

# Agriculture and Food Management

## 7

### CHAPTER

*The performance of the agricultural sector influences the growth of the Indian economy. Agriculture (including allied activities) accounted for 17.8 per cent of the Gross Domestic Product (GDP-at constant prices) in 2007-08 as compared to 21.7 per cent in 2003-04. Notwithstanding the fact that the share of this sector in GDP has been declining over the years, its role remains critical as it accounts for about 52 per cent of the employment in the country. Apart from being the provider of food and fodder, its importance also stems from the raw materials that it provides to industry. The prosperity of the rural economy is also closely linked to agriculture and allied activities. Agricultural sector contributed 12.2 per cent of national exports in 2007-08. The rural sector (including agriculture) is being increasingly seen as a potential source of domestic demand; a recognition, that is shaping the marketing strategies of entrepreneurs wishing to widen the demand for goods and services.*

7.2 With an average growth of over 4.9 per cent over three years (2005-06 to 2007-08), the agriculture sector (including allied activities) lent credible support to the overall growth in GDP. However, in 2008-09,

the growth originating from agriculture and allied activities declined to 1.6 per cent (as per the revised estimates). While this is lower than the 4.9 and 4.0 per cent growth witnessed in 2007-08 and

**Table 7.1 : Agriculture sector – Key indicators**

Item	2007-08	2008-09
<b>1. GDP – share and growth</b> (per cent at 1999-00 prices)		
Growth in GDP in agriculture & allied sectors	4.9	1.6
Share in GDP - Agriculture and allied sectors	17.8	17.1
<i>Agriculture</i>	16.3	
<i>Forestry and logging</i>	0.7	
<i>Fishing</i>	0.8	
<b>2. Share in total gross capital formation in the country</b> (per cent at 1999-00 prices)		
Share of agriculture & allied sectors in total gross capital	6.7	
<i>Agriculture</i>	5.7	
<i>Forestry and logging</i>	0.1	
<i>Fishing</i>	0.9	
<b>3. Agricultural imports &amp; exports</b> (per cent at current prices)		
Agricultural imports to national imports	3.1	
Agricultural exports to national exports	12.2	
<b>4. Employment</b> in the agriculture sector as share of total employment in 2004-05 as per Current Daily Status (per cent)		52.1

Source : Central Statistical Organisation & Dept of Agriculture and Cooperation

**Table 7.2 : Gross capital formation in agriculture (Figures in Rs. crore at 1999-2000 prices)**

Year	GDP	Agriculture & allied activities		GCF/GDP in agriculture & allied (%)	GCF in agriculture as % of total GDP
		GCF	GDP		
2004-05	2388768	57849	482446	12.0	2.4
2005-06	2616101	66065	511013	12.9	2.5
2006-07	2871120	73285	531315	13.8	2.6
2007-08	3129717	79328	557122	14.2	2.5

2006-07 respectively, the performance in 2008-09 needs to be viewed in the light of the high base of the previous years. Agricultural growth is characterized by sharp fluctuations and remains vulnerable to the vagaries of nature.

7.3 In terms of composition, out of the total share of 17.8 per cent in GDP in 2007-08 for the agriculture and allied activities sector, agriculture alone accounted for 16.3 per cent of GDP followed by fishing at 0.8 per cent and forestry and logging at 0.7 per cent of GDP.

### Gross capital formation in agriculture and allied sector

7.4 The Gross Capital Formation (GCF) in agriculture as a proportion to the total GDP has shown a decline from 2.9 per cent in 2001-02 to 2.5 per cent in 2007-08. However, the GCF in agriculture relative to GDP in this sector has shown an improvement from 11.23 per cent in 1999-2000 to 14.24 per cent in 2007-2008 (Table 7.2).

7.5 The share of agriculture & allied sector in total GCF after showing a marginal increase during 1999-2000 to 2001-02 has been continuously declining. It stood at 10.2 per cent in 1999-2000, increased to 11.7 per cent in 2001-02 and thereafter

**Table 7.3 : Share of agriculture & allied sector in total GCF (%) (at 1999-2000 prices)**

Year	Public sector	Private sector	Total
1999-2000	6.0	11.9	10.2
2000-01	5.8	11.3	9.7
2001-02	6.7	13.7	11.7
2002-03	6.5	11.5	10.3
2003-04	7.4	9.2	8.8
2004-05	7.8	7.7	7.7
2005-06	7.9	7.1	7.2
2006-07	8.2	6.6	7.0

Source : Agricultural Statistics at a Glance 2008, Directorate of Economics & Statistics

declined to 7 per cent in 2006-07. The decline was mainly attributed to decline in the private sector despite increase in the share of public sector (Table 7.3).

7.6 Apart from production, the demand and distributional aspects of the agricultural sector, especially of food availability and food management, are of importance to the economy. This chapter reviews the production performance of different segments of agriculture and allied activities covering, inter alia, horticulture, animal husbandry and fisheries as also the developments in the area of food management during the year 2008-09.

### Crop production, 2008-09

7.7 For three consecutive years (2005-06 to 2007-08), foodgrains production recorded an average annual increase of over 10 million tonnes. The total foodgrains production in 2007-08 was estimated at 230.78 million tonnes as against 217.3 million tonnes in 2006-07 and 208.60 million tonnes in 2005-06.

7.8 As per the third advance estimates, production of foodgrains in 2008-09 is estimated to be 229.85 million tonnes, which is a marginal improvement of 1.97 million tonnes over the second advance estimates for 2008-09. This is, however, lower than the target of 233 million tonnes set out for the year as also the final estimates of 230.78 million tonnes for 2007-08 (Table 7.4).

### Cereal production

7.9 The overall production of cereals in 2008-09 has shown a decline of 0.2 per cent over 2007-08 and a shortfall of 0.8 per cent over target for the year. While rice production in 2008-09 exceeded both target for the year and the level in 2007-08, wheat production was marginally below the target for the year and production level achieved in 2007-08. In the case of coarse cereals, there has been a large

Table 7.4 : Foodgrain production (million tonnes)

Crop	2007-08	2008-09			
	Final	Targets	3 <sup>rd</sup> Advance Estimates	Percentage Increase (+) Decrease(-) Over final 2007-08	Percentage Increase (+) Decrease (-) vis-à-vis target for 2008-09
1 Rice	96.69	97.00	99.37	2.8	2.4
2 Wheat	78.57	78.50	77.63	-1.2	-1.1
3 Coarse cereals	40.76	42.00	38.67	-5.1	-7.9
4 Cereals	216.02	217.50	215.67	-0.2	-0.8
5 Total pulses	14.76	15.50	14.18	-3.9	-8.5
6 Total food grains	230.78	233.00	229.85	-0.4	-1.4

shortfall both with reference to the targeted production as also the level achieved in the previous year.

### Rice

7.10 As per the third advance estimates, the production of rice was 99.37 million tonnes in 2008-09, an increase of about 2.8 per cent over 2007-08 levels and 2.4 per cent over the target for 2008-09. The increase in the production of rice during the year was mainly on account of the kharif season output which was 3.4 per cent higher than the level achieved in corresponding period of 2007-08 and 3.0 per cent over the target for the year. Rabi rice, on the other hand, is expected to be lower by, about 0.9 per cent over the 2007-08 production levels and by 0.6 per cent over targeted production for 2008-09.

### Wheat

7.11 Wheat production is estimated at 77.63 million tonnes in 2008-09 against the target of 78.50 million tonnes. The production in 2008-09 is expected to be 1.2 per cent lower than the 2007-08 production level.

### Coarse cereals

7.12 Total production of coarse cereals are expected to decline to 38.67 million tonnes against production of 40.76 million tonnes in 2007-08 and the 2008-09 target of 42 million tonnes. The kharif production is estimated at 28.31 million tonnes which is 11.2 per cent lower than the kharif production in 2007-08 and 13.2 per cent lower than the target for 2008-09. The decline in production in 2008-09 vis-à-vis last year's production, is spread across jowar, bajra, maize, ragi and small millets. However production of barley shows an increase of 29.2 per cent over that of 2007-08.

### Pulses

7.13 Total production of pulses is estimated at 14.18 million tonnes in 2008-09, which is 3.9 per cent lower than the production in 2007-08 and 8.5 per cent lower than the targeted production for 2008-09. The decline over the previous year is significant for the kharif season, which was only partially neutralized by the increase in production in the rabi crop.

### Oilseeds

7.14 Total production of the nine oilseeds is estimated at 281.3 lakh tonnes, which is about 5.5 per cent lower than the production in 2007-08 and about 11.4 per cent lower than the targeted production for 2008-09. As compared to the previous year, there is a decline of 12.3 per cent in kharif oilseed production while in the rabi oilseed production, there is an increase of about 10.1 per cent (Table 7.5).

### Sugarcane

7.15 The production of sugarcane during 2008-09 is estimated at 2,892 lakh tonnes which is lower than the production of 3,482 lakh tonnes during 2007-08. This represents a decline of 16.9 per cent over previous year and of 14.9 per cent vis-a-vis the target for 2008-09.

### Cotton

7.16 The production of cotton, estimated at 232.68 lakh bales, is short of the final estimates of 258.84 lakh bales in 2007-08 by 10.1 per cent and as compared to the target by 10.5 per cent.

### Jute and mesta

7.17 The production of jute and mesta, estimated at 103.28 lakh bales in 2008-09, is lower than the targeted production of 110 lakh bales by 6.1 per cent

**Table 7.5 : Production of commercial crops**

Crop	Units	2007-08 Final	2008-09			
			Targets	3 <sup>rd</sup> Advance Estimates	Per cent increase over 2007-08	Per cent increase vis-a vis target
<b>Total Nine Oilseeds</b>	Lakh tonnes	297.55	317.50	281.27	-5.5	-11.4
<b>Sugarcane</b>	Lakh tonnes	3481.88	3400.00	2892.34	-16.9	-14.9
<b>Cotton #</b>	Lakh bales	258.84	260.00	232.68	-10.1	-10.5
<b>Jute &amp; Mesta # #</b>	Lakh bales	112.11	110.00	103.28	-7.9	-6.1

**Source : Department of Agriculture & Cooperation** # bales of 170 kgs each ## bales of 180 kgs.

and also lower than the production in 2007-08 by 7.9 per cent.

7.18 It therefore emerges that as per the present reckoning from third advance estimates for 2008-09, the production of coarse cereals, pulses, and most commercial crops (in particular, sugarcane and cotton) are lower than the levels achieved in 2007-08.

### Area, production and yield

7.19 Growth in the production of agricultural crops depends on acreage and yield. Limitations in the expansion of agricultural land suggest that increase in gross cropped area can come from multiple cropping. In view of this, the main source of long-term output growth is improvement in yield. [The trends in indices of area, production and yield of different crops till 2007-08 (Base T.E 1981-82=100) are given as under Table 7.6. Trends in area and production are given in Figure 7.1.

#### Rice

7.20 Compound growth rates of index of area under rice show a negative growth of (-) 0.1 per cent per annum during 2001-08 compared to the 1990s. The area under rice cultivation has remained more or less stagnant in the recent years while growth in yield has shown an increase.

#### Wheat

7.21 Area under wheat that was around 25 million hectares in 2002-03 increased to 26.4 million hectares in 2005-06 and further to 28 million hectares in 2007-08. The coverage under irrigation has been about 87 to 89 per cent of area for wheat. The compound growth rates of indices of area, production and yield of wheat during 1991-2000 and 2001-08 show a perceptible decline.

