AGRICULTURAL PRODUCTION & FOOD AVAILABILITY

7.2 The growth in the agriculture sector, though lower than in the non-agriculture, nonetheless remained higher than the growth of population. Between 1950-51 and 2006-07, production of foodgrains increased at an average annual rate of 2.5 per cent compared to the growth of population which averaged 2.1 per cent during this period. As a result, India almost became self-sufficient in foodgrains and there were hardly any imports during 1976-77 to 2005-06, except occasionally. The rate of growth of foodgrains production, however, decelerated to 1.2 per cent during 1990-2007, lower than annual rate of growth of population, averaging 1.9 per cent. The per capita availability of cereals and pulses, therefore, witnessed a decline during this period. The consumption of cereals declined from a peak of 468 grams per capita per day in 1990-91 to 412 grams per capita per day in 2005-06, indicating a decline of 13 per cent during this period. The consumption of pulses declined from 42 grams per capita per day (72 grams in 1956-57) to 33 grams per capita per day during the same period.

Agriculture production in 2006-07 and 2007-08

7.3 The overall production of foodgrains was estimated at 217.3 million tonnes in 2006-07, an increase of 4.2 per cent over 2005-06. Compared to the target set for 2006-07, it was, however, lower by 2.7 million tonnes (1.2 per cent). The increase in production in 2006-07 was largely because of higher production of wheat by 6.5 million tonnes (9.3 per cent) and of pulses by 0.8 million tonnes (6 per cent). There was a decline in production of oilseeds (3.7 million tonnes or 13 per cent) compared to the production in 2005-06.

7.4 The production of non-food crops, particularly sugarcane, cotton and jute (including mesta), however, exceeded both the targets and the levels achieved in the previous year. In the current year, as per the second advance estimates of crops' production, a shortfall is expected in rabi crops. The overall foodgrains production in 2007-08 is expected to fall short of the target by 2.2 million tonnes, though it is expected to be 10.1 million tonnes higher compared to the second estimates for 2006-07. Production of sugarcane is estimated to exceed the target, though it will be lower than the previous year. A shortfall of 2.8

Table 7.2 Agriculture production (million tonnes)

Crop	2003-04	2004-05	2005-06	2006-07			2007-08	
	Final estimates			Target	Second estimates	Final estimates	Target	Second estimates
Rice	**88.5**	**83.1**	**91.8**	**92.8**	**90.1**	**93.4**	**93.0**	**94.1**
Kharif	78.6	72.2	78.3	80. 8	77.4	80.2	80.0	81.5
Rabi	9.9	10.9	13.5	12.0	12.7	13.2	13.0	12.6
Wheat	**72.2**	**68.6**	**69.4**	**75.5**	**72.5**	**75.8**	**75.5**	**74.8**
Coarse Cereals	**37.6**	**33.5**	**34.1**	**36.5**	**32.0**	**33.9**	**37.5**	**36.1**
Kharif	32.2	26.4	26.7	28.7	24.5	25.6	28.7	28.6
Rabi	5.4	7.1	7.3	7.8	7.5	8.3	8.8	7.5
Pulses	**14.9**	**13.1**	**13.4**	**15.2**	**14.5**	**14.2**	**15.5**	**14.3**
Kharif	6.2	4.7	4.9	5.8	5.2	4.8	5.5	5.8
Rabi	8.7	8.4	8.5	9.4	9.3	9.4	10.0	8.6
Total Foodgrains	**213.2**	**198.4**	**208.6**	**220.0**	**209.2**	**217.3**	**221.5**	**219.3**
Kharif	117.0	103.3	109.9	115.3	107.2	110.6	114.2	115.9
Rabi	96.2	95.1	98.7	104.8	102.0	106.7	107.3	103.4
Total Oilseeds	**25.2**	**24.4**	**28.0**	**29.4**	**23.6**	**24.3**	**30.0**	**27.2**
Kharif	16.7	14.1	16.8	18.1	13.7	14.0	18.5	17.6
Rabi	8.5	10.2	11.2	11.3	9.9	10.3	11.5	9.6
Sugarcane	233.9	237.1	281.2	270.0	315.5	355.5	310.0	340.3
Cotton[a]	13.7	16.4	18.5	18.5	21.0	22.6	22.0	23.4
Jute and Mesta[b]	11.2	10.3	10.8	11.3	11.4	11.3	11.0	11.3

Source: Ministry of Agriculture, Goverment of India.

[a] Million bales of 170 kg each.
[b] Million bales of 180 kg each.

million tonnes (10 per cent) is expected in the production of oilseeds compared to the target, though it is still expected to be higher by 2.9 million tonnes compared to the final estimates of 2006-07 (Table 7.2).

7.5 Over a medium term, there has generally been a shortfall in the achievement of target of foodgrains, pulses and oilseeds during 2000-01 to 2006-07. The actual production of foodgrains on an average was 93 per cent of the target. Actual production, however, was only 87.7 per cent of target for pulses and 85.3 per cent of target for oilseeds. Production of sugarcane and cotton, however, overachieved their respective targets in 2005-06 and 2006-07 (Table 7.5).

Rainfall and reservoir levels

7.6 The rainfall and availability of water for irrigation influence the crop productivity. For the country as a whole, the weighted seasonal rainfall during the south-west monsoon (June-September) 2007 was 5 per cent higher than the long period average (LPA). Southern peninsula experienced the maximum rainfall (26 per cent more) followed by Central India (8 per cent) and North-East India (4 per cent). The North-West India was deficient in rainfall by 15 per cent. Out of 533 meteorological districts, 32 per cent received excess rainfall, 40 per cent normal, 24 per cent deficient and the remaining 4 per cent scanty rainfall. The rainfall was not uniformly distributed over time and there were significant variations relative to LPA (Table 7.3). The cumulative post-monsoon rainfall from October 1 to December 31, 2007, was excess to normal in 9 meteorological subdivisions and deficient/scanty in the remaining 27 meteorological subdivisions in the country.

