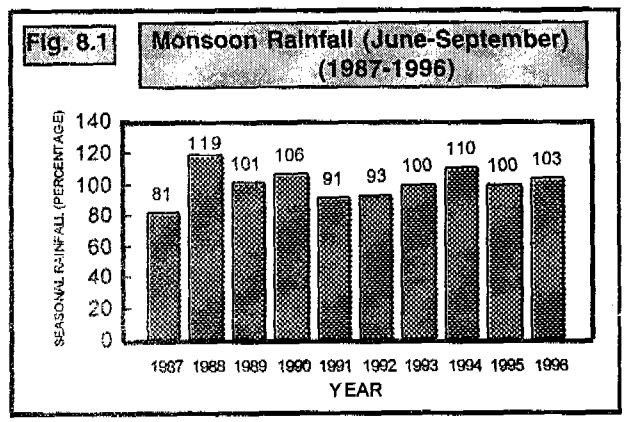
# 8

# AGRICULTURE

The prospect of growth in agriculture in 1996-97 appears to be excellent and the year is likely to end up with foodgrains production of over 191.2 million tonnes as against 185 million tonnes in the preceding year. In commercial crops, particularly oilseeds, and cotton, significant increase in output is quite certain. The only area of concern, however, is the continued slow growth in production of pulses. Overall, the agriculture production is likely to record a growth rate of about 3 per cent in 1996-97.

## Monsoon 1996

2. 1996 was the ninth successive normal monsoon year. Country wide seasonal rainfall was 103 per cent of the long term average which was better than that of last year. The monsoon arrived almost on time and covered the entire country by June 30, two weeks earlier than the normal date. By the end of the Monsoon season (June-September), 32 out of 35 meterological sub-divisions and 81 per cent of districts covering 91 per cent area of the country had received normal to excess rainfall. The comparative performance of the monsoon for the past ten years, 1987 to 1996, is shown in Table 8.1




and Figure 8.1. The district-wise distribution of rainfall for the past 10 years is shown in Figure 8.2.

3. The spatial and temporal rainfall distribution over the country was very satisfactory except over Orissa and Vidarbha where rainfall was marginally deficient or scanty in some districts. In the later part of June, Rajasthan and Haryana experienced floods. In third week of July, floods also occured in north Bengal and Bihar. Excessive rain due to cyclonic storm caused extensive damage twice in Andhra Pradesh, first in June and then again in early November.

**TABLE 8.1**

**Monsoon Performance,1987 to 1996**

**(June-September)**

| Year | Number of Meteorological Sub-divisions | | | Normal/ Excess rainfall ( % of districts) | Actual rainfall as per cent to normal rainfall |
|---|---|---|---|---|---|
| | Excess/ Normal | Deficient/ Scanty | Total | | |
| 1987 | 14 | 21 | 35 | 43 | 81 |
| 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 |
| 1995 | 33 | 2 | 35 | 79 | 100 |
| 1996 | 32 | 3 | 35 | 81 | 103 |

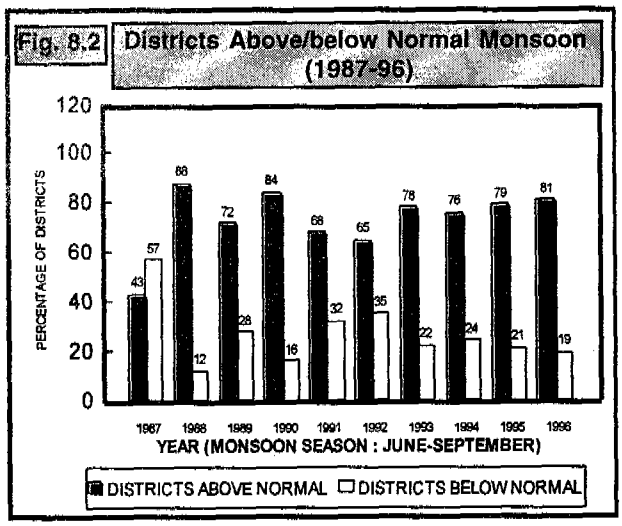


**TABLE 8.2**

**Rainfall Indices Weighted by Cumulative Kharif Cereals Production - State-wise**

(Per cent)

| States | Production Weights | Rice Area under irrigation* | Rainfall Indices-17 July | | | Rainfall Indices-30 September | | |
|---|---|---|---|---|---|---|---|---|
| | | | 1994 | 1995 | 1996 | 1994 | 1995 | 1996 |
| Andhra Pradesh | 8.70 | 95.0 | 90.89 | 99.03 | 143.43 | 84.88 | 138.05 | 122.43 |
| Assam | 3.34 | 33.8 | 83.29 | 120.07 | 80.50 | 74.75 | 112.76 | 77.38 |
| Bihar | 7.94 | 37.5 | 78.73 | 81.64 | 117.30 | 87.01 | 104.33 | 93.91 |
| Gujarat | 3.30 | 53.3 | 195.98 | 56.31 | 58.42 | 175.40 | 77.50 | 94.87 |
| Haryana | 2.49 | 99.6 | 146.00 | 103.24 | 131.29 | 122.27 | 179.30 | 130.05 |
| Himachal Pradesh | 0.85 | 56.8 | 133.64 | 92.32 | 112.14 | 105.12 | - | 92.82 |
| Jammu & Kashmir | 1.23 | 90.8 | - | - | - | - | - | - |
| Karnataka | 5.80 | 66.4 | 148.79 | 88.97 | 91.81 | 118.57 | 96.51 | 108.60 |
| Kerala | 1.31 | 41.3 | 118.07 | 86.74 | 68.72 | 115.75 | 92.69 | 91.36 |
| Madhya Pradesh | 9.42 | 22.9 | 174.82 | 74.02 | 58.98 | 139.94 | 89.93 | 95.46 |
| Maharashtra | 7.51 | 25.9 | 140.03 | 72.63 | 67.36 | 114.51 | 82.67 | 86.67 |
| Orissa | 6.13 | 35.5 | 139.66 | 62.98 | 81.21 | 131.41 | 83.68 | 76.38 |
| Punjab | 6.91 | 99.2 | 92.58 | 76.63 | 149.89 | 111.78 | 146.18 | 113.79 |
| Rajasthan | 4.02 | 34.0 | 164.92 | 79.26 | 158.80 | 133.70 | 121.71 | 147.59 |
| Tamil Nadu | 8.06 | 92.7 | 65.39 | 104.41 | 248.02 | 70.83 | 112.30 | 157.70 |
| Uttar Pradesh | 12.87 | 58.0 | 82.09 | 80.88 | 91.87 | 97.42 | 101.03 | 97.17 |
| West Bengal | 8.40 | 24.6 | 98.39 | 111.73 | 103.60 | 89.47 | 119.26 | 105.50 |
| **All India** | | **48.6** | **117.93** | **85.87** | **94.99** | **108.03** | **104.38** | **99.79** |

* Indicates percentages of irrigated area under rice in 1993-94

4. Total rainfall, its spatial and temporal distribution and its impact on the production of Kharif cereals, can be seen from the rice area and production weighted rainfall index constructed for each State and aggregated over All India. Cereals production weighted cumulative rainfall indices for the entire season are computed by assigning weights based on share in the production of kharif cereals. A comparative picture of temporal distribution of rainfall during the south-west monsoon season of 1996 as compared to 1995 and 1994 is shown in Table 8.2.

### Post Monsoon Rainfall

5. Rabi prospects also depend to some extent on post monsoon rainfall. The cumulative rainfall during the post south-west monsoon season 1996 (1 October to 31 December) was excess or normal in 25 meteorological sub-divisions as against 16 sub-divisions during the corresponding period last year. Performance of the post-monsoon rainfall for the past 6 years is shown in Table 8.3.

**TABLE 8.3**

**Post Monsoon Rainfall**
**(October-December)**
**(Number of Meteorological Sub-Divisions)**

| | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|---|---|
| Excess/Normal | 11 | 16 | 20 | 19 | 16 | 25 |
| Deficient/Scanty | 24 | 19 | 15 | 16 | 19 | 10 |
| **Total** | **35** | **35** | **35** | **35** | **35** | **35** |

6. The main states or divisions which received deficient or scanty rainfall during the post monsoon period are Gangetic West Bengal, Sub-Himalayan West Bengal and Sikkim, Orissa, Bihar Plateau, Jammu & Kashmir, Himachal Pradesh, Punjab, Haryana, Chandigarh, Delhi, Hills of West Uttar Pradesh and East Madhya Pradesh.

### Reservoir Storage Status

7. The total live storage position in 63 important reservoirs in different parts of the country by the

**TABLE 8.4**

**Reservoir Status**
**(End of September)**

| Position | 1995 | 1996 |
|---|---|---|
| 1. Number of Reservoirs covered | 63 | 63 |
| 2. Total live storage(TMC) | 90.1 | 97.7 |
| 3. Average of last 10 years(TMC) | 93.4 | 94.2 |
| 4. Current year's storage as per cent of the design storage | 72 | 78 |
| 5. Per cent of this year's live capacity to last year | 80 | 108 |
| 6. Per cent of this year's capacity to average of last 10 years | 96 | 104 |

end of September, 1996 as monitored by the Central Water Commission was much better this year. It was 97.7 Thousand Million Cubic Meters (TMC) at the end of September, 1996 as against 90.1 TMC during the corresponding period of 1995. Comparative position of storage level at the end of September, 1996 and the preceding year is listed in Table 8.4.

8. Good monsoon and the widespread rainfall this year boosted the water level of reservoirs. The highest live storage of 98.44 TMC in 63 reservoirs was on 11th October, 1996 as against 89.53 TMC in the corresponding period last year.

## Agriculture Production

9. Agriculture production performance in the last five years together with the prospects for 1996-97 is listed in Table 8.5, Figure 8.3 and Figure 8.4.

