7

AGRICULTURE

It was an excellent year for agriculture, facilitated greatly by a good 1994 Monsoon whose coverage across the country during June-September was the best since 1989. The country is likely to attain a record foodgrains output of 185 million tonnes in 1994-95. The kharif 1994 output of foodgrains is estimated at 102 million tonnes and the rabi output is likely to touch over 83 million tonnes. Despite some setback in production of soyabean, total production of oilseeds/ edible oils from secondary as well as primary sources is likely to be marginally higher in 1994-95. Sugar production is expected to be higher in 1994-95 mainly because of higher cane availability in Maharashtra, Karnataka and Tamil Nadu. Cotton output is estimated to be higher but output of Jute & Mesta is likely to be the same as in 1993-94. Among the plantation crops, production of tea and natural rubber would be higher in 1994-95, but coffee output may decline substantially.

Monsoon 1994

1. The 1994 Monsoon was the seventh successive normal Monsoon. The cumulative seasonal rainfall for the country as a whole during the four month period (June to September) was close to 110 per cent of its long period average. It was the second highest monsoon rainfall year during the past 10 years, the highest being in 1988 when it was 119 per cent of the long period average.

2. The Monsoon arrived over Kerala on May 28,1994, a few days earlier than its normal date and progressed unusually rapidly, covering the entire country by June 30, about 15 days earlier than the normal date. By the end of the monsoon season, 25 out of 35 meteorological subdivisions and 76 per cent of the districts covering 75 per cent of the country's area received normal to excess rain. The comparative performance of the monsoon for the period 1988 to 1994 is shown in Table 7.1 and Figure 7.1.

3. The entire surface area of the country has 35 meteorological subdivisions within which lie 415 districts. Progress of monsoon is examined in each district in terms of volume of rainfall distribution. Figure 7.2 lists district-wise distribution of rainfall for the past seven years.

4. By and large, the distribution of rainfall for the country as a whole in 1994 was quite satisfactory and the total quantum of rainfall for the country was very good. However, in some parts of eastern and peninsular India, it was somewhat deficient. A special feature of the 1994 monsoon was that though the quantity of rainfall was above average and the central belts of the country received normal to excess rain during most of the season, the traditional heavy rainfall areas of north-east India did not receive adequate rains. As a result the flood prone areas of eastern India escaped the fury of floods this year.

5. The temporal distribution of monsoon rain during 1994-95 was more favourable to kharif crops than last year. The spatial distribution of rainfall index in 1994 and in the preceding year, as also the previous best in 1988, is listed in Table 7.2. A comparative week-wise picture of temporal distribution of rainfall during the

TABLE 7.1

Monsoon Performance, 1988 to 1994

(June-September)

Year	Number of Meteorological Sub-divisions			Percentage of districts with normal/ excess rainfall	Actual rainfall as per cent to normal rainfall (Country as a whole)
	Excess/ Normal	Deficient/ Scanty	Total		
1	2	3	4	5	6
1988	32	3	35	88	119
1989	29	6	35	72	101
1990	32	3	35	84	106
1991	27	8	35	68	91
1992	32	3	35	65	93
1993	31	4	35	78	100
1994	25	10	35	76	110