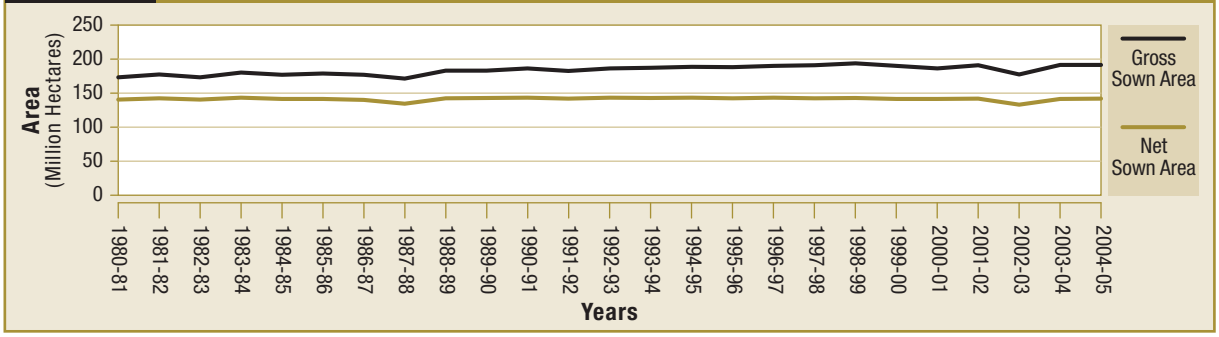
Table 7.3 Monsoon performance - 2000 to 2007 (June-September)

Year	Number of meteorological subdivisions			Percentage of districts with normal/excess rainfall	Percentage of rainfall relative to LPA
	Normal	Excess	Deficient/ Scanty		
2000	23	5	8	66	91
2001	30	1	5	68	91
2002	14	1	21	39	81
2003	26	7	3	75	102
2004	23	0	13	56	87
2005	23	9	4	72	99
2006	20	6	10	60	99
2007	17	13	6	72	105

Table 7.4 Reservoir storage

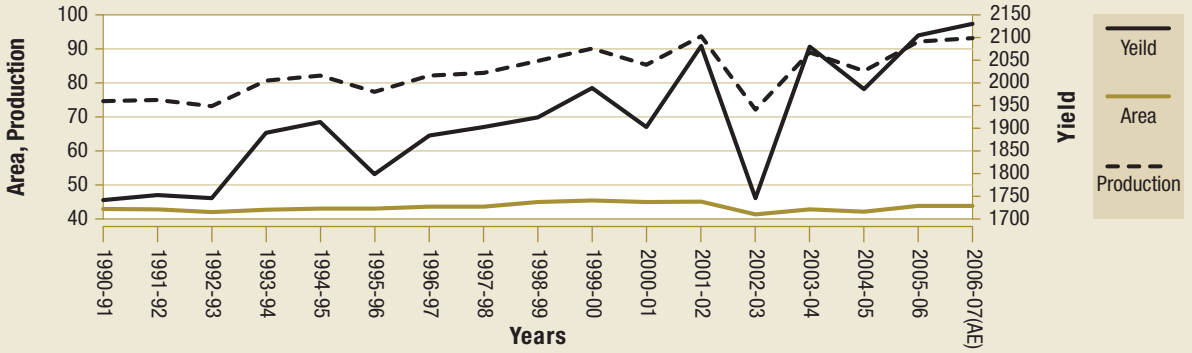
	2006		2007		Average of last 10 years	
	Storage BCM	Percentage FRL	Storage BCM	Percentage FRL	Storage BCM	Percentage FRL
Beginning of monsoon (June 1)	31.2	20.5	31.1	20.5	20.5	13.5
End of monsoon (September 30)	133.4	87.9	124.2	81.8	99.9	65.8
Increase in storage	102.2	67.3	93.0	61.3	79.5	52.4

Figure 7.1 Selected categories of land use



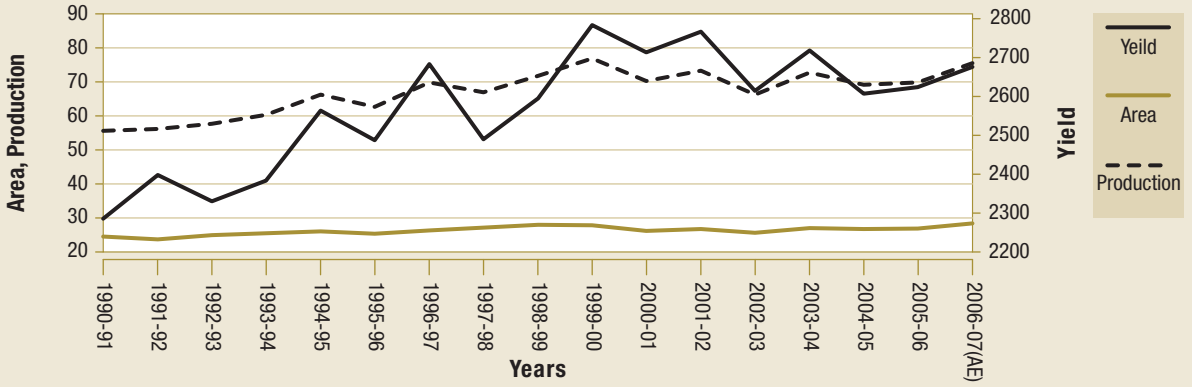
website:http://indiabudget.nic.in

Figure 7.2 All-India area, production and yield of rice



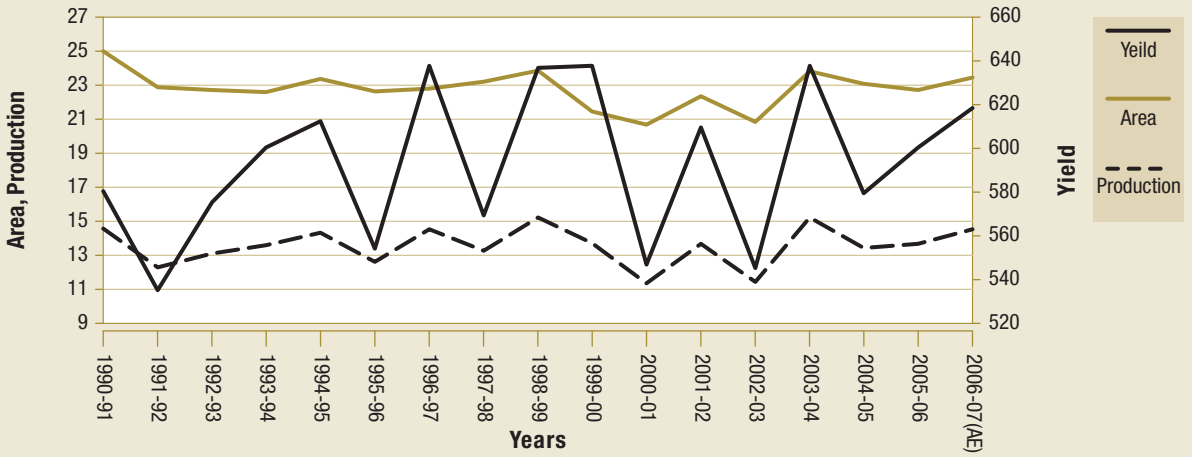
Area: Million Hectares; Production: Million Tonnes; Yield: Kg./Hectare