### Foodgrains

10. Foodgrains account for about 63 per cent of country's agricultural output and hence even a marginal decline in foodgrains production has a 'ripple effect' on rest of the economy. Despite a near normal monsoon in 1995, the foodgrains output of 185 million tonnes in 1995-96 was lower by over 6 million tonnes compared to 1994-95 output of 191.5 million tonnes. This was mainly on account of decrease in production of wheat, kharif rice, bajra and pulses. The most unexpected development was the late realisation in 1996 that the wheat harvest was just about 62.6 million tonnes, lower by about 3 million tonnes over the preceding year. The reasons for decline in production of rabi foodgrain crops i.e. wheat and gram are mainly attributed to unfavourable weather conditions at the grain filling stage of the crop in February/March, 1996. This was a serious set back and its late realisation did cause some distortions in wheat availability. Wheat prices rose to unprecedented heights by November, 1996, prompting the Government to release larger quantities from FCI's public stocks besides taking recourse to imports. Kharif 1996 foodgrains output is likely to be 103.2 million tonnes as against only 98.2 million tonnes in

**TABLE 8.5**

**Production of Foodgrains and Commercial Crops**

(Million Tonnes)

| Crop | 1991-92 | 1992-93 | 1993-94 | 1994-95 | 1995-96 | | 1996-97 | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Target | Final | Target | Likely |
| Rice | 74.7 | 72.9 | 80.3 | 81.8 | 80.0 | 79.6 | 81.0 | 79.6 |
| Wheat | 55.7 | 57.2 | 59.8 | 65.8 | 60.0 | 62.6 | 65.0 | 64.5 |
| Coarse Cereals | 26.0 | 36.6 | 30.8 | 29.9 | 36.5 | 29.6 | 32.5 | 33.1 |
| Pulses | 12.0 | 12.8 | 13.3 | 14.0 | 15.5 | 13.2 | 15.0 | 14.0 |
| **Foodgrains** | **168.4** | **179.5** | **184.3** | **191.5** | **192.0** | **185.0** | **193.5** | **191.2** |
| Kharif | 91.6 | 101.5 | 100.4 | 101.0 | 107.5 | 98.2 | 104.0 | 103.2 |
| Rabi | 76.8 | 78.0 | 83.9 | 90.4 | 84.5 | 86.8 | 89.5 | 88.0 |
| Oilseeds | 18.6 | 20.1 | 21.5 | 21.3 | 22.5 | 22.4 | 23.0 | 24.1 |
| Sugarcane | 254.0 | 228.0 | 229.7 | 275.5 | 255.0 | 283.0 | 270.0 | 273.6 |
| Cotton@ | 9.7 | 11.4 | 10.7 | 11.9 | 13.0 | 13.1 | 13.0 | 14.3 |
| Jute & mesta$ | 10.3 | 8.6 | 8.4 | 9.1 | 9.3 | 8.9 | 9.0 | 9.2 |
| **(Percentage variation in production over the previous year)** | | | | | | | | |
| Rice | 0.5 | -2.4 | 10.2 | 1.9 | | -2.7 | | 0.0 |
| Wheat | 1.1 | 2.7 | 4.5 | 10.0 | | -4.9 | | 3.0 |
| Coarse Cereals | -20.5 | 40.8 | -15.8 | -2.9 | | -1.0 | | 11.8 |
| Pulses | -16.1 | 6.7 | 3.9 | 5.3 | | -5.7 | | 6.1 |
| **Foodgrains** | **-4.5** | **6.6** | **2.7** | **3.9** | | **-3.4** | | **3.3** |
| Kharif | -7.8 | 10.8 | -1.1 | 0.6 | | -2.8 | | 5.1 |
| Rabi | -0.3 | 1.6 | 7.6 | 7.7 | | -3.9 | | 1.3 |
| Oilseeds | 0.0 | 8.1 | 7.0 | -0.9 | | 5.2 | | 7.6 |
| Sugarcane | 5.4 | -10.2 | 0.7 | 19.9 | | 2.7 | | -3.3 |
| Cotton@ | -1.0 | 17.5 | -6.1 | 11.2 | | 10.1 | | 9.2 |
| Jute & mesta$ | 12.0 | -16.5 | -2.3 | 8.3 | | -2.2 | | 3.4 |

@ Million Bales of 170 kg each $ Million Bales of 180 kg each.

1995. If Rabi crops prospects turn out to be normal, 1996-97 foodgrains output is likely to be 191.2 million tonnes which would be close to the record production of 191.5 million tonnes achieved in 1994-95. The annual growth rate in foodgrain production in recent past is given in Table 8.5.

11. Per hectare yield rates of rice and wheat rose significantly during seventies and eighties. Consequently, both these foodgrains registered over 3 percent annual growth in production between 1980-81 to 1995-96 (Table 8.6 and Table 8.7), which was significantly higher than the annual population growth of 2.14 per cent during eighties. The low annual growth of 1.2 per cent in production of pulses since 1980-81 did, however, cause annual growth of total foodgrains to fall to 2.86 per cent. However, looking at the first seven years of this decade (1990-91 to 1996-97), the annual rate of growth of foodgrains was only 1.7 per cent which is lower than the current population growth. If this trend continues it could become a matter of grave concern.

**TABLE 8.6**

**Annual Growth in Foodgrains Production**

(Per cent)

| Year | Rice | Wheat | Pulses | Food-grains |
|---|---|---|---|---|
| **Compound growth Rate*** | | | | |
| 1967-68 to 1995-96 | 2.90 | 4.72 | 0.93 | 2.67 |
| 1980-81 to 1995-96 | 3.35 | 3.62 | 1.21 | 2.86 |
| 1990-91 to 1996-97 | 1.52 | 3.62 | 1.07 | 1.70 |

* Based on the index numbers, base triennium ending1981-82=100

### Rice

12. Rice production reached a record level of 81.8 million tonnes in 1994-95. However, production in 1995-96 was down to 79.6 million tonnes. Production in Kharif, 1996 is estimated to be 70.6 million tonnes compared to 70.1 million tonnes in Kharif, 1995. Some adverse impact on rabi/summer rice during 1996-97 on account of the deficient/scanty rains, particularly in Orissa and West Bengal and also on account of cyclonic storm in Andhra Pradesh, has been reported. Despite this, if 1996 Rabi rice output remains at 1994-95 or 1995-96 level of around 9 million tonnes, the total output of rice may be 79.6 million tonnes in 1996-97 (Table 8.8).

### Wheat

13. Wheat output of 62.6 million tonnes in 1995-96 was 3.2 million tonnes lower over 1994-95 output of 65.8 million tonnes. Due to sudden rise in temperature at the grain filling stage of the crop in February/ March, 1996, there was an unexpected decline in its productivity in major wheat growing States except Haryana and Rajasthan. Severe incidence of yellow rust was also reported on wheat variety HD-2329 which is largely grown in Punjab. 1996-97 target of wheat output is 65 million tonnes. The weather parameter of temperature was initially low, which is considered beneficial for the crop growth. However, delayed winter rains in the wheat growing area have resulted in moisture stress conditions. If the rainfall/ temperature conditions are normal in the Rabi season, the production of wheat may be relatively better and could be expected at around 64.50 million tonnes in 1996-97. Wheat is becoming important even in rice consuming areas and increasingly substituting for coarse cereals as urbanisation and incomes rise. The ratio of wheat production to rice production has steadily increased from one third in 1950-51 and 1960-61 to about one half in 1970-71 and further to four fifth in 1995-96 (Table 8.8).

**TABLE 8.7**

**Yield of Important Crops**

(Kg / Hectare)

| Commodity | Weight* | 1970-71 | 1980-81 | 1990-91 | 1991-92 | 1992-93 | 1993-94 | 1994-95 | 1995-96 |
|---|---|---|---|---|---|---|---|---|---|
| Rice | 29.74 | 1123 | 1336 | 1740 | 1751 | 1744 | 1888 | 1911 | 1855 |
| Wheat | 14.45 | 1307 | 1630 | 2281 | 2394 | 2327 | 2380 | 2559 | 2493 |
| Jowar | 4.43 | 466 | 660 | 814 | 655 | 982 | 898 | 779 | 834 |
| Bajra | 1.87 | 622 | 458 | 658 | 465 | 836 | 521 | 700 | 575 |
| Gram | 3.07 | 663 | 657 | 712 | 739 | 684 | 783 | 853 | 697 |
| Groundnut | 5.60 | 834 | 736 | 904 | 818 | 1049 | 941 | 1027 | 1014 |
| Rapeseed & mustard | 2.41 | 594 | 560 | 904 | 895 | 776 | 847 | 950 | 912 |
| Sugarcane@ | 8.11 | 48 | 58 | 65 | 66 | 64 | 67 | 71 | 68 |
| Cotton | 4.37 | 106 | 152 | 225 | 216 | 257 | 249 | 257 | 246 |

* Base : Triennium ending 1981-82 = 100 @ Tonnes/ha.