Fig 7.1

ALL INDIA MONSOON RAINFALL (JUNE—SEPTEMBER) 1988 TO 1994

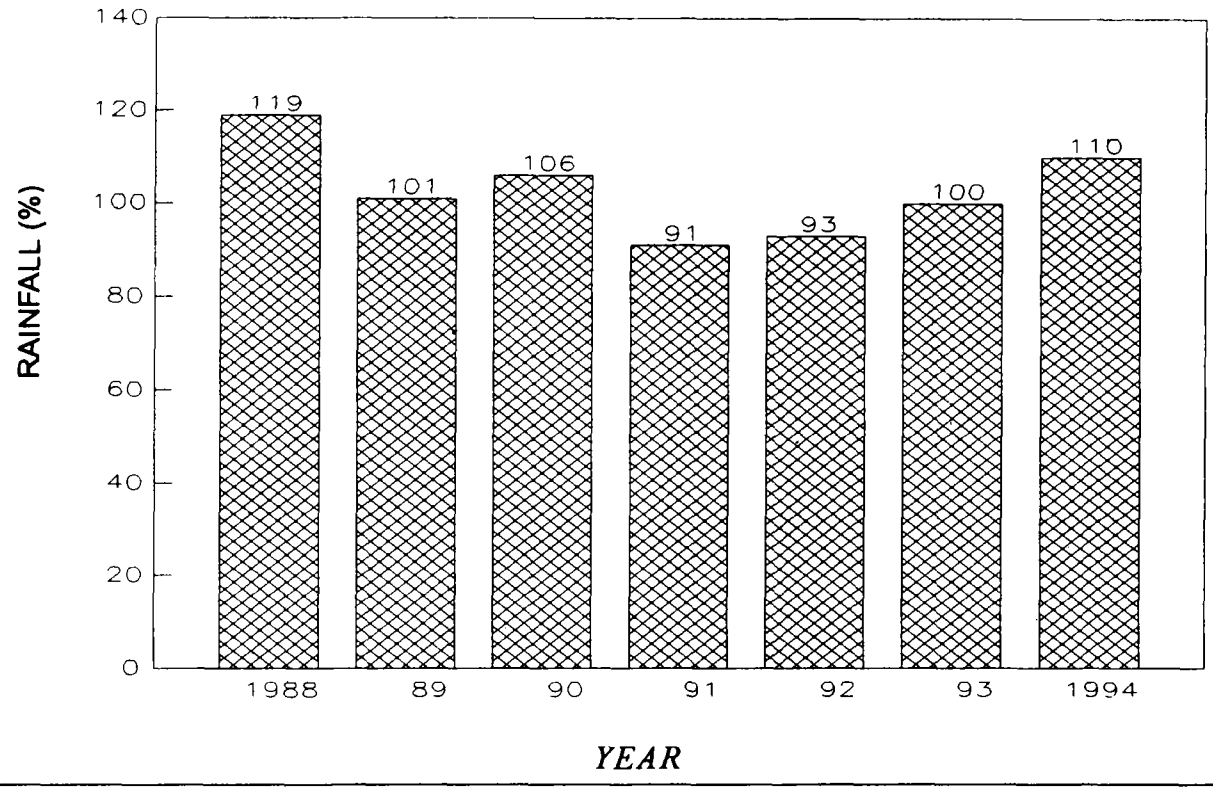


Fig 7.2

DISTRICTS WITH ABOVE NORMAL AND BELOW NORMAL RAINFALL 1988 TO 1994

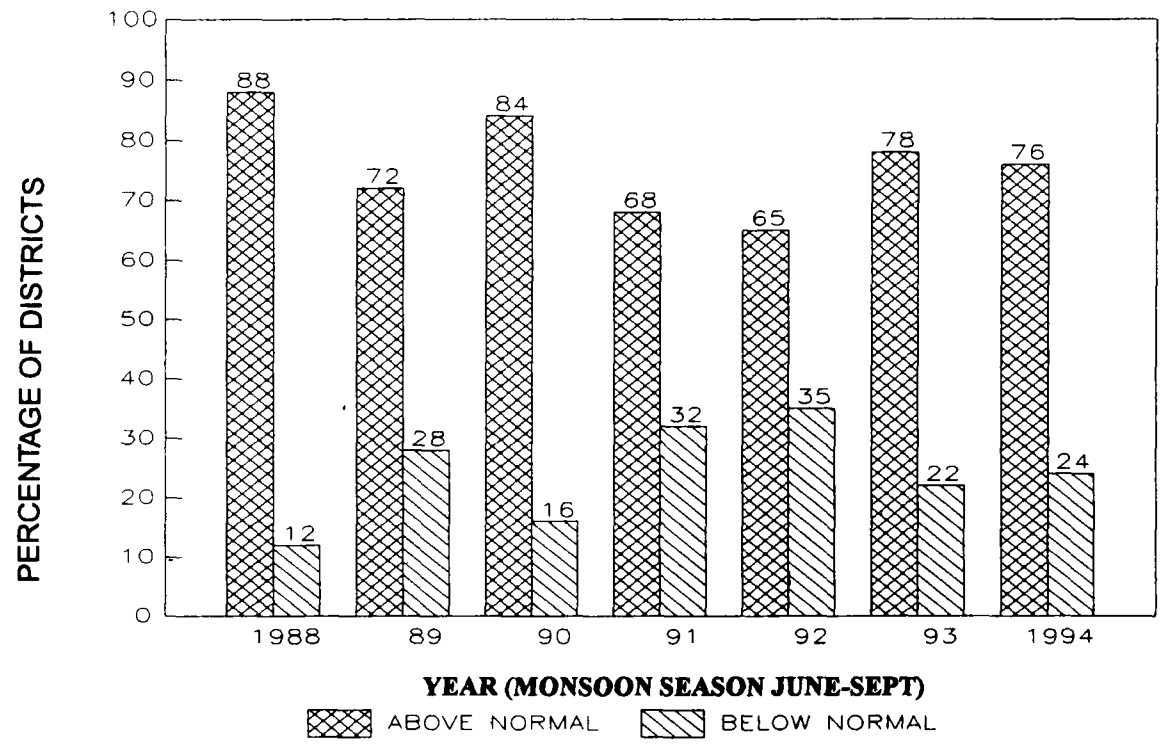


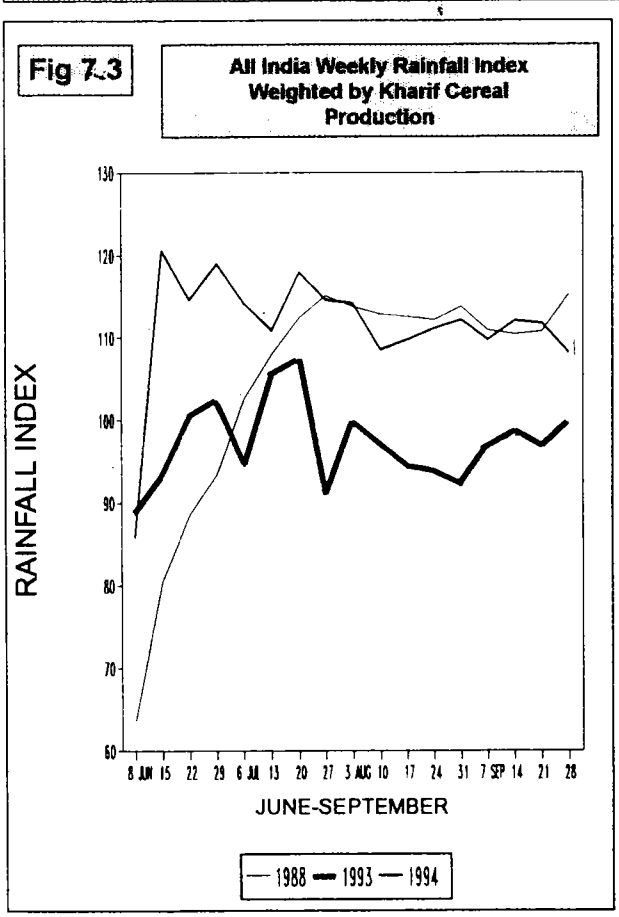
TABLE 7.2
State-wise Rainfall Indices Weighted by Kharif Cereals Production

(Per cent)

States	Production Weights	Rice Area under irrigation[1]	As on 14 July			As on 30 September		
			1988	1993	1994	1988	1993	1994
1	2	3	4	5	6	7	8	9
Andhra Pradesh	8.70	94.9	106.29	82.04	98.38	151.16	80.40	85.88
Assam	3.34	33.8	79.27	106.50	87.92	103.05	113.15	74.73
Bihar	7.94	35.4	137.30	69.10	87.74	107.68	97.14	87.61
Gujarat	3.30	48.5	62.62	161.50	158.00	133.69	102.25	180.22
Haryana	2.49	99.1	241.23	192.64	121.27	206.93	97.32	121.18
Himachal Pradesh	0.85	57.6	151.51	137.93	161.01	136.32	81.41	108.70
Jammu & Kashmir	1.23	91.2	165.97	200.16	56.66	152.60	38.74	59.76
Karnataka	5.80	61.0	75.78	96.88	143.38	119.08	93.34	125.94
Kerala	1.31	40.1	70.92	104.84	107.63	99.05	82.40	115.74
Madhya Pradesh	9.42	20.1	100.93	101.37	179.99	90.79	101.76	140.05
Maharashtra	7.51	30.4	82.54	100.64	139.16	125.82	100.80	118.37
Orissa	6.13	35.6	108.85	109.50	141.24	91.88	88.35	131.07
Punjab	6.91	99.2	179.37	250.86	78.95	183.13	115.95	110.93
Rajasthan	4.02	22.5	93.49	199.45	163.13	79.24	110.44	141.30
Tamil Nadu	8.06	90.8	117.38	100.66	83.64	122.60	102.91	70.17
Uttar Pradesh	12.87	43.4	116.49	99.13	80.01	102.96	95.75	95.26
West Bengal	8.40	24.6	136.81	95.69	69.65	112.99	113.39	89.76
All India	**100.00**	**45.1**	**107.95**	**105.65**	**106.74**	**115.28**	**94.81**	**105.52**

[1] *Indicates percentage of irrigated area under rice in 1990-91.*

Fig 7.3



monsoon season of 1994 compared with 1993 and 1988 is shown in Figure 7.3. The overall rainfall index weighted by kharif cereals production as on September 30, 1994 was 105.52 compared to only 94.81 per cent recorded for the corresponding period last year.

Reservoir Situation

6. Total live storage in 62 important reservoirs at the end of the 1994 Monsoon was 109.6 Thousand Million Cubic Meters (TMC) as against 87.2 TMC during September 1993. The average live storage during the past 10 years was 89.5 TMC. Thus the current year not only represented about 26 per cent increase in the reservoir storage this year, but also resulted in raising the stored water to 90 per cent of designed utilisable storage as against 71 per cent recorded in September,1993.

Production Performance

Major Crops

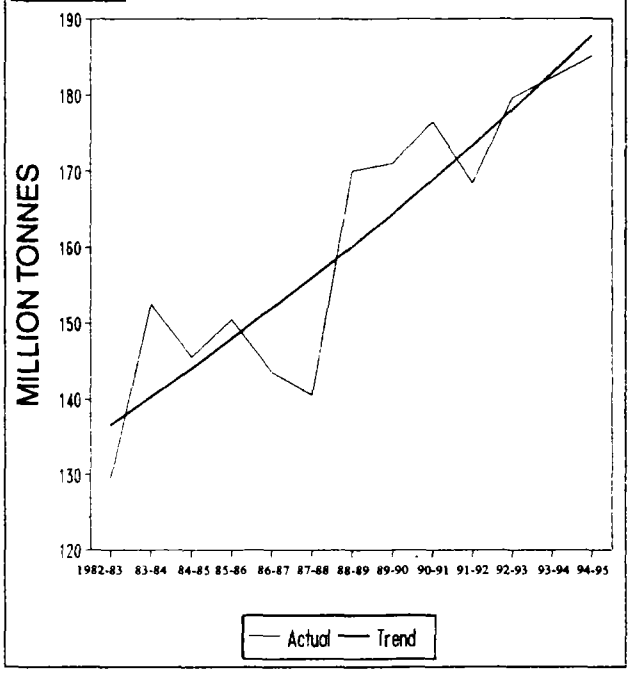
7. Agricultural production performance in the last four years together with the prospect of 1994-95 crop output is listed in Table 7.3. Trend in foodgrains production for the period 1982-83 to 1994-95 is shown in Figure 7.4 Production performance for the period 1986-87 to 1993-94 compared to 1970-71 and 1980-81 is shown in Figures 7.5 and Figures 7.6.

TABLE 7.3
Production of Principal Crops

Crop	1990-91	1991-92	1992-93 (Revised)	1993-94 Target	1993-94 Final	1994-95 Target	1994-95 Likely
1	2	3	4	5	6	7	8
			(Million Tonnes)				
Rice	74.3	74.7	72.9	78.0	79.0	78.5	80.0
Wheat	55.1	55.7	57.2	58.5	59.1	58.5	58.5
Coarse Cereals	32.7	26.0	36.6	36.0	30.9	36.5	32.0
Pulses	14.3	12.0	12.8	15.5	13.1	15.5	14.5
Total Foodgrains	**176.4**	**168.4**	**179.5**	**188.0**	**182.1**	**189.0**	**185.0**
Kharif	99.4	91.6	101.5	105.5	99.4	106.3	101.8
Rabi	77.0	76.8	78.0	82.5	82.7	82.7	83.2
Oilseeds	18.6	18.6	20.1	21.0	21.5	22.0	21.5
Sugarcane	241.0	254.0	228.0	250.0	227.1	250.0	245.6
Cotton[1]	9.8	9.7	11.4	12.5	10.7	12.5	11.6
Jute & mesta[2]	9.2	10.3	8.6	9.3	8.5	9.3	8.5
			(Percentage variation in production over the previous year)				
Rice	1.0	0.5	-2.4		8.4		1.3
Wheat	10.6	1.1	2.7		3.3		-1.0
Coarse Cereals	-6.0	-20.5	40.8		-15.6		3.6
Pulses	10.9	-16.1	6.7		2.3		10.7
Total Foodgrains	**3.2**	**-4.5**	**6.6**		**1.4**		**1.6**
Kharif	-1.6	-7.8	10.8		-2.1		2.4
Rabi	10.0	-0.3	1.6		6.0		0.6
Oilseeds	10.1	0.0	8.1		7.0		0.0
Sugarcane	6.8	5.4	-10.2		-0.4		8.1
Cotton	-14.0	-1.0	17.5		-6.2		8.4
Jute & mesta	10.8	12.0	-16.5		-1.2		0.0

[1] *Million bales of 170 kg each,* [2] *Million bales of 180 kg each*

Fig. 7.4 Trends in Foodgrain Production



Foodgrains

8. Foodgrains production of 182 million tonnes in 1993-94 was higher (by over 1.4 per cent) over the previous year. Increase in production of foodgrains has been rather modest during the last three years. But in 1994-95, production is likely to be around 185 million tonnes, 3 million tonnes more than 1993-94.

Rice

9. Rice production exceeded the target of 78 million tonnes in 1993-94 to reach 79 million tonnes, up by 6 million tonnes over the preceding year. In 1994-95, there may be 1 million tonnes increase with total production expected to reach 80 million tonnes, again exceeding the target set for the year. Kharif 1994 was a good year for rice production.

Wheat

10. Output of Wheat in 1993-94 reached 59.1 million tonnes, which was 3.3 per cent higher than 1992-93. During 1994-95, the prospect of production is quite good and expected production is 58.5 million tonnes, equal to the target set for the year.

Coarse Cereals

11. Bajra, jowar, maize, ragi, barley and small millets constitute coarse cereals. Area under total coarse cereals was 34.4 million hectares in 1992-93, which was 3 per cent higher than the previous year. Production of coarse cereals in 1993-94 is lower than the previous year and the likely production during 1994-95 is reported to be 32 million tonnes which would be higher than previous year. Perhaps a good rainfall year causes more area to be diverted to higher value crops at the expense of area under coarse grains, ensuring at the same time higher yields per unit area under coarse cereals.