Figure 7.3 All-India area, production and yield of wheat



Area: Million Hectares; Production: Million Tonnes; Yield: Kg./Hectare

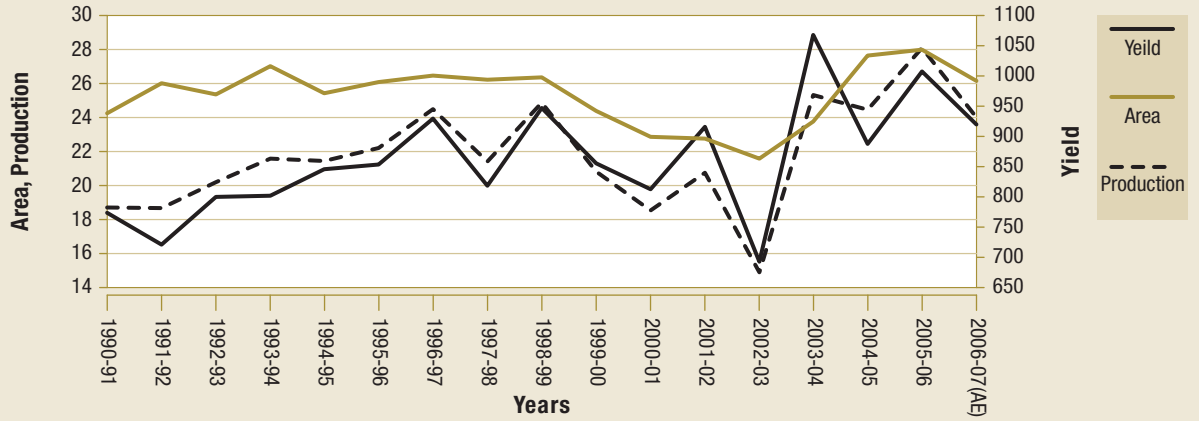
Figure 7.4 All-India area, production and yield of pulses



Area: Million Hectares; Production: Million Tonnes; Yield: Kg./Hectare

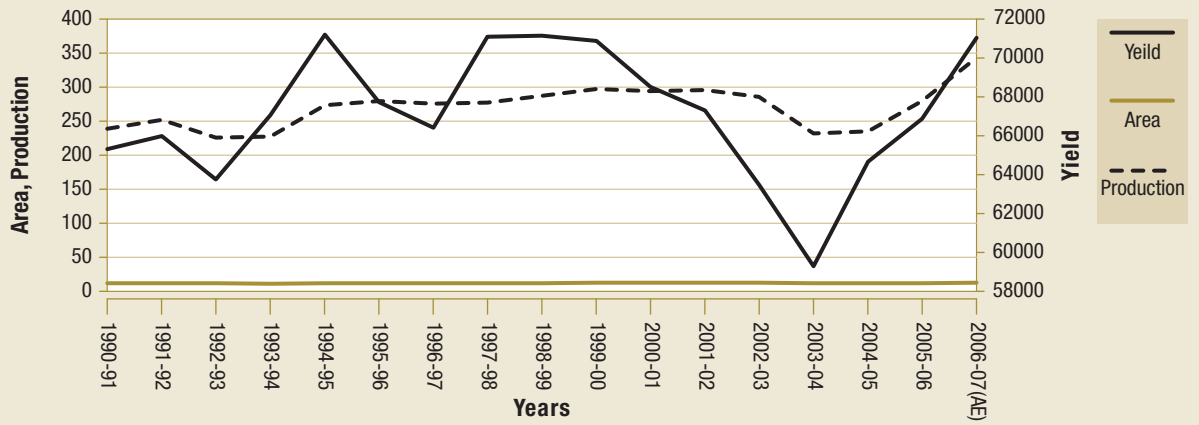
7.7 The Central Water Commission (CWC) monitors storage of 81 important reservoirs having their live storage capacity at full reservoir level (FRL) of 151.8 billion cubic metres (BCM). At the end of monsoon 2007, the total water availability in these reservoirs was 124.2 BCM which was about 7 per cent less than the storage of 133.4 BCM at the end of monsoon 2006, but higher than the average of the last 10 years by 24 BCM (Table 7.4). The storage is considered quite favourable from the viewpoint of hydroelectricity generation as well as *rabi* crops.

Figure 7.5 All-India area, production and yield of oilseeds



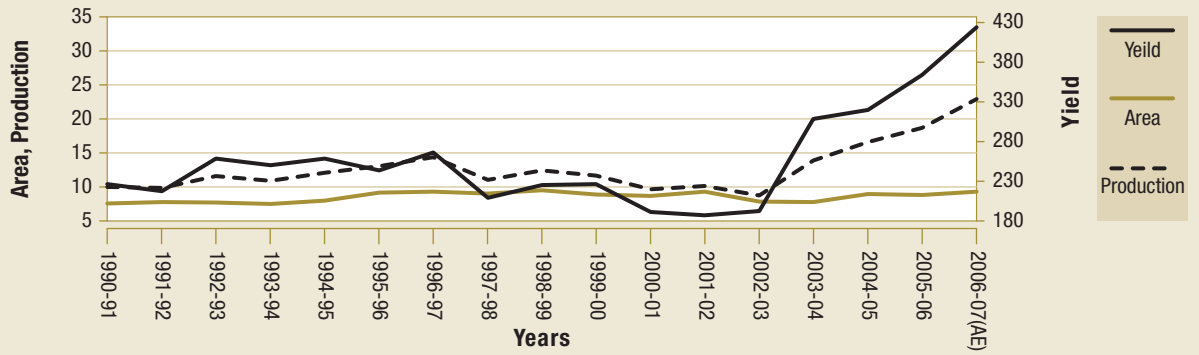
Area: Million Hectares; Production: Million Tonnes; Yield: Kg./Hectare