Figure 8.4

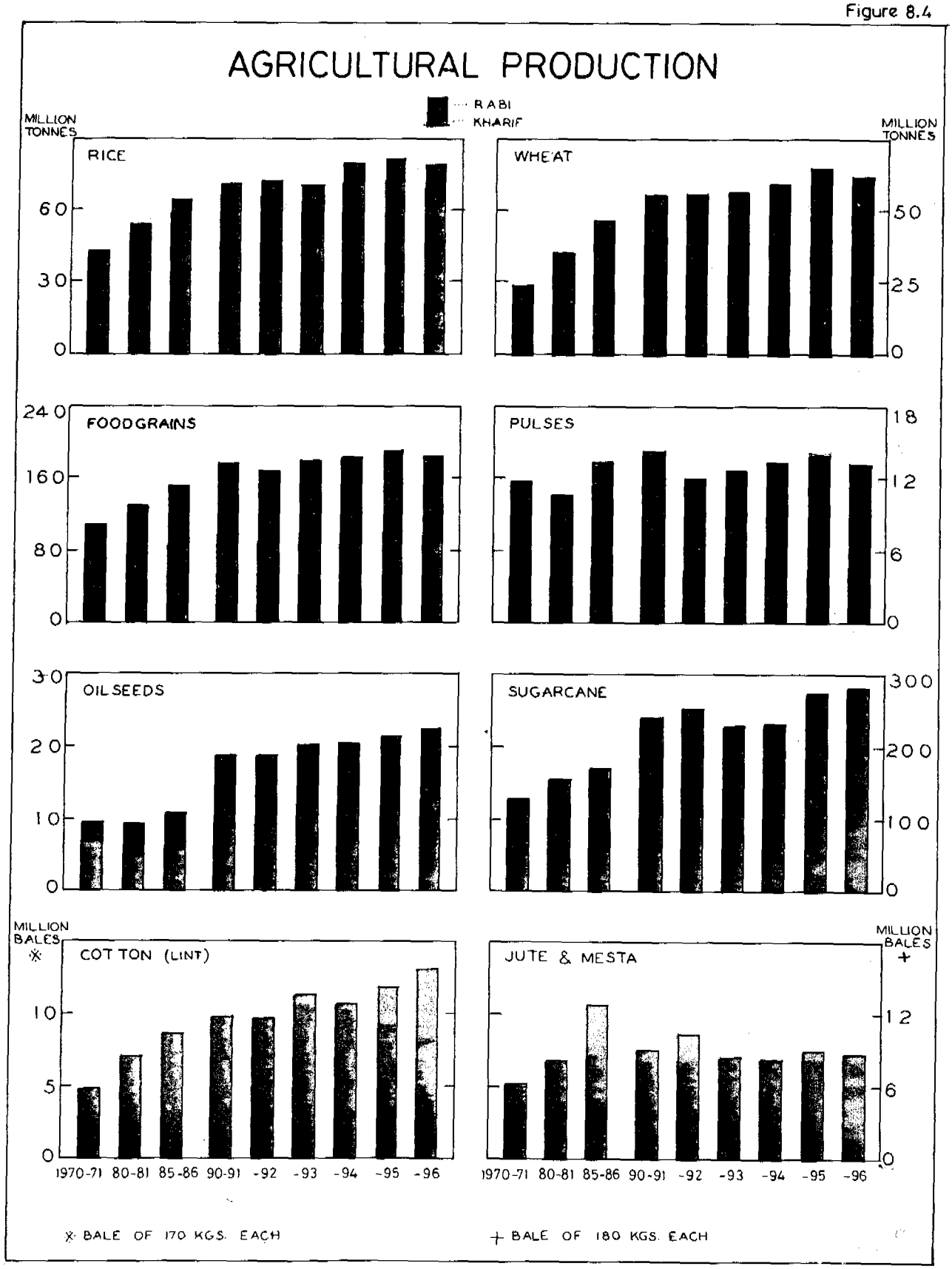

AGRICULTURAL PRODUCTION
RABI
KHARIF
MILLION TONNES
RICE
60
30
0
MILLION TONNES
WHEAT
50
25
0
240
FOODGRAINS
160
80
0
PULSES
18
12
6
0
30
OIL SEEDS
20
10
0
SUGARCANE
300
200
100
0
MILLION BALES ※
COTTON (LINT)
10
5
0
MILLION BALES +
JUTE & MESTA
12
6
0
1970-71 80-81 85-86 90-91 -92 -93 -94 -95 -96
1970-71 80-81 85-86 90-91 -92 -93 -94 -95 -96
※ BALE OF 170 KGS. EACH
+ BALE OF 180 KGS. EACH

**TABLE 8.8**

**Production of Rice and Wheat**

(Million Tonnes)

| Year | Rice | Wheat | Percentage of Wheat to Rice |
|---|---|---|---|
| 1950-51 | 20.58 | 6.46 | 31.4 |
| 1960-61 | 34.58 | 11.00 | 31.8 |
| 1970-71 | 42.22 | 23.83 | 56.4 |
| 1980-81 | 53.63 | 36.31 | 67.7 |
| 1990-91 | 74.29 | 55.14 | 74.2 |
| 1994-95 | 81.81 | 65.77 | 80.4 |
| 1995-96 | 79.62 | 62.62 | 78.6 |

### Coarse Cereals

14. The area under coarse grains (bajra, maize, jowar, ragi, small millets and barley) continues to show a declining trend and stagnation in production. Coarse grains are mostly grown by small and marginal farmers in areas largely characterised by low and erratic rainfall. The coarse grains are grown mostly in Maharashtra, Rajasthan, Madhya Pradesh, Uttar Pradesh, Andhra Pradesh, Tamil Nadu and Bihar. In 1995-96, the production of all the coarse cereal crops except bajra was relatively better than 1994-95. The production of bajra in 1995-96 suffered badly in the major States of Rajasthan, Gujarat, Haryana and Maharashtra and was 5.39 million tonnes i.e. substantially lower by 24.7 per cent over the production level of 7.16 million tonnes achieved in 1994-95. Despite this, the production of coarse cereals is estimated to be 29.61 million tonnes in 1995-96. As the rainfall and weather situation, particularly during the monsoon period, has been quite favourable in the major coarse cereal growing States, the production prospects have improved and the coarse cereal output is expected to be about 33.05 million tonnes in 1996-97.

### Pulses

15. Pulses production in the country has been stagnating around 8-14 million tonnes for the last 40 years. Per capita availability of pulses has come down from 69 grams in 1961 to about 39 grams in 1996. Production fluctuates from year to year depending on the performance of monsoon. The practice of inter cropping and mixed cropping is also more prevalent in pulses, which are grown as secondary crops. The production of pulses, which crossed 14 million tonnes mark in 1994-95, declined to 13.19 million tonnes in 1995-96. This was due to the substantial fall in production of gram to 5.02 million tonnes in 1995-96 from a level of 6.44 million tonnes in the preceding year. This shortfall was, however, offset to some extent by higher production achieved in Tur and other pulses in 1995-96. As a result of better monsoon rainfall, the production of pulses is expected to be higher and may be around 14 million tonnes in 1996-97.

### Commercial Crops

16. The production of commercial crops like sugarcane (283 million tonnes), oilseeds (22.4 million tonnes) cotton (13.1 million bales) have been of a record level in 1995-96. As per the present assessment, the production prospects of these crops are better in 1996-97 and the production may go up further.

### Sugarcane and Sugar

17. Sugarcane production reached a record level of 275.54 million tonnes in 1994-95 surpassing its earlier record level of 254 million tonnes of 1991-92. Again, a record production of 283 million tonnes of sugarcane has been estimated for 1995-96. Current production prospects of sugarcane are also quite good and is expected to be about 274 million tonnes in 1996-97. (Table 8.9)

18. Sugar production reached an all time record level of about 164 lakh tonnes in sugar year 1995-96 (October, 1995 to September, 1996), recording a substantial jump over the preceding years record production of 146 lakh tonnes. Two years of record output of sugar has resulted in accumulation of sizable stocks, and industry is striving to export more, depending upon whether the global prices are favourable. The Statutory Minimum Price (SMP) for sugarcane for 1995-96 was fixed at Rs.42.50 per quintal linked to a basic recovery of 8.5 per cent and for the 1996-97 season it has been fixed at Rs.45.90 per quintal.

19. The sugar industry continues to function under a regulatory system where licences have to be sought for establishing new capacity or expanding the existing installed capacity. There is also a dual price control system under which 40 per cent of output is pre-empted for use of the government for PDS, at an ex-factory price which is fixed for each

**TABLE 8.9**

**Production of Sugarcane**

| Year | Area (Mill. ha.) | Production (Mill. tonnes) | Yield (Kgs./ ha) | Per cent area under Irrigation |
|---|---|---|---|---|
| 1950-51 | 1.7 | 57.05 | 33422 | 67.3 |
| 1960-61 | 2.4 | 110.00 | 45549 | 69.3 |
| 1970-71 | 2.6 | 126.37 | 48322 | 72.4 |
| 1980-81 | 2.7 | 154.25 | 57844 | 81.2 |
| 1990-91 | 3.7 | 241.05 | 65395 | 86.2 |
| 1995-96(P) | 4.1 | 282.95 | 68369 | - |

(P) - Provisional

of 16 Zones. The balance 60 per cent output, factories are free to sell at the market price except that the quantity for free sale is regulated by prescribing monthly quantities that each units can sell as non-levy sugar.

20. During the financial year 1995-96, the releases for PDS ranged from 3.27 to 4.03 lakh tonnes per month. Similarly, the releases for freesale sugar were kept high between 6.25 to 8.30 lakh MTs per month so as to ensure that freesale market price of sugar remained at a reasonable level. The stock holding limits and turnover period of sugar and khandsari were enhanced to 1000 quintals and 30 days from 1st October, 1996 from 500 quintals and 15 days respectively to promote increased availability of sugar in the market.

21. During the 1995-96 sugar season, about 8.87 lakh tonnes of sugar was exported. Sugar export has been decanalized and manufacturing units are now permitted to pack sugar in 50 kg. packages for export purposes and from 5th November, 1996, also in small consumer packs of 1, 2 and 5 kgs. for indigenous use. These packages can be made from any foodgrade packaging material.

**Oilseeds**

22. Among the nine oilseed crops grown in the country, groundnut and rapeseed/mustard together account for 62 per cent of total oilseeds production. Soyabean and sunflower have of late emerged as the oilseed crops having major growth potential. The other oilseed crops include sesamum, castorseed, nigerseed, safflower and linseed. Oilseeds production was 18.61 million tonnes in 1990-91 and has since touched a level of 22.42 million tonnes in 1995-96. The production in 1996-97 is likely to be 24.11 million tonnes (Table 8.10).

**Cotton**

23. Cotton production is estimated at 130.9 lakh bales of 170 kgs. each in 1995-96, an increase of 10.1 per cent over the production of 118.9 lakh bales in 1994-95. Due to increase both in area coverage and its productivity, the production of cotton is likely to go up further in 1996-97 and is expected to be around 143 lakh bales.

**Jute and Mesta**

24. Production of Jute and Mesta continued to stagnate. Production which had reached a record level during 1985-86, registered a sharp decline and hovered around 6.78 to 10.29 million bales thereafter. Production in 1995-96 is expected to be 8.90 million bales, and may rise marginally to 9.19 million bales in 1996-97. The area production and yield of jute and mesta is listed in Table 8.11.