**Table 7.6 : Compound growth rates of area, production and yield**

(as % per annum with Base T.E 1981-82=100)

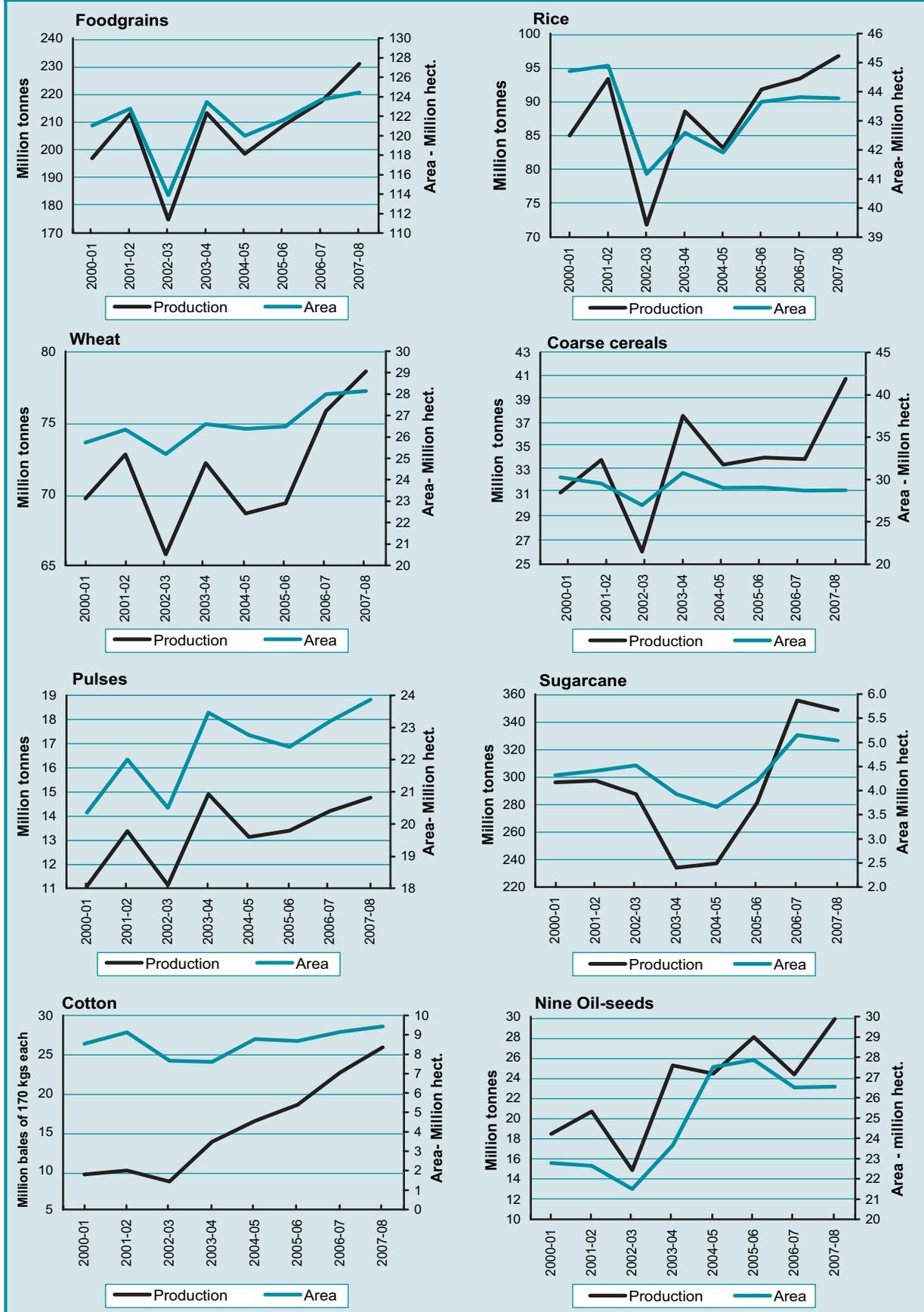
Rice			
Growth rates	1980-81 to 1989-90	1990-91 to 1999-2000	2000-01 to 2007-08
Area	0.4	0.7	-0.1
Production	3.6	2.0	1.9
Yield	3.2	1.3	2.0
Wheat			
Area	0.5	1.7	1.3
Production	3.6	3.6	1.4
Yield	3.1	1.8	0.1
Coarse cereals			
Area	-1.3	-2.1	-0.4
Production	0.4	0.0	3.3
Yield	1.6	1.8	4.3
Pulses			
Area	-0.1	-0.6	1.9
Production	1.5	0.6	3.4
Yield	1.6	0.9	1.7
Sugarcane			
Area	1.4	-0.1	1.9
Production	2.7	2.7	2.2
Yield	1.2	1.1	0.3
Cotton			
Area	-1.3	2.7	1.5
Production	2.8	2.3	17.5
Yield	4.1	-0.4	15.8
Nine oilseeds			
Area	2.5	0.2	3.4
Production	5.4	1.4	7.2
Yield	2.5	1.4	3.7

**Source : Department of Agriculture & Cooperation**

#### Coarse cereals

7.22 Growth in index of area during 2001-08 improved, compared to the 1990s. The growth in

Figure 7.1 : Area & production of principal crops (production in million tonnes, area in million hectares)



index of yield increased significantly, leading to an increase in the growth in production.

### Pulses

7.23 Gram and tur are the major contributors to the total pulses production in the country. During the period 2000-01 to 2007-08 there has been an improvement in the growth in the indices of yield and in area resulting in considerable increase in the growth in production.

### Sugarcane

7.24 The area under sugarcane showed an increase from 3.93 million hectares in 2003-04 to around 5.04 million hectares in 2007-08. Production increased from 233.86 million tonnes in 2003-04 to 348.2 million tonnes in 2007-08. Accordingly, yield increased from 59.4 tonnes per hectare to 69.1 tonnes per hectare in 2007-08. Despite a decline in growth in index of yield during 2001-08 as compared to the 1990s, the index of production growth was more or less sustained by the growth in index of area during the period.

### Cotton

7.25 Cotton occupies an important place among the cash crops in India. Cotton is grown in nine major states namely, Punjab, Haryana, North Rajasthan, Gujarat, Maharashtra, Madhya Pradesh, Andhra Pradesh, Karnataka and Tamil Nadu.

7.26 The area under cotton increased from 7.60 million hectares in 2003-04 to 9.43 million hectares in 2007-08. The yield of cotton went up from 307 kgs per hectare in 2003-04 to 466 kgs per hectare in 2007-08. The compound growth in index of yield has shown an increase from (-) 0.4 per cent during the 1990s to 15.8 per cent during 2001-08. However, the growth in index of area moderated, but remained positive. The combined effect on index of production was an increase in growth from 2.3 per cent during the 1990s to 17.5 per cent during 2001-08.

### Oilseeds

7.27 Area covered under nine oilseeds, which stood at 23.66 million hectares in 2003-04 increased to 26.54 million hectares in 2007-08. Production of oilseeds, which stood at 25.19 million tonnes in 2003-04, increased to 29.76 million tonnes in 2007-08. The growth in indices of yield and area under oilseeds has shown a perceptible improvement during 2001-08 as compared to the 1990s.

### Area coverage 2008-09

7.28 During 2008-09 the area sown at all-India level under kharif was 2.3 per cent less than the

area sown in 2007-08 of 1,039.23 lakh hectares. As on 27.03.09, area sown under all rabi crops taken together has been reported to be higher at 638.33 lakh hectares as compared to 619.68 lakh hectares in the corresponding period of 2007-08.

### Agricultural inputs

7.29 Improvement in yield which is key to long-term growth depends on a host of factors that includes technology, use of quality seeds, fertilizers and pesticides and micronutrients, not the least irrigation. Each of these plays a role in determining the yield level and in turn the augmentation in the level of production.

### Seeds

7.30 The story of the agricultural season begins with soil preparation. However, the first decisive step that a farmer takes relates to sowing. The availability of quality seeds (among other factors) make a critical difference to output growth. In India, more than four-fifths of the farmers rely on farm-saved seed leading to a low seed replacement rate.

7.31 The Indian Seed Programme includes the participation of Central and State Governments, the Indian Council of Agricultural Research (ICAR), state agricultural universities and the cooperatives and private players. There are 15 state seed corporations besides two national level corporations, viz. the National Seeds Corporation and the State Farms Corporation of India. Indian seeds programme recognizes three kinds of seed generation, viz. breeder, foundation and certified seeds. Production of breeder and foundation seeds during 2008-09 is anticipated at 1.00 lakh quintals and 9.69 lakh quintals respectively and the distribution of certified/quality seeds at about 190.0 lakh quintals (Table 7.7).

**Table 7.7 : Production of breeder and foundation seeds and distribution of certified seed**

Year	Breeder seeds (quintals)	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	1,00,000 (Anticipated)	9.69 (Anticipated)	190.00 (Anticipated)

Source : Department of Agriculture & Cooperation

7.32 The Ministry of Agriculture is implementing a Central sector scheme "Development and Strengthening of Infrastructure Facilities for Production and Distribution of Quality Seeds" on all-India basis since 2005-06. The scheme is aimed at making available quality seeds of various crops to the farmers at affordable price and in time so as to enhance seed replacement rate, boost seed production in private sector and help the public sector seed companies to contribute in enhancing seed production.

7.33 A major thrust under the scheme is on improving quality of farm-saved seeds through "Seed Village Programme," under which more than 25,000 seed villages have been organized during 2008-09 across the country. Certified/quality seed production has increased from 194.31 lakh quintals during 2006-07 to 250.35 lakh quintals during 2008-09.

7.34 The seed component of the Prime Minister's Relief Package for distressed farmers is being implemented in 31 suicide-affected districts in four states of Maharashtra, Andhra Pradesh, Karnataka and Kerala under the above scheme, Certified seeds are supplied at 50 per cent of the seed cost to the farmers in such affected districts. During the year 2008-09, an amount of Rs. 445.81 crore has been released under the PM's Relief Package.

7.35 Fifty-two proposals for seed infrastructure development were sanctioned for boosting seed production in private sector and nine notified seed testing laboratories and two state seed certification agencies are being strengthened. Financial sanctions have been given for establishing tissue culture facilities in Orissa and Maharashtra for banana and pomegranate respectively. The Biotech Consortium of India Limited (BCIL) has been engaged as an expert agency to execute public awareness programmes in nine BT cotton-growing states. The consortium has been provided financial assistance of Rs. 26.65 lakh during the year 2008-09.

7.36 The Protection of Plant Varieties and Farmers' Rights (PPV&FR) Authority has been established in November 2005. The Authority has the mandate to implement provisions of the PPV&FR Act, 2001. Fourteen crops, namely, rice, bread wheat, maize, sorghum, pearl millet, chickpea, pigeon pea, green gram, black gram, lentil, field pea, kidney bean, cotton and jute were notified for the purpose of registration under the Act. The Authority has plans to extend its coverage to forestry, aromatic

and medicinal plants. The Government of India on January 1, 2008 approved the restructuring of State Farms Corporation of India.

7.37 In response to the changes that have taken place in the seed sector, the existing Seeds Act, 1966 is proposed to be replaced by a suitable legislation to, inter alia, (i) create a facilitative climate for growth of the seed industry so as to enhance seed replacement rates, boost the export of seeds and encourage import of useful germplasm, create a conducive atmosphere for application of frontier sciences in varietal development and for enhanced investment in related R&D. The Government introduced the Seeds Bill in the Rajya Sabha in December 2004 which was referred to the Parliamentary Standing Committee on Agriculture. The Parliamentary Standing Committee has recommended modifications in the Bill. The Government moved the official amendments to the Seeds Bill in June 2008, which will be taken up for consideration by the Parliament.

### *Irrigation*

7.38 The Government of India has taken up irrigation potential creation through public funding and 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 102.08 million hectares up to the end of the Tenth Five Year Plan (2006-07). Of the total potential created however only 87.2 million hectares is actually utilized. The Working Group on Water Resources for the Eleventh Five Year Plan (2007-12) has proposed creation of irrigation potential of 16 million hectares (9 million hectares from MMI sector and 7 million hectares from MI sector) during the Eleventh Five Year Plan period.

7.39 The Central Government initiated the Accelerated Irrigation Benefit Programme (AIBP) from 1996-97 for extending assistance for the completion of irrigation schemes remaining incomplete. Under the programme the project 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 with inclusion of grant component w.e.f. 2004-05. The 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)/tribal areas/flood-prone area and KBK districts of Orissa. Under AIBP, State Governments were provided Rs. 27,996 crore as Central Loan Assistance (CLA)/grant for major and medium projects up to December 31, 2008. So far 91 major and medium irrigation schemes have been completed. In 2008-09, Rs. 2,791 crore has been released for AIBP for major and medium irrigation schemes up to December 2008.

### Fertilizers

7.40 Chemical fertilizers have played a significant role in the development of the agricultural sector. The per hectare consumption of fertilizers in nutrient terms stands at 117.07 kg in 2007-08. However, recent trends in agricultural productivity show a decline in marginal productivity of soil in relation to the application of fertilizers and in some cases has also become negative. Some of the evident factors contributing to the decline in marginal productivity are skewed NPK application ratio in the country, comparatively higher application of straight fertilizers like urea, DAP and MOP as against the complex fertilizers (NPKs) which are considered to be ergonomically better and more balanced fertilizer products. Lack of application of proper nutrients based on soil analysis has also contributed to slowdown in growth of productivity.

7.41 The domestic production of urea in the year 2008-09 was 199.22 lakh tonnes as compared to 187.27 lakh tonnes in 2002-03 whereas that of DAP declined in 2008-09 to 29.33 lakh tonnes after reaching a peak of 52.36 lakh tonnes in 2002-03, mainly because of shift from DAP production to complex fertilizer production (Table 7.8).

7.42 Availability of raw material/ intermediates has also been a major bottleneck towards increase in production. There is no domestic production of MOP and its requirement is met fully by import. The imports of urea, DAP and MOP are given in Table 7.9.

**Table 7.8 : Production of urea, DAP and complex fertilizers**

(in lakh tonnes)				
Year	2005-06	2006-07	2007-08	2008-09
Urea	200.98	203.08	198.58	199.22
DAP	46.28	48.51	42.12	29.33
Complex fertilizers	67.64	74.64	58.50	68.48

Source : Department of Fertilizer

**Table 7.9 : Imports of urea, DAP and MOP**

(Lakh MT)			
	Urea	DAP	MOP
2005-06	20.57	28.27	45.28
2006-07	47.18	28.75	34.48
2007-08	69.28	29.90	44.20
2008-09	56.67	61.91	56.72

Source : Department of Fertilizer

### Fertilizer prices and subsidy

7.43 The international prices of fertilizers increased manifold and the domestic cost of production of fertilizers has also increased during last couple of years. In spite of this, the prices of fertilizers have not been increased and have been kept at the same level of 2002 for major fertilizers. In addition, due to implementation of nutrient-based subsidy pricing, prices of various complex fertilizers were reduced by 18 per cent on an average. Increased burden of cost is borne by the Government in the form of increased subsidy/concessions paid to the manufacturers of various fertilizers. Total subsidy bill, which was Rs. 11,835 crore during 2003-04, increased to Rs. 99,456 crore during 2008-09.

7.44 The Government has taken various policy initiatives for the fertilizer sector. These cover pricing policy for indigenous urea, new investments in urea sector, nutrient-based pricing, production and availability of fortified and coated fertilizers, uniform freight subsidy on all fertilizers under the fertilizer subsidy regime, concession scheme for decontrolled phosphatic and potassic fertilizers, inclusion of Mono Ammonium Phosphate (MAP), Tri Super Phosphate (TSP) and Ammonium Sulphate (AS) in the

**Table 7.10 : The consumption of fertilizers in nutrient terms**

(lakh tonnes)				
Product	2005-06	2006-07	2007-08	2008-09* (Kharif 08)
Nitrogenous (N)	127.23	137.73	144.19	73.75
Phosphatic (P)	62.04	55.43	55.15	33.21
Potassic (K)	24.13	23.35	26.36	17.74
Total (N+P+K)	203.4	216.51	225.7	124.70
Per hectare Consumption (kg.)	105.5	112.3	117.07	—

Source : Department of Fertilizer

\* Estimated

concession scheme, revised scheme for concession for Single Super Phosphate (SSP) based on inputs cost and a uniform all-India maximum retail price of Rs. 3,400 per tonne for SSP, policy for conversion of FO/LSHS urea units to natural gas.

### Rainfall and reservoir storage

7.45 Rainfall greatly influences the crop productivity. More than 75 per cent of annual rainfall is received during the South-west (SW) monsoon season (June-September). During winter season (January-February) of 2008, the country as a whole received 14 per cent less rainfall of long period average (LPA). In the pre-monsoon period of 2008 (March-May), the departure of rainfall was 14 per cent below of LPA. During SW monsoon of 2008, the country as a whole received 2 per cent less rainfall compared to the LPA. Southern peninsula, central India and the North-east experienced deficient rainfall of 4 per cent, 4 per cent and 6 per cent respectively of their LPA. The North-west India however received 7 per cent more rainfall.

7.46 At district level, 28 per cent of districts of the country received excess rainfall, 48 per cent normal rainfall, 23 per cent deficient rainfall and 1 per cent scanty rainfall. During post-monsoon season (October to December) of 2008, country as a whole received 31 per cent less rainfall of LPA. During winter season (January-February) of 2009 the country as a whole received 45 per cent less of LPA.

7.47 The spatial distribution of seasonal monsoon rainfall during 2008 was largely uniform with 30 meteorological subdivisions recording normal rainfall. Only two subdivisions (Punjab and Orissa) recorded excess rainfall. The subdivisions Nagaland, Manipur, Mizoram & Tripura, West Madhya Pradesh, Vidarbha

and Kerala recorded deficient rainfall. Out of 36 meteorological subdivisions, 92 per cent of the country's area comprising of 32 subdivisions received excess / normal rainfall and the remaining 8 per cent received deficient rainfall during the season. Monsoon rainfall was marked by large temporal variations for the country as a whole, as the rainfall was 24 per cent above LPA in June. In July, the monsoon rainfall was 17 per cent below LPA. The rainfall was near normal during August and September as it was 3 per cent and 1 per cent below LPA respectively.

### Reservoir storage

7.48 The Central Water Commission (CWC) monitors the total live storages of 81 important reservoirs with live storage capacity at Full Reservoir Level (FRL) of 151.77 billion cubic meters (BCM) (Table 7.11).

7.49 At the end of monsoon 2008 the total water availability in these reservoirs was 114.262 BCM which was higher than the average of the last 10 years by 12.2 per cent (12.433 BCM). The storages were comfortable from the view point of hydro electricity generation as well as irrigation for rabi crops.

### Price policy for agricultural produce

7.50 Price policy for agricultural commodities seeks to ensure remunerative prices to growers for their produce with a view to encourage higher investment and production and at the same time to safeguard the interest of consumers by making available supplies at reasonable prices. The minimum support prices (MSP) for major agricultural products announced each year are fixed taking into account the recommendations of the Commission for Agricultural Costs and Prices (CACP). The CACP

**Table 7.11 : Reservoir storage status**

Item	2008		2007		Average of last 10 years	
	Storage BCM	% of FRL	Storage BCM	% of FRL	Storage BCM	% of FRL
Beginning of monsoon season as on 1.6.2008	29.495	19	31.120	21	21.259	14
End of monsoon season as on 30.9.2008	114.262	75	124.150	82	101.829	67
Increase in storage during monsoon season, June 1 to September 30	84.767	56	93.030	61	80.570	53

Source : Central Water Commission

Table 7.12 : Minimum support prices

(Rs. per quintal)

Commodity	MSP 2008-09 (crop year)	Commodity	MSP 2008-09 (crop year)
<b>Kharif crops</b>		<b>Rabi crops</b>	
Paddy (common)	850 + Rs. 50 per quintal bonus	Wheat	1080
Paddy (Gr.A)	880 + Rs. 50 per quintal bonus	Gram	1730
Jowar (Malindi)	860	Masur (lentil)	1870
Maize	840	Rapeseed/mustard	1830
Arhar (Tur)	2000	Barley	680
Moong	2520	<b>Other crops</b>	
Cotton (F-414/H-777/J34)	2500*	Sugarcane	81.18
Groundnut in shell	2100		

\* staple length (mm) of 24.5 – 25.5 and Micronaire value of 4.3 -5.1

recommends MSPs for 24 important crops. Apart from taking into account the cost of production, the CACP considers other factors such as demand–supply gap, price situation, global availability inter-crop price parity and terms of trade between agriculture and non-agriculture sector (Table 7.12).

7.51 The MSPs of kharif crops of 2008-09 season was raised substantially over the respective MSPs for 2007-08 season. The MSP for paddy was raised by Rs. 205 per quintal. A bonus of Rs. 50 per quintal was also payable over and above the MSP, thus raising the purchase price to Rs. 900 per quintal. An increase of Rs. 240 per quintal was given for jowar and bajra, while the MSPs of maize and ragi were raised by Rs. 220 and Rs. 315 per quintal respectively. The MSPs of moong and urad were raised by Rs. 820 per quintal and of arhar by Rs. 450 per quintal. The MSPs of sesamum and nigerseed were also substantially raised by Rs. 1,170 and Rs. 1,165 per quintal respectively. The MSP of sunflower seed was raised by Rs. 705 per quintal while that of groundnut-in-shell was raised by Rs. 550 per quintal. The MSP of soyabean (black) was raised by Rs. 440 per quintal while the MSP of soyabean (yellow) by Rs. 340 per quintal. The MSP of cotton (staple length 24.5 mm-25.5 mm and micronaire value of 4.3-5.1) was fixed at Rs. 2,500 per quintal against Rs. 1,800 per quintal for medium staple cotton in the previous year, while the MSP of cotton (staple length 29.5 -30.5 mm and micronaire value of 3.5-4.3) was fixed at Rs. 3,000 per quintal against Rs. 2,030 per quintal for long staple cotton in the previous year.

7.52 In the case of rabi crops of 2007-08 season, the MSP of wheat was fixed at Rs. 1,000 per quintal against Rs. 750 per quintal in the previous year, an increase of Rs. 250 per quintal. The MSPs of gram and masur were raised by Rs. 155 per quintal and that of barley and rapeseed/mustard by Rs. 85 per quintal. The MSPs of rabi crops of 2008-09 season to be marketed in 2009-10 have been further raised over their previous years' MSPs. The MSP of wheat has been raised to Rs. 1,080 per quintal and of barley to Rs. 680 per quintal. MSP of gram has been raised by Rs. 130 per quintal and of masur by Rs. 170 per quintal. The MSP of rapeseed/mustard has been raised to Rs. 1,830 per quintal.

7.53 While the price support scheme for wheat and rice is implemented by the Department of Food & Public Distribution, for the coarse cereals, a system of decentralized procurement is followed. For purchase of cotton, the Cotton Corporation of India and NAFED are the designated agencies while for jute it is the Jute Corporation of India. Losses incurred if any, in these operations are fully reimbursed by the Central Government.

7.54 The Department of Agriculture & Cooperation is implementing the Price Support Scheme (PSS) for procurement of oilseeds and pulses. The Department of Agriculture & Cooperation is also implementing the Market Intervention Scheme (MIS) on request from the State Governments for procurement of horticultural and agricultural commodities generally perishable in nature and not covered under the Price Support Scheme.

**Table 7.13 : Procurement made by NAFED during 2008-09 (on the request of State Governments) Under Market Intervention Scheme.**

Sl. No.	State	Commodity	Quantity allowed (in MT)	Market intervention price (Rs. per MT)	Value in (Rs. crore)
1	Uttar Pradesh	Potato	1,00,000	2,500	25.0
2	Mizoram	Chilli	1,810	28,000	5.1
3	West Bengal	Potato	1,00,000	2,300	23.0
4	Mizoram	Passion Fruit	9,000	7,000	6.3
5	Uttarakhand	Apple	1,500	4,500	0.7
6	Himachal Pradesh	Apple	38,000	4,500	17.1
7	Uttarakhand	Apple	1,500	4,500	0.7
8	Mizoram	Chow chow	6,450	4,500	2.9
9	Nagaland	Ginger	15,000	5,000	7.5
10	Andhra Pradesh	Oil palm	30,000	5,000	15.0
11	Karnataka	Arecanut white	6,000	69,000	41.4
		Red	4,000	89,000	35.6
12	Uttar Pradesh	Potato	1,00,000	2,850	28.5
13	Nagaland	Orange	16,000	5,100	8.2
14	Karnataka	oil palm	800	5,000	0.4
<b>Total</b>					<b>217.27</b>

7.55 NAFED undertakes procurement of oilseeds, pulses and cotton under PSS as and when prices fall below the MSP. Procurement under PSS continues till prices stabilize at or above the MSP. Losses, if any, incurred by NAFED in undertaking MSP operations are fully reimbursed by the Central Government. Profit, if any, earned in undertaking MSP operations are credited to the Central Government. During 2008-09, NAFED has procured a quantity of 535 MT of copra valuing Rs. 2.17 crore in Kerala, Tamil Nadu and Karnataka, 17.99 lakh MT raw cotton valuing Rs. 5,139.33 crore in Maharashtra, Gujarat and Andhra Pradesh, 12,060 MT sunflower seed valuing Rs. 29.39 crore in Andhra Pradesh, Karnataka, Maharashtra and 40 MT groundnut valuing Rs. 0.09 crore in Uttar Pradesh under PSS (Table 7.13).

7.56 The MIS is implemented in order to protect the growers of these commodities from making a distress sale in the event of a bumper crop when there is glut in the market and prices fall below the economic levels / cost of production. Procurement under MIS is made by NAFED as the central agency and by the state designated agencies. Losses if any incurred by the procuring agencies are shared between the Central Government and the concerned State Government on 50:50 basis (75:25 in case of

North-eastern States). However, the amount of loss to be shared between the Central Government and the concerned State Government is restricted to 25 per cent of the procurement cost. Profit if any earned by the procuring agencies is retained by them.

### Progress of special programmes for raising agricultural production

#### *National food security mission*

7.57 The national food security mission (NFSM) is being implemented in 312 identified districts of 17 states of the country. The NFSM-Rice is being implemented in 136 districts of 14 states i.e. Andhra Pradesh, Assam, Bihar, Chhattisgarh, Gujarat, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Tamil Nadu, Uttar Pradesh and West Bengal. The interventions covered under NFSM-Rice include demonstrations on improved practices; system of rice intensification; promotion of hybrid rice-production and distribution; distribution of HYV seeds; seed minikits; micro-nutrients; liming; conoweeders; zero till seed drills; multi-crop planters; seed drills; rotavators, diesel pump sets, power weeders, knap sack sprayers; plant protection chemicals and bio-pesticides; farmers' field schools; local initiatives; award for best performing districts;

mass media campaign; international exposures for technical knowledge enrichment and project management team. NFSM-Wheat is being implemented in 141 districts of 9 states i.e. Bihar, Gujarat, Haryana, Madhya Pradesh, Maharashtra, Punjab, Rajasthan, Uttar Pradesh and West Bengal. The interventions covered under NFSM-Wheat include demonstrations on improved practices; seed replacement; seed minikits; micro-nutrients; gypsum; zero till seed drills; rotavators, diesel pump sets, multi-crop planters; seed drills; sprinkler sets; knap sack sprayers; diesel pump sets; pilot project on community generators; farmers' field schools; award for best performing districts; local initiatives; international exposures for technical knowledge enrichment and project management team. NFSM-Pulses is being implemented in 171 identified districts in 14 states i.e. Andhra Pradesh, Bihar, Chhattisgarh, Gujarat, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal. NFSM-Pulses interventions includes assistance in the form of production and purchase of breeder seeds and foundation and certified seeds; distribution of certified seeds; strengthening of seeds certification agencies; sprinkler sets; zero till seed drills; strengthening of infrastructure of IIPR, Kanpur; pilot project on blue bull; demonstration of ICRISAT technologies and project management team and other facilities provided under NFSM-Rice and NFSM-Wheat. During 2008-09, an amount of Rs. 883.26 crore was released under the Programme.

### *The rashtriya krishi vikas yojana*

7.58 Under the Scheme of RKVY, the following indicative broad activities have been identified for focused attention – Integrated Development of Food Crops, including coarse cereals, minor millets and pulses; agriculture mechanization; soil health and productivity; development of rain-fed farming systems; integrated pest management; market infrastructure; horticulture; animal husbandry, dairying and fisheries; Concept to Completion Projects that have definite timelines; support to institutions that promote agriculture and horticulture, etc.; organic and bio-fertilizers; and innovative schemes. During the year 2007-08 an outlay of Rs. 1,500 crore was approved of which an amount of Rs. 1,246.89 crore including Rs. 48 crore at Rs. 10 lakh per district for preparation of District Agriculture Plan (DAP) was released to the states. For the year 2008-09, an outlay of Rs. 2,891.70 crore has been provided at revised

estimate (RE) stage and an amount of Rs. 2,886.80 crore has been released to the eligible States as on 31.03.2009.

### *Information availability*

7.59 Timely availability of reliable information on agricultural output is of great significance for planning and policy making. The existing system of agricultural statistics, in spite of established procedures and wide coverage, has inherent limitations in the matter of providing an objective assessment of crops at the pre-harvesting stages with the desired spatial details, which are essential to identify problem areas and the nature of required interventions in terms of spatial, temporal and qualitative inferences. Capabilities of the existing system of crop forecasts and crop estimation can be enhanced with the introduction of technological advancements and the adoption of emerging methodologies. In turn, an efficient and sound information mechanism can assist considerably in the management of concerns in areas such as food security, price stability, international trade, etc. Remote Sensing (RS), Information and Communication Technology (ICT) and Geographic Information System (GIS) can be used towards this end. Schemes/projects like Forecasting Agricultural Output using Space, Agro-meteorology and Land-based Observations (FASAL) and Extended Range Forecasting System (ERFS) have been initiated to establish a more scientific and reliable basis for forecasting.

7.60 In order to enhance the capabilities of the existing system of crop forecasts and crop estimation, the Ministry of Agriculture considered introduction of technological advancements and adoption of emerging methodologies such as RS and GIS. Accordingly, in 1987, the Department of Agriculture & Cooperation (DAC) sponsored a project called "Crop Acreage and Production Estimates (CAPE)" with the objective of developing methodologies using the RS techniques for crop area and production forecasting. The project was implemented through the Space Applications Centre (SAC), Ahmedabad and provided a platform for development and standardization of basic procedures, models and software packages for crop area and production forecasting, using remote sensing and weather data. The concept of FASAL seeks to strengthen the current capabilities of early and in-season crop estimation capabilities from econometric and weather-based techniques with remote sensing applications. Mid-season assessments can be supplemented with multi-

temporal coarse resolution data based analysis. In the latter half of crop growth period, direct contribution of remote sensing in the form of acreage estimates and yield forecasts would be available

7.61 Keeping in view the expertise needed, some of the functions under the scheme have been outsourced, for example, forecasting of area and production of major crops using Remote Sensing technology is being handled by SAC. and forecast of production based on econometric modelling is being done by the Institute of Economic Growth (IEG), New Delhi. The activities relating to forecast of production based on crop growth and yield modelling by making use of the agro-met data has been assigned to the India Meteorological Department (IMD). All other functions, including coordination with various groups are being performed by the National Crop Forecasting Centre (NCFC) in the Ministry of Agriculture. Experimental forecasts based on econometric models and forecast based on RS technology for specific crops have commenced.

#### Forecasting systems

7.62 In view of immense importance of extended range forecasting in agriculture applications, the Department of Agriculture and Cooperation, as custodian of the end-users i.e. the farming community, has sponsored a project entitled "Development and Application of Extended Range Forecasting System for Climate Risk Management in Agriculture (ERFS)". The principal participating agencies are India Meteorological Department; the National Centre for Medium Range Weather Forecasting (NCMRWF); Space Applications Centre; Indian Council of Agricultural Research, Centre for Atmospheric Sciences, IIT, Delhi and Department of Agriculture and Cooperation. These six partners have signed an agreement in December 2006 to work

jointly on various implementation aspects of the project.

7.63 The objective of ERFS is to generate and disseminate information with a lead-time of 25-30 days. It is expected to give sufficient time to the farmers to plan their cropping activities and help the policymakers to take necessary corrective measures for any contingency, which may arise. Under ERFS, forecast for each month at regional/district level is the ultimate goal. The project is likely to be completed in 5-6 years time frame in two phases. In the first phase (two-three years), it is envisaged to develop a seasonal forecast system for met subdivisions/ agro-climatic zones. In the second phase, monthly forecast is targeted at these levels.

## ALLIED SECTORS

### Horticulture

7.64 The production of horticultural crops increased from 191.83 million tonnes in 2006-07 to 207.01 million tonnes during 2007-08. With a production of 15,840 million nuts, India has emerged as the largest producer of coconut in the world. India also accounts for 26.9 per cent of the world's production. Area and production of major horticultural crops are given as under (Table 7.14)

7.65 A major programme, namely the "National Horticulture Mission (NHM)" was launched in the country, during the Tenth Five Year Plan with effect from 2005-06, for holistic development of horticulture sector. The Mission's objectives are to enhance horticulture production through area-based regionally differentiated strategies to improve nutritional security and income support to farm households, to establish convergence and synergy among ongoing programmes for horticulture and to develop, promote and disseminate technologies.

**Table 7.14 : All-India area and production of horticultural crops**

(Area in '000 hectares; production in '000 tonnes)

Crop	2005-06		2006-07		2007-08*	
	Area	Production	Area	Production	Area	Production
Fruits	5339	55397	5554	59563	5775	63503
Vegetables	7131	110106	7584	115011	7803	125887
Flowers loose	146	686	144	880	161	870
Plantation crops	3283	11263	3207	12007	3226	12045
Spices	2422	3923	2448	3953	2603	4103
<b>Total Horticulture</b>	<b>18713</b>	<b>181814</b>	<b>19393</b>	<b>191831</b>	<b>20087</b>	<b>207012</b>

\* Provisional

7.66 Under the National Horticulture Mission, 344 districts have been taken up for the development of potential horticulture crops, of which, four were included during 2008-09. In the North-eastern region and the Himalayan States, an additional area of 4.86 lakh ha has been brought under various horticultural crops under TMNE from 2001-02 to 2008-09. An area of 12 lakh ha has been brought under improved methods of irrigation such as drip and sprinkler irrigation. During 2005-06 to 2007-08 Rs. 2,472.62 crore was released for the scheme, against which the expenditure incurred was Rs. 2,007.09 crore. In 2008-09, Rs. 1,010.49 crore was released for the scheme, and expenditure reported has been Rs. 1,148.15 crore.

7.67 A Centrally-sponsored scheme titled, Technology Mission for Integrated Development of Horticulture in the North Eastern region including Sikkim (TMNE) was initiated during 2001-02. It was extended to J&K, Himachal Pradesh and Uttarakhand in 2003-04. During 2001-02 to 2008-09, Rs. 1,538.60 crore was released of which Rs. 1,122.97 crore was for NE States and Rs. 415.63 crore for the Himalayan States. In 2008-09, an amount of Rs. 291.39 crore has been released, of which Rs. 218.00 crore is for North-eastern States and Rs. 73.39 crore is for Jammu & Kashmir, Himachal Pradesh and Uttarakhand. For the current year 2009-10, an allocation of Rs. 299.00 crore has been made, of which Rs. 220.00 crore is for North-eastern States and Rs. 79.00 crore is for Jammu & Kashmir, Himachal Pradesh and Uttarakhand.

7.68 Since the inception of the scheme, an additional area of about 4.86 lakh hectare has been brought under cultivation in various horticulture crops in North-eastern and the Himalayan States including fruits (3,06,101 hectare), vegetables (71,824 hectare.), spices (58,443 hectare), plantation crops (10,443 hectare), medicinal plants (5,651 hectare), aromatic plants (6,883 hectare), roots and tubers (1,040 hectare), flowers (25,762 hectare). Forty-seven wholesale markets, 262 rural primary markets, 64 apni mandis, 18 state grading laboratories, 31 ropeways and 49 processing units have been established in the North-eastern states and the Hill States of J&K Himachal Pradesh and Uttarakhand. The creation of infrastructure facilities such as nurseries, community tanks, tube-wells, tissue culture units, green houses, model floriculture centres, mushroom units, vermi-compost units etc. has helped in production and supply of quality planting

material and improved production and productivity of horticulture crops in the region. During 2009-10, an additional area of 1.00 lakh ha is proposed to be brought under various horticulture crops.

7.69 A Centrally-sponsored scheme on micro irrigation has been launched in January 2006 for implementing drip and sprinkler irrigation in the country. The scheme is aimed at achieving better water use efficiency (60-70 per cent), increase in yield (30-100 per cent), saving fertilizer consumption (up to 40 per cent), reduction of weeding cost and inter-cultural operations, better quality produce and enhanced productivity.

7.70 Under this scheme, assistance is provided to all categories of farmers at 50 per cent of the cost of drip and sprinkler system and at 75 per cent of the cost for demonstration. The National Committee on Plasticulture Applications in Horticulture (NCPAH) through Precision Farming Development Centres (PFDCs) in 22 locations monitors the implementation of the programme. The programme is for horticulture, non-horticulture crops except oil palm and plantation crops like rubber, tea & coffee.

7.71 So far, 13 lakh ha has been brought under drip and sprinkler irrigation system in 18 states of the country. During the last two years implementation of the system has geared up and shows 25 per cent increase in area coverage. During 2007-08, a sum of Rs. 411.25 crore was released to 11 states and an area of 4.32 lakh hectares has been brought under micro irrigation. During 2008-09, Rs. 470.00 crore was released under micro irrigation to 16 states for covering an area of 5.50 lakh hectares including transfer of technology through training, awareness programme and publication of literature, etc.

#### *National bamboo mission*

7.72 With a view to harness the potential of bamboo crop in the country the Department of Agriculture and Cooperation (DAC), Ministry of Agriculture has been implementing a Centrally-sponsored scheme called the National Bamboo Mission (NBM) in 27 states in the country. This scheme is approved for the period 2006-07 to 2010-11 with a total outlay of Rs. 568.23 crore. A sum of Rs. 110.00 crore (RE) has been allocated for the scheme during 2008-09 and Rs. 84.66 crore was released to different state implementing agencies/institutions.

Table 7.15 : Key statistics on the NR sector in India (2003-04 to 2008-09)

Year	Area (ha)	Production (tonnes)	Productivity (Kg/ha)	Export (tonnes)	Import (tonnes)	Consumption (tonnes)
2003-04	575980	711650	1663	75905	44199	719600
2004-05	584090	749665	1705	46150	72835	755405
2005-06	597610	802625	1796	73830	45285	801110
2006-07	615200	852895	1879	56545	89799	820305
2007-08 (P)	635400	825345	1799	60353	86394	861455
2008-09 (E)	650000	864000	1875	45538	79927	865000

Source : The Rubber Board

(P) Provisional

(E) Estimates

### New initiatives in horticulture

7.73 The proposal for implementation of the project "Replanting and Rejuvenation of Coconut Gardens" in districts of Thiruvananthapuram, Kollam and Thrissur in Kerala and the Union Territory of Andaman & Nicobar Islands" has been approved on a pilot basis. Recognizing the importance for institutional support for development of horticulture in the North-east region, the Government of India has sanctioned a Central Institute of Horticulture in Medziphema, Nagaland, during January 2006, with a financial outlay of Rs. 20.00 crore spread over a period of five years. The outlay for the Tenth Five Year Plan is Rs. 8.35 crore and for the remaining three years of Eleventh Five Year Plan is Rs. 11.65 crore. The institute is being set up at Medziphema in an area of 43.50 hectares. The objectives and the identified programmes of the institute include capacity building by training of trainers, extension officers, farmers, entrepreneurs, processors and exporters. The programmes also include demonstration of improved technologies such as use of improved varieties/hybrids, adoption of INM / IPM practices, high-tech farming, precision farming, protected cultivation, post-harvest technology and extension support in the field of horticulture. The promotion of organic cultivation of horticultural crops and establishing convergence and synergy among programmes in the field of horticultural research and development are also envisaged.

### Rubber

7.74 India is the fourth largest producer of natural rubber (NR) with a share of 8.9 per cent in world production in 2008. The small-holding sector accounted for 89 and 93 per cent of rubber planted area and NR production respectively. Despite not having the best regions geographically favourable for growing NR, India continued to record the highest productivity among major NR producing countries.

The estimated production and consumption of NR in 2008-09 is 8,64,000 and 8,65,000 tonnes against the projections of 8,75,000 and 8,99,000 tonnes respectively. The lower NR production is due to weather characterized by relatively high temperature and the lower NR consumption is due to the impact of economic slowdown. India is also the fourth largest consumer of NR with a share of 9.2 per cent in world consumption in 2008. The auto-tyre sector accounted for 57.5 per cent of NR consumption (Table 7.15).

7.75 In 2008-09, the estimated export of NR is 45,538 tonnes against the import of 79,927 tonnes. Duty-free channels accounted for 99 per cent of NR imported in 2008-09. Export of NR is perceived as a strategy to adjust domestic demand-supply balance and also to educate the growers on the necessity to process the produce in conformity with the international standards.

### Coffee

7.76 Among the plantation crops, coffee has made significant contribution to the Indian economy during the last 50 years, Although India contributes only 4 per cent of total world production, but Indian coffee has created a niche for itself in the international market, particularly Indian Robusta, which is highly preferred for its blending quality. Arabica coffee from India is also well received in the international market (Table 7.16).

7.77 The international coffee price for Arabica averaged at 79.85 US cents per lb while Robusta averaged at 32.89 US cents per lb during 2004, but recovered to 136.46 US cents per lb and 96.76 US cents per lb respectively during 2008. The current global financial crisis has had its impact on Indian coffee exports though it did not have much effect on domestic prices and domestic consumption. However, due to unfavourable weather conditions, 2008-09 production (at 2.62 lakh tonnes) has shown no growth over the previous year. Accordingly, the

**Table 7.16 : Production, exports and domestic consumption of coffee**

Year	Production Qty. in lakh ton	Exports		Domestic consumption in tonnes	
		Qty	Value (Rs. crores)		
2006-07	2.88	2.49	2008	455	85000
2007-08*	2.62	2.19	2047	503	90000
<b>2008-09*</b>	<b>2.62</b>	<b>2.04</b>	<b>1925</b>	<b>443</b>	<b>94400</b>

Source : The Coffee Board \* Provisional as on 13.04.2009,

level of exports has also come down. The Coffee Board continues with its initiatives to enhance the competitiveness of Indian coffee sector which inter alia include continuing the development support scheme during the Eleventh Five Year Plan period in which subsidy will be extended for the benefit of coffee growers for replantation, water augmentation, quality upgradation, pollution abatement, capacity building and welfare support; providing interest subsidy at the uniform rate of 5 per cent to coffee growers on their working capital loans taken from the financial institutions which will be limited to a ceiling of Rs. 50,000 per Arabica coffee grower and Rs. 40,000 per Robusta coffee grower and the interest rate, after allowing interest subsidy should not be lower than 7 per cent; undertaking campaigns to promote domestic consumption of coffee; providing subsidy for coffee roasting, grinding and packaging units during the Eleventh Five Year Plan; reduction of import duty on specified machinery for coffee sector to 5 per cent to enable the industry to improve productivity, quality and consumption of coffee; implementation of weather (rainfall) insurance as a risk management support for coffee growers in collaboration with Agriculture Insurance Company of India Ltd.

### Animal husbandry, dairying and fisheries

7.78 The livestock sector contributed over 5.26 per cent to the total GDP during 2006-07 and contributes about 31.7 per cent GDP from total agriculture and allied activities. The Eleventh Five Year Plan envisages an overall growth of 6-7 per cent per annum for the sector. In 2007-08, this sector contributed 104.8 million tonnes of milk, 53.5 billion eggs, 44 million kg wool and 2.6 million tonnes of meat. The 17th Livestock Census (2003) has placed the total livestock population at 485 million and total of poultry birds at 489 million. The 18th Livestock Census has been conducted throughout the country with reference date of October 15, 2007, results of which are awaited.

7.79 India ranks first in the world in milk production, which increased from 17 million tonnes (MT) in 1950-51 to about 104.84 MT by 2007-08. The per capita availability of milk has also increased from 112 grams per day in 1968-69 to 252 grams during 2007-08, but it is still low compared to the world average of 265 grams/day. About 80 per cent of milk produced in the country is handled in the unorganized sector and the remaining 20 per cent is shared equally by cooperative and private dairies. Over 1.28 lakh village-level dairy cooperative societies, spread over 346 districts in the country, collect about 22.8 million litres of milk per day and market about 18.9 million litres. The efforts of the Government in the dairy sector are concentrated on promotion of dairy activities in non-operation flood area with emphasis on building up cooperative infrastructure, revitalization of sick dairy cooperatives and federations and creation of infrastructure in the States for production of quality milk and milk products (Table 7.17).

7.80 A major programme for genetic improvement, 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 with an allocation of Rs. 402 crore and Rs. 775.9 crore for Phase I and II, respectively. NPCBB envisages genetic upgradation and development of indigenous breeds on priority basis. At present, 28 states and one UT are participating in the project. Financial assistance to

**Table 7.17 : Production and per capita availability of milk**

Year	Per capita (grams/day)	Milk production (MT)
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

the tune of Rs. 398.38 crore was released to these states up to 2007-08. During the financial year 2008-09, Rs. 87.37 crore has been released to the implementing agencies under the scheme.

### *Livestock insurance*

7.81 The Government implemented the Livestock Insurance scheme as a Centrally-sponsored scheme on a pilot basis during 2005-06 to 2007-08 in 100 selected districts across the country. The scheme has twin objectives of providing protection mechanism to the farmers and cattlerearers against any eventual loss of their animals and to demonstrate the benefit of the scheme to the people and popularize it with the ultimate goal of attaining qualitative improvement in livestock and their products. Under the scheme 50 per cent subsidy on premium was provided by the Government of India to insure crossbred and high-yielding cattle and buffaloes and the beneficiary paid 50 per cent of the premium. The benefit of the subsidy was restricted to two crossbred cows or buffaloes per beneficiary for a policy of maximum period of three years. The scheme was implemented in the states through the respective State Livestock Development Boards. As per information received from various states, during pilot period, 9.55 lakh animals were insured and out of 21,081 cases of claims made, 16,813 cases were settled. During the remaining period of the Eleventh Five Year Plan, the scheme is being implemented as a regular scheme as per existing guidelines in the 100 newly selected districts. There is provision of Rs. 153.43 crore in the Eleventh Five Year Plan for the Livestock Insurance scheme.

### *Poultry*

7.82 India produces more than 47.3 billion eggs per year, with per capita availability of 42 eggs per annum. As per the estimate provided by the Food and Agriculture Organization (FAO) for 2007, the annual chicken meat production in India is around 2.2 million tonnes. The value of exports was around Rs. 441 crore during 2007-08. Poultry sector has lately faced the onslaught of both bird flu and steep increase in prices of poultry feed ingredients like maize. A number of economic measures like conversion of unpaid principal and interest on working capital into term loans and reschedulement were announced in February 2008 to bail out the bird-flu affected farmers. The Reserve Bank of India has already issued guidelines for the "Agricultural Debt Waiver and Debt Relief Scheme, 2008," which was announced during Union Budget 2008-09 wherein

allied activities include poultry among others. These measures are expected to provide much-needed relief to distressed poultry sector. The Special Livestock and Fisheries Sectors Package for Suicide-prone Districts of Andhra Pradesh, Maharashtra, Karnataka and Kerala has been modified and subsidy for poultry units introduced.

### *Livestock health*

7.83 Animal wealth in India has increased manifold and animal husbandry practices have also changed to a great extent. With increased trade potential, the chances of ingress of exotic diseases into the country has also increased. With the improvement in the quality of livestock through launching of extensive cross breeding programmes, the susceptibility of these livestock to various diseases, including exotic diseases has increased. For ensuring the maintenance of disease-free status and to be compatible with the standards laid down by the World Animal Health Organization, major health schemes have been initiated to support animal health programmes in the state. In order to reduce morbidity and mortality, efforts are being made by the State Governments/Union Territory to provide better health care through polyclinics/veterinary hospitals/dispensaries/first-aid centres including mobile veterinary dispensaries. A network of 26,540 polyclinics/hospitals/dispensaries and 25,433 veterinary-aid centres (including stockmen centres/mobile dispensaries), supported by about 250 disease diagnostic laboratories are functioning in the states and Union Territories for quick and reliable diagnosis of diseases. In order to provide referral services over and above the existing disease diagnostic laboratories in the states, one Central and five regional disease diagnostic laboratories are also functioning. Further, for control of major livestock and poultry diseases the Government of India provides financial assistance to the States/UTs to supplement their activities to prevent, control and contain the animal diseases and also for strengthening of veterinary services including reporting of animal diseases in the form of Centrally-sponsored schemes called "Livestock Health & Disease Control". Besides, India was free from Avian Influenza till January 2006. The first outbreak was reported in February-April 2006 in remote areas in Maharashtra, Gujarat and Madhya Pradesh, followed by second outbreak in July 2007 in Manipur. The most widespread outbreaks were experienced in 2008 in

West Bengal and Tripura. All these outbreaks were controlled and contained efficiently and the country was free from Avian influenza in November 2008. The effort of the Indian Government was appreciated by the international organizations like the World Bank, WHO, FAO etc. In the subsequent outbreak, Avian influenza was reported in Assam, Sikkim and recurrence in West Bengal. All these outbreaks have been effectively controlled.

## Fisheries

7.84 Fish production increased from 6.8 million tonnes in 2006-07 to 7.3 million tonnes in 2007-08. Fishing, aquaculture and allied activities are reported to have provided livelihood to over 14 million persons in 2006-07 apart from being a major foreign exchange earner (Table 7.18). The National Fisheries Development Board (NFDB) has been set up to realize the untapped potential of the fishery sector with the application of modern tools of research and development including biotechnology. The board was registered in July 2006 under the Andhra Pradesh Societies Registration Act, 2001, and has become operational.

## Feed and fodder

7.85 Adequate availability of feed and fodder to the livestock is very vital for increasing the milk production and sustaining the ongoing genetic improvement programme. It is estimated that there

is shortage of about 34 per cent of green fodder in the country. To increase the availability of fodder, the department is implementing a Centrally-sponsored fodder development scheme throughout the country to supplement the efforts of the states in fodder development. Financial assistance to the tune of Rs. 924.91 lakh was provided to the states during 2008-09. A Central Minikit Testing Programme is also implemented under which Minikits of latest high-yielding fodder varieties are distributed free of cost to the farmers for their popularization. During 2008-09, 6.34 lakh Minikits were allotted to the states for distribution to the farmers.

## Credit and insurance

7.86 The "Farm Credit Package" announced in June 2004 was aimed at 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 credit flow in 2008-09 is placed at Rs. 2,64,455 crore (Table 7.19).

7.87 A number of steps were taken to enhance credit support to farmers. About 808 lakh Kisan Credit Card (KCC) have been issued up to February 28, 2009. This scheme was introduced in August 1998 to provide adequate and timely credit support from the banking system to the farmers for their cultivation needs, including purchase of all inputs in a flexible and cost effective manner. The scheme

**Table 7.18 : Production and export of fish**

Year	Fish production (million tonnes)			Export of marine products	
	Marine	Inland	Total	Qty ('000 tonnes)	Value (Rs. crore)
1990-91	2.3	1.5	3.8	140	893
2000-01	2.8	2.8	5.6	503	6288
2003-04	3.0	3.4	6.4	412	6087
2004-05	2.8	3.5	6.3	482	6460
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	7.3	541	7620

**Table 7.19 : Progress of credit flow**

Year	(Rs. crore)					
	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09*
Credit flow during the years	86981	125309	180486	229400	254657	264455

\* Provisional

includes reasonable component of consumption credit and investment credit within the overall credit limit sanctioned to the borrowers. The Government has decided that from kharif 2006-07, 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 and State Governments would provide necessary interest subvention to NABARD and other banks for this purpose.

7.88 In January 2006, the Government announced the 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. States are required to sign the Memorandum of Understanding (MoU) with the Government of India and NABARD, committing to implement the legal, institutional and other reforms as envisaged in the revival package. So far 25 states viz. Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Gujarat, Haryana, Jammu & Kashmir, Jharkhand, Karnataka, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Rajasthan, Orissa, Punjab, Sikkim, Tamil Nadu, Tripura, Uttarakhand, Uttar Pradesh and West Bengal have executed the MoUs with the Government of India and NABARD. This covers 96 per cent of the Primary Agricultural Credit Societies (PACS) and 96 per cent of the Central Cooperative Banks (CCBs) in the country. Package for revival of long-term cooperative credit structure is also under consideration of the Government.

7.89 Agricultural Debt Waiver and Debt Relief Scheme 2008: In the Union Budget 2008-09, the Government announced a scheme of agricultural debt waiver and debt relief for farmers with the total value of overdue loans being waived estimated at Rs. 50,000 crore and a one-time settlement (OTS) relief on the overdue loans at Rs. 10,000 crore for implementation by all scheduled commercial banks, besides RRBs and cooperative credit institutions. The scheme covered direct agricultural loans extended to "marginal and small farmers" and "other farmers" by SCBs, RRBs, cooperative credit institutions (including urban cooperative banks) and local area banks.

7.90 Rehabilitation package for distress farmers: The Government of India has approved a rehabilitation package of Rs. 16,978.69 crore for 31 suicide prone districts in four States of Andhra Pradesh, Maharashtra, Karnataka and Kerala. 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. 15,889.02 crore (as on 31.03.2009) has been released to Andhra Pradesh, Karnataka, Kerala and Maharashtra under the package. The package for Development of Kuttanad Wetland Ecosystem in Kerala with an outlay of Rs. 1,840.75 crore was approved by the Government on 24.07.2008, as a part of rehabilitation package for the farmers in suicide-prone districts. The package for mitigation of agrarian distress in Idduki district of Kerala with an outlay of Rs. 764.45 crore was also approved by the Government as a part of the rehabilitation package.

### *Agriculture insurance*

7.91 The frequency and severity of droughts, floods and cyclones and rising temperatures, agro-climatic variations and erratic rainfall accentuates uncertainty and risk in the agricultural sector leading to huge losses in agricultural production and the livestock population in India.

7.92 The National Insurance Scheme (NAIS) for crops has been implemented from rabi 1999-2000 season. Under the scheme and until rabi 2007-08, an area of 184 million hectares of about 1,155 lakh farmers have been covered and a sum of Rs. 1,21,606 crore insured. Claims to the tune of about Rs. 11,607 crore have been reported against premium income of about Rs. 3,626 crore benefitting 302 lakh families.

7.93 Under the Weather Based Crop Insurance Scheme (WBCIS) being implemented by the Agriculture Insurance Company of India Ltd. (AIC), 10 states have been covered on pilot basis during the kharif 2008 season. About 1.4 lakh farmers with 1.87 lakh hectares of cropped area were insured for a sum of Rs. 309 crore generating a premium of Rs. 31.5 crore (including subsidy, farmers' share of premium is Rs. 11.82 crore). This pilot is being continued in rabi 2008-09. In addition to AIC, private insurers like ICICI-LOMBARD General Insurance Company and IFFCO-TOKIO General Insurance Company have also been included for implementation of the scheme in selected areas.

## MARKETING AND EXTENSION

### Agricultural marketing

7.94 Agricultural Produce Market Committee (APMC) Act: The Government of India has circulated model legislation titled “The State Agricultural Produce Marketing (Development and Regulation) Act, 2003” to bring about reforms in agricultural marketing. Contract farming, direct marketing and public-private partnership in management and development of agricultural markets are the major instruments of change among others. Twenty-five states/UTs have already amended their APMC Acts/ made varying provisions for the purpose, while other states are in the process of amending their respective APMC Acts. The position of states which have amended their APMC Act or have provision for bringing out reforms as on 31.03.09 is given in Table 7.20.

### Extension reforms

7.95 The Department of Agriculture & Cooperation supports transfer of agriculture technologies and information to the farming community through the following initiatives:

- A Centrally-sponsored scheme “Support to State Extension Programmes for Extension Reforms” was launched in May 2005 (Tenth Five Year Plan) with an objective to support the State Governments’ efforts on revitalization of their extension system. The scheme
- promotes a decentralized farmer-driven and farmer-accountable extension system through a new institutional arrangement for technology dissemination in the form of an Agriculture Technology Management Agency (ATMA,) a registered society under the Societies Registration Act, at district level. The scheme is in operation in 583 districts of 29 states & 2 Union Territories. The scheme supports state level activities like upgrading state level training institutions, HRD of extension functionaries, rewards & incentives; and monitoring & evaluation of the scheme. At the district level support is provided for farmer-oriented activities; farm information dissemination activities; and research-extension-farmer activities. Over 40.98 lakh farmers have benefited through exposure visits, trainings, demonstrations, krishi melas and farm schools during 2008-09. The scheme is being improved further by including ways to strengthen the manpower available with the State Departments, infrastructure support to State Agriculture Management and Extension Training Institutes (SAMETIs) and also to promote farmer facilitators.
- Agri Clinics and Agri Business Centres (ACABC) Scheme was launched in April 2002. The scheme encourages unemployed agri-graduates to set up agri-clinics and agri-business centres thereby supplementing the efforts of public extension system and serving as supplementary sources of input supply and services to the needy farmers. In the process the scheme provides gainful employment to agriculture graduates in the

**Table 7.20 : Progress of reforms in agricultural markets (APMC Act) as on 31.03.2009**

Sl. No.	Stage of reforms	Name of State/ Union territory
1.	States/ UTs where reforms to APMC Act has 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, Nagaland, Orissa, Rajasthan, Sikkim and Tripura.
2.	States/ UTs where reforms to APMC Act has been done partially.	a) Direct Marketing: NCT of Delhi. b) Contract Farming: Haryana, Punjab, and Chandigarh. c) Private Markets : Punjab and Chandigarh
3.	States/ UTs where there is no APMC Act and hence not requiring reforms.	Bihar*, Kerala, Manipur, Andaman & Nicobar Islands, Dadra & Nagar Haveli, Daman & Diu & Lakshadweep
4.	States/ UTs, where APMC Act already provides for the reforms.	Tamil Nadu
5.	States/ UTs where administrative action is initiated for the reforms.	Mizoram, Meghalaya, Haryana, J&K, Uttarakhand, West Bengal, Puducherry, NCT of Delhi and Uttar Pradesh.

\* APMC Act repealed w.e.f. 1.9.2006.

emerging areas in agricultural sector. Capital subsidy to the extent of 25 per cent (33 per cent for North-east and hill areas and women graduates) and interest subsidy for first two years is provided to ACABCs through credit-linked and back-ended form to banks through NABARD.

- The mass media support to agriculture extension scheme has been aimed at utilizing the existing infrastructure of Doordarshan and All India Radio to produce and transmit programmes covering a wide spectrum of topics in agriculture and allied field for disseminating the latest information and knowledge to the farming community. A dedicated 24-hour channel on agriculture is under consideration of the DAC. A study has been commissioned for the purpose.
- The Kisan Call Centres scheme: This scheme was launched on January 21, 2004 to provide agricultural information to the farming community through toll-free, countrywide common number. The calls are answered and the replies are given in 21 local languages. Over 32.70 lakh calls were received up to March 2009 by the 25 KCCs located across the country. The Telecommunications Consultants India Limited, a public sector undertaking, is implementing the scheme through a private service provider. Kisan Knowledge Management System (KKMS) is being developed to provide instant information back up to the call centre agents for replying farmers' queries. The onus of updating and validating the KKMS at regular interval would be on State Agricultural Universities (SAUs). Information dissemination is enabled through participation or support of fairs like India International Trade Fair organized annually by India Trade Promotion Organization and five Regional fairs, one in each region, every year. The agriculture fairs at block, district and state levels are also being supported under the Extension Reforms (ATMA) Scheme.
- Support to Central Institutes: Under this scheme, support is provided to National Institute of Agricultural Extension Management, Extension Education Institutes and Model Training Courses. Four Extension Education Institutes at regional level provide HRD support to State Department officials on the extension methodology aspects. Model Training Courses aim at improving the professional competence and upgrading the knowledge and skills of subject matter specialists and extension workers of the state departments on subject matter areas. Courses on emerging topics like improved production technology

including varietal change, management of climate change, precision farming, conservation agriculture, organic farming etc. are organized.

### National policy for farmers, 2007

7.96: Based on the recommendations of the National Commission on Farmers and in consultation with the concerned Central Ministries/departments and the states, the Government of India has adopted the National Policy for Farmers, 2007. Major policy provisions include provisions for asset reforms, water use efficiency, use of technology, inputs and services like soil health: good quality seeds, disease free planting material, support services for women, credit, insurance etc. Provisions have also been made for National Agricultural Bio-security System, setting up of farm schools in the fields of outstanding farmers to promote farmer to farmer learning and to strengthen extension services and expanding food security basket to include nutritious crops like bajra, jowar, ragi and millets mostly grown in dry land areas. A comprehensive National Social Security Scheme for the farmers for ensuring livelihood security by taking care of insurance needs on account of illness, old age is included.

7.97 An Inter-Ministerial Committee has been constituted by the Department of Agriculture & Cooperation for operationalizing the National Policy for Farmers 2007. A plan of action has been formulated and circulated to all the concerned Central Ministries and departments and also to all the states for necessary follow-up action. The progress in the implementation will be monitored by an Inter-Ministerial Committee.

### Food management

7.98 Food management in India has three basic objectives viz. procurement of foodgrains from farmers at remunerative prices, distribution of foodgrains to the consumers particularly the vulnerable sections of the society at affordable prices and maintenance of food buffers for food security and price stability. The instruments for food management are the Minimum Support Price (MSP) and Central Issue Price (CIP). The focus is on incentivizing farmers by ensuring fair value for their produce through the Minimum Support Price mechanism, distribution of foodgrains at subsidized rates to 6.52 crore BPL families, covering all households at the risk of hunger under Antyodaya Anna Yojana (AAY), establishing grain banks in chronically food-scarce areas and strengthening the

Public Distribution System (PDS). 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.

### Procurement of foodgrains

7.99 Overall procurement of rice and wheat, predominant cereals, which reached 42.4 million tonnes in 2005-06, declined to 35.8 million tonnes in 2006-07 but improved marginally to 37.6 million tonnes in 2007-08. While the decline in wheat procurement in Rabi Marketing Season (RMS) 2006-07 is attributed to production of wheat falling short of targeted levels, lower market arrivals, high ruling market prices, negative market sentiments due to low stocks of wheat in the Central pool and aggressive purchases by the private traders, the marginal increase in 2007-08 was due to increase in MSP. To encourage farmers to increase production of wheat as well as to enhance procurement in RMS 2007-08, the Government announced MSP of Rs. 750 per quintal and an incentive bonus of Rs. 100 per quintal. Procurement of wheat, however, increased only in a limited way to 11.1 million tonnes, compared to 9.2 million tonnes in RMS 2006-07.

7.100 The MSP was further increased to Rs. 1,000 per quintal for the RMS 2008-09 which led to record procurement of 22.68 million tonnes of wheat.

To incentivize the procurement, MSP and incentive bonus, totaling Rs. 745 per quintal for common varieties of paddy and Rs. 775 per quintal for Grade 'A' varieties was declared for Kharif Marketing Season (KMS) 2007-08. MSP of Rs. 850 per quintal for common varieties of paddy and Rs. 880 per quintal for Grade 'A' varieties was announced for KMS 2008-09 and made applicable from 24.6.2008 in KMS 2007-08 itself. The total procurement of rice consequently rose to 28.49 million tonnes in KMS 2007-08 against the estimated 27.6 million tonnes, the increase mainly attributable to early application of MSP for the next crop season. The Government has also announced a bonus of Rs. 50 per quintal during KMS 2008-09. Procurement of rice in FY 2008-09 was 32.8 million tonnes as compared to 26.3 million tonnes in 2007-08 (Table 7.21).

7.101 Procurement of foodgrains by FCI continues to be higher in states such as Punjab, Haryana, Uttar Pradesh and Andhra Pradesh. These four states accounted for nearly 68.8 per cent of rice procured for the Central pool in KMS 2005-06, 69.7 per cent in 2006-07 and 69.46 per cent in 2007-08. Punjab and Haryana accounted for 99.5 per cent of wheat procurement in RMS 2006-07, which declined to 91.1 per cent in 2007-08 and 66.88 per cent in RMS 2008-09, indicating fairly improved procurement by other states. Andhra Pradesh, Orissa and West Bengal showed notable improvement in procurement in KMS 2007-08, while Punjab, Madhya Pradesh,

**Table 7.21 : Procurement and offtake of wheat and rice under the Central pool**

	2003-04	2004-05	2005-06	2006-07	2007-08	(million tonnes)	
						April- 2007-08	March 2008-09
<b>Procurement of wheat and rice under Central Pool</b>							
Rice	20.8	24.0	26.7	26.3	26.3	26.3	32.8
Wheat	15.8	16.8	14.8	9.2	11.1	11.1	22.7
<b>Offtake of wheat and rice for TPDS</b>							
						<b>April-February</b>	
Rice	13.4	16.6	19.2	21.2	22.6	20.4	20.4
Wheat	10.8	13.1	12.2	10.4	10.9	10.0	11.5
Total (A)	24.2	29.7	31.4	31.6	33.5	30.4	31.9
BPL (rice+wheat)	15.8	17.5	15.6	14.2	15.1	13.8	14.5
APL (rice+wheat)	4.2	6.7	8.3	8.7	9.0	8.0	8.6
AAY (rice+wheat)	4.2	5.5	7.4	8.7	9.4	8.6	8.8
<b>Offtake of wheat and rice for other schemes</b>							
Welfare scheme (B)	13.5	10.6	9.7	5.1	3.9	3.4	3.0
Open sales/ exports (C)	11.6	1.2	1.1	0.0	0.02	0.02	0.7
<b>Total (A+B+C)</b>	<b>49.3</b>	<b>41.5</b>	<b>42.1</b>	<b>36.7</b>	<b>37.4</b>	<b>33.8</b>	<b>35.6</b>

Source : Food Bulletin – Department of Food and Public Distribution

**Table 7.22 : Procurement of rice for Central pool (marketing year-wise)**

State/UT	Qty (lakh tonnes)			Percentage share		
	2005-06	2006-07	2007-08	2005-06	2006-07	2007-08
Andhra Pradesh	49.71	53.28	74.17	18.0	21.2	26.0
Chhattisgarh	32.65	28.65	27.43	11.8	11.4	9.6
Haryana	20.54	17.77	15.72	7.4	7.1	5.5
Orissa	17.85	20.02	23.38	6.5	8.0	8.2
Punjab	88.55	78.29	79.08	32.0	31.2	27.8
Uttar Pradesh	31.51	25.59	28.91	11.4	10.2	10.2
West Bengal	12.75	6.42	15.08	4.6	2.6	5.3
others	23.00	21.05	21.14	8.3	8.4	7.4
<b>Total</b>	<b>276.56</b>	<b>251.07</b>	<b>284.91</b>	<b>100</b>	<b>100</b>	<b>100</b>

Source : Department of Food & Public Distribution

**Table 7.23 : Procurement of wheat (marketing year wise)**

State/UT	Qty (lakh tonnes)			Percentage share		
	2006-07	2007-08	2008-09	2006-07	2007-08	2008-09
Bihar	-	0.08	5	0	0.07	2.20
Haryana	22.29	33.5	52.31	24.16	30.11	23.06
Himachal Pradesh	-	-	0	0	0	0.00
Madhya Pradesh	-	0.57	24.1	0	0.51	10.63
Punjab	69.46	67.81	99.39	75.29	60.94	43.82
Rajasthan	0.02	3.83	9.35	0.02	3.44	4.12
Uttarakhandl	-	0.02	0.85	0	0.02	0.37
Uttar Pradesh	0.49	5.46	31.37	0.53	4.91	13.83
Chandigarh	-	-	0.1	0	0	0.00
Delhi	-	-	0.07	0	0	0.00
Gujarat	0	0	4.15	0	0	1.83
Maharashtra	0	0	0.1	0	0	0.04
Jharkhand	0	0	0.02	0	0	0.01
J&K	0	0	0.01	0	0	0.00
<b>Total</b>	<b>92.26</b>	<b>111.27</b>	<b>226.82</b>	<b>100</b>	<b>100</b>	<b>100</b>

Source : Department of Food & Public Distribution

Uttar Pradesh and Gujarat showed remarkable improvement in procurement of wheat in RMS 2008-09 (Table 7.22 and 7.23).

7.102 The MSP of maize was raised to Rs. 620 per quintal for KMS 2007-08 and a quantity of 60,301 MT was procured. The procurement of coarse grains generally improved in KMS 2007-08. The MSP of maize has been further increased to Rs. 840 per quintal for KMS 2008-09, resulting in procurement of 7,38,000 tonnes of maize in KMS 2008-09 (till 31.03.2009). The overall procurement of coarse grains in KMS 2008-09 till 31.03.2009 has increased to 11.18 lakh tonnes, due to highly remunerative MSPs of coarse grains.

7.103 Details of coarse grain procurement during last three years and the current kharif marketing season is given in Table 7.24.

**Table 7.24 : Procurement of coarse grain**

(lakh tonnes)	
Year	Procurement
2005-06	11.50
2006-07	0.002
2007-08	2.04
2008-09 (till March 2009)	11.18

Source : Department of Food & Public Distribution

#### *Decentralized procurement scheme*

7.104 Decentralized Procurement Scheme is in operation in 10 states, namely, West Bengal, Uttar Pradesh, Madhya Pradesh, Chhattisgarh, Uttarakhand, Gujarat, Orissa, Tamil Nadu, Karnataka and Kerala and the Union Territory of Andaman & Nicobar Islands since 1997. Under this scheme, the designated states procure, store and issue

foodgrains under the Targeted Public Distribution System (TPDS) and the welfare schemes of the Government of India. The difference between the economic cost fixed for the State and the Central Issue Price is passed on to the State Government as subsidy. The decentralized system of procurement has the objectives of covering more farmers under the MSP operations, improving efficiency of the PDS, providing foodgrains varieties more suited to local taste and reducing transportation costs. States under DCP operations have shown a healthy increase in procurement in rice. The downward trend in procurement of wheat has been arrested in RMS 2008-09 with procurement increasing to 6.05 million tonnes under DCP operations as against 0.61 million tonnes in the preceding year.

### Import of wheat

7.105 The decision to import wheat in 2006-07 and 2007-08 was taken to meet the deficit in the Central pool for meeting commitments under TPDS, other food-based welfare schemes and emergency relief measures. It also helped to augment domestic availability of wheat for maintaining food security, improvement in buffer stock and price stability. Government placed orders to import 5.5 million tonnes of wheat in 2006-07 at a weighted average price of US\$ 204.7 per tonne and 1.8 million tonnes in 2007-08 at weighted average price of US\$ 373.8 per tonne. The phenomenal increase in procurement of wheat in RMS 2008-09 and excellent procurement in RMS 2009-10 (till 20.4.2009) will ensure that imports will not be necessary in the ensuing year.

### Buffer stock

7.106 The years 2001-03 witnessed high levels of stock in the Central pool, reaching a peak of 64.7

million tonnes, an all-time record, in June 2002. The year 2003-04 witnessed a general easing in the foodgrains stocks with the FCI, because of lower procurement of rice and wheat following a bad agricultural year in 2002-03 combined with relatively high offtake of foodgrains, especially for drought relief operations (Table 7.25).

7.107 The steady reduction in stocks prompted the Government to stop fresh allocation of rice and wheat for export from August 2003. FY 2004-05 started with a much lower level of stock at 20 million tonnes on April 1, 2004, as compared to the stock level of 32.8 million tonnes on April 1, 2003. The foodgrains stocks, however, remained consistently higher than the buffer requirement during 2004-05 on account of good procurement of rice and wheat and relatively lower offtake than in the previous year. The stock of foodgrains, which was 15.7 million tonnes on April 1, 2006 against the buffer norms of 16.2 million tonnes, increased to 17.88 million tonnes on April 1, 2007. The stock position as on April 1, 2008 was comfortable at 19.64 million tonnes against buffer stock norm of 16.2 million tonnes. The stock position of foodgrains as on April 1, 2009 was 350.33 lakh tonnes comprising of 216.04 lakh tonnes of rice and 134.29 lakh tonnes of wheat against buffer norm of 122 lakh tonnes and 40 lakh tonnes respectively, and is adequate for meeting the requirements under TPDS and welfare schemes during the current financial year.

### Economic cost of foodgrains to FCI

7.108 The economic cost of foodgrains consists of three components viz, MSP (and bonus) as the price paid to farmers, procurement incidentals and the cost of distribution. The economic cost witnessed a significant increase for both wheat and rice in

**Table 7.25 : Stock position of wheat and rice in the Central pool vis-à-vis minimum buffer norms**

(in lakh tonnes)

ASON	WHEAT		RICE		TOTAL	
	Minimum buffer norms	Actual stock	Minimum buffer norms	Actual stock	Minimum buffer norms	Actual stock
January 2007	82	54.28	118	119.77	200	174.05
April	40	47.03	122	131.72	162	178.75
July	171	129.26	98	109.77	269	239.04
October	110	101.21	52	54.89	162	156.10
January 2008	82	77.12	118	114.75	200	191.87
April	40	58.03	122	138.35	162	196.38
July	171	249.12	98	112.49	269	361.61
October	110	220.25	52	78.63	162	298.88
January 2009	82	182.12	118	175.76	200	357.88

Source : Department of Food & Public Distribution

Table 7.26 : Economic cost of rice and wheat

(Rupees per quintal)					
Year	2004-05	2005-06	2006-07 (prov)	2007-08 (prov)	2008-09 (RE)
<b>Rice</b>					
Procurement incidentals	58.48	21.25	191.79	191.81	268.02
Distribution cost	256.51	281.37	300.59	331.81	294.67
Economic cost \$	1303.59	1350.67	1411.6	1563.70	1789.78
<b>% increase over previous year</b>					
Procurement incidentals	90.61	-63.66	*	0.01	39.73
Distribution cost	19.57	9.69	6.83	10.38	(-11.19)
Economic cost \$	5.46	3.61	4.51	10.77	14.45
<b>Wheat</b>					
Procurement incidentals	182.74	163.67	179.39	163.47	198.87
Distribution cost	222.8	226.96	280.19	282.76	228.54
Economic cost \$	1019.01	1031.51	1214.39	1353.24	1392.68
<b>% increase over previous year</b>					
Procurement incidentals	32.23	-10.44	9.60	(-8.87)	21.65
Distribution cost	31.30	1.87	23.45	0.91	(-19.17)
Economic cost \$	10.92	1.23	17.73	11.43	2.91

Source : Department of Food & Public Distribution.

\$ Weighted average of common and grade 'A' rice taken together;

\* For rice, from 2006-07, in the procurement incidentals weightage of levy rice incidentals is also being taken.

2007-08 due to increase in MSPs. The economic costs of wheat and rice for 2007-08 have been provisionally fixed at Rs. 1,353.24 and Rs. 1,563.70 per quintal respectively. The economic cost of wheat and rice in 2008-09 is estimated to be Rs. 1,392.68 and Rs. 1,789.78 per quintal respectively. The difference between the economic cost of foodgrains and the issue price is reimbursed to FCI (Table 7.26)

7.109 The incidence of taxation and levies on wheat and rice continues to be high in the major procurement states like Punjab, Haryana and Andhra Pradesh. They have been imposing state taxes and levies of over 10 per cent ad valorem on the procurement of foodgrains, thereby inflating the economic costs, which have a direct bearing on market prices. Huge expenditure is also incurred by the FCI, and reflected in economic costs, on payment of Dami/Arthia charges as per statutory notifications issued by some states notably, Punjab, Haryana, Uttar Pradesh and Rajasthan.

#### Offtake of foodgrains from the Central pool

7.110 The offtake of foodgrains is primarily under the Targeted Public Distribution System and other welfare schemes of the Government of India. Under TPDS the allocation is made on a scale of issue which is 35 kg. per family for BPL and AAY categories and is variable based on foodgrain availability for APL category. Offtake of foodgrains under TPDS and other welfare schemes has been increasing in the last five years and has gone up from 31.3 million tonnes in 2002-03 to 37.4 million tonnes in 2007-08.

#### Food subsidy

7.111 Provision of minimum nutritional support to the poor through subsidized foodgrains and ensuring price stability in different states are the twin objectives of the food security system. In fulfilling its obligation towards distributive justice, the Government incurs food subsidies. The difference between economic cost of foodgrains and the issue price is reimbursed to FCI. Food subsidy provided to FCI and states/UTs undertaking DCP operations showed an annual increase of above 30 per cent during each of the three years namely, 2000-01, 2001-02 and 2002-03. The same trend is discernible since 2007-08 (Table 7.27).

Table 7.27 : Growth of food subsidies in India

Year	Food subsidy* (Rs. crore)	Annual growth (per cent)
1998-99	8700	16.0
1999-00	9200	5.8
2000-01	12010	30.5
2001-02	17494	45.7
2002-03	24176	38.2
2003-04	25160	4.1
2004-05	25746	2.3
2005-06	23071	-10.4
2006-07	23828	3.3
2007-08	31260	31.2
2008-09 (Prov)	43668	40.0

Source : Department of Food & Public Distribution

\* The subsidy amount above is in respect of wheat and rice only.

Table 7.28 : Trends in minimum support price and Central issue price

Marketing season	(Rs/quintal)							
	Minimum support price		Central issue price					
	Wheat	Paddy	Wheat			Rice		
		APL	BPL	AAY	APL	BPL	AAY	
2004-05	630	560	610	415	200	795	565	300
2005-06	640	570	610	415	200	795	565	300
2006-07	700	620	610	415	200	795	565	300
2007-08	850	745	610	415	200	795	565	300
2008-09	1000	850	610	415	200	795	565	300

7.112 While the economic cost of wheat and rice has gone up continuously due to increase in MSP and incentive bonus, the issue price has been kept unchanged since July 1, 2002. This has resulted in increasing incidence of food subsidy, which is the difference between the economic cost and issue prices (Table 7.28).

7.113 The total amount of subsidy has continued to rise at the national level. The ratio of the percentage allocation of subsidies as given by the offtake of foodgrains under TPDS and the proportion of people below poverty line is less than one for many of the poorer states.

### Rationalization of wheat / rice allocation

7.114 Keeping in view the declining stock position in the Central pool, the Central Government rationalized allocation of wheat for APL category under the TPDS from June 2006 based on each state's average offtake during the earlier three years and allocation of rice from April 2007 based on offtake during earlier three years. Further, in view of lower procurement of rice during 2006-07 and 2007-08 than the estimates, the allocation of rice for APL category for 2008-09 has been made on the basis of its average offtake during 2006-07 and 2007-08. The decision has been made uniformly applicable for all the states excepting J&K, A&N Islands, Lakshadweep, Himachal Pradesh and the North-eastern States excluding Assam, for which allocations have been retained at last year's (2007-08) level. However, there was no change in the overall allocation/ entitlements for BPL and AAY categories. Thus, while the allocations for AAY and BPL categories are made at 35 kg per family per month, allocations for APL category are made depending upon the availability of stocks in the Central pool. Besides the normal monthly allocation for APL category, ad hoc additional allocations of 22.56 lakh tonnes of wheat and 4.28 lakh tonnes of rice was made to various states/UTs during 2008. Further, a quantity of 1.92 lakh tonnes

of wheat and 0.39 lakh tonnes of rice was also allocated to various States as festival allocations.

7.115 In order to check inflationary trends in food economy, the Government took a decision in August 2008 to release wheat into the open market under the Open Market Sale Scheme (Domestic) (OMSS). These releases have been made through allocation to state/UT Governments for distribution to retail consumers and sale to bulk consumers by FCI through open tenders.

7.116 Allocation of up to 10 lakh tonnes was made to the State/UT Governments for distribution to retail consumers during the months of September 2008 to March 2009. The lifting by State Governments against these allocations was only 0.79 lakh tonnes (as on 15.03.2009). State/UT-wise allocation has also been made for sale of wheat to bulk consumers by FCI. The tenders floated by FCI were accepted by the high level committee (HLC) constituted by the Government. The HLC accepted bids for 12.13 lakh tonnes of wheat. The release of wheat under OMSS has helped in stabilizing wholesale prices of wheat.

### Sugar

7.117 The sugar production is provisionally estimated at 263 lakh tonnes in 2007-08 sugar season (October-September) as compared to record sugar production of 282 lakh tonnes in 2006-07 sugar season. In 2008-09 sugar season, sugar production is presently assessed to be about 150 lakh tonnes. Consumption is estimated at about 225 lakh tonnes per year. The shortfall in sugar production as against estimated consumption is sought to be met by import of raw sugar permitted against advance licence and under OGL at zero rate of customs duty up to 1.8.2009 to supplement domestic availability as well as control prices. The Government has also allowed STC, MMTC, PEC and NAFED to import 10 lakh tonnes of white/refined sugar at zero rate of customs duty up to 1.8.2009. Stock holding limits have been prescribed and further interventions may be

**Table 7.29 : Production of oilseeds and net availability of edible oils**

(in lakh tonnes)

Oil-year (Nov.-Oct.)	Production*	Net availability of edible oils from all domestic sources	Import of edible oils (financial year)***	Total availability/ consumption of edible oils (domestic & imports)	Estimated requirement/ demand for edible oil consumption
2007-08	297.55	86.54	56.08	142.62	142.62
2008-09#	281.27	80.49	70.69	151.18	151.18 **

Source : \* Ministry of Agriculture

\*\* Directorate of Vanaspati, Vegetable Oils & Fat

\*\*\* DGCI&S

# Estimated

considered, if required. Due to the concerted efforts of the Government to ensure clearance of cane price arrears, the arrears for the 2008-09 sugar season, as on February 15, 2009, are estimated at about Rs. 2,033.78 crore only as against the total cane price payable of Rs. 13,989.19 crore. The cane price arrears for the last season (2007-08) were only Rs. 134.91 crore as on 15.2.2009.

7.118 To help the sugar industry and sugarcane farmers the Government had taken the measures during 2006-07 and 2007-08 sugar season which helped the sugar industry to improve liquidity during this period. These measures inter alia included creation of buffer stock of 50 lakh tonnes for one year. The banks provided additional credit on creation of buffer stock. The buffer subsidy amount and the additional credit were used for payment of cane price arrears as first priority; export assistance to defray expenditure on internal transport, marketing and handling charges and ocean freight for a period of one year was introduced with effect from April 19, 2007 and extended further up to 30.9. 2008. Such assistance was also to be used for payment of cane price including cane price arrears as first priority; extension up to 5 years of the moratorium of two years on restructured term loans of Cooperative Sugar Factories which were outstanding on April 1, 2005, under the NABARD package; loans from the banks under special schemes to the sugar mills — private, public sector and cooperative — of an amount equivalent to the notional central excise duty payable on total production of sugar during 2006-07 and 2007-08 sugar years and to provide full interest subvention to the banks on account of this loan, subject to a cap of 12 per cent per annum. The loan amount was to be used for clearance of cane price arrears of 2006-07 sugar season and cane price of 2007-08 sugar season relating to the Statutory Minimum Price (SMP) of sugarcane fixed by the Central Government. As per available information, about Rs. 2,700 crore of loan has been extended under the scheme.

### Edible oils

7.119 Estimated production of oilseeds and net availability of edible oils from all domestic sources is as in Table 7.29.

7.120 In order to check the instances of under-invoicing of edible oil imports, the Government had fixed tariff value on import of certain edible oils with effect from August 3, 2001 after which tariff value on these oils has been revised from time to time. The import duty structure and tariff values of edible oils are given in Tables 7.30 and 7.31.

**Table 7.30 : Present import duty structure on edible oils \***

Item Description	Current rates of duty on Crude Edible Oils	Current rates of duty on Refined Edible Oils
Soyabean oil	20% **	7.5%
Palmolein	Nil	7.5%
Palm oil	Nil	7.5%
Groundnut oil	Nil	7.5%
Sunflower	Nil	7.5%
Safflower oil	Nil	7.5%
Coconut Oil	Nil	7.5%
Rapeseed/Mustard oil	Nil	7.5%

Source : Directorate of Vanaspati, Vegetable Oils and Fats

\* Import duty effective from April 1, 2008.

\*\* Effective from 18.11.2008.

### Commodity futures market

7.121 Commodities which were traded in the commodity futures market during 2008 included a variety of agricultural commodities, bullion, crude oil, energy and metal products. New agricultural commodities introduced for trading in 2008-09 were red areca nut, coriander seeds and garlic. The commodity futures market facilitates price discovery process and provide price risk management. Its

**Table 7.31 : Tariff values of edible oils**

Notification date	(in US\$ per tonne)						
	Crude Palm Oil	RBD Palm Oil	RBD Palmolein	Crude Palmolein	Crude Soyabean Oil	Others Palm Oil	Others Palmolein
15.9.2006	447	476	484	481	580	462	483

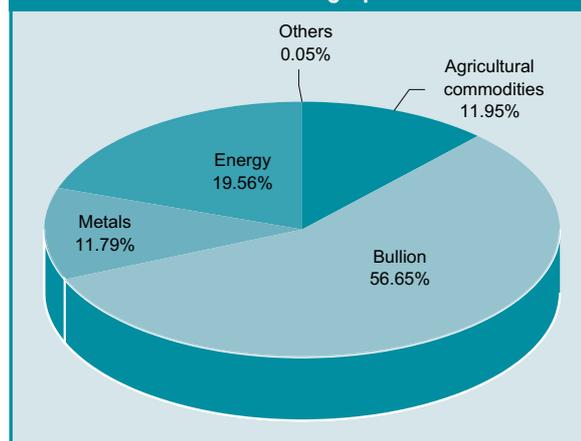
Source : Directorate of Vanaspati, Vegetable Oils and Fats

effectiveness depends on the wider participation of all the stakeholders categories. The daily average value of trade in the commodity exchanges improved from Rs. 13,287.55 crore during 2007-08 to Rs. 17,042.07 crore in 2008-09. Agricultural commodities, bullion and energy products accounted for a large share of the commodities traded.

7.122 During the year 2008-09, value of trade in agricultural commodities was about 12 per cent of total value of trade but in terms of volume of trade agricultural commodities accounted for 33.7 per cent of total volume of trade (Table 7.32).

7.123 Bullion accounted for the maximum share of the commodity groups to the total value of trade during 2008-09 (April-March) at 56.65 per cent followed by energy at 19.56 per cent. Agricultural commodities and metals accounted for 11.95 per cent and 11.79 per cent respectively of the total value of trade during 2008-09 (April- March) (Figure 7.2).

7.124 Special emphasis was given by FMC to broadbase the market and to take the benefits of futures trading to all the stakeholders of the commodity market, especially farmers. The initiatives taken in this regard, inter alia, include: promoting the participation of hedgers to counter-balance financial stakeholders with the commercial stakeholders for a balanced and liquid market and to strengthen the price discovery process; increasing the awareness level of farmers and other market participants to make them aware of the existence of as well as benefits from the futures market; working on various models of "aggregation" to enable small farmers to hedge on the commodity exchanges to

**Figure 7.2 : Per cent share of the major group of commodities traded during April - March 2008-09**

manage their price risk; permitting NCDEX to accredit warehouses of producers/processors/similar participants to widen the scope of physical delivery of bulk commodities.

### Restoration of futures trade – Chana, soy oil, rubber and potato

7.125 Considering the concerns of the Government of India about the inflationary expectations in the economy, the FMC, as a measure of abundant caution, had suspended futures trading in soya oil, rubber and potato w.e.f. May 7, 2008. However, with the easing of inflationary pressure, the suspension was allowed to lapse on November 30, 2008. Trading in these commodities resumed on December 4, 2008.

**Table 7.32 : Volume and value of agricultural commodities traded during last three years**

Group of commodity	VOT in lakh tonne					
	Value Rs. in crore					
	2006-07		2007-08		2008-09	
	VOT	Value	VOT	Value	VOT	Value
Agri. commodities.	5023.92 (81.96%)	1317125.21 (35.82%)	3139.03 (56.32)	941283.33 (23.15%)	2309.35 (33.65%)	627303.14 (11.95%)
<b>Grand Total</b>	<b>6129.29</b> <b>(100%)</b>	<b>3676926.67</b> <b>(100%)</b>	<b>5573.41</b> <b>(100%)</b>	<b>4065989.47</b> <b>(100%)</b>	<b>6863.49</b> <b>(100%)</b>	<b>5248956.18</b> <b>(100%)</b>

Source : Department of Consumer Affairs

7.126 The Government of India had appointed a committee under the chairmanship of Prof. Abhijit Sen, Member, Planning Commission to study the impact of futures trading, if any, on agricultural commodity prices. The Committee was appointed on March 2, 2007 and submitted its report on April 29, 2008. The main findings and recommendations of the committee are: negative sentiments have been created by the decision to delist futures trades in some important agricultural commodities; the period during which futures trading has been in operation is too short to discriminate adequately between the effect of opening of futures markets, if any, and what might simply be the normal cyclical adjustments in prices; Indian data analyzed does not show any clear evidence of either reduced or increased volatility; the vibrant agriculture markets including derivatives markets are the frontline institutions to provide early signs of future prospects of the sector. The committee recommended for upgradation of regulation by passing of the proposed amendment to FC(R) Act 1952 and removal of infirmities in the spot market.

7.127 The “Study on Impact of Futures Trading in Wheat, Sugar, Pulses and Guar Seeds on Farmers” was commissioned by the Forward Markets Commission and undertaken by the Indian Institute of Management, Bangalore. While the study was primarily intended to find out how futures trading is helping major stakeholders in the value chain of these commodities; it also dealt with the impact of futures trading on the prices of these commodities. The study did not find any visible link between futures trading and price movement and suggested that the main reason for price changes seemed to be changes in the fundamentals (mainly on the supply side) of these commodities, Price changes were also attributed to changes in government policies.

## CHALLENGES AND OUTLOOK

7.128 The agriculture sector faces challenges on various fronts. On the supply side, the yield of most crops has not improved significantly and in some cases fluctuated downwards. The scope for increase in the net sown area is limited and farm size has been shrinking. In the case of certain crops like sugarcane, extreme variability in the acreage and production over the years has been a matter of concern. On the other hand, in the case of pulses, production has just not kept pace with the requirement leading to a rise in prices given that its availability in the international markets is limited.

7.129 Therefore there is clearly a need for a renewed focus on improving productivity. At the same

time to step up the growth of allied activities and non-farm activities that can help improve value addition. The current focus on developing rural infrastructure particularly rural roads needs to be maintained as it would go a long way in providing connectivity that is essential for movement of agricultural produce. The irrigation sector requires a renewed thrust both in terms of investment as also modern management. There is considerable scope for development of micro-irrigation systems and watersheds and in the use of a participatory approach for achieving the same.

7.130 There is a need to narrow the gap between producer prices and consumer prices through proper marketing support. The development of marketing infrastructure and storage and warehousing and cold chains and spot markets that are driven by modern technology will go a long way in addressing this need.

7.131 As per the Report of the Committee on Financial Inclusion (January 2008), more than 73 per cent of farmer households have no access to formal sources of credit. Innovative institutional mechanisms that provide credit and financial products (including insurance products) specifically designed to meet the needs of the farm sector keeping their risk - bearing ability in view is the need of the hour.

7.132 The rural economy needs to be viewed as comprising of a continuum of interrelated economic activities. Farming needs to be dovetailed with viable off-farm and non-farm activities. Farmers need to be facilitated to take up value addition such as processing of agricultural produce, horticulture, pisciculture, poultry, development of non-farm rural enterprises.

7.133 On the distribution side, there is need to ensure that benefits accrue to the targeted population. A mission approach for promotion of smart cards and its cross reference with ration cards and voter ID cards would help better targeting, lesser leakages and easier administration.

7.134 An area that requires focused attention is the issue of sustainability of agriculture with due emphasis on environmental concerns. Soil erosion, water logging, reduction in groundwater table and the decline in the surface irrigation are the problems faced by agriculture. The consequences of climate change on Indian agriculture also need to be factored in the strategy for the development of this sector.

7.135 On the whole, while the challenges faced by the agriculture and the allied sector are numerous, the possibilities for new investment, the use of new technologies that could generate value to the society and incomes in the rural sector are also immense.