Figure 7.6 All-India area, production and yield of sugarcane



Area: Million Hectares; Production: Million Tonnes; Yield: Kg./Hectare

Figure 7.7 All-India area, production and yield of cotton



Area: Million Hectares; Production: Million Bales of 170 kgs. each; Yield: Kg./Hectare

Raising agriculture production — approach

7.8 The production of agriculture crops, besides the weather induced fluctuations, significantly depends on the availability of inputs like fertilizers, irrigation, certified seeds, credit support and appropriate price signals. Minimum support prices indicated upfront and before the sowing seasons act as effective incentives for acreage response of the agricultural crops. Deviations in foodgrains and agricultural output from their long-term trends are determined, among other factors, by variations in monsoon around its long-term trend and the area under irrigation. Since increase in net sown area has flattened out (Figure

Table 7.5 Actual production relative to targets (per cent)

Crop	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	Average (2001-07)
Rice	101.5	77.2	95.2	88.9	104.5	100.6	94.7
Wheat	93.3	84.3	92.5	86.3	91.8	100.4	91.4
Coarse cereals	101.1	79.0	110.6	90.9	93.3	92.9	94.6
Pulses	89.1	69.6	99.4	85.8	88.4	93.7	87.7
Foodgrains	97.6	79.4	96.9	88.1	97.0	98.8	93.0
Oilseeds	37.8	55.0	102.0	93.0	105.2	82.6	85.3
Sugarcane	91.4	89.8	73.1	87.8	118.4	131.7	98.7
Cotton	68.9	57.5	91.5	109.5	112.1	122.3	93.7
Jute & mesta	106.2	94.0	93.1	87.1	96.1	99.9	96.1

Table 7.6 Trend growth rate in area, input use, credit and capital stock in agriculture during 1980-81 to 2003-04 (per cent/year)

Period	1980-81 to 1990-91	1990-91 to 1996-97	1996-97 to 2005-06
Technology[a]	3.3	2.8	0.0
Public sector net fixed capital stock	3.9	1.9	1.4[b]
Gross irrigated area	2.3	2.6	0.5[b]
Electricity consumed in agriculture	14.1	9.4	-0.5[c]
Area under fruits and vegetables	5.6	5.6	2.7[c]
Private sector net fixed capital stock	0.6	2.2	1.2[b]
Terms of trade	0.2	1.0	-1.7[b]
Total net fixed capital stock	2.0	2.1	1.3[b]
NPK use	8.2	2.5	2.3
Credit supply	3.7	7.5	14.4[b]
Total cropped area	0.4	0.4	-0.1
Net sown area	-0.1	0.0	-0.2
Cropping intensity	0.5	0.4	0.1

[a] **Yield potential of new varieties of paddy, rapeseed/mustard, groundnut, wheat, maize**

[b] **Up to 2003-04.** [c] **Up to 2004-05**

Box 7.1 Methodology of estimating area and production of agricultural crops

The period of an agricultural crop year is from July to June, during which various farm operations from preparation of seedbed, nursery, sowing, transplanting various inter-culture operations, harvesting, threshing, etc., are carried out. Final estimates of production based on complete enumeration of area and yield through crop cutting experiments become available much after the crops are actually harvested. However, considering the genuine requirement of crop estimates much before the crops are harvested for various policy purposes, a time schedule of releasing the advance estimates has been drawn.

(i) **First advance estimates** of area and production covering only the *kharif* crops is prepared in September every year, when the south-west monsoon season is about to be over and *kharif* crops are at an advanced stage of maturity. This is based on assessment made by the State Governments and the reports from the field offices. These are validated on the basis of inputs from the Crop Weather Watch Group (CWWG), and other feedback, such as availability of water in major reservoirs, availability/supply of inputs including credit to farmers, rainfall, temperature, irrigation, etc.

(ii) **Second advance estimates** is made in the month of January every year. These estimates cover the second assessment in respect of *kharif* crops and the first assessment in respect of *rabi* crops.

(iii) **Third advance estimates** are prepared towards the end of March/beginning of April every year. In these estimates, the earlier advance estimates of both *kharif* and *rabi* seasons are firmed up/validated based on the information available with the State Agricultural Statistical Authorities (SASAs) of area coverage and crop cutting experiments, remote sensing data as well as the proceedings of CWWG.

(iv) **Fourth advance estimates** are prepared in the month of June/July every year. By this time, most of the *rabi* crops get harvested and SASAs are in a position to supply the estimates of both *kharif* and *rabi* seasons. Like the third advance estimates, the fourth advance estimates are duly validated with the information available from other sources.

(v) **Final estimates** are made in December/January of the following agricultural year and are based on crop-cutting experiments and actual area coverage.

7.1), further increase in agriculture production needs to come through an increase in gross cropped area (multiple cropping), coverage of area under irrigation and improvement in the productivity levels (Figures 7.2 to 7.7). The Planning Commission has made an assessment of trend growth of various parameters that contribute to agricultural growth. Except for an increase in the rate of growth of credit supply to farmers, there has been a deceleration in the growth of all the other variables/factors (Table 7.6).

7.9 There has been a considerable decline in the rate of growth of area, production, productivity and area irrigated for the major crops (Table 7.7).

7.10 The area under the production of foodgrains over a 16-year period witnessed an average annual decline of 0.26 per cent during 1989-90 to 2005-06, largely because of a shift in area away from coarse grains. The trend, however, was moderately reversed during 2002-06, partly because of a low base. Cotton and oilseeds also witnessed an increase in area during the period. Average annual rate of growth in production and yield varied across crops and over different time periods. For cotton and oilseeds, the rate of growth in production remained high during 2002-06 (Tenth Five Year Plan period), while in case of wheat and sugarcane, annual growth in production peaked during the Eighth Five Year Plan period. Rice maintained a positive growth in yield during this period, but in case of wheat, average annual growth in yield during 2002-06 was negative. Growth of productivity in pulses fluctuated over the three Plan periods. It became negative during 1997-2002 (Ninth Five Year Plan period), but turned positive again during the Tenth Five Year Plan. Increase in production and productivity of cotton during the Tenth Five Year Plan may be due to increased use of BT cotton (Table 7.7).