**TABLE 8.10**

**Production of Oilseeds**

(Million Tonnes)

| Oilseeds | 1990-91 | 1991-92 | 1992-93 | 1993-94 | 1994-95 | 1995-96 Target | 1995-96 Final | 1996-97 Target | 1996-97 Likely |
|---|---|---|---|---|---|---|---|---|---|
| Groundnut | 7.51 | 7.09 | 8.56 | 7.83 | 8.06 | 8.40 | 7.81 | 8.00 | 9.12 |
| Kharif | 5.12 | 4.99 | 6.66 | 5.71 | 6.06 | 6.20 | 5.82 | 6.00 | 7.12 |
| Rabi | 2.39 | 2.10 | 1.90 | 2.12 | 2.00 | 2.20 | 1.99 | 2.00 | 2.00 |
| Castorseed | 0.72 | 0.58 | 0.62 | 0.63 | 0.85 | 0.70 | 0.78 | 0.80 | 0.80 |
| Sesamum | 0.84 | 0.71 | 0.76 | 0.56 | 0.59 | 0.90 | 0.55 | 0.80 | 0.69 |
| Rapeseed/Mustard | 5.23 | 5.87 | 4.80 | 5.33 | 5.76 | 5.70 | 6.07 | 6.10 | 6.10 |
| Linseed | 0.33 | 0.29 | 0.28 | 0.33 | 0.32 | 0.35 | 0.31 | 0.30 | 0.30 |
| Nigerseed | 0.19 | 0.18 | 0.16 | 0.20 | 0.19 | 0.20 | 0.19 | 0.20 | 0.21 |
| Safflower | 0.32 | 0.20 | 0.34 | 0.52 | 0.42 | 0.45 | 0.40 | 0.40 | 0.40 |
| Sunflower | 0.87 | 1.19 | 1.18 | 1.35 | 1.22 | 1.50 | 1.32 | 1.40 | 1.38 |
| Kharif | 0.33 | 0.36 | 0.43 | 0.50 | 0.33 | 0.60 | 0.39 | 0.60 | 0.48 |
| Rabi | 0.54 | 0.83 | 0.75 | 0.85 | 0.89 | 0.90 | 0.93 | 0.80 | 0.90 |
| Soyabean | 2.60 | 2.49 | 3.39 | 4.75 | 3.93 | 4.30 | 4.99 | 5.00 | 5.11 |
| **Total** | **18.61** | **18.60** | **20.11** | **21.50** | **21.34** | **22.50** | **22.43** | **23.00** | **24.11** |
| Kharif | 9.80 | 9.31 | 12.03 | 12.35 | 11.95 | 12.90 | 12.73 | 13.20 | 14.41 |
| Rabi | 8.81 | 9.29 | 8.08 | 9.15 | 9.39 | 9.60 | 9.70 | 9.80 | 9.70 |

Figure 8.5

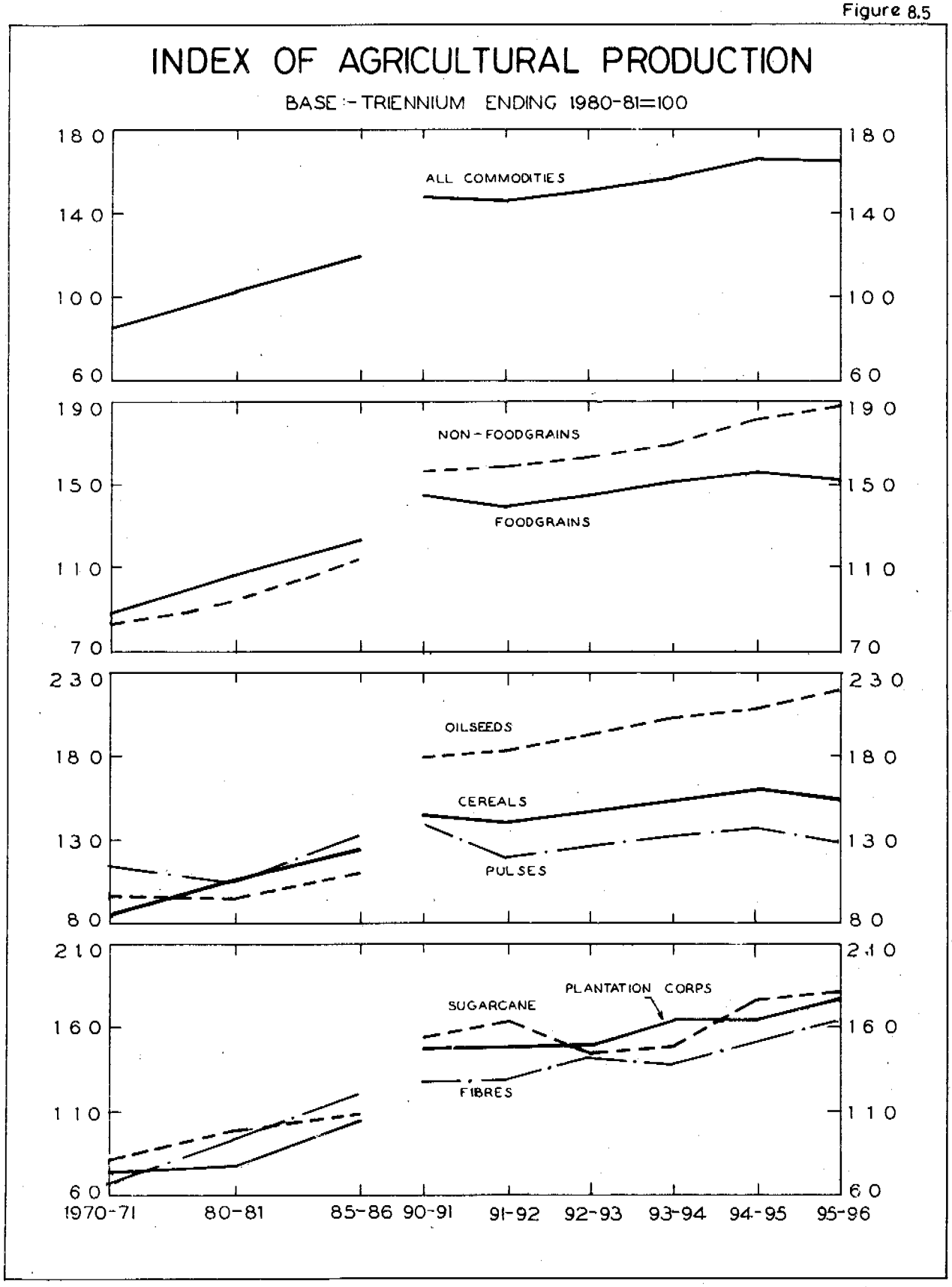

INDEX OF AGRICULTURAL PRODUCTION
BASE :- TRIENNIUM ENDING 1980-81=100
ALL COMMODITIES
NON-FOODGRAINS
FOODGRAINS
OILSEEDS
CEREALS
PULSES
SUGARCANE
PLANTATION CORPS
FIBRES
180
140
100
60
190
150
110
70
230
180
130
80
210
160
110
60
1970-71
80-81
85-86
90-91
91-92
92-93
93-94
94-95
95-96

**TABLE 8.11**

**Area, Production and Yield of Jute / Mesta**

| Year | Area (Mill. ha.) | Production (Mill. Bales)* | Yield (Kgs./ha.) |
|---|---|---|---|
| 1950-51 | 0.57 | 3.31 | 1043 |
| 1960-61 | 0.90 | 5.26 | 1049 |
| 1970-71 | 1.08 | 6.19 | 1032 |
| 1980-81 | 1.30 | 8.16 | 1130 |
| 1990-91 | 1.02 | 9.23 | 1634 |
| 1991-92 | 1.11 | 10.29 | 1662 |
| 1992-93 | 0.93 | 8.59 | 1658 |
| 1993-94 | 0.89 | 8.43 | 1713 |
| 1994-95(P) | 0.93 | 9.08 | 1760 |
| 1995-96(P) | 0.92 | 8.90 | 1733 |

* 180 Kg each P Provisional

## Plantation Crops

### Tea

25. Tea is India's traditional item of export besides being the most commonly consumed beverage. The domestic demand for tea has been rising faster than the expansion in its production, thus generating pressure on exportable surplus. Tea is a foreign exchange earner with negligible import content, besides being an important source of revenue to the Government. More than a million workers find employment in the tea industry.

26. In 1995-96, 762.35 million Kgs. of tea was produced which was 34 per cent higher than preceding year's output of 737.4 million Kgs. Export of tea rose to 163.65 million Kgs. valued at Rs. 1191.19 crore in 1995-96 from 152.16 million Kgs. valued at Rs. 986.41 crore in 1994-95. For 1996-97, a production target of 790 million Kgs. and an export target of 180 million Kgs. has been fixed.

### Coffee

27. Karnataka state dominates with 53 per cent of country's area under coffee. Arabica and Robusta are the two main varieties grown accounting for 49 per cent and 51 per cent of area respectively under coffee. In 1995-96, coffee output was 2.23 lakh tonnes, bulk of which (76 per cent) was exported. Apparently, coffee has emerged as an export oriented product. Coffee export during 1995-96 was 1.70 lakh tonnes valued at Rs. 1524 crore (Table 8.12).

28. In September, 1996, trade in coffee was totally deregulated. Growers are now free to sell their entire production in the domestic or export market without any quantitative restriction or compulsory routing through Coffee Board. Government also put decaffeinated/roasted coffee on OGL which allows free import in case of domestic scarcity.

**TABLE 8.12**

**Production and Export of Coffee**

(Lakh Tonnes)

| Season | Production | Export | |
|---|---|---|---|
| | | Quantity | Value (Rs. Crore) |
| 1990-91 | 1.70 | 1.00 | 279 |
| 1991-92 | 1.80 | 1.11 | 349 |
| 1992-93 | 1.69 | 1.14 | 381 |
| 1993-94 | 2.08 | 1.37 | 587 |
| 1994-95 | 1.80 | 1.37 | 1096 |
| 1995-96 | 2.23 | 1.70 | 1524 |
| 1996-97@ | 2.20 | 1.13* | 850* |

@ (Estimated) * 1st April-15 Nov. 1996

### Natural Rubber

29. Country's demand for natural rubber is largely met by indigenous production, with only a small proportion (less than 5 per cent) met through imports. Production of natural rubber has increased from a modest 15,830 tonnes in 1950-51 to 3.3 lakh tonnes in 1990-91 and 5.07 lakh tonnes in 1995-96. Area under rubber has also gone up from 4.75 lakh hectares in 1990-91 to an estimated 5.22 lakh hectares in 1995-96. Kerala is the major rubber producing state and, together with Tamil Nadu, accounts for 86 per cent of the total area under rubber contributing over three fourth of total rubber production. Rest of the 14 per cent of area is located in Maharashtra, Tripura, Meghalaya, Mizoram, Manipur, Assam, Nagaland, Andaman and Nicobar Islands, Goa, Orissa etc. Most rubber plantations are small and the average size of holding is 0.5 hectare only. As against production of 5.07 lakh tonnes and consumption of 5.26 lakh tonnes in 1995-96, the estimated production and consumption during 1996-97 is 5.42 lakh tonnes and 5.56 lakh tonnes respectively. Import of natural rubber from time to time is necessary to bridge the gap between demand

**TABLE 8.13**

**Production and Consumption of Natural Rubber**

(Lakh Tonnes)

| Year | Consumption | Production | Yield (Kg/ha) |
|---|---|---|---|
| 1991-92 | 3.80 | 3.67 | 1130 |
| 1992-93 | 4.14 | 3.93 | 1191 |
| 1993-94 | 4.50 | 4.35 | 1285 |
| 1994-95 | 4.86 | 4.72 | 1362 |
| 1995-96 | 5.26 | 5.07 | 1422 |
| 1996-97* | 5.56 | 5.42 | - |

*(Estimated)

and supply. Yield per hectare has increased from 284 kg. in 1950-51 to 1130 kg. in 1991-92 and to 1422 kg. in 1995-96 (Table 8.13).