Pulses

12. Production of pulses in India has been stagnating around 10-14 million tonnes for the last 30 years. Production fluctuates from year to year depending upon the behaviour of the monsoon. Having fluctuated between 10.9 million tonnes in 1987-88 to 12.8 million tonnes in 1992-93, pulses production was 13.1 million tonnes in 1993-94 exhibiting an increase of about 2.3 per cent over 1992-93. Production in 1994-95 is anticipated at about 14.5 million tonnes, as against a target of 15.5 million tonnes.

Growth in Foodgrain Production

13. In the post green revolution period, beginning 1967-68, the annual growth in foodgrains production was 2.62 per cent, a little above the rate of population growth. In the more recent period (from 1980-81) the growth in rice production has significantly risen to match the growth rate in wheat production. The only setback is in pulses, which continues to register lower growth rates (Table 7.4) and, as a consequence, per capita daily availability of pulses has come down from around 69 grams in 1961 to about 37.8 grams in 1994. A substantial step-up in the production of pulses is necessary and should be possible to achieve as the current yields are low. Sluggish growth in pulses production is mainly because of failure in evolving new high yielding varieties of pulses. Some successful work has been done in arhar (tur), moong and gram, but its impact on enhancing supplies is not yet visible.

Oilseeds

14. The major edible oilseeds cultivated in the country are groundnut, rapeseed and mustard, soyabean, sunflower, sesamum, castorseed, safflower, niger seed and linseed. Total oilseeds production was 20.1 million tonnes in 1992-93, and 21.5 million tonnes in 1993-94. In 1994-95 the target of production is 22 million tonnes which may be achieved if the rabi crop outcome is 10 million tonnes against 9.3 million tonnes last year. There was a setback in soyabean crop in Kharif 1994, and therefore there is some uncertainty about this year's crop output not exceeding last year. Trend of production of oilseeds from 1987-88 to 1993-94 and the likely production during 1994-95 along with the targets are shown in Table 7.5.

Sugarcane

15. Production of sugarcane maintained an upward trend since 1985-86 until it peaked at 254 million tonnes in 1991-92. In 1992-93, it declined to 228 million tonnes mainly due to a decline in area from 3.8 million hectares in 1991-92 to 3.6 million hectares in 1992-93. In 1993-94, production is estimated at around 227 million tonnes which was lower than 1992-93 by 1 million tonnes. In 1994-95, 245.6 million tonnes of cane output is a distinct possibility. Maharashtra, Karnataka and Tamil Nadu are reported to have higher cane output this year compared to last year.

Cotton

16. Cotton output is subject to wide fluctuations. Even so, the production threshold has risen from a low of 75.3 lakh bales (of 170 kgs. each) in 1982-83 to 114 lakh bales in 1992-93. In 1994-95, cotton production may be around 116 lakh bales against 107 lakh bales last year. Cotton area has declined considerably from 80.6 lakh hectares in 1981-82 to 73.4 lakh hectares in

TABLE 7.4
Annual Growth Rate in Production of Foodgrains

(Per cent)

Foodgrains	Compound growth rate[1]		Annual (year to year change)				
	1967-68 to 1992-93	1980-81 to 1992-93	1990-91	1991-92	1992-93	1993-94	1994-95[2]
1	2	3	4	5	6	7	8
Rice	2.84	3.47	1.00	0.54	-2.41	8.37	1.27
Wheat	4.89	3.55	10.60	1.09	2.69	3.32	-1.02
Pulses	0.94	1.49	10.89	-16.09	6.67	2.34	10.69
Foodgrains	2.62	2.84	3.16	-4.54	6.59	1.45	1.59

[1] *Based on index numbers, base triennium ending 1981-82 = 100* [2] *Provisional*

Figure 7.5

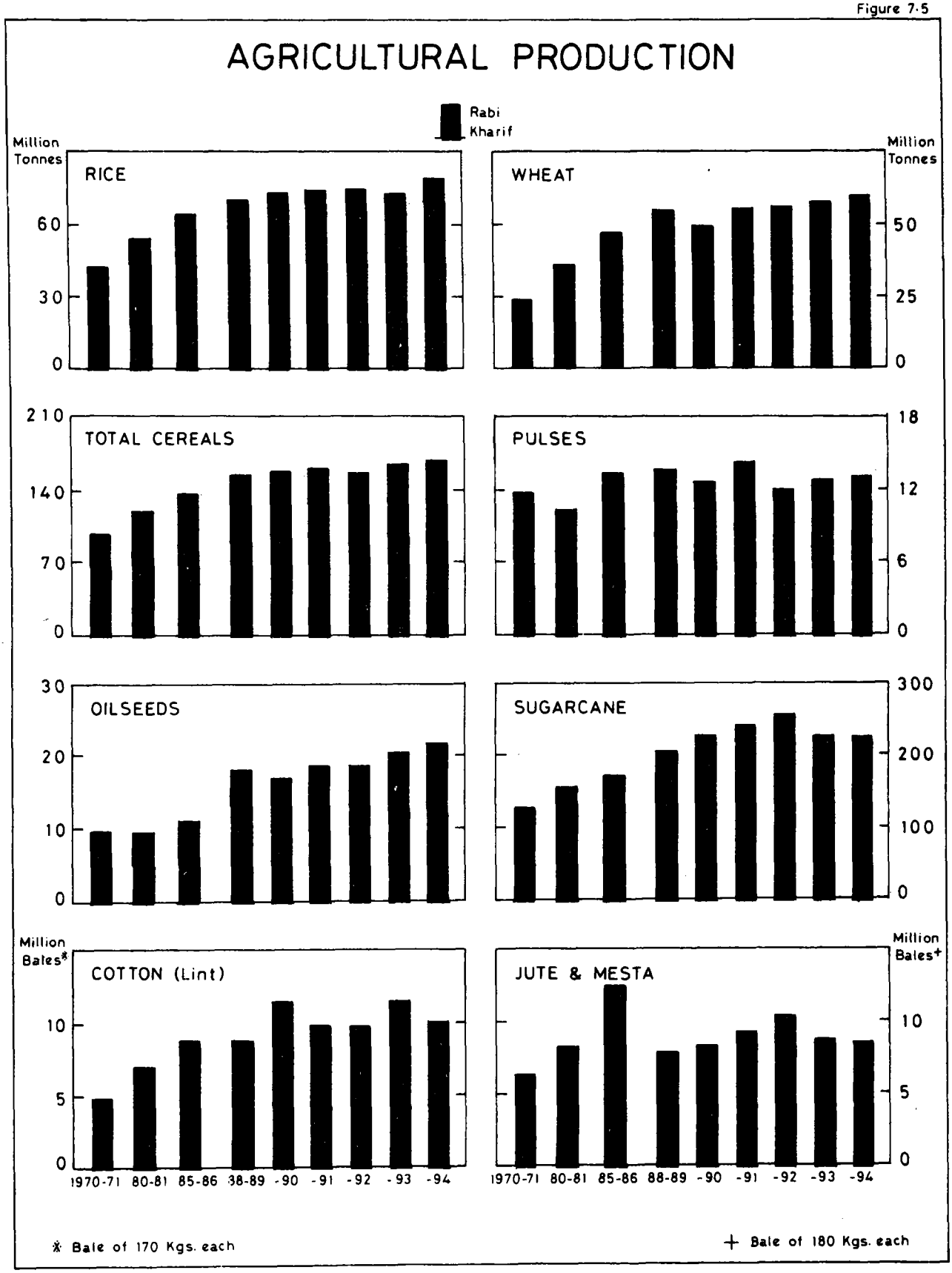

AGRICULTURAL PRODUCTION
Rabi
Kharif
Million Tonnes
RICE
60
30
0
WHEAT
Million Tonnes
50
25
0
210
TOTAL CEREALS
140
70
0
PULSES
18
12
6
0
30
OILSEEDS
20
10
0
SUGARCANE
300
200
100
0
Million Bales*
COTTON (Lint)
10
5
0
JUTE & MESTA
Million Bales+
10
5
0
1970-71 80-81 85-86 88-89 -90 -91 -92 -93 -94
1970-71 80-81 85-86 88-89 -90 -91 -92 -93 -94
* Bale of 170 Kgs. each
+ Bale of 180 Kgs. each

Figure 7.6

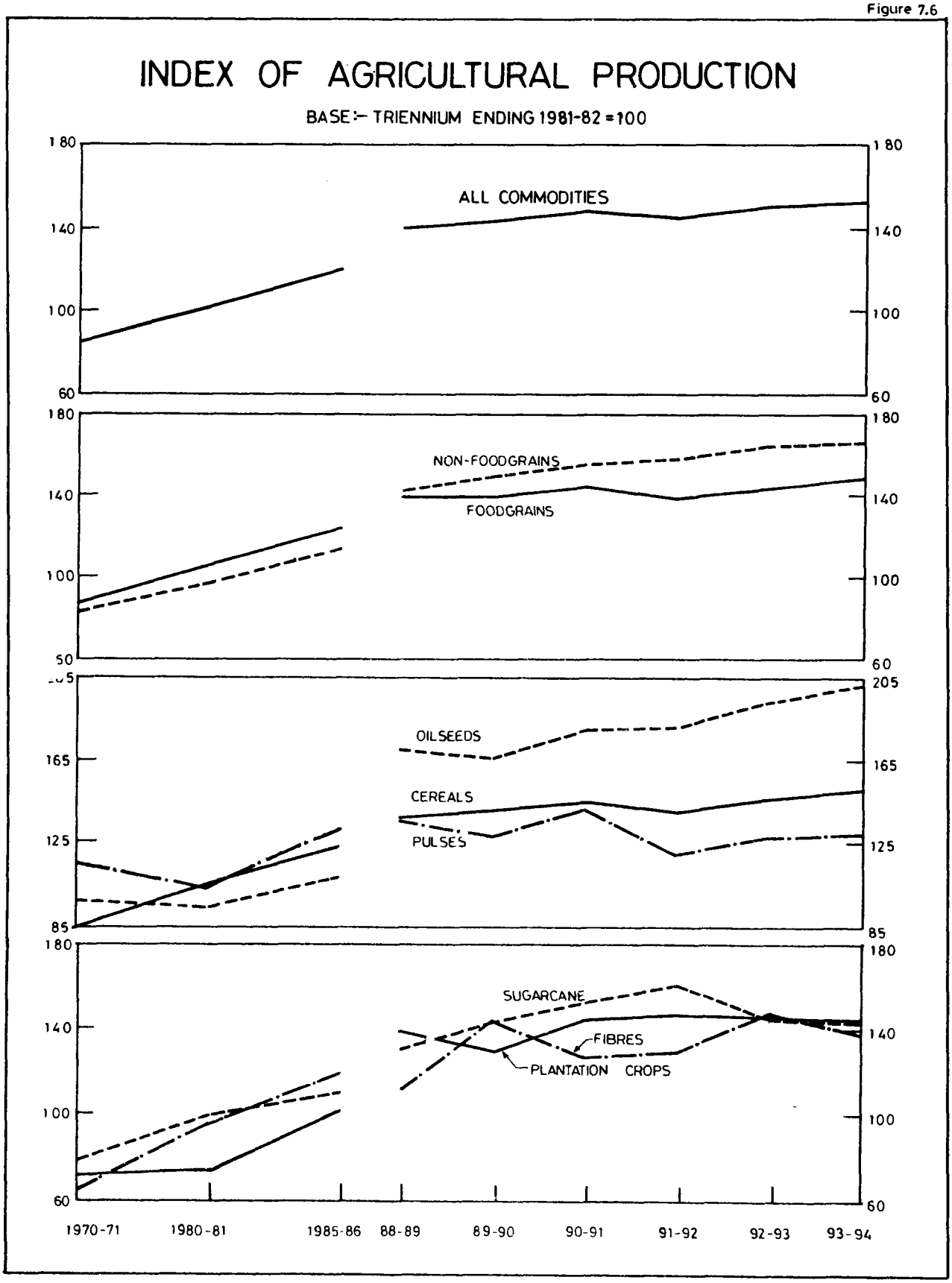

INDEX OF AGRICULTURAL PRODUCTION
BASE :- TRIENNIUM ENDING 1981-82 = 100
ALL COMMODITIES
NON-FOODGRAINS
FOODGRAINS
OILSEEDS
CEREALS
PULSES
SUGARCANE
FIBRES
PLANTATION CROPS
180
140
100
60
50
205
165
125
85
1970-71
1980-81
1985-86
88-89
89-90
90-91
91-92
92-93
93-94

TABLE 7.5
Oilseeds Production
(Million tonnes)

Oilseeds	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93[1]	1993-94[2]	1994-95 Target	1994-95 Likely
1	2	3	4	5	6	7	8	9	10
Groundnut	5.85	9.66	8.10	7.51	7.09	8.56	7.76	8.30	8.22
Kharif	4.18	7.49	6.10	5.12	4.99	6.66	5.61	6.10	6.01
Rabi	1.67	2.17	2.00	2.39	2.10	1.90	2.15	2.20	2.21
Castorseed	0.20	0.41	0.52	0.72	0.58	0.62	0.64	0.70	0.89
Sesamum	0.58	0.68	0.74	0.84	0.71	0.76	0.57	0.90	0.81
Rapeseed & Mustard	3.46	4.38	4.12	5.23	5.87	4.80	5.39	5.70	5.47
Linseed	0.39	0.36	0.33	0.33	0.29	0.28	0.33	0.40	0.36
Nigerseed	0.18	0.18	0.19	0.19	0.18	0.16	0.18	0.20	0.20
Safflower	0.46	0.44	0.49	0.32	0.20	0.34	0.58	0.40	0.60
Sunflower	0.63	0.37	0.63	0.87	1.19	1.18	1.40	1.40	1.18
Kharif	0.38	0.22	0.27	0.33	0.36	0.43	0.53	0.60	0.38
Rabi	0.25	0.15	0.36	0.54	0.83	0.75	0.87	0.80	0.80
Soyabean	0.90	1.55	1.80	2.60	2.49	3.39	4.63	4.00	3.72
Total	**12.65**	**18.03**	**16.92**	**18.61**	**18.60**	**20.11**	**21.48**	**22.00**	**21.45**
Kharif	**6.42**	**10.53**	**9.62**	**9.80**	**9.31**	**12.03**	**12.16**	**12.50**	**12.01**
Rabi	**6.23**	**7.50**	**7.30**	**8.81**	**9.29**	**8.08**	**9.32**	**9.50**	**9.44**

[1] *Revised* [2] *Final*

1993-94. The increase in cotton output is therefore the result of significant increase in productivity from 166 kgs. per hectare in 1981-82 to 257 kgs. in 1992-93. Consumption of cotton has also continuously increased from 75.9 lakh bales in 1981-82 to 128 lakh bales in 1993-94, thus, outpacing the increase in cotton output. Increase in raw cotton demand is likely to put pressure on domestic prices unless cotton output registers a substantial increase.

Jute and Mesta

17. From a peak output level of 12.6 lakh bales (of 180 Kgs. each) in 1985-86. the production has fallen in successive years to a level ranging between 8.5 to 10.3 lakh bales. Production in 1994-95 is expected to be 8.5 million bales, almost same as in 1993-94.

Plantation and Horticultural Crops

Coffee

18. India's coffee production comprises just 2.8 per cent of world production. Arabica and Robusta are the two main varieties grown in India. Coffee is consumed mainly in southern states and a large share of annual output is surplus and therefore available for exports. Domestic demand for coffee has been static at around 60,000 tonnes per annum.

19. Coffee production rose from a small quantity of 18893 tonnes in 1950-51 to a record high of 2.15 lakh tonnes in 1988-89. In 1993-94, production rose to 2.12 lakh tonnes, then declined to 1.8 lakh tonnes in 1994-95 (Table 7.6). Large variation in coffee output in some years is due to seasonal factors as coffee is extremely sensitive to changes in weather conditions.

20. India's share in world exports is estimated to be around 2.3 per cent. Export during 1992-93 was 113602 tonnes valued at Rs.381.3 crore. However, in 1993-94, the exports rose to 135626 tonnes and export realisation rose to Rs.581.8 crore due mainly to high global prices.

21. As per the Coffee Act, 1942, coffee produced in the country barring in a few areas, is surrendered to the Coffee Board for auction/sale. This Act, however,

TABLE 7.6
Coffee Production
(Tonnes)

Season/Year	Production
1950-51	18893
1985-86	122450
1986-87	192094
1987-88	122713
1988-89	215000
1989-90	118053
1990-91	169726
1991-92[1]	174000
1992-93[1]	161500
1993-94[1]	212000
1994-95[2]	180100

[1] *Revised Estimate* [2] *Blossom Estimate.*

allows an Internal Sale Quota (ISQ) to the growers up to a maximum of 30 per cent of the produce. With effect from January 14, 1994, the Coffee Act was amended to provide for raising Free Sale Quota (FSQ) to 50 per cent of the produce which the growers could sell both in domestic and in export markets. The balance 50 per cent of the produce is pooled for auction by Coffee Board. With this amendment, the dual auction system for domestic sale and for exports was combined into one auction in the Coffee Board.

22. Due to the general shortage of coffee in the world market in 1994, and the raising of FSQ of domestic production to 50 per cent, domestic coffee prices rose very sharply. The Government, therefore, put quantitative restrictions on exports and a ceiling of 110 thousand tonnes was announced for the 12 month period January-December 1994. This ceiling was subsequently enhanced to 120 thousand tonnes. Some grades of coffee were banned from export. However, these restrictions have since been removed with effect from January 1, 1995.

Natural Rubber

23. Natural rubber is a vital raw material for the road transport industry. Currently about 95 per cent of the natural rubber demand in the country is met by indigenous production and the deficit is met by imports.

24. Rubber production has shown a significant uptrend in recent years. From 2.6 lakh tonnes in 1988-89 it has increased to 4.35 lakh tonnes in 1993-94. Area under rubber trees has also gone up from 26,469 hectares in 1988-89 to an estimated 5.03 lakh hectares in 1994-95. Kerala dominates amongst rubber producing states, with about 85 per cent of rubber area. Rubber is also grown in non-traditional areas of Maharashtra, Tripura, Meghalaya, Mizoram, Manipur, Assam, Nagaland, Andaman and Nicobar Islands, Goa, Orissa, etc. Most rubber plantations are small, the average holding size being 0.5 hectares only. As against production of 4.35 lakh tonnes and estimated consumption of 4.5 lakh tonnes in 1993-94, the estimated production and consumption during 1994-95 is 4.75 lakh tonnes and 4.85 lakh tonnes respectively. Import of natural rubber at the margin continues to bridge the gap between total requirement and total output.

Tea

25. The tea industry in India is one of the oldest and well organised industries and plays an important role in the national economy. It is traditionally an important foreign exchange earner with negligible import content and makes a significant contribution to the State and Central exchequer.

26. Production of tea in the country has grown steadily from a level of 561 million kgs in 1982-83 to 723 million kgs in 1992-93. Domestic demand for tea has risen at a faster pace, thereby, creating a pressure on the exportable surplus which is close to about 200 million kgs. Steps have been taken by the Government to stimulate production so as to meet the growing domestic and international demand for tea. In this context, a perspective plan for achieving a production target of 1000 million kgs by 2000 AD has been drawn up by the Tea Board. In 1992-93, 177.9 million kgs valued at Rs.993.4 crore was exported. In 1993-94, exports declined to 161.2 million kgs. valued at Rs.1080.1 crore. The decline in exports was mainly due to lower off-take of Indian tea by Russia on account of its economic problems and also less exports to Iran and Egypt owing to their foreign exchange problems.

27. For 1994-95 a production target of 770 million kgs and an export target of 210 million kgs has been fixed. Up to August 1994, production was 465.9 million kgs as against 454.1 million kgs during the corresponding period last year. Similarly, exports up to August 1994 were 53.5 million kgs valued at Rs.330.5 crore, as compared to 59.1 million kgs valued at Rs.408.1 crore during the corresponding period last year.

Fruits and Nuts

28. Immense agro-climatic diversity enables India to produce a large variety of horticultural crops such as fruits, vegetables, flowers, plantation crops- coconut, cashewnut, cocoa, arecanut - and many types of spices, medicinal and aromatic plants. Currently these crops are estimated to cover 13.6 million hectares, yielding an annual output of 106 million tonnes which is the third largest output after Brazil and China. India accounts for 17 per cent of the world's coconut production, and 40 per cent of the world's cashew, besides being the largest producer of ginger, turmeric and coriander. India's share in world trade in spices is about 18 per cent - mainly black pepper.

29. Production of about 33 million tonnes of fruit in 1992-93, brought India close to the top rank currently enjoyed by Brazil as the world's largest producer of fruits. Coconut production rose to 11375 million nuts by 1992-93, largely due to gains in productivity–from 5445 nuts per hectare in 1981-82 to 7034 nuts in 1992-93. The Eighth plan target (1992-97) for annual output is 15000 million nuts.

30. Cashewnut production in 1992-93 reached 3.5 lakh tonnes. In 1993-94, 72450 tonnes were exported, earning Rs.1044 crore in foreign exchange. Even though India is the largest exporter of processed cashewnut, the domestic output falls short of the

internal demand of the processing industry and hence raw nuts are also imported. The Eighth Plan target of output at 4.73 lakh tonnes will still fall short of the demand estimated at 6 lakh tonnes.

Spices

31. Fifteen major spice crops out of a large number of spice crops, have been singled out for development. Of these, black pepper is the most prominent for domestic as well as export consumption. Total production of major spices is estimated at about 2.2 million tonnes in 1992-93 and the Eighth Plan target is set at 3.2 million tonnes for all spices. Processing and quality control would need much greater attention to widen our share in the expanding global export market.

Floriculture

32. This is a new area with high potential for exports. Already 41 joint venture projects with foreign participation have been approved and some are reported to have reached production stage.

Use of Plastics in Horticulture

33. Use of plastics in the form of drip irrigation, greenhouses and plastic mulches is a major effort of the Government for improving productivity of horticulture crops, for which an investment of Rs. 250 crore has been allocated in the Eighth Plan period (1992-97). Of this, Rs. 200 crore is earmarked for drip irrigation alone which is becoming quite popular in several States. Greenhouses are being encouraged for export oriented floriculture projects. These have already become popular in Ladakh area for growing vegetables in the off-season.

Post Harvest Technology

34. It has been roughly estimated that India is losing over Rs.3000 crore annually due to post harvest losses in fruits and vegetables, because of poor infrastructure and lack of organised marketing. This area has received high priority in the Eighth Plan and Rs.200 crore have been earmarked for providing soft loan facilities to various agencies, including the corporate sector, for setting up of different facilities like pre-cooling units, cold storages, packing houses, etc. in different parts of the country for reducing the losses and preventing deterioration in the quality of the end product. However, the potential for private investment in post harvest processing and preservation technology has not yet been fully realised.

Agricultural Inputs

35. Despite successes achieved in raising farm production in some of the major and high value crops, there are still a number of crops where production and ,hence, return to the farm household is very low. There can, therefore, be no complacency in organizing adequate input support to the farming sector. Emphasis would have to continue on a package of inputs, their availability and delivery system, specially for small and marginal farmers. Some of the major farm inputs are highlighted below.

Irrigation

36. A highly efficient and irrigated cropping system alone can sustain India's huge and expanding population. The expansion of irrigation potential and its optimum utilisation therefore occupies a high priority.

37. The country's irrigation potential has increased from 22.6 million hectares in the pre-plan period to about 85 million hectares at the end of 1993-94 comprising 31.8 million hectares under major and medium irrigation projects and 53.2 million hectares in minor irrigation schemes. The target for 1994-95 is 2.8 million hectares comprising 0.7 million hectares under major and medium projects and 2.1 million hectares under minor irrigation schemes. The anticipated irrigated potential created at the end of 1994-95 is 87.8 million hectares comprising 32.5 million hectares under major and medium projects and 55.3 million hectares under minor irrigation schemes. The irrigation sector continues to be a priority sector for development in the Eighth Five Year Plan.

38. Under-utilisation of created irrigation potential, particularly in major and medium irrigation projects continues to persist. At the end of 1993-94, utilisation was 76.3 million hectares against a created potential of 85.1 million hectares. This leaves a gap of 8.8 million hectares of under-utilized potential (4.6 million hectares in major and medium and 4.2 million hectares in minor irrigation). The main reasons for the gap are delays involved in the development of on-farm works like construction of field channels, land levelling and adoption of the ' warabandi' system (network of distributories and minors over the command area) and finally the time taken by farmers in switching over to the new cropping pattern, i.e. from dry farming to irrigated farming.

39. A Centrally sponsored Command Area Development Scheme (CAD) has been under implementation since 1974-75 with the basic objective of reducing the gap between potential created and potential utilised. The programme envisages execution of on-farm development works like construction of field channels, land levelling and shaping, implementation of 'warabandi' for rotational supply of water and construction of field drains. In addition, the programme also encompasses adaptive trials, demonstration and training of farmers and introduction of suitable cropping patterns. Up to March 1994 about Rs.5102 crore was spent on the programme, of which Central

assistance amounted to Rs.1302 crore and the balance of Rs.3800 crore was met under State sector schemes.

40. Minor irrigation schemes include ground water and surface water schemes. While ground water schemes include dugwells, shallow tubewells and pump-sets, the surface water schemes include tanks and reservoir diversion schemes, lift irrigation from rivers and streams. These schemes have been accorded special attention under the Special Foodgrains Production Programme. At the end of 1993-94, irrigation potential created and its utilisation through minor irrigation schemes was estimated at 53.2 million hectares and 49.1 million hectares respectively. For 1994-95 the targets for additional irrigation potential created and utilised are 2.1 million hectares and 1.6 million hectares respectively. Because of shorter gestation lags and lower investment costs, emphasis is laid on creation of minor irrigation schemes covering both surface and ground water. Because of advantageous water table levels, the eastern sector is being given special attention for exploration of minor irrigation during the Eighth Five Year Plan. The details of development of irrigation potential and utilisation are listed in Table 7.7.

41. Strengthening the irrigation infrastructure is one of the main objectives of the Eighth Five Year Plan. At the start of the Eighth Plan in 1992, there were 158 major, 226 medium and 95 Extension, Renovation and Modernisation (ERM) projects carried forward from previous plans. The total spill over cost of these projects has been estimated at about Rs.40563 crore. Therefore, the Eighth Plan strategy clearly envisages giving priority to completion of the on going projects. The other major elements of the strategy include ensuring speedy transition to irrigated agriculture and optimum use of water through the Command Area Development (CAD) programme, installation of sprinkler and drip irrigation systems in water scarce and drought prone areas and encouragement to surface water and lift irrigation.

42. The user cost of irrigation water is an issue that continues to be debated at the national and inter-state levels. There is an urgent need to reach a consensus on resolving the problem posed by mounting arrears and the consequent subsidy. There is a broad consensus that the irrigation rates should at least cover the annual maintenance and operational expenses and some part of the fixed costs. Whereas the water rates for surface and ground water need to be rationalised with due regard to the interests of small and marginal farmers, the issue of sound financial restructuring of irrigation projects cannot be evaded indefinitely.

Seeds

43. Much of the spectacular gain in cereal production in the early seventies and the consequent green revolution was ascribed to the breakthrough in seed technology. Genetic manipulation of seed embryos ushered in the 'era of choice' in seeds, thus opening new vistas for the domestic farmer. Unfortunately, the seed revolution appears to have tapered off after encompassing only the cereal segment of the farm economy. Improved seed technology continues to elude vital segments of the farm economy such as pulses, oilseeds, vegetables and fruits.

44. The large and expanding population and, more

TABLE 7.7
Development of Irrigation Potential and its Utilisation
(Million hectares)

	At the end of Seventh Plan (1989-90)	During 1990-92	At the end of 1991-92	1992-93 (Actuals)	1993-94 Likely	1994-95 Target
1	2	3	4	5	6	7
1. Major & medium irrigation						
Potential	29.9	0.8	30.7	0.4	31.8	0.7
Utilisation	25.5	0.9	26.3	0.3	27.2	0.6
2. Minor Irrigation						
Potential	46.6	3.7	50.4	1.5	53.2	2.1
Utilisation	43.1	3.4	46.5	1.4	49.1	1.6
3. **Total**						
Potential	**76.5**	**4.5**	**81.1**	**1.9**	**85.0**	**2.8**
Utilisation	**68.6**	**4.3**	**72.8**	**1.7**	**76.3**	**2.2**

Note: Irrigation projects with a Cumulative Command Area (CCA) of more than 10000 hectares are classified as major projects and projects with CCA of more than 2000 hectares and up to 10000 hectares as medium projects.

TABLE 7.8
Area Under High-Yielding Varieties of Seeds

Crop	1966-67	1988-89	1989-90	1990-91	1991-92	1992-93[1]	1993-94[2]	1994-95 (Targets)
1	2	3	4	5	6	7	8	9
				(Million hectares)				
Paddy	0.9	25.4	26.2	27.4	28.0	27.5	28.9	32.8
Wheat	0.5	20.2	20.3	21.0	20.5	21.7	22.0	23.3
Jowar	0.2	6.1	6.9	7.1	6.8	6.9	6.8	7.0
Bajra	0.1	5.9	5.6	5,7	5.4	5.6	5.1	6.2
Maize	0.2	2.5	2.3	2.6	2.8	2.6	2.7	2.9
Ragi	-	-	-	1.2	1.2	1.1	1.2	1.3
Total	1.9	60.1	61.2	65.0	64.7	65.4	66.6	73.5
				(Percentage of HYV area to Total Area under the crop)				
Paddy	2.6	60.9	62.1	64.2	65.7	65.9	68.8	
Wheat	3.9	83.8	86.4	86.9	88.1	88.2	88.4	
Jowar	1.1	41.8	46.6	49.4	55.0	53.1	52.7	
Bajra	0.8	49.2	51.4	54.4	53.8	52.8	53.7	
Maize	3.9	42.4	39.0	44.1	47.8	43.6	45.1	
Ragi	-	-	-	55.3	56.3	57.6	62.8	

[1] *Revised* [2] *Anticipated*

importantly, the shift in preferences away from cereals to non-cereals in response to a rise in income levels, has pushed up demand for vegetables and fruits, which now account for a substantial weight in the consumption basket of the average consumer. The erratic price behaviour and very large seasonal changes in the price of fruits and vegetables is now beginning to cause concern. Much of the uptrend in primary product prices in the current financial year as also in the preceding years, was to a large extent due to a high rise in prices of vegetables, fruits and pulses.

45. The domestic effort in evolving appropriate seed technologies for vegetables and fruits and pulses has been slow or unsuccessful. There should be no hesitation, therefore, in scouting globally for quality seeds, especially for vegetables and fruits, for which resources should no more be a constraint, since such imports would help accelerate commercial production of such non-cereal crops.

46. Import of seeds of wheat, paddy, coarse cereals, pulses and fodder is permitted without a licence subject to fulfilment of provisions of the seed policy evolved in 1988. However, bulk import of wheat and paddy is not considered necessary under the seed policy since ICAR has effective research collaborations with IRRI, Manila and CIMMYT, Mexico.

47. Import of seeds of vegetables, flowers, fruits and plant, tubers and bulbs, cuttings, saplings and bud woods of flowers and fruits for sowing and planting is permitted without licence in accordance with the provisions of Plants, Fruits and Seeds Order 1989.

48. During 1993-94, 6.1 million quintals of certified/ quality seeds were distributed. It is expected to reach the level of 7 million tonnes by the end of the Eighth Five Year Plan. The progress of area covered under HYV seeds under different crops and their share in the total area are listed in Table 7.8.

49. The quality control of seeds is ensured under the provisions of the Seeds Act, 1966 and the Seeds Rules 1986 as amended from time to time. The provisions of the Seeds Act and Rules are administered by two apex national level bodies; the Central Seed Committee and Central Seed Certification Board (CSCB) and State level seed sub-committees.

Fertilizers

50. The consumption of chemical fertilizers, which was only 0.13 million tonnes in nutrient terms in 1955-56, increased to 12.4 million tonnes in nutrient terms in 1993-94. Progress of fertilizer consumption in the country since 1986-87 is listed in Table 7.9.

51. The consumption in appropriate mix (ratio) of the three primary plant nutrients - Nitrogen (N),

TABLE 7.9
Consumption of Chemical Fertilizers
(Million tonnes of nutrients)

Year	Nitrogen (N)	Phosphate (P)	Potash (K)	Total (NPK)
1	2	3	4	5
1986-87	5.7	2.1	0.9	8.7
1987-88	5.7	2.2	0.9	8.8
1988-89	7.3	2.7	1.1	11.1
1989-90	7.4	3.0	1.2	11.6
1990-91	8.0	3.2	1.3	12.5
1991-92	8.0	3.3	1.4	12.7
1992-93	8.4	2.9	0.9	12.2
1993-94	8.8	2.7	0.9	12.4
1994-95[1]	9.9	3.1	1.1	14.1

[1] *Estimates*

Phosphate (P) and Potash (K)—is essential for increasing crop yields. The ideal NPK ratio aggregated for the country as a whole is 4:2:1, but the current all India NPK consumption ratios are significantly different from this ideal norm (Table 7.10).

TABLE 7.10
Consumption Ratio of N P K in India

Year	Nitrogen	Phosphate	Potash
1	2	3	4
1955-56	10.8	1.3	1
1960-61	7.2	1.8	1
1965-66	7.5	1.7	1
1980-81	5.9	1.9	1
1985-86	7.0	2.5	1
1991-92	5.9	2.4	1
1992-93	9.5	3.2	1
1993-94	9.3	3.0	1

52. There was some narrowing down of NP ratio of consumption from 5.9:1.9 in 1980-81 to 5.9:2.4 in 1991-92. However, this trend seems to have been reversed during 1992-93 and 1993-94 as the nitrogen to phosphate ratio increased to 9.5:3.2 in 1992-93 and 9.3:3 in 1993-94.

53. It may be seen from Table 7.10 that the NPK ratio which was almost at an ideal level prior to decontrol of fertilizers in August 1992, showed considerable variation after decontrol. In order to arrest this adverse trend and to contain the mounting subsidy bill on controlled fertilizers, the price of urea was raised by 20 per cent effective June 10, 1994. Besides this, prices of low analysis nitrogenous fertilizers, viz. Calcium Ammonium Nitrate, Ammonium Sulphate and Ammonium Chloride were also decontrolled on the same date. However, the scheme of special concessions on decontrolled phosphatic and potassic fertilizers has been continued for the third year in succession.

54. The production of nitrogenous and phosphatic fertilizers during 1993-94 stood at about 9.05 million tonnes recording a decline of about 7.1 per cent over 1992-93. In 1994-95 however, the production of nitrogenous and phosphatic fertilizers is expected to increase to over 10 million tonnes (78.2 lakh tonnes of nitrogen and 23 lakh tonnes of phosphate). Details of production, imports and subsidies since 1987-88 are given in Table 7.11.

55. Fertilizer Subsidy in 1994-95 is likely to be higher than the budgeted amount of Rs.4000 crore, mainly on account of finalisation of policy parameters for the Sixth Pricing Period under the Retention Price-cum-Subsidy Scheme for urea, besides the increase in the price of imported urea and increase in consumption. Raising the price of urea in the current fiscal year to Rs.3320 per tonne (20 per cent increase) and the decontrol of low analysis fertilizers (CAN, Ammonium Chloride and Ammonium Sulphate) would of course help offset a part of the subsidy burden.

56. Domestic fertilizer industry has begun to face greater competition following the decontrol and decanalisation of non-nitrogenous fertilizers and trade policy changes introduced in 1992-93. In order to enable the domestic phosphatic industry to reduce the cost of production, the customs duty on imports of phosphoric acid, the main intermediate used in the manufacture of DAP, was abolished in September, 1993. Further, to enable it to compete with cheaper imports,

TABLE 7.11
Fertilizer Production, Imports and Subsidies

Year	Production (N+P) ('000 Tons)	Imports (N+P+K) ('000 Tons)	Subsidies (Rs. crore) On Imported Fertilizers	On Domestic Fertilizers	Total
1	2	3	4	5	6
1987-88	7131	984	114	2050	2164
1988-89	8964	1608	201	3000	3201
1989-90	8543	3114	771	3771	4542
1990-91	9045	2758	659	3730	4389
1991-92	9863	2769	1300	3500	4800
1992-93	9736	2968	996	4800	5796
1993-94	9047	3166	600	3800	4400
1994-95	10120	1518[1]	500[2]	3500[2]	4000[2]

[1] Includes import of Urea, in nutrient terms, the only controlled fertilizer imported on government account.
[2] Budgeted.

the scheme of special concessions on decontrolled fertilizers has been restricted from 1993-94 onwards to indigenous DAP and complex fertilizers including SSP. This concession is also, however, available on sale of imported Muriate of Potash (MOP) as the entire quantity of MOP is imported since there are no known and exploitable reserves of potash in the country.

57. As a long term measure to reduce the capital related cost of fertilizer plants, customs duty on import of capital goods required for setting up of new fertilizer plants as well as for renovation and modernisation programmes, was abolished from September 23, 1992.

Plant Protection

58. In view of the safety of ecosystem and the environment, the policy is to follow an Integrated Pest Management (IPM) as a thrust area in the overall crop protection programmes during the Eighth plan period. The consumption of pesticides in 1993-94 is estimated to be 83000 tonnes as compared to 69463 tonnes in 1992-93. Bulk of the requirement of pesticides is met through indigenous production. During 1993-94, about 5000 extension functionaries and 3000 farmers have been planned to be trained in IPM for rice and cotton.

59. A National Conference on IPM was held in March 94 to finalise the IPM training/demo programmes with State authorities. Similarly, use of bio-pesticides is now being actively studied. Technical and financial support of international agencies like FAO, UNDP and ADB-CABI is being sought to promote IPM in India.

Agricultural Credit

60. The policy on agricultural credit has been its progressive institutionalisation for providing timely and adequate credit to farmers for increasing agricultural production and productivity. Providing better access to institutional credit for small and marginal farmers and other weaker sections to enable them to adopt modern technology and improved agricultural practices has been the major objective of the policy.

61. Agricultural Credit is disbursed through a multi-agency network consisting of Commercial Banks, Regional Rural Banks (RRBs) and Cooperatives. The total quantum of agricultural credit from various institutional sources has increased from Rs. 7005 crore in 1985-86 to Rs. 13000 crore in 1992-93. The target for credit disbursement for 1994-95 is Rs. 16700 crore. Agency-wise disbursement of agricultural credit from 1987-88 to 1993-94 and the targets for 1994-95 are indicated in the Table 7.12.

62. Cooperatives have played a significant role in the flow of credit to the agricultural sector, both for production and investment. Short-term (production) advances by credit cooperatives account for 57.5 per cent of the total disbursements, commercial banks account for 37.5 per cent and Regional Rural Banks for 5 per cent. In medium/long term (investment) credit, cooperatives account for 30 per cent of the total disbursements, while commercial banks account for 65 per cent and Regional Rural Banks for 5 per cent. Though the share of cooperatives in agricultural credit had shown a declining trend till 1991-92, it has shown strong signs of recovery thereafter. The network of cooperative credit institutions with 88000 'primary agricultural societies' for short-term advances and 2258 primary units for long term credit have been instrumental in reaching credit to farmers in the remotest parts of the country.

63. Despite the overall increase in agricultural credit, there is a serious problem of overdues which has been inhibiting credit expansion and economic viability of the lending institutions, especially cooperatives and the RRBs. The waiver of agricultural loans in 1990 has further accentuated the problem of recovery. The Government has initiated certain measures to revitalise the cooperatives on the recommendations of the Agricultural Credit Review Committee. These measures include amendment to State Cooperative Laws, holding elections of cooperative bodies and revitalising Primary Agricultural Credit Societies (PACs) through Business Development Planning. The Government is also contemplating the introduction of a comprehensive scheme for revitalisation of the cooperative credit structure. NABARD has also initiated the process of drawing up Developmental Action Plans (DAPs) for cooperative credit institutions for revamping the cooperative credit structure in order to make it viable and self-sustaining. In October 1994, the Reserve Bank of India deregulated the interest rate structure for cooperatives for lending (subject to a minimum of 12 per cent) and for raising deposits. This is expected to improve the viability of the cooperative banks.

Crop Insurance

64. From Kharif 1985 to the end of Rabi 1993-94 season, 414 lakh farmers have been covered under

TABLE 7.12
Disbursement of Agricultural Credit

(Rs. Crore)

Item	1987-88	1988-89	1989-90	1990-91[1]	1991-92	1992-93[1]	1993-94[1]	1994-95 (Target)
1	2	3	4	5	6	7	8	9
COOPERATIVES								
Short-term	3824	4087	3995	2822	3950	4900	6000	6600
Medium-term	688	809	577	366	391	182	461	
Long-term	734	655	684	785	1005	1213	2039	3000
Sub-total:	5246	5551	5256	3973	5346	6295	8500	9600
COMMERCIAL & REGIONAL RURAL BANKS								
Short-term & term loans	4009	4234	4930	5010	5962	6705	6600	7100
Grand Total:	**9255**	**9785**	**10186**	**8983**	**11308**	**13000**	**15100**	**16700**

[1] *Provisional*

Comprehensive Corp Insurance Scheme (CCIS) covering over an area of 720 lakh hectares insuring a sum of Rs. 10004 crore. Claims amounting to Rs. 963 crore were paid to the farmers (of which, Gujarat alone accounted for more than half the amount) till end of June 1994 against a premium income of Rs. 167 crore.

Investment

65. Since 1980-81, a larger portion of public expenditure went into current expenditure in the form of increased level of subsidies for fertiliser, irrigation, electricity, credit and other agricultural inputs rather than investment. The available data on current expenditure (developmental revenue expenditure of Centre and States) and Gross Capital Formation (GCF) in agriculture indicates a trend decline in the ratio of investment (GCF) to current expenditure with a welcome reversal in 1993-94. (Table 7.13 and Fig 7.7).

66. Prior to 1945-46, public irrigation schemes showed a surplus after meeting working expenses, interest charges and setting off of losses in unproductive works. The scenario has undergone a dramatic change since then. For example, in 1989-90, the financial loss (difference between working expenses and revenue collected) incurred by irrigation sector was estimated at Rs. 3600 crore excluding interest charge, and Rs. 8900 crore with interest on investment. On an average, a loss of Rs. 149 per hectare of irrigation (command) is being incurred. In the power sector, the amount actually lost by State Electricity Boards on account of selling electricity to agricultural sector at less than average cost was as high as Rs. 7205 crore in 1992-93. In 1993-94 it is estimated to be Rs. 8888 crore. As per the revised estimates, it may be Rs. 10113 crore in 1994-95.

67. Gross investment in real terms (at 1980-81 prices) in agriculture has stagnated. It was Rs. 4636 crore in 1980-81 and Rs.4617 crore in 1992-93 (actual). From 18 per cent of the total gross domestic capital formation in 1980-81, it has declined to 9 per cent in 1992-93. The decline in real capital formation in agriculture by the public sector is more perceptible, as it has come down to Rs. 1065 crore in 1992-93 compared to Rs. 1796 crore in 1980-81. Private sector real investment in agriculture has increased in absolute terms from Rs. 2840 crore in 1980-81 to Rs. 3552 crore in 1992-93, though its share in total gross domestic capital formation has declined significantly during the period. This decreasing share of private investment in the total gross capital formation seems to suggest that the agriculture sector is relatively less attractive for private investment as compared to other sectors of the economy. This suggests a need to strengthen incentives for attracting more private investment into agriculture. The likelihood of acceleration in private investment in agriculture would depend also on the pace of development of the agriculture processing and export of value added non-traditional agriculture products.

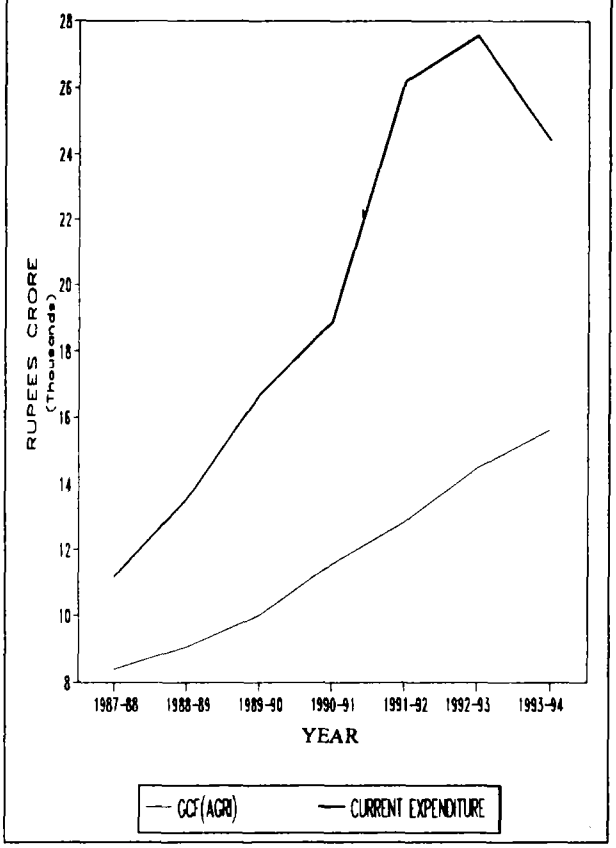
TABLE 7.13
Gross Capital Formation in Agriculture and Current Government (Centre and States) Expenditure (at current prices)

(Rs. Crore)

Year	Gross Capital Formation[1] at 1980-81 prices	Gross Capital Formation[1] at current prices	Current Expenditure[2]	Ratio (Col 3÷4)
1	2	3	4	5
1987-88	4414	8389	11201	0.75
1988-89	4347	9062	13545	0.67
1989-90	4353	10025	16692	0.60
1990-91	4593	11592	18867	0.61
1991-92	4497	12837	26174	0.49
1992-93	4617	14462	27552(R.E)	0.52
1993-94	4695	15642	24383(B.E)	0.64

[1] *Figures are for Public and Private Sectors*
[2] *Current expenditure includes developmental revenue expenditure of Centre and States on Agriculture and allied services, irrigation and flood control, power and fertilizer subsidy. It does not include expenditures incurred by public sector non-departmental commercial and private enterprises.*

Fig 7.7 **Gross Capital Formation in Agriculture vis-a-vis Current Expenditure of Government (Central + States)**



68. There is a continuing debate at academic and policy making levels on the need to reverse the mounting burden of agricultural input subsidies (especially

for power and water). It is prompted by the fact that a gradually reduced subsidy burden would release resources necessary to reverse the declining trend in public investment in agriculture, since the problem of investment in agriculture is less a problem of total availability of resources and more one of distribution between current expenditure and capital formation. It is also felt that there is scope for increasing the investment by the private sector if policy incentives are seen to be effective, especially in export oriented agricultural enterprises.

Agricultural Research and Extension

69. The Indian Council of Agricultural Research (ICAR) is the dominant apex institution responsible for the promotion of science and technology in agricultural research and education. Through a network of research institutes and state agricultural universities located in different agro-climatic regions , the ICAR has been successful in developing technologies for agriculture - in crop sciences, soils, agronomy, animal husbandry, fisheries - and its application through demonstration and training. The role of ICAR in ushering in the green revolution in Seventies is the greatest hall mark of its achievement.

70. The Government has reorganised extension services in major states, including North-Eastern States and other Union Territories. Training infrastructure in the Central and State sector has been established at the National Institute of Agricultural Extension Management and the fifteen Advanced Training Institutes and four Extension Education Institutes for training of extension personnel at various levels. Two new schemes, namely, Agricultural Extension through Voluntary Organisation and Women in Agriculture have been made operational from 1994-95.

Allied Sectors

Animal Husbandry and Diary Development

71. Animal husbandry development has assumed a much broader role in the overall economy than so far envisaged, as an integral part of expanding and diversified agriculture. This sector currently accounts for over 25 per cent of gross value of agricultural output. India's vast livestock population offers tremendous potential for meeting domestic demand for milk, egg, meat, wool, etc. This sector has also begun to be regarded as a source of new employment, especially for marginal and small farmers and agricultural labourers by offering subsidiary occupation to supplement family income.

72. The gross value of output from this sector is estimated at Rs. 58800 crore in 1992-93, accounting for over one fourth of the value of total agricultural output excluding the contribution of animal draft output.

73. Milk production was estimated at 60.2 million tonnes in 1993-94, about 4.6 per cent higher over 1992-93. India ranks second in world milk production. Success in raising the level of milk production is ascribed to the Operation Flood Project, the world's largest integrated dairy development programme started in 1970 by the National Dairy Development Board (NDDB). This programme is basically designed to link rural milk producers with urban consumers and is currently in its third phase of implementation. Over 68900 Dairy Cooperative Societies have been organised in 170 'milk sheds' involving about 8.8 million farmer members by September 1994.

Poultry Farming

74. Poultry is the most efficient convertor of low value food into high value nutritional food for human consumption in the shortest time. It is becoming a vital component of the farm economy as it provides additional income and job opportunities to the weaker sections of the society. The main thrust is on increasing production of eggs and poultry meat through increased availability of quality chicks and support facilities such as storage, marketing, balanced feed, health care and other infrastructural amenities. Egg production in the country has increased twelve fold since the fifties from 1832 million in 1950-51 to an estimated 23718 million in 1993-94.

Fisheries

75. Fisheries play an important role in the economy, generating employment for a large coastal population, raising nutritional levels, augmenting food supply and earning foreign exchange. According to quick estimates of the Central Statistical Organisation, the contribution of the fisheries sector to net domestic product has shown a four fold increase from Rs. 1478 crore in 1984-85 to Rs.5860 crore in 1992-93 at current prices.

76. Fish production in the country has increased from 7.5 lakh tonnes in 1950-51 to 46.8 lakh tonnes during 1993-94. The average annual growth rate in fish production during the period 1984-85 to 1993-94 is 6 per cent. The growth rates in marine and inland fisheries have been 5.5 per cent and 6.8 per cent per annum during this period. The trend of fish production and export may be seen in Table 7.14.

77. The target for fish production in 1994-95 is 47.5 lakh tonnes, comprising 27.3 lakh tonnes from marine sources and 20.2 lakh tonnes from inland waters. The Department of Agriculture and Cooperation operates a number of schemes for increasing fish production. These schemes include the Development of freshwater aquaculture through Fish Farmers' Development Agencies (FFDAs), development of brackish-water aquaculture through Brackish-water Fish Farmers'

TABLE 7.14
Fish Production and Export of Marine Products

Year	Fish production			Export of Marine products	
	Marine	Inland	Total	Quantity	Value
	(Lakh tonnes)			(Lakh tonnes)	(Rs. Crore)
1	2	3	4	5	6
1989-90	22.75	14.02	36.77	1.11	634.99
1990-91	23.00	15.36	38.36	1.39	893.37
1991-92	24.47	17.09	41.56	1.72	1375.89
1992-93	25.76	17.89	43.65	2.09	1767.43
1993-94	26.88(P)	19.93(P)	46.81(P)	2.44	2503.62
1994-95	27.30(T)	20.20(P)	47.50(T)	2.87(T)	3120.00(T)

P : Provisional, T : Target

Development Agencies (BFDAs); introduction of modernised fishing craft to enable fishermen to extend their area of operation and catch pelagic species under the scheme of Development of Coastal Marine Fisheries; and excise duty relief on diesel utilised by mechanised craft up to 20 metres overall length for marine fisheries. A Shrimp and Fish Culture Project is being implemented with World Bank assistance for development of shrimp culture in the States of Andhra Pradesh, Orissa and West Bengal and for increasing inland fish production in Bihar and Uttar Pradesh in addition to these three States.

Agricultural Marketing

78. Marketing of farm products in the country is, by and large operated under the normal forces of supply and demand. Private trade is the centrepiece of the country's market mechanism. The Government intervention is limited mainly to protect the interests of both producers and consumers through promotion of organised marketing of agricultural commodities. To achieve this, most State Governments have enacted the necessary legislation for regulation of agricultural produce markets.

79. The number of regulated markets in the country as on March 31,1994 was 6809. The Central Government has provided assistance for the creation of infrastructural facilities in the markets and also for setting up of rural godowns. Grading standards have been laid down for 150 agricultural and allied commodities under the Agricultural Produce (Grading and Marking) Act. 1937. There are 3124 licensed cold storages with an installed capacity of 8.174 million tonnes as on March 31,1994. To promote setting up of cold storage under the cooperative sector, the National Cooperative Development Corporation has provided Rs.74.9 crore for installation of 243 cold storages with an installed capacity of 7.16 lakh tonnes till the end of March, 1994.

80. A number of organisations and institutions function currently to deal with product and area specific problems that have a bearing on production, pricing, and marketing of agricultural products. The most important are the Commission for Agricultural Costs and Prices, the Food Corporation of India, the Cotton Corporation of India, the Jute Corporation of India and the Commodity Boards.

81. Agricultural Marketing is also closely linked to a network of cooperatives at primary level, state level and at the national level. Marketing cooperatives are operating almost in all 'mandies'. Cooperative societies are functioning in the area of processing of fruits and vegetables, sugarcane crushing, cotton ginning and pressing etc.

82. At the National level, the National Cooperative Development Corporation plans and promotes programmes for the production, processing, marketing, storage, export and import of agricultural produce through cooperatives. The National Agricultural Cooperative Marketing Federation of India Ltd. (NAFED) is an apex cooperative organisation dealing in procurement, distribution, export and import of selected agricultural commodities. A few other organisations in the cooperative sector are the National Cooperative Tobacco Growers' Federation Ltd., the National Consumers' Cooperative Federation and the Tribal Cooperative Marketing Development Federation of India Ltd. (TRIFED) which attends specifically to the marketing problems of the tribal areas. However, the share of cooperatives in the total marketing of agricultural commodities is rather small.

83. Specialised Commodity Boards continue to operate for rubber, coffee, tea, tobacco, spices, coconut, oil-seeds and vegetable oils, horticulture etc. The National Dairy Development Board is also engaged in the marketing of agricultural commodities. Separate Directorates have been created to manage development of agro raw materials like sugarcane, jute, tobacco, oilseeds, rice, millets, cotton, pulses, cashewnuts, cocoa, arecanut, spices etc. Besides, a number of Development Councils have been set up for special commodities like rice, pulses, jute, millets, cotton, tobacco, oilseeds, sugarcane, arecanut, cocoa etc. In the field of export, besides, the State Trading Corporation, some related bodies are the Cashewnuts Export Promotion Council, the Shellac Export Promotion Council and the Agricultural and Processed Food Export Development Authority. The role of cooperatives in the marketing of agricultural produce has been progressively expanding.

Farm Exports

84. Farm exports provide tremendous resilience to the overall export earnings of the country. Since the import content of the agricultural sector is insignificant

as compared to the non-agricultural sector, the country's gain is much more per unit of foreign exchange earned through agro exports.

85. Export-import policy has been progressively rationalised to provide impetus to agricultural exports. Trade policy changes aimed at reducing tariff and non tariff barriers are expected to open up new vistas for agricultural exports.

86. Rice is emerging as a major export product. Minimum export price in respect of all varieties of rice has been abolished. Fruits, vegetables and flowers are non-traditional export products with high potential. Export of these products has witnessed sustained growth during the last three years and has begun to attract the attention of corporate investors. A number of export oriented units in the floriculture sector are under various stages of completion.

87. The successful conclusion of the Uruguay Round of Negotiations will improve the competitiveness of India's agricultural products. Developed countries are required to scale down their prevailing levels of domestic and export subsidies in their respective countries. This is hoped to open up new markets for primary product exporting countries.

88. Agricultural exports (other than raw cotton, including wastes) have registered remarkable growth during the last 2 years, from Rs. 7430 crore in 1992-93 to Rs.10062 crore during 1993-94. The current year should see a further consolidation of the export performance.

Outlook

89. In overall economic development the agricultural sector will continue to play a pivotal role, since this sector still accounts for about 30 per cent of the GDP and almost two-thirds of the population still depend on this sector for livelihood. To accelerate GDP growth rate, a long term trend growth rate of 3 per cent in Indian agriculture should be the desirable goal. To achieve it, a number of key problems in the agricultural sector will need to be resolved.

90. The declining trend in the rate of investment in agriculture in the recent years needs to be reversed. Specific provisions are required for operation and maintenance of public capital assets. Public investment in irrigation, rural communication, and schemes for prevention and control of land and water degradation will need to be increased. The resources for this purpose can be augmented only by scaling down the massive subsidies provided for water, electricity and fertiliser. To encourage private investment in agriculture, the thrust of reform policies should continue to improve relative incentives in favour of agriculture.

91. For raising rainfed/dryland crop yields more emphasis is required for the use of location specific varieties suited to such agro-climatic conditions. Progress of integrated watershed development projects for promotion of water conservation and diversified production systems need to be closely monitored. Arable land is shrinking due to continuous soil erosion, land degradation and diversion of good cultivable land for urban/ industrial use. Therefore, various soil and water conservation technologies need to be vigorously pursued to raise productivity in marginal and rainfed land holdings.

92. The seed revolution, which appears to have tapered off after encompassing only the cereal segment, has to be widened to cover other vital segments such as pulses, oilseeds, vegetables, and fruits. This is especially important in view of the rise in average income levels having pushed up demand for non-cereal food items. The marked seasonality in these commodities (fruits, vegetables and oils) needs to be moderated to ensure improved year-round supply and dampen inflationary pressures. A prerequisite for successful development of this sector is provision of adequate and more modern storage and warehousing facilities. Furthermore, investment and induction of new technology in the agro processing sector requires to be accelerated.

93. The present system of agricultural credit needs to be substantially improved. To ensure adequate availability of funds to small and poor farmers, the high cost of intermediation will need to be moderated.

94. Emerging new post harvest technologies for agricultural products will require an improved data base for important tree crops, especially in view of their enhanced export potential. While tariff, trade and exchange rate reforms have strengthened incentives for agricultural exports, there are still many regulations inhibiting exports of agricultural products, which need to be phased out. Appropriate policy incentives for investment in technological upgradation for food processing merits a high priority.