7.11 Productivity of crops in India is not only low relative to other countries, there are considerable inter-state variations. The productivity of wheat in 2005-06 varied from a low of 1,393 kg per ha in Maharashtra to a high of 4,179 kg in Punjab. The Steering Committee on Agriculture for the Eleventh Five Year Plan has observed that not only the yields differed across the States, there was a significant gap between the performance and potential as revealed by actual yield and yield with improved practices adopted by farmers (Table 7.8).

Table 7.7 Rate of growth of area, production, yield and area under irrigation for major crops

	Rice	Wheat	Pulses	Foodgrains	Cotton	Oilseeds	Sugarcane
Growth in the area under crops (per cent)							
1989-90 to 2006-07	0.14	0.73	-0.35	-0.26	0.86	-0.02	1.15
1992-93 to 1996-97	0.46	1.51	-0.33	0.17	4.04	0.56	2.60
1997-98 to 2001-02	0.34	-0.15	-1.82	-0.57	-1.26	-3.38	1.77
2002-03 to 2005-06	-0.29	1.09	2.06	0.55	1.26	5.62	-1.67
Growth in the production (per cent)							
1989-90 to 2006-07	1.17	1.90	-0.03	1.18	2.04	1.25	1.13
1992-93 to 1996-97	1.73	3.60	0.66	1.88	4.88	3.57	3.74
1997-98 to 2001-02	1.13	1.26	-2.52	0.67	-5.79	-4.68	1.23
2002-03 to 2005-06	1.75	0.42	3.27	1.61	20.22	9.81	-1.23
Growth in yield (per cent)							
1989-90 to 2006-07	1.02	1.16	0.32	1.43	1.17	1.24	-0.04
1992-93 to 1996-97	1.27	2.06	1.01	2.05	0.77	2.96	1.14
1997-98 to 2001-02	0.75	1.41	-0.76	1.23	-4.56	-1.38	-0.53
2002-03 to 2005-06	2.10	-0.66	1.25	1.09	18.48	4.11	0.36
Growth in area under irrigation (per cent)							
1989-90 to 2006-07	1.33	1.42	1.85	1.25	0.88	-0.28	1.94
1992-93 to 1996-97	1.97	2.18	3.57	1.74	5.24	2.00	2.73
1997-98 to 2001-02	1.26	0.34	0.78	0.91	-2.46	-4.80	2.38
2002-03 to 2004-05	-1.86	1.03	5.11	-0.06	-4.34	7.35	-4.70

Note: All growth rate are based on moving averages of three years.
Source : Agricultural Statistics of India, 2007

Table 7.8 State-wise performance and potential yield of selected crops

State	Improved practice(I)	Farmer practice(F)	Actual yield 2003-04(A)	Gap (per cent)	
	In kg/ha			I and F	I and A
Wheat (Yield : Kg/ha - 2002-03 to 2004-05)					
Bihar	3651	2905	1783	25.7	104.8
Madhya Pradesh	3297	2472	1789	33.4	84.3
Uttar Pradesh	4206	3324	2794	26.5	50.5
Rice (irrigated) (Yield : Kg/ha - 2003-04 to 2004-05)					
Uttar Pradesh	7050	5200	2187	35.6	222.4
Bihar	4883	4158	1516	17.4	222.1
Chhattisgarh	3919	3137	1455	24.9	169.4
Sugarcane					
Maharashtra	127440	99520	51297	28.1	148.4
Karnataka	147390	128000	66667	15.1	121.2
Bihar	74420	49440	40990	50.5	81.6

Support prices

7.12 The Commission for Agricultural Costs & Prices (CACP) recommends the Minimum Support Prices (MSPs) for 24 important crops. The Commission, apart from other factors, considers the cost of production which includes the cost of paid-out inputs, imputed value of family labour and rentals for the own land while recommending MSP. The MSPs are normally announced upfront before the commencement of sowing operations of the particular crop and have usually been remunerative and significantly higher than the cost. The MSP, by definition, becomes the floor price and farmers are assured of getting that price. In most of the crops, the MSP inclusive of bonus has been above the cost of production. MSPs were revised substantially in 2007-08. Increase in the MSPs for paddy (common), wheat, moong, urad, arhar, jute in 2007-08, over the MSP for 2004-05, was 33 per cent, 56.3 per cent, 23.4 per cent, 23.4 per cent, 14.4 per cent and 18.5 per cent, respectively. The purchase price offered to farmers, particularly in the efficiently producing States, usually is significantly higher than the cost of production.

Irrigation

7.13 The Government has also been creating irrigation potential through public funding and assisting farmers to create potential on their own farms. Substantial irrigation potential has been

Table 7.9 Irrigation potential created and utilized (million ha)

	1991-92	1992-97	1997-2002	2002-07	Annual rate of growth (%)		
		Eighth Plan	Ninth Plan	Tenth Plan	Eighth Plan	Ninth Plan	Tenth Plan
Cumulative potential created (million ha)							
Major and medium	30.7	33.0	37.1	42.4	1.4	2.4	2.7
Minor	50.4	53.3	56.9	60.4	1.1	1.3	1.2
Total	**81.1**	**86.3**	**94.0**	**102.8**	**1.2**	**1.7**	**1.8**
Cumulative potential utilized (million ha)							
Major and medium	26.3	28.4	31.0	34.4	1.6	1.7	2.1
Minor	46.5	48.8	50.0	52.8	0.9	0.5	1.1
Total	**72.9**	**77.2**	**81.0**	**87.2**	**1.2**	**1.0**	**1.5**
Per cent utilization							
Major and medium	85.6	86.3	83.7	81.3			
Minor	92.4	91.5	87.9	87.4			
Total	**89.8**	**89.5**	**86.2**	**84.9**			

created through major, medium and minor irrigation schemes. The total irrigation potential in the country has increased from 81.1 million ha in 1991-92 to 102.8 million ha in 2006-07. The potential created so far is estimated to be 73.5 per cent of the ultimate irrigation potential (Table 7.9). Of the total potential created, however, only 87.2 million ha (84.9 per cent) is actually utilized.