### Horticulture & Floriculture

30. Immense agro-climatic diversity enables India to grow a large variety of horticulture crops which include fruits, vegetables, flowers, spices and plantation crops. From organised upland tea and coffee plantations to extensive and often dense coastal strips of coconut trees as also the sub-terranian tuber and root crops characterise the variegated nature of the horticultural potential in the country. The country holds the first position in global production of bananas, mangoes, coconut and cashew and is amongst the first ten in citrus, pineapple and apple production. India holds first position in global production of cauliflower and is amongst top ten in production of potato, tomato, onion and green peas. Production of principal horticultural crops is listed in Table 8.14. Horticultural products - fruits, vegetables, flowers, cashew, spices etc. account for nearly 25 per cent of total agricultural exports.

**TABLE 8.14**

**Production of Principal Horticultural Crops**

(Million Tonnes)

| Crops | 1991-92 | 1992-93 | 1993-94 |
|---|---|---|---|
| Fruits | 28.63 | 32.96 | 39.47 |
| Vegetables | 58.53 | 71.00 | 65.09 |
| Spices | 1.90 | 2.14 | 2.38 |
| Cashew | 0.31 | 0.35 | 0.35 |
| Arecanut | 0.24 | 0.25 | 0.28 |
| Coconut* | 10079 | 11375 | 12355 |

*Million Nuts

31. Floriculture - the production of flowers-has emerged as a promising area of high growth in recent years, particularly for its potential of export of cut flowers. In 1994-95 export of flowers was estimated at Rs.30 crore. More than 200 export oriented units have been identified for accelerating export growth in this area.

32. Investment of Rs. 250 crore was allocated in the Eighth Plan period (1992-97) for encouraging the use of green houses, plastic mulches and drip irrigation, with Rs. 200 crore having been earmarked for drip irrigation alone. The earlier restriction of permitting assistance for 1 hectare per beneficiary for drip irrigation was removed during 1995-96 and assistance is now provided for the entire holding of the beneficiary for growing horticultural crops. During 1996-97, subsidy has been enhanced to 90 per cent of the total cost or Rs.25000 per hectare, whichever is less for small and marginal farmers, SC/ST and women farmers, and 70 per cent of the total cost or Rs. 25000 per hectare whichever is less for other farmers. Low cost green houses are being encouraged not only for export oriented floriculture projects but also in cold arid regions like Ladakh for growing vegetables during the off season.

### Post-Harvest Technology

33. Due to lack of technology and poor infrastructural support for handling, packing, processing and preservation, substantial post harvest losses of fruits and vegetables still characterises the horticulture sector. Traditional mode of marketing fruits and vegetables currently results in an estimated loss of Rs. 3000 crore annually. National Horticulture Board (NHB) was provided Rs. 200 crore for implementing appropriate schemes (during Eighth Plan, 1992-97) for providing infrastructural support. The budgetary provision for 1996-97 is Rs.41 crore.

## Institutional Support and Inputs Influencing Agricultural Production

34. Agricultural production performance depends on optimum and timely use of inputs such as seeds, fertilizers, pesticides, water etc. as well as institutional support through agricultural marketing, pricing policies, availability and access to credit, agricultural research and extension.

### Seeds

35. Use of quality seeds is essential for achieving higher crop production. Hence multiplication, distribution and, availability of good quality seed is crucial to accelerated crop production. The seed technology breakthrough that ushered in the green revolution in the seventies and even eighties has unfortunately lost its momentum in nineties. There has been no perceptible progress in evolving new seed varieties in the recent years particularly in respect of cereals and pulses, as also fruits and vegetables. Lack of any significant breakthrough in seed technology is perhaps one of the main reasons for slow growth in foodgrains output during the nineties. This is a matter of serious concern. ICAR would need to take a fresh look at the current seed technology scenario and take some quick measures to remedy the situation of stagnating yields, particularly in some of the socially sensitive agricultural commodities.

36. Indian seed programme largely adheres to the limited generation system for seed multiplication. The system recognises three generations, namely breeder, foundation and certified seed and provides adequate safeguard for quality assurance in the seed multiplication chain to maintain the purity of variety

as it flows from the breeder stage to the farmers. Certified/quality seeds distributed to the farmers since 1992 is shown in Table 8.15.

**TABLE 8.15**
**Distribution of Certified/Quality Seeds**
(Lakh Quintals)

| Year | Quantity | Per cent Change |
|---|---|---|
| 1992-93 | 60.33 | — |
| 1993-94 | 61.00 | 1.1 |
| 1994-95 | 65.00 | 6.5 |
| 1995-96 | 68.80 | 5.8 |
| 1996-97* | 70.00 | 1.7 |

*Target

37. Since 1969, 2385 varieties of agricultural and horticultural crops have been notified, out of which 221 varieties of agricultural and horticultural crops have been notified during 1995-96. Seed Control Order 1983, seeks to regulate distribution, supply and trade in seeds. Production and distribution of seeds, particularly for food crops and cereals, is still predominantly operating under State agencies.

### Irrigation

38. Country's food security depends on the performance, delivery and expansion of the irrigation sector. Since 64 per cent of the working population is engaged in agricultural vocations, irrigation not only enhances the employment potential in the rural areas by turning seasonal employment into a more stable year round employment, but also reduces migration of rural population to urban areas. Irrigation also provides foodgrains security against the vagaries of monsoon and increases cropping intensity on the same area of land resulting in more foodgrain production per hectare of land. Thus, the importance of irrigation in ensuring food security, employment generation, poverty alleviation, reduction in social tension in rural areas and in reducing migration of rural poor to the urban areas is very obvious and vital.

39. Creation of irrigation potential and its optimum utilisation continues to receive a high priority in Government planning. The country's anticipated irrigated potential created by the end of 1995-96 is 89.44 million hectares comprising 33.01 million hectares under major and medium projects and 56.43 million hectares under minor irrigation schemes. The progress of development of irrigation potential and its utilisation is listed in Table 8.16.

40. The target for creation and utilisation of additional irrigation potential during 1995-96 was 2.36 million hectares and 2.08 million hectares respectively through major, medium and minor irrigation projects. Out of this, the target for creation and utilisation of irrigation potential through minor irrigation projects during 1995-96 were 1.59 million hectares and 1.29 million hectares respectively. Due to shorter gestation period and relatively lower investment levels, preference is given for undertaking and completion of minor irrigation schemes covering both surface and ground water. Because of comparatively advantageous water table levels, the eastern sector was accorded special attention for development of minor irrigation during the Eighth Five Year Plan (1992-97).

**TABLE 8.16**
**Development of Irrigation Potential and its Utilisation**
(Million Hectares)

| Irrigation Schemes | At the end of Seventh Plan (1989-90) | Addition during 1990-92 | Addition in Eighth Plan | | End of 1995-96 anticipated achievement |
|---|---|---|---|---|---|
| | | | Target 1992-97 | Anticipated achievement 1992-96 | |
| **1. Major & medium Irrigation** | | | | | |
| Potential | 29.9 | 0.8 | 5.09 | 2.31 | 33.01 |
| Utilisation | 25.5 | 0.8 | 4.25 | 2.12 | 28.42 |
| **2. Minor Irrigation** | | | | | |
| Potential | 46.6 | 3.8 | 10.71 | 6.03 | 56.43 |
| Utilisation | 43.1 | 3.4 | 9.36 | 4.97 | 51.47 |
| **3.Total** | | | | | |
| Potential | 76.5 | 4.6 | 15.80 | 8.34 | 89.44 |
| Utilisation | 68.6 | 4.2 | 13.61 | 7.09 | 79.89 |

Note: Irrigation projects with a Culturable 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.

41. Strengthening of irrigation infrastructure is one of the main objectives in irrigation supply management. There were 158 major, 226 medium and 95 Extension, Renovation and Modernisation (ERM) projects carried forward from the past at the start of Eighth Plan in 1992. Under RIDF-I, 2623 projects with a loan amount of about Rs. 1990.97 crore could be sanctioned for speedy completion by NABARD to 22 States. These projects are expected to create an additional irrigation potential of 22.52 lakh hectares. Under RIDF-II, with a phasing of three years, Rs. 2293.12 crore has been earmarked for 4951 irrigation projects in 16 States.

42. With a view to ensuring early completion of projects for providing irrigation benefits to the farmers, the Government of India has launched a programme called 'Accelerated Irrigation Benefit Scheme' during 1996-97, under which the Centre is providing additional central assistance by way of loans to the States on matching basis for early completion of selected large irrigation and multi-purpose projects. An allocation of Rs.900 crore in the 1996-97 Budget was provided for the scheme. The other major elements of the strategy to extend irrigation benefits to more areas include promotion of better water management practices, installation of sprinkler and drip irrigation systems in water scarce and drought prone areas, conjunctive use of surface and ground water and farmers participation in irrigation water management.

43. Under-utilisation of irrigation potential, particularly under major and medium irrigation projects continues to persist. The gap is basically attributable to delays involved in the development of on-farm works, namely, construction of field channels, land levelling, and adoption of the 'warabandi' system of water distribution in project command areas and also the time taken by the farmers in switching over from dry/rainfed farming to irrigated farming. To reduce the gap between the irrigation potential created and utilised and, to increase crop productivity under the command areas, Command Area Development Programme (CADP) has been under implementation since 1974-75. During 1995-96, Rs.122.45 Crore were released to States as Central assistance under the programme.

44. Growing demand for diverse uses of water because of rapid industrialisation, urbanisation and population growth is causing acute pressure on development of water resources. This brings in focus user-cost of water. Increased use of commercial fertilizers and pesticides, generation of new and toxic wastes by industries, municipal and domestic sweages, are an increasing source of water pollution. Rivers, lakes and estuaries are faced with high degree of pollution. Concern for water quality is, therefore, going to be very critical in water resource development and management.

45. Prevention of environmental degradation should occupy a central place in the water resource development programmes. To ensure that the environmental concerns are dealt with at the planning phase of the project itself, 'environmental impact assessment' studies are now carried out in all the major projects and implementation of environmental safeguards are being regularly monitored through National, State and project level Enviromental Monitoring Committees. Catchment area treatment plans are also being carried out to reduce sediment inflows into the reservoirs as an integral part of environmental plans.

**Fertilizers**

46. From 0.2 million tonnes in 1960-61, fertilizer consumption in nutrient terms rose to 5.5 million tonnes in 1980-81 and further to 12.5 million tonnes in 1990-91. In 1995-96 it is estimated at 13.9 million tonnes (Table 8.17).

**TABLE 8.17**
**Consumption of Chemical Fertilizers**
(Million Tonnes of Nutrients)

| Year | Nitrogen (N) | Phosphate (P) | Potash (K) | Total NPK |
|---|---|---|---|---|
| 1960-61 | 0.2 | Neg. | Neg. | 0.2 |
| 1970-71 | 1.5 | 0.5 | 0.2 | 2.2 |
| 1980-81 | 3.7 | 1.2 | 0.6 | 5.5 |
| 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 | 9.5 | 2.9 | 1.1 | 13.5 |
| 1995-96 | 9.8 | 2.9 | 1.2 | 13.9 |
| 1996-97* | 11.2 | 3.7 | 1.5 | 16.4 |

* Estimated.

47. The ideal NPK ratio aggregated for the country as a whole is 4 : 2 : 1, but the current all India NPK ratios are far removed from this norm (Table 8.18).

**TABLE 8.18**
**All India N P K Consumption Ratio**

| Year | Nitrogen | Phosphate | Potash |
|---|---|---|---|
| 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 | 9.7 | 2.9 | 1 |
| 1994-95 | 8.4 | 2.6 | 1 |
| 1995-96 | 8.5 | 2.5 | 1 |

Consumption is biased in favour of nitrogenous fertilizer whose predominant use is a consequence of the pricing policy adopted for different fertilizers.

48. Phosphatic and potassic fertilizers (including DAP, MOP and complex grade fertilizers) were decontrolled in August 1992. Only urea (nitrogenous fertilizer) continues to operate under a price control system and involves a heavy subsidy for keeping consumer (farm gate) price low. The imports of fertilizers as well as fertilizer raw materials and, intermediates were also progressively decanalised between March 1992 and March 1994. Consequent to decontrol in 1992, prices of phosphatic and potassic fertilizers rose sharply. Table 8.19 lists the price changes in urea, DAP and MOP and the changes in the relative prices after decontrol. To offset the impact of sharp price rise in DAP after decontrol, subsidy on indigenously produced DAP was increased from Rs. 1000 per tonne to Rs. 3000 per tonne and for imported DAP by Rs. 1500 per tonne with effect from July, 1996.

**TABLE 8.19**
**Prices of Fertilizers**
(Rs./Tonne)

| Year | Urea | DAP | MOP | Relative Price Ratio DAP/ Urea | Relative Price Ratio MOP/ Urea |
|---|---|---|---|---|---|
| 1989-90 | 2350 | 3600 | 1300 | 1.53 | 0.55 |
| 1990-91 | 2350 | 3600 | 1300 | 1.53 | 0.55 |
| 1991-92 | 3060 | 4680 | 1700 | 1.53 | 0.56 |
| 1992-93 (K) | 3060 | 4680 | 1700 | 1.53 | 0.56 |
| 1992-93 (R) | 2760 | 6650 | 4500 | 2.41 | 1.63 |
| 1993-94 (K) | 2760 | 6600 | 3800 | 2.39 | 1.38 |
| 1994-95 (K) | 3320 | 7500 | 3800 | 2.26 | 1.14 |
| 1995-96 (K) | 3320 | 9800 | 4450 | 2.95 | 1.34 |
| 1995-96 (R) | 3320 | 10000 | 4600 | 3.01 | 1.39 |

DAP & MOP Prices after decontrol are net of subsidy of Rs.1000 per tonne.
K - Kharif, R - Rabi.

49. The domestic production of fertilizers falls short of requirement. In case of potassic fertilizers, the entire quantity is imported. Whereas, prices of phosphatic and potassic fertilizers remain decontrolled, the price of nitrogenous fertilizer is still under a controlled price system involving not only cross subsidy between domestic producing plants but also absolute subsidy by keeping the selling price much below the average ex-factory (retention) price. Likewise imported urea also involves subsidy as its landed cost is higher than the domestic controlled selling price. Domestic production, imports and subsidy is listed in Table 8.20.

50. The fertilizer subsidy budget of 1996-97 is likely to come under pressure mainly on account of fluctuations in exchange rate, uptrend in global crude oil price and, intermediate product prices, as also increase in the international price of urea.

### Plant Protection

51. Pest and disease control through Integrated Pest Management Schemes, locust surveillance and control, and plant and seed quarantine, are the three main facets of Plant Protection systems currently in use. Integrated Pest Management (IPM) includes pest monitoring, promotion of biological control of pests, organising demonstrations, training and awareness of IPM technology.

52. Locust Warning Organisation (LWO) under the Directorate of Plant Protection, Quarantine and storage undertake surveillance to ensure timely

**TABLE 8.20**
**Fertilizer Production, Imports and Subsidies**
(Thousand tonnes)

| Year | Production N | Production P | Production N+P | Imports N+P+K | Subsidy (Rs. crore) Imported Fertilizers | Subsidy (Rs. crore) Domestic Fertilisers | Subsidy (Rs. crore) Total |
|---|---|---|---|---|---|---|---|
| 1988-89 | 6712 | 2252 | 8964 | 1608 | 201 | 3000 | 3201 |
| 1989-90 | 6747 | 1796 | 8543 | 3114 | 771 | 3771 | 4542 |
| 1990-91 | 6993 | 2052 | 9045 | 2758 | 659 | 3730 | 4389 |
| 1991-92 | 7301 | 2562 | 9863 | 2769 | 1300 | 3500 | 4800 |
| 1992-93 | 7430 | 2306 | 9736 | 2988 | 996 | 4800 | 5796 |
| 1993-94 | 7231 | 1816 | 9047 | 3166 | 600 | 3800 | 4400 |
| 1994-95 | 7945 | 2493 | 10438 | 2965 | 1166 | 4075 | 5241 |
| 1995-96 | 8777 | 2558 | 11335 | 4008 | 1935 | 4300 | 6235 |
| 1996-97* | 9023 | 2680 | 11703 | — | 1648 | 4500 | 6148 |

*(Budgeted)

ground control of locust population over an area of 2 lakh sq. kms. of Scheduled Desert Area of Rajasthan and parts of Gujarat and Haryana.

53. Wide-spread and indiscriminate use of toxic pesticides can have several adverse effects on human and animal health, besides poisoning and polluting air, water and soil, thus leading to general ecological imbalance. Innovative methods of pest management have been introduced to moderate the ill effects of pesticides. Use of safer pesticides including botanicals (neem based) and bio-pesticides, pheromones and other bio-chemical products are encouraged to manage pest problems. As a result of adoption of IPM, particularly in cotton, vegetables and rice, the consumption of pesticides has come down from 72133 tonnes during 1991-92 to 61260 tonnes during 1995-96. During 1995-96, 49405 farmers and 7810 extension officers have been imparted training on different aspects of IPM technology including agro economic system analysis. 63000 farmers and 10500 extension officers are proposed to be trained in IPM on rice, cotton, vegetables, pulses and oilseeds during 1996-97.

## Agricultural Credit and Insurance

*Flow of Agricultural Credit*

54. Agricultural loans provided by various agencies rose from Rs.15169 crore in 1992-93 to Rs.24849 crore in 1995-96. The target for 1996-97 is Rs.28817 crore. Disbursement of agricultural credit from 1992-93 to 1995-96 and target for 1996-97 is listed in Table 8.21. The thrust of agricultural credit policy continues to be on providing timely and adequate credit support to farmers with particular focus on small and marginal farmers and weaker sections. Efforts are on to step up credit support by 25 per cent every year and thereby double the ground level agriculture credit within a period of five years. Commercial Banks, Regional Rural Banks (RRBs) and Cooperative Banks constitute the principle source of institutional credit to the farm sector.

55. Cooperatives play a significant role in meeting the short term credit requirement of agricultural sector. The network of cooperative credit institutions with 90783 "primary agricultural societies" for short term advances and 1792 primary units for long term credit have been instrumental in reaching credit to farmers in the remotest part of the country. Short term (production) advances by credit cooperatives accounted for 59 per cent of the total disbursement. Commercial banks ranked next with 35 per cent and RRBs provided the balance 6 per cent during 1995-96. In medium/long term (investment) credit, cooperatives accounted for 35 per cent of the total disbursement while commercial banks accounted for 58 per cent and RRBs for 7 per cent. Though the share of cooperatives in agricultural credit had shown a declining trend till 1991-92, it has shown signs of recovery thereafter.

**TABLE 8.21**
**Flow of Institutional Credit to Agriculture**
(Rs.crore)

| Agency | 1991-92 | 1992-93 | 1993-94 | 1994-95 | 1995-96 (Revised) | 1996-97 (Target) |
|---|---|---|---|---|---|---|
| **COOPERATIVE BANKS** | | | | | | |
| Short term | 4403 | 7170 | 7839 | 9462 | 9966 | 13440 |
| Med./Long term | 1397 | 2208 | 2278 | 2454 | 2800 | 3360 |
| Sub-Total | 5800 | 9378 | 10117 | 11916 | 12766 | 16800 |
| **COMMERCIAL BANKS** | | | | | | |
| Short term | 2341 | 2432 | 2700 | 3972 | 5975 | 5158 |
| Med./Long term | 2465 | 2528 | 2700 | 4284 | 4608 | 5179 |
| Sub-Total | 4806 | 4960 | 5400 | 8256 | 10583 | 10337 |
| **REGIONAL RURAL BANKS** | | | | | | |
| Short term | 336 | 489 | 732 | 775 | 945 | 1080 |
| Med./Long term | 260 | 342 | 245 | 477 | 555 | 600 |
| Sub-Total | 596 | 831 | 977 | 1252 | 1500 | 1680 |
| Grand Total | 11202 | 15169 | 16494 | 21424 | 24849 | 28817 |

56. Despite the significant increase in overall agricultural credit, there is a serious problem of overdues which has not only been inhibiting credit expansion but also economic viability of lending institutions, especially the cooperatives and the RRB's. The waiver of agricultural loans in 1990 had seriously accentuated the problem of recovery. The position regarding recovery of direct agricultural advances of all scheduled commercial banks for the last four years, 1992 to 1995, is shown in Table 8.22.

57. To improve the viability of the cooperative banks, the Reserve Bank of India, effective October, 1994, deregulated the interest rate structure for cooperatives for lending (subject to a minimum of 12 per cent) and for raising deposits. In August, 1996, the Reserve Bank of India deregulated the lending rate of RRBs.

**TABLE 8.22**
**Recovery of Agricultural Advances by Commercial Banks**
(Rs. crore)

| Year (ended June) | Demand | Recovery | Overdues | Recovery per cent |
|---|---|---|---|---|
| 1992 | 9338.31 | 5056.56 | 4281.75 | 54.15 |
| 1993 | 10460.92 | 5847.33 | 4613.59 | 55.90 |
| 1994 | 11231.48 | 6477.27 | 4754.21 | 57.67 |
| 1995* | 11073.48 | 6629.32 | 4444.26 | 59.86 |

* Latest available

*Comprehensive Crop Insurance Scheme*

58. Agriculture is susceptible to the vagaries of nature like drought, floods etc. In order to provide financial support to farmers in the event of crop failure as a result of natural calamity and, to restore their credit eligibility for the next season, comprehensive crop insurance scheme was introduced in April, 1985. The participation in the scheme is voluntary and States are free to opt for the scheme. Farmers availing of crop loans from cooperative credit institutions, commercial banks and regional rural banks for producing rice, wheat, millets, oilseeds and pulses are covered under the scheme. The sum insured is equal to the crop loan disbursed subject to a maximum of Rs.10000/- per farmer. Indemnity claims are shared by Central and concerned State Governments in the ratio of 2:1. If the actual average yield in any area covered by this scheme falls short of the guaranteed yield, then the farmers are entitled to an indemnity to the extent of short-fall in yield viz-a-viz the guaranteed yield.

59. Some States/Union Territories are participating in the Crop Insurance Scheme since 1985, while a few participated and withdrew subsequently. Since inception of the Scheme in 1985, about 5.24 crore farmers have been covered. The claims paid amounted to about Rs. 1351 crore as against a premium collection of about Rs. 231 crore upto rabi 1995-96 season; The incurred claims ratio being 1:5.85, the scheme in its present form is extremely unviable. However, the scheme has no impact on the insurance companies because the expenditure on claims settlement is entirely met by the Ministry of Agriculture. The General Insurance Corporation of India only administers the scheme on behalf of the Ministry of Agriculture and to that extent the adverse claims ratio is not relevant to the GIC. The adverse claims ratio indicates that there is a need to improve the parameters of the scheme to make it financially viable. This exercise has been already undertaken by the Ministry of Agriculture.

**Trend of Investment in Agriculture**

60. Investment or gross capital formation in agriculture by public and private sector together shows an increasing trend during seventies and eighties despite yearly fluctuations. From 1990-91, even though there is some uptrend in total investment in agriculture sector, the share of public investment in agriculture has fallen. The private investment in agriculture has been steadily increasing from Rs.1969 crore in 1970-71 (at 1980-81 prices) to Rs.2840 crore in 1980-81, Rs.3440 crore in 1990-91 and Rs.4991 crore in 1995-96. The share of private investment in total investment in agriculture which was 61 per cent in 1980-81 increased to over 79 per cent during the five year period 1990-96. The rising trend in private investment perhaps reflects the improved trade policy regime for agriculture viz-a-viz industry in the post reform period (Table 8.23).

**TABLE 8.23**

**Gross Capital Formation in Agriculture**

(At 1980-81 Prices)

(Rs. crore)

| Year | Total | Public | Private | Per cent share | |
|---|---|---|---|---|---|
| | | | | Public | Private |
| 1970-71 | 2758 | 789 | 1969 | 28.6 | 71.4 |
| 1980-81 | 4636 | 1796 | 2840 | 38.7 | 61.3 |
| 1990-91 | 4594 | 1154 | 3440 | 25.1 | 74.9 |
| 1991-92 | 4729 | 1002 | 3727 | 21.2 | 78.8 |
| 1992-93 | 5372 | 1061 | 4311 | 19.7 | 80.3 |
| 1993-94 | 5038 | 1153 | 3885 | 22.9 | 77.1 |
| 1994-95 | 5678 | 1329 | 4349 | 23.4 | 76.6 |
| 1995-96(Q) | 6301 | 1310 | 4991 | 20.8 | 79.2 |

Q - Quick Estimates

61. The public investment in agriculture which had been generally rising till seventies, decelerated during the eighties. Public investment in real terms at 1980-81 prices was Rs.1796 crore in 1980-81 but declined to Rs.1002 crore in 1991-92. During 1992-93, 1993-94 and 1994-95 it showed slight uptrend but marginally declined to Rs.1310 crore in 1995-96. The decline in public investment is attributed to diversion of resources from investment to current expenditure. A large portion of public expenditure on agriculture in recent years went into current expenditure in the form of increased subsidies for food, fertilizers, electricity, irrigation, credit and other agricultural inputs rather than on creation of assets. The subsidy for fertilizer which was Rs.5796 crore in 1992-93 is likely to rise to over Rs.8000 crore in 1996-97 (Table 8.20 and para 50).

62. Some of the other reasons for slow growth in public investment in agriculture are - larger expenditure on maintenance of existing projects, relatively lower allocation for irrigation, rural infrastructure and research, more emphasis on food security, lack of effective credit support and credit infrastructure in rural area.

63. The thrust of public sector investment in agriculture in the 1996-97 Budget was on optimising investments already made. The strategy to increase capital formation in agriculture includes increased plan outlay and increasing the proportion for development of infrastructure, more efficient use of resources to raise productivity and ensuring remunerative prices to farmers to enable them to use own savings for higher investment. A new Rural Infrastructure Development Fund within NABARD has been established to provide credit for medium and

minor irrigation and soil conservation projects. In the budget for 1996-97, provision was made to increase share capital of National Bank for Rural Development (NABARD) from Rs.500 crore to Rs.2000 crore in the next five years. A scheme of Accelerated Irrigation Benefit Programme (AIBP) was initiated during 1996-97 with a provision of Rs.900 crore for providing assistance to States by way of loans for timely completion of selected large and multi-purpose irrigation projects. The Small Farmers Agri-Business Consortium (SFAC) has also been set up to promote private investment in agriculture. These steps will help in accelerating investment in agriculture in the long run.

**Agricultural Marketing**

64. Except for commodities whose prices are administered - petroleum, coal, nitrogenous fertilizer - the agricultural commodity markets operate under the normal forces of supply and demand. Regulation and development of agricultural markets, standardisation and grading of agricultural commodities, assistance for creation of infrastructural facilities in agricultural produce markets and assistance for setting up of rural godowns are the major activities falling under agricultural marketing. The Government role is limited mainly to protecting the interests of both consumers and producers through farm support policies and promotion of organised marketing of agricultural commodities. Most of the State Governments have also enacted the necessary legislation for regulation of agricultural produce markets.

65. Some of the official organisations and institutions currently engaged in dealing with product and area specific problems having a bearing on production, pricing, and marketing of agricultural products are Commission for Agricultural Costs and Prices (CACP), the Food Corporation of India (FCI), the Cotton Corporation of India (CCI), the Jute Corporation of India (JCI) and the Commodity Boards.

66. The Central Government has provided assistance for the creation of infrastructural facilities for marketing and also for setting up of rural godowns. The progress in agricultural marketing since 1990 is shown in Table 8.24.

67. A network of cooperatives at the national level, state level and at primary level operates to help farm producers with access and farther reach for sale of produce. National Cooperative Development Corporation (NCDC) is the apex institution which formulates the policy for marketing, storage, production, export and import of agricultural produce through cooperatives. NCDC has provided Rs.79.97 crore for setting up of 248 cold storages with an installed capacity of 7.39 lakh tonnes till end of March, 1996.

68. The National Agricultural Cooperative Marketing Federation of India Ltd. (NAFED) is an apex cooperative organisation dealing in distribution, procurement, export and import of selected agricultural commodities. NAFED is a central nodal agency for undertaking price support operations for pulses and oilseeds and market intervention operation for horticultural items like potato, onion, grapes, kinoo/ malta, black pepper and red chilli etc. The turnover target of NAFED for 1996-97 is Rs.936 crore. The marketing of agriculture produce through cooperatives has registered a remarkable growth from Rs.1950 crore in 1980-81 to about Rs.9503.84 crore in 1994-95. 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.

**Agricultural Mechanisation**

69. Despite the preponderance of small holdings in the country, selective use of machines for tillage operations is showing considerable growth. This is evident from the increasing number of tractors and power tillers sold in the recent years (Table 8.25). The latest land and livestock holding survey (NSS forty-eighth round) published in October, 1996 reveals that the number of tractors per 10000 hectares of operated area rose from 6 tractors in 1971-72 to 109 tractors in 1991-92. A scheme "Promotion of Agricultural Mechanisation among Small Farmers" has been introduced since 1992-93, under which a subsidy of 30 per cent subject to a maximum of Rs. 30000 is available to the farmers, individually

**TABLE 8.24**
**Agricultural Regulated Markets**

| Year | Regulated Markets (Nos) | Grading Standards for Agricultural Commodities (Nos.) | Cold Storages Numbers | Cold Storages Capacity (Million Tonnes) |
|---|---|---|---|---|
| 1990-91 | 6640 | 142 | 2930 | 7.68 |
| 1991-92 | 6738 | 143 | 2973 | 7.79 |
| 1992-93 | 6772 | 148 | 3053 | 8.09 |
| 1993-94 | 6809 | 150 | 3124 | 8.17 |
| 1994-95 | 6836 | 151 | 3167 | 8.58 |
| 1995-96 | 6968 | 153 | 3253 | 8.73 |

**TABLE 8.25**

**Production and Sale of Tractors & Power Tillers**

(Numbers)

| Year | Production | | Sale | |
|---|---|---|---|---|
| | Tractors | Power Tillers | Tractor | Power Tillers |
| 1991-92 | 151749 | 7580 | 150582 | 7528 |
| 1992-93 | 147016 | 8648 | 144330 | 8642 |
| 1993-94 | 137352 | 9034 | 138796 | 9449 |
| 1994-95 | 164029 | 8334 | 164841 | 8376 |
| 1995-96* | 190990 | 10239 | 191497 | 10048 |

* Provisional

or their groups, for the purchase of tractors upto 30 h.p. The subsidy is also available to registered cooperative and farming societies. The subsidy of Rs.30000 per tractor which was restricted to small and marginal farmers was extended to all categories of farmers in the 1996-97 Budget. The 1996-97 budget extended a subsidy of 50 per cent limited to Rs. 30000, under the Integrated Cereals Development Programme for Rice, for the purchase of power tillers.

70. Increased mechanisation in agriculture has created demand for more trained manpower for operation, maintenance and management of agricultural machinery. To provide better quality equipment to the farmers, the Government has already set up four Farm Machinery Training and Testing Institutes, one each in Madhya Pradesh, Haryana, Andhra Pradesh and Assam. Two more institutes, one in Rajasthan and other in Tamil Nadu are likely to be established.

### Agriculture Research, Education and Extension

71. Indian Council of Agricultural Research (ICAR) plays a crucial role in promoting science and technology and its application in agriculture. Seven rice hybrids with a clear yield advantage of one tonne more per ha. than the best variety have been released for general cultivation in over 50,000 hectares in 1996. A national Gene Bank which is the biggest in Asia was opened at New Delhi.

72. Besides ICAR, there are 29 State Agricultural Universities, one Central Agricultural University for North East Hill Region, four National Institutes of the Council viz. Indian Agricultural Research Institute, Indian Veterinary Research Institute , National Dairy Research Institute and Central Institute of Fisheries Education which undertake research in specialised areas. During the year about 2.51 lakh farmers, farm women and rural youths are expected to be trained in various aspects of agriculture production by Krishi Vigyan Kendras (KVKs).

73. Non-governmental organisations are now beginning to be involved in strengthening the research, extension and delivery system. Two schemes namely, "Agricultural Extension through Voluntary Organisation" was launched in 1994-95 on pilot basis in 6 States through 14 voluntary organisations and "Women in Agriculture Scheme" was launched covering 7 districts in 7 states.

## Animal Husbandry, Dairy Development and Fisheries

74. The gross value of output from livestock sector (at current prices) is estimated to account for 26 per cent of the total value of output from Agriculture sector. This excludes the contribution of animal draught power. Animal husbandry is an important source of self employment and subsidiary occupation in rural and semi-urban areas and more so for people living in the drought prone, hilly, tribal and other poorly developed areas, where crop production on its own may not sustain them fully. As revealed by NSS, 1987-88, the average annual growth rate for employment in the livestock sector during the period 1972-73 to 1987-88 was 4.15 per cent as against 1.1 per cent for the agriculture sector as a whole. The recent Land and Livestock Holding Survey (NSS, forty-eighth round) further reveals that during eighties there was a substantial growth of dairy farming in the country. The ratio of in-milk bovine stock to 100 households rose from 37 in 1981-82 to 46 in 1991-92. It also highlighted that the rise in ratio during eighties was most pronounced in the states with relatively high average in milk stock, like Punjab, Haryana and Rajasthan. On the other hand, there was little improvement in the ratio in Kerala, Orissa and Tamil Nadu. The marginal and small holdings constitute the core of the milk production sector

**TABLE 8.26**

**Milk Production**

(Million Tonnes)

| Year | Milk Production |
|---|---|
| 1950-51 | 17.0 |
| 1960-61 | 20.0 |
| 1970-71* | 21.2 |
| 1980-81 | 31.6 |
| 1990-91 | 53.9 |
| 1991-92 | 55.7 |
| 1992-93 | 58.0 |
| 1993-94 | 60.6 |
| 1994-95 | 64.1 |
| 1995-96(A) | 66.1 |
| 1996-97(T) | 70.1 |

*Data relates to 1968-69.
A : Anticipated T : Target

accounting for about 66 per cent of the in-milk bovine stock (1991-92 estimate).

75. In 1995-96, the country produced 66 million tonnes of milk. This represents an average annual growth of 4.5 per cent since 1990-91. Milk Production since 1950-51 to 1996-97 is shown in table 8.26.

**Poultry Farming**

76. Poultry farming has become an important activity providing additional income to the weaker sections of the population in rural and semi-urban areas. Poultry farming has made good progress due to research and developmental efforts of the Government and the organised private sector. Egg production is expected to have increased to about 27 billion during 1995-96. Land and Livestock Holding Survey (NSS, forty eighth round, October, 1996) points out that there has been a rapid growth in poultry farming during 1970s and 1980s. The poultry stock per hundred households rose steadily from 107 in 1971-72 to 195 in 1991-92. In 1991-92, the marginal category of farm households (constituting 48 per cent of the households) alone accounted for 55 per cent of poultry stock.

**Cattle Insurance**

77. Under the cattle insurance policy, cover is provided for the sum insured or the market value of the animal at the time of death, whichever is less. Animals are normally insured upto 100 per cent of their market value. General Insurance Corporation (GIC) implements various cattle insurance programmes through its four companies under their "Market Agreement on Cattle Insurance". Buffaloes, calves/heifers, stud bulls, bullocks etc. of specified age groups are insured against death due to accidents inclusive of natural causes like fire, lightning, floods, storm, earthquakes, famine, diseases, surgical operation, riot, strike and civil commotion and risk of breeding and calving. Insurance policy can also be extended to cover permanent total disability on payment of extra premium. Cattle purchase under poverty alleviation programmes are insured under Master Policy. The animals are insured at concessional rate and part of the premium is subsidised by the Government. Under the Cattle Insurance Scheme, at present, about 10 per cent of the total cattle population is covered. The projected target for insuring cattle during 1996-97 was 88 lakhs out of which 48 lakhs was for 'scheme' animals and 40 lakhs for 'non-scheme' animals. The position regarding number of cattle covered, premium collected and claims paid during the past 5 years is listed in Table 8.27. After taking into account management expenses and incentives, the scheme is presently operating on no-profit-no-loss basis. The scheme is thus operated by the Insurance Companies on their own risk.

**TABLE 8.27**

**Cattle Insurance-Premium and Claims**

(Rs. crore)

| Year | Premium collected | Incurred claims | Incurred claims ratio |
|---|---|---|---|
| 1990-91 | 85.69 | 61.36 | 71 |
| 1991-92 | 89.61 | 63.29 | 70 |
| 1992-93 | 93.57 | 59.78 | 63 |
| 1993-94 | 103.87 | 63.71 | 61 |
| 1994-95 | 106.87 | 71.50 | 66 |
| 1995-96 | 113.38 | N.A. | — |

N.A. Not Available

**Fisheries and Aquaculture**

78. India is the seventh largest producer of fish in the world and, perhaps, second in inland fish production. Fishery sector plays a vital role in sustaining a fairly large proportion of population along the long 8129 kms. coast line. The contribution of fisheries to the net domestic product has increased from Rs.1479 crore in 1984-85 to Rs.9826 crore in 1994-95 at current prices showing about six and a half times increase in ten years. The trend of fish production and exports is listed in Table 8.28. The target for fish production in 1996-97 is 51.40 lakh tonnes comprising 28.57 lakh tonnes from marine and 22.83 lakh tonnes from inland waters. An area of 3.86 lakh hectares has been brought under scientific fish culture and 5.04 lakh farmers have been trained in improved practices upto 1995-96 through active support provided under Fish Farmers Development Agencies. Development of brackish water aquaculture through Brackish Water Fish

**TABLE 8.28**

**Marine and Inland Fish Production and Export of Marine Products**

| Year | Fish production (Lakh tonnes) | | | Export of Marine products | |
|---|---|---|---|---|---|
| | Marine | Inland | Total | Quantity (Lakh Tonnes) | Value (Rs. Crore) |
| 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 | 17.10 | 41.57 | 1.72 | 1375.89 |
| 1992-93 | 25.76 | 17.89 | 43.65 | 2.09 | 1767.43 |
| 1993-94 | 26.49 | 19.95 | 46.44 | 2.44 | 2503.62 |
| 1994-95 | 26.92 | 20.97 | 47.89 | 3.07 | 3575.27 |
| 1995-96(P) | 27.07 | 22.42 | 49.49 | 2.96 | 3501.00 |
| 1996-97(T) | 28.57 | 22.83 | 51.40 | - | - |

P : Provisional
T : Target

Farmers Development Agencies have been established in the coastal states for providing a package of technical, financial and extension support for shrimp farming. A shrimp and fish culture project is under implementation with the World Bank assistance in 5 states.

## Agricultural Exports

79. Agricultural products exported include foodgrains, tobacco, cashew, oilmeals, sesame and niger seeds, groundnut, beverages, guargum meal, oilseeds extractions, shellac, sugar and molasses, horticulture and floriculture products, processed fruits and juices and meat preparations etc. The total exports of agricultural products (including tea, coffee and raw cotton but excluding marine products) during 1995-96 was Rs. 15659.31 crore. India's share in the world trade in agricultural commodities is just about one per cent.

80. Agricultural exports have received special attention from the Government since it is in this area that there is the greatest potential for raising farm incomes, tackling unemployment and earning foreign exchange. The impetus for accelerated growth in agricultural exports is envisaged through enhanced infrastructure support and by building up a conducive policy environment. A number of policy changes have been introduced to make agricultural exports more viable. Market determined exchange rate policy has favoured agricultural product exports. Lowering of import duties on capital goods particularly for greenhouse equipment and plant and machinery necessary for food processing industries as well as easier availability of credit for exports have also helped. Some of the restrictions on agricultural exports have been removed. The items on the restricted list have been pruned down and only a few items now remain subject to either licensing or quantitative ceiling.

81. The policy changes introduced have created a conducive environment for enhanced exports of agricultural products. Besides the traditional products exported, a number of new agricultural products have been introduced in our export basket. These include floriculture products, fresh fruits such as bananas, lychees, grapes, pomegranates and fresh vegetables such as broccolli and asparagus.

## Outlook

82. The pace of agricultural growth in recent years has been constrained by a number of factors, including the relatively slow growth of foodgrain production. The annual compound growth of foodgrains for the past six years between 1990-91 to 1996-97 at 1.7 per cent is lower than the annual population growth of 1.9 per cent for nineties and, therefore, a matter of serious concern. Even a marginal fall of 3 to 4 per cent in foodgrains output can cause prices of primary articles to escalate sharply, necessitating government intervention by way of ordering larger draw down on reserve stocks of foodgrains and even taking recourse to imports on the margin as happened in 1993 and again in late 1996.

83. Three major constraints to growth need to be addressed. The first is the decline in the public investment as also deterioration in the operