
Rice							
Procurement Incidentals*	61.67	58.48	193.66	214.91	252.58	295.03	316.81
Distribution Cost	157.72	256.51	289.58	297.82	263.81	208.40	254.51
Economic Cost**	1165.03	1303.59	1391.18	1549.86	1732.48	1873.58	2043.14
Wheat							
Procurement Incidentals	137.63	182.74	180.15	164.02	193.62	219.22	224.99
Distribution Cost	145.51	222.80	269.36	244.43	230.27	216.06	248.89
Economic Cost	884.00	1019.01	1177.78	1311.75	1384.42	1457.30	1543.93

Notes: * For rice, from 2006-07, weightage of levy rice incidentals is also being added in the procurement incidentals.

** Weighted average of common and grade 'A' rice taken together.

BE : budget estimates; RE : revised estimates.

Figure 8.16 Economic cost of rice and wheat

towards distributive justice, the Government incurs food subsidy. While the economic cost of wheat and rice has continuously gone up, the issue price has been kept unchanged since 1 July 2002. The Government, therefore, continues to provide large and growing amounts of subsidy on foodgrains for distribution under the TPDS, other nutrition-based welfare schemes, and open market operations. The food subsidy bill has increased substantially in the past few years (Table 8.18 and Figure 8.17).

TPDS Allocation and CIP

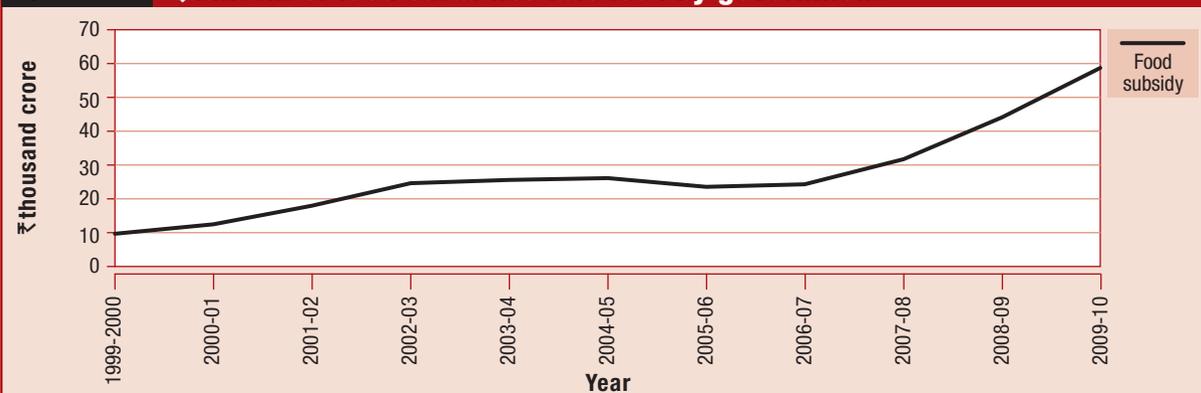
8.82 Allocations of foodgrains for the BPL and Antyodaya Anna Yojana (AAY) categories are made at 35 kg per family per month for all accepted 6.52 crore BPL (including 2.43 crore AAY) families in the country as per 1993-94 poverty estimates of the Planning Commission and March 2000 population estimates of the Registrar General of India (RGI). For the APL category, allocations to different States/UTs are made depending upon the availability of stocks of foodgrains in the Central pool and past offtake by the States. The allocation for the APL category has been increased from 10 kg to 15 kg per family per month from August 2010 for six

Table 8.18 : Quantum of food subsidies released by Government

Year	Food subsidy (₹ crore)	Annual growth (per cent)
1999-2000	9200.00	5.75
2000-01	12,010.00	30.54
2001-02	17,494.00	45.66
2002-03	24,176.45	38.20
2003-04	25,160.00	4.07
2004-05	25,746.45	2.33
2005-06	23,071.00	-10.39
2006-07	23,827.59	3.28
2007-08	31,259.68	31.19
2008-09	43,668.08	39.69
2009-10	58,242.45	33.37
2010-11*	51,196.97	-

Note: *Figures up to 22 December 2010.

months. Accordingly, these allocations range between 15 kg and 35 kg per family per month. Wheat and rice are issued by the Central

Figure 8.17 Quantum of food subsidies released by government

Government at uniform CIPs to States and Union Territories for distribution under the TPDS. Details of CIPs of wheat and rice since 2002-03 are given in Table 8.19.

8.83 The difference between wholesale prices of wheat and rice in the open market and the CIPs at which foodgrains are issued to cardholders has widened in the last five years due to non-revision of the latter, as a result of which offtake under the TPDS, particularly by APL families has gone up substantially. During the current year, the Government has released a quantity of 470.80 lakh tonnes under the TPDS covering AAY, BPL and APL families. In addition, 5.90 lakh tonnes of foodgrains was released to States as calamity relief, etc. Further, special ad hoc allocation of 30.66 lakh tonnes of foodgrains was made to States/UTs in May 2010 for all accepted numbers of BPL/AAY/APL families in the country. The issue price of this allocation was ₹ 8.45 per kg for wheat and ₹ 11.85 per kg for rice. A total quantity of 25.00 lakh tonnes has been allocated as special ad hoc/additional allocation for BPL families at BPL prices to all States/UTs in September 2010 for distribution over next six months. Further, during the current year, an allocation of 47.55 lakh tonnes of foodgrains has been made till November 2010 for other welfare schemes such as the Midday Meal Scheme, Integrated Child Development Services (ICDS), welfare Institutions, and the Emergency Feeding Programme.

Open Market Sale Scheme (Domestic) OMSS (D)

8.84 In addition to maintaining buffer stocks and providing foodgrain stocks to meet the requirement of the TPDS and other welfare schemes, the FCI on the behalf of the Government of India has been undertaking sale of wheat and rice at predetermined prices in the open market from time to time to enhance the supply so as to have a moderating influence on open market prices. The quantity of

Table 8.19 : CIPs

(₹/quintal)			
Year	Category	Wheat	Rice
2002-03	APL	610	830
(w.e.f 1.7.2002	BPL	415	565
till date)	AAY*	200	300

* CIPs for AAY households are effective since the inception of the scheme in December 2000.

Table 8.20 : Quantity of Wheat and Rice Disposed of under the OMSS (D)

Year	Qty (lakh MT)	
	Wheat	Rice
2009-10	16.28	4.94
2010-11* (as on 17.11.2010)	2.07	1.67

Note: *Lifting after March 2010 against allocation made in 2009-10.

wheat and rice disposed of under the Open Market Sale Scheme (domestic) (OMSS [D]) during the last two years is given in Table 8.20.

Sugar

8.85 Sugar production in India is cyclic in nature. The 2006-07 and 2007-08 sugar seasons (October-September) were years of high production whereas the 2008-09 and 2009-10 seasons were years of low production. The production of sugar in the 2008-09 and 2009-10 sugar seasons is estimated at about 146.7 lakh tonnes and 188 lakh tonnes compared to 282 lakh tonnes and 263 lakh tonnes in 2006-07 and 2007-08 respectively. The decline in sugar production in 2008-09 and 2009-10 put upward pressure on domestic sugar prices and the Central Government had to take a number of measures to augment domestic stocks of sugar and contain sugar prices during this period such as allowing import of duty-free sugar, imposing stock-holding and turnover limits on sugar, bringing khandsari sugar under the ambit of stockholding and turnover limits and suspension of futures trading in sugar. The sugar production in 2010-11 is expected to be better at about 245 lakh tonnes, as per estimates given by Cane Commissioners.

8.86 The concept of 'statutory minimum price' has been replaced by that of 'fair and remunerative price' (FRP) for sugarcane to provide reasonable margin to sugarcane farmers on account of 'risk' and 'profit' and is to be uniformly applicable to all States. The amendments to the Sugarcane (Control) Order 1966, have come into force from 22 October 2009. For the 2010-11 sugar season, the Central Government has fixed an FRP of ₹ 139.12 per quintal linked to a basic recovery rate of 9.5 per cent subject to a premium of ₹ 1.46 for every 0.1 percentage increase in recovery above that level.

Edible Oils

8.87 The production of oilseeds (kharif 2010-11) and net availability of edible oils from all domestic sources

(primary) are estimated at 172.74 lakh tonnes and 35.19 lakh tonnes respectively. In order to increase the availability and control price of edible oils, the Government has reduced custom duties on crude and refined edible oils to 'nil' and 7.5 per cent respectively since April 2008. It has been decided that this duty structure will continue till September 2011. Export of all major edible oils from the country has been banned since March 2008 up to September, 2011 (except coconut oil through Cochin Port and certain oils from minor forest produce and edible oils in branded consumer packs of up to 5 kg, with a ceiling of 10,000 tonnes per year). The Government launched a scheme for 'Distribution of Subsidized Edible Oils' in 2008-09 to provide relief to consumers from rising prices of edible oils. Under this Scheme, imported edible oil was distributed through State Governments/UTs at the rate of 1 litre per ration card per month. The Scheme continued in 2009-10 with a subsidy of ₹ 15 per kg on imported oil up to 10 lakh tonnes and has been extended till 31 March 2011.

COMMODITY FUTURES MARKET

8.88 The commodity futures market facilitates the price discovery process and provides a platform for price risk management in commodities. The market comprises 21 commodity futures exchanges, which include five national and 16 (commodity-specific) regional commodity exchanges. During 2010, one commodity exchange, namely the Ahmadabad Commodity Exchange (ACE), was upgraded to a national exchange and rechristened ACE Derivatives and Commodity Exchange Limited, Ahmadabad. Agricultural commodities, bullion, energy, and base metal products account for a large share of the commodities traded in the commodities futures market. Futures trading in zinc and lead, mini contracts were introduced for trading during 2010.

8.89 The total value of trade in the commodity futures market has risen substantially in 2010 (Table 8.21). The growth could be attributed to larger participation in the market, increase in global commodity prices, the advent of new commodity exchanges and the restoration of trade in some of the suspended agriculture commodities.

8.90 During the year 2010-11 (up to November 2010), in value terms bullion accounted for the maximum share of traded value among the commodity groups (45.22 per cent) followed by metals (23.80 per cent), energy (19.45 per cent)

Table 8.21 : Turnover on commodity futures markets

(₹ crore)

Name of the exchange	Calendar year		
	2008	2009	2010 (up to Nov. 2010)
Multi Commodity Exchange, Mumbai	42,84,653	59,56,656	78,95,404
National Commodity and Derivatives Exchange, Mumbai	6,28,074	8,05,720	9,73,217
National Multi Commodity Exchange, Ahmedabad	37,272	1,95,907	1,80,738
Others	83,885	1,32,173	4,45,366
Total	50,33,884	70,90,456	94,94,725

and agricultural commodities (11.53 per cent). However, in quantity terms trade in energy accounted for 56.77 per cent followed by agricultural commodities (31.67 per cent), metals (11.51 per cent), and bullion (0.05 per cent).

8.91 The Forward Markets Commission (FMC), the regulator for commodity futures trading under the provisions of the Forward Contracts (Regulation) Act 1952, continued its efforts to strengthen and broad base the market during 2010. The efforts were directed at enlarging the participation of physical market stakeholders, especially farmers, as hedgers in the commodity futures market by increasing the level of awareness of physical market participants and policymakers about the economic role of this market. The FMC also ensures the dissemination of spot and futures prices of agriculture commodities at Agricultural Produce Market Committees (APMCs) through the implementation of the Price Dissemination Project, in coordination with AGMARKNET and the national commodity exchanges. The project envisages placement of electronic price ticker boards at APMC markets displaying AGMARKNET spot prices and futures prices of agriculture commodities discovered on the National Exchanges, on a real-time basis. On the regulatory front, the FMC also took the following steps for the development of commodity futures market:

- The Commission amended the guidelines for grant of recognition to new commodity exchanges under the Forward Contracts

- (Regulation) Act 1952 by specifying the equity that can be held by a single stock exchange or commodity exchange and the cumulative equity shareholding of all stocks and commodity exchanges.
- ii. The equity structure of the nationwide multi-commodity exchanges was specified after five years of operation, in view of which, no individual or persons acting in concert can hold more than 15 per cent of the paid up equity capital of the exchange. The original promoter/investors can also not hold more than 26 per cent of the paid up equity capital of the exchanges. The amended clause also restricts the shareholding of stock exchange(s) and commodity exchange (s) in the National Commodity Exchange.
 - iii. To protect the interests of customers, guidelines on market access through authorized persons for all national commodity exchanges were amended whereby the system of sub-brokers was discontinued and the members of the national commodity exchanges were required to provide access to their clients only through authorized person(s) appointed as per the Commission's guidelines.
 - iv. Guidelines were issued specifying the conditions which are required to be fulfilled by the members of the commodity exchanges willing to set up wholly owned subsidiaries and joint ventures in the overseas markets.

DEVELOPMENT OF ELECTRONICS SPOT EXCHANGE

8.92 Four National Commodity Spot Exchanges with electronic trading platforms were set up, namely the National Spot Exchange Limited (NSEL), NCDEX Spot Exchange (NSPOT), Reliance Spot Exchange, and National APMC. Of these, the NSEL, NCDEX Spot Exchange, and Reliance Spot Exchange are in operation. At present, the spot exchanges offer trading in more than 30 commodities having delivery locations spread over 15 states. Spot exchanges electronically connect large numbers of buyers and sellers geographically located at distant places to converge on a single platform to overcome problems of time, distance, and information flow and also provide guarantee for each trade market linkage among farmers, processors, exporters and users with a view to reducing the cost of intermediation and enhancing price realization by farmers. They also

provide the most efficient spot price inputs to futures exchanges. On the agricultural side, the exchanges will enable farmers to trade seamlessly on the platform by providing real-time access to price information and a simplified delivery process, thereby ensuring the best possible price. On the buy side, all users of the commodities in the commodity value chain would have simultaneous access to the exchanges and be able to procure at the best possible price. Therefore the efficiency levels attained as a result of such seamless spot transactions would result in major benefits for both producers and consumers.

OUTLOOK AND CHALLENGES

8.93 The country has made great strides towards increasing foodgrains production since the mid-sixties. Today, India ranks high in the production of various commodities such as milk, wheat, rice, fruits, and vegetables. However, the agriculture sector in India is at a crossroads with rising demand for food items and relatively slower supply response in many commodities resulting in frequent spikes in food inflation. The technological breakthrough achieved in the 1960s is gradually waning. The need for a second green revolution is being experienced more than ever before.

8.94 Increasing agriculture production and productivity is a necessary condition not only for ensuring national food security, livelihood security, and nutritional security but also for sustaining the high levels of growth envisaged in the current Plan. However, with very little growth in area and marginal growth in yields of many crops during the last decade, increasing agricultural production remains a challenge. Concerted and focused efforts are required for addressing the challenge of stagnating productivity levels in agriculture. A holistic approach, simultaneously working on agricultural research, development, dissemination of technology, and provision of agricultural inputs such as quality seed, fertilizers, pesticides, and irrigation, would help achieve the critical levels of productivity needed. Further, effective coordination and monitoring of the ongoing agriculture and allied sector programmes needs to be ensured for optimum results.

8.95 Capital investment in agriculture as a percentage of the GDP has been stagnating in recent years, although the capital expenditure in agriculture as a percentage of the GDP in agriculture has shown

some improvement in the current Five Year Plan. It may, however, also be noted that the agriculture sector GDP has itself been stagnating during the last three years from 2007-08 to 2009-10. The real challenge in agriculture sector is to enhance capital investment in the sector both by public and private sector in a sustained way.

8.96 Sixty per cent of our net sown area is still rainfed. Various studies indicate that the potential of rainfed areas has not been fully utilized. A targeted development of rainfed areas should be prioritized.

8.97 Enhancing the returns farmers get on their production is essential for incentivizing the farmers to produce more. Farmers need to realize the market price for their produce. Setting up of efficient supply chains is not only essential for ensuring adequate supplies of essential items at reasonable prices but also to ensure that producers get adequately compensated. Linking farmers to the market is, therefore, very important. The successful experience of cooperatives in the milk sector in managing the supply chain and providing remunerative prices to the producers may be emulated in the case of agricultural products.

8.98 The level of secondary food processing in India is very low compared to many western countries. With increasing income and population, demand for processed food is likely to increase. It is necessary to cater to this changing demand and at the same time enhance the income of farmers. So far the focus in food management has been on cereals, mainly rice and wheat. However, the demand for processed food is expected to increase. Investment in food processing, cold chains, handling, and packaging of processed food needs encouragement.

8.99 Declining per capita availability of foodgrains has been a matter of major concern. For ensuring nutritional security, it is not only important to increase the per capita availability of foodgrains but also to ensure that right quantities of food items are there in the food basket of a common man. A thrust on horticulture products is required for enhancing per capita availability of food items as well as ensuring nutritional security.

8.100 Addressing infrastructure requirements in the agriculture sector, especially storage, communication, roads, and markets should be a priority. Public Private Partnership models can be of help in ensuring faster development of these

requirements which are of vital importance for the growth of agriculture sector.

8.101 A higher growth rate of the economy and rising levels of income are putting pressure on products from the livestock sector. Many items such as meat, milk, and poultry are experiencing upward pressure in their prices adding to the wholesale food price inflation. A long-term strategy to increase the production of these items is the need of the hour. These steps would also help enhance rural income and supplement the livelihood options of the rural populace.

8.102 There has been substantial increase in the MSPs of various crops over the last few years. This is considered necessary for incentivizing farmers to increase production and productivity. At the same time, the MSP signals the floor price for the produce which, in turn, has the potential of increasing the prices. Addressing the welfare of the agricultural producers and of the consumers simultaneously poses a challenge. Further, inability of a large number of small and marginal farmers to directly access the agri-market puts a question mark on increases in MSP actually benefiting such farmers. Record procurement of rice and wheat in the last few years has helped build up the buffer stock and strategic reserve of wheat and rice. There is, however, a huge cost involved in the process, which is met through budgetary sources in the form of food subsidy. The procurement operations linked with MSPs cause fiscal stress by way of increasing food subsidies. The issue of efficient food stocks management and offloading of stocks in time needs urgent attention.

8.103 One of the most pressing of emerging challenges is that of conservation. Enactment of laws for ecological foundations for climate resilient agriculture, management of agricultural waste, building carbon sequestration of soil and overall natural resource management is urgently needed.

8.104 To conclude, raising farm productivity with adequate focus on rainfed areas, diversification of Indian agriculture from just crop farming to livestock, fisheries and poultry and horticulture while simultaneously addressing environmental concerns should be the focus for the agriculture sector. Higher levels of investments are required for not only increasing farm productivity but also creating adequate infrastructure for transport, storage and distribution of agricultural produce.