7.14 The pace of creation of additional irrigation potential came down sharply from an average of about 3 per cent per annum during 1950-51—1989-90 to 1.2 per cent, 1.7 per cent and 1.8 per cent per annum, respectively, during the Eighth, Ninth and Tenth Five Year Plan periods. The rate of growth of utilization of the potential created declined to 1 per cent per annum during the Ninth Five Year Plan period and improved to 1.5 per cent per annum during the Tenth Five Year Plan period. The average annual rate of utilization remained lower than the average annual addition to the irrigation potential resulting in the cumulative utilization witnessing a continuous erosion. This not only amounts to an inefficient use of funds, but also a forgone income from irrigated lands.

7.15 Responding to the continuous decline in the rate of creation in irrigation potential, the Central Government initiated the Accelerated Irrigation Benefit Programme (AIBP) from 1996-97 for extending assistance in completion of irrigation schemes which had remained incomplete (Table 7.10). Under this programme, the projects approved by the Planning Commission were eligible for assistance. Further, the assistance, which was entirely a loan from the Centre in the beginning, was modified with inclusion of a grant component from 2004-05. The AIBP guidelines were further modified in December 2006 to provide for 90 per cent of the project cost as grant to special category States, DPAP/Tribal areas and KBK (Koraput, Bolangir and Kalahandi) districts of Orissa.

Table 7.10 Performance of AIBP Projects (Rs. crore; area thousand ha)

Year	Central loan assistance / grant released	Total potential created under AIBP	Total potential created
1996-97	500.0	74.5	560.0
1997-98	952.2	182.0	645.2
1998-99	1119.2	259.0	592.2
1999-2000	1450.5	223.2	666.0
2000-01	1856.2	528.8	983.5
2001-02	2602.0	442.8	1214.6
2002-03	3061.7	456.0	812.0
2003-04	3128.5	447.0	1004.0
2004-05	2867.3	496.0	1000.0[a]
2005-06	1900.3	600.0	1500.0[a]
2006-07[a]	2302.0	932.0	
Total	**21739.9**	**4641.3**	

[a]Estimated

7.16 Under AIBP, the State Governments were provided Rs. 24,867.4 crore as CLA/grant for 229 major/medium Irrigation projects and 6,205 Surface Minor Irrigation (MI) Schemes up to January 29, 2008. So far 91 major/medium and 4,605 surface MI Schemes have been completed. In the current year, as on January 29, 2008, Rs. 3,127.5 crore has been released for AIBP.

7.17 To cover a larger area under irrigation, the Government sanctioned a National Project for Repair, Renovation and Restoration of Water Bodies directly linked to agriculture, in January 2005 with an estimated cost of Rs. 300 crore to be shared by the Centre and States in 3:1 ratio. The water bodies having cultivated command area of more than one ha and up to 2,000 ha were included under the pilot scheme in one or two districts in each State. The scheme was approved for 26 districts in 15 States. Central share of Rs. 179.3 crore has been released to the States till November 30, 2007, covering 1,098 water bodies. The physical work for restoration has been completed for 733 water bodies and the work is in progress in the remaining 365 water bodies.

7.18 Following the pilot scheme, restoration of water bodies has also been taken up in States having considerable number of water bodies with the World Bank assistance. The World Bank Loan Agreement has been signed with Tamil Nadu for Rs. 2,182 crore to restore 5,763 water bodies having a cultivated command area (CCA) of 4 lakh ha. The Rs. 835 crore Andhra Pradesh Community-Based Tank Management Project was signed with the World Bank in June 2007 for restoration of 3,000 water bodies with a CCA of 2.5 lakh ha. The project of Karnataka was signed for Rs. 259 crore with the World Bank in November 2007 for restoration of 1,225 water bodies involving a CCA of 0.52 lakh ha. The proposals from Orissa and West Bengal Governments have also been submitted to the World Bank.

Table 7.11 Gross capital formation in agriculture (at 1999-2000 prices)

(Rs. crore)

	GCF total	GCF in agriculture	Share of agriculture in total GCF (%)	GDP agricultrue	GCF/GDP in agriculture (%)
1999-2000	506244	43473	8.6	409660	10.6
2000-01	488658	39027	8.0	407176	9.6
2001-02	474448	48215	10.2	433475	11.1
2002-03	555287	46823	8.4	398206	11.8
2003-04	665625	44833	6.7	441360	10.2
2004-05	795642	49108	6.2	441183	11.1
2005-06	950102	54905	5.8	468013	11.7
2006-07	1053323	60762	5.8	485937	12.5

7.19 Irrigation is one of the six components for the development of rural infrastructure under the Bharat Nirman and aims at creating the irrigation potential of 10 million ha by 2008-09. The target under Bharat Nirman is to be met largely through the completion of ongoing major and medium irrigation projects/schemes. During 2005-06 and 2006-07, 1.68 million ha and 1.94 million ha of irrigation potential, respectively, is reported to have been created.

Capital formation in agriculture

7.20 Productivity increase in agriculture is also considerably dependent on capital formation both from the public and private sectors. Gross capital formation (GCF) in agriculture as a proportion to the total capital formation has shown a continuous decline. GCF in agriculture relative to GDP in this sector has, however, shown an improvement from 9.6 per cent in 2000-01 to 12.5 per cent in 2006-07. This, however, needs to be raised to 16 per cent during the Eleventh Five Year Plan to achieve the target growth of 4 per cent in this sector (Table 7.11).

Credit support to agriculture

7.21 The "Farm Credit Package" announced in June 2004 stipulated, among other things, doubling the flow of institutional credit for agriculture in the ensuing three years. The credit flow to the farm sector got doubled during two years as against the stipulated time period of three years. The details regarding the progress of agency-wise credit flow to agriculture and allied sectors is given in (Table 7.12).

Kisan Credit Card

7.22 To provide adequate and timely support from the banking system to the farmers for their cultivation needs including purchase of all inputs in a flexible and cost-effective manner, a Kisan Credit Card (KCC) Scheme was introduced in August 1988 for short- and medium-term loans. NABARD had advised banks to extend coverage through expanding their outreach by lending to more farmers including non-wilful defaulters, oral lessees, tenant farmers, sharecroppers, who may have been outside the fold of the scheme, as also new farmers. About 705.55 lakh KCCs have been issued up to November 2007. Further, from January 31, 2006, the scheme has been extended to all types of loan requirements of borrowers of State Cooperative Agriculture Rural Development Banks (SCARDBs). It covers short-term/medium-term

Table 7.12 Institutional credit flow to agriculture sector (Rs. crore)

Agency	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08[a]
Cooperatives	23716	26959	31424	39404	42480	33070
RRBs	6070	7581	12404	15223	20435	15925
Commercial Banks	39774	52441	81481	125859	140382	88765
Total	**69560**	**86981**	**125309**	**180486**	**203297**	**137760**

[a]Up to November 2007.

credit and long-term credit and a reasonable component of consumption credit within the overall limit sanctioned to the borrowers.

Rate of interest on agricultural loan

7.23 From *kharif* 2006-07, it was decided that the farmers would receive crop loans up to a principal amount of Rs. 3 lakh at 7 per cent rate of interest and the Government of India would provide necessary interest subvention to NABARD and banks for this purpose. This policy has been continued in 2007-08 also. For this purpose the Government has made a provision of Rs. 1,677 crore in the Union Budget 2007-08.

Revamping of cooperative credit structure

7.24 In January 2006, the Government announced a package for revival of Short-term Rural Cooperative Credit Structure involving financial assistance of Rs. 13,596 crore. NABARD has been designated as the implementing agency for the purpose. A Department for Cooperative Revival and Reforms has been set up in NABARD for facilitating the implementation process. States are required to sign a Memorandum of Understanding (MoU) with NABARD committing to implement the legal, institutional and other reforms as envisaged in the revival package. So far, 21 States and 3 UTs have agreed to implement the package; out of which 17 States (Andhra Pradesh, Arunachal Pradesh, Bihar, Chhattisgarh, Gujrat, Haryana, Madhya Pradesh, Maharashtra, Rajasthan, Orissa, Uttarakhand, Uttar Pradesh, Tripura, Nagaland, Tamil Nadu, Punjab and West Bengal) have signed the MoU with the Government of India and NABARD. A total amount of Rs. 1,073 crore has been released by NABARD as Government of India's share under the package to Andhra Pradesh, Madhya Pradesh and Haryana. The Task Force has also submitted its report for revival of Long Term Cooperative Credit Structure. The report has been forwarded to the State Governments for their comments. A financial package for revival of long-term cooperative credit structure would be developed based on their comments.

Agriculture insurance

7.25 Climatic variability caused by erratic rainfall pattern, and increase in the severity of droughts, floods and cyclones and rising temperatures, have been the causes of uncertainty and risk resulting in huge losses in agricultural production and the livestock population in India. The National Agricultural Insurance Scheme (NAIS) for crops has been implemented from *rabi* 1999-2000 season with the objective of providing insurance coverage in the event of failure of any of the notified crops as a result of natural calamities, pests and diseases. The scheme is available to all the farmers (both loanee and non-loanee) irrespective of their size of holding and operates on the basis of "Area Approach'" It envisages coverage of all the food crops (cereals, millets and pulses), oilseeds and other commercial/ horticultural crops in respect of which past yield data are available for adequate number of years. At present, 10 per cent subsidy in premium is available to small and marginal farmers, which is to be shared equally by the Centre and State Governments. The

Table 7.13 Season-wise details of coverage under the scheme of NAIS

(number of farmers in lakh, area in lakh ha and sum assured, premium paid and claims in Rs. crore)

	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07
Rabi crop						
No. of farmers	19.6	23.3	44.2	35.3	40.5	49.8
Area covered	31.5	40.4	64.7	53.4	72.2	76.3
Sum insured	1497.5	1837.6	3049.5	3774.2	5071.7	6592.6
Premium paid	30.2	38.5	64.1	75.9	104.8	142.9
Claims	64.7	188.6	497.1	160.6	338.3	477.0
Kharif crop						
No of farmers	87.0	97.7	79.7	126.9	126.7	129.3
Area covered	128.9	155.3	123.6	242.7	205.3	196.7
Sum insured	7502.5	9431.7	8114.1	13170.5	13517.3	14759.1
Premium paid	261.6	325.5	283.3	458.9	449.9	467.3
Claims	493.5	1824.3	652.7	1037.9	1059.9	1771.6

scheme is implemented by 23 States and 2 Union Territories. Since the inception of the scheme and until *rabi* 2006-07, about 971 lakh farmers have been covered. The coverage area is 156 million ha and the sum insured is Rs. 92,618 crore. Claims to the tune of about Rs. 9,855 crore have become payable against the premium income of about Rs. 2,943 crore benefiting nearly 270 lakh farmers (Table 7.13).

Redesigning of the insurance scheme

7.26 Despite high claims ratio (1:3.3) and low premium rates, particularly for food and oilseeds crops, farmers (particularly non-loanee farmers) are not coming forward to avail of crop insurance in a big way. To overcome some of the limitations and to make the scheme more farmer-friendly, a Joint Group was constituted to study the improvements required in the existing crop insurance schemes. The Group made an in-depth study and has made important recommendations like reduction in the unit area of insurance to Gram Panchayat for major crops, improving the basis of calculation of threshold yield, higher indemnity level coverage of pre-sowing/planting risks and post-harvest losses, personal accident insurance cover, etc. Based on the recommendations of the Joint Group and views/ comments of various stakeholders, modification of the existing NAIS is under consideration of the Government.

Pilot Scheme for Weather-based Crop Insurance

7.27 As announced in the Union Budget for 2007-08, the Weather-based Crop Insurance Scheme (WBCIS) was implemented in the selected areas of Karnataka on a pilot basis. WBCIS intends to provide insurance protection to farmers against adverse incidence, such as deficit and excess rainfall which are deemed to impact adversely the crop production. It has the advantage to settle the 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 has been restricted to "at par" with NAIS. The Agriculture Insurance Company of India Ltd. (AIC) has implemented the pilot WBCIS in Karnataka during *kharif* 2007 season, covering eight rain-fed crops, insuring crops on nearly 50,000 ha for a sum insured of Rs. 50 crore. WBCIS is being implemented in 2007-08 on a larger scale in selected areas of 12 States for *rabi* 2007-08 season. In addition to AIC, private insurers like ICICI-LOMBARD General Insurance Company and IFFCO-TOKIO General Insurance Company have also been included for selected areas.

Rehabilitation package for distressed farmers

7.28 The Government of India has approved a rehabilitation package of Rs. 16,978.7 crore for 31 suicide-prone districts in the four States of Andhra Pradesh, Maharashtra, Karnataka and Kerala. The package will be implemented over a period of three years and includes both immediate and medium-term measures. The rehabilitation package aims at establishing a sustainable and viable farming and livelihood support system through debt relief to farmers, improved supply of institutional credit, crop-centric approach to agriculture, assured irrigation facilities, watershed management, better extension and farming support services and subsidiary income opportunities through horticulture, livestock, dairying, fisheries, etc. So far an amount of Rs. 3,728.4 crore of interest on overdue loans has been waived by the banks and Rs. 10,086.6 crore (as on December 31, 2007) has been released to Andhra Pradesh, Maharashtra, Karnataka and Kerala under the package.

Availability of other inputs for agriculture

7.29 The availability of inputs remains critical for agriculture production. The Government has been conscious of improving the access of farmers to better quality seeds, chemical fertilizers and pesticides and ensuring availability and affordability of these inputs to the farmers (Table 7.14).

7.30 Seed, as the carrier of new technology for crop production and higher crop yields, is a critical input for sustained growth of agriculture. More than 80 per cent of the farmers rely on farm-saved seeds leading to a low seed-replacement rate. The Indian Seed Programme engages the Central and State Governments, Indian Council of Agricultural Research (ICAR), State agricultural universities, and the cooperative and private sectors in its programme. There are 14 State Seed

Table 7.14 Production and use of agricultural inputs

Programme	1991-92	2000-01	2004-05	2005-06	2006-07
Production and distribution of seeds (000 quintals)					
Breeder seeds	34.90	42.69	66.46	68.65	73.83
Foundation seeds	375	591	690	740	790
Distribution of quality seeds	5750	8627	11310	12675	15501
Consumption of chemical fertilizers (lakh tonnes)					
Nitrogenous (N)	80.46	109.20	117.13	127.23	140.48
Phosphatic (P)	33.21	42.15	46.24	52.04	56.63
Potassic (K)	13.61	15.67	20.61	24.13	23.34
Total (N+P+K)	127.28	167.02	183.98	203.40	220.45
Per hectare (kg)	69.84	89.63	96.59	104.50	113.26
Consumption of pesticides (000 tonnes)					
Pesticides (technical grade)	72.13	43.58	40.67	39.77	37.95
Area under soil conservation (million ha)					
Soil conservation	35.70	39.47	39.80	NA	NA

Corporations (SSCs) besides two national-level corporations. Though the private sector has begun to play a significant role in production and distribution of seed, particularly after the introduction of the Seed Policy of 1988, the organized seed sector, particularly for food crops and cereals, continues to be dominated by the public sector. However, it is estimated that about 46 per cent of the seed commercially sold in the country is by the private seed companies. The annual rate of growth of certified/quality seeds distribution is expected to accelerate from 12.1 per cent in 2005-06 to 18.1 per cent in 2006-07. During 2006-07, 73,830 quintal breeder seed was anticipated to be produced by the National Agricultural Research System.

7.31 To increase the use of chemical fertilizers, the farm gate prices of fertilizers have been kept unchanged. Per hectare consumption of fertilizers has increased from 69.8 kg in 1991-92 to 113.3 kg in 2006-07 at an average rate of 3.3 per cent. Current fertilizer policy subsidizes 15 types of fertilizers, which largely provide NPK (major nutrients) by fixing Maximum Retail Prices (MRPs). Regulatory controls on production, distribution, products and prices results in elimination of market forces and often encourages rent seeking. A large proportion of fertilizer subsidy goes to the fertilizer units, which is paid on a (group based) cost plus basis. Although 60 per cent of fertilizer production is gas-based, due to non-availability of natural gas in adequate measure, some of these units through dualistic option use naphtha, which is a costlier feedstock. The current system has allowed the inefficient units to persist. The current pricing mechanism of fertilizers has also encouraged nutrient imbalance. There is excessive use of urea and a bias against micronutrients. As against the desirable NPK proportion of 4:2:1, the average use is 6:2.4:1. The Steering Committee of the Planning Commission has observed that "because nitrogenous fertilizers are subsidized more than potassic and phosphatic fertilizer, the subsidy tends to benefit more the crops and regions which require higher use of nitrogenous fertilizer as compared to crops and regions which require higher application of P and K." The excessive use of urea has also affected the soil profile adversely.

7.32 A healthy plant growth is possible only if all 16 nutrients are available in soil. Besides NPK, sulphur, zinc and calcium are also required in good quantity. Other nutrients such as iron, boron, etc., are also required in small quantities, but their deficiency significantly impacts plant growth and life. Micronutrients are best applied through fortification of major fertilizers. However, restrictions of MRP, as well as fixed subsidy, afford no incentive for such fortification. As a result, though NPK requirements are partly made good, micronutrient deficiency continues to affect the productivity of crops significantly.

Agricultural marketing

Reforms through APMC Act

7.33 Agriculture sector needs well functioning markets to drive growth, employment and economic prosperity in rural areas of the country. To provide dynamism and efficiency into the marketing system, large investments are required for the development of post-harvest and cold chain infrastructure nearer to the farmers' fields. Accordingly, the Ministry of Agriculture circulated a model Agriculture Produce Marketing Committee (APMC) Act, 2003, and suggested amendments to the State APMC Acts so as to promote investment in marketing infrastructure, motivating corporate sector to undertake direct marketing and to facilitate a national integrated market. With a view to facilitate the States in the drafting of modified Rules under the amended Acts, the Ministry of Agriculture has formulated model APMC Rules and circulated the same to the States. As resolved in the 53rd Meeting of the NDC, Minisry of Agriculture has requested States/UTs for completing the process of amendments and notification of Rules by 2007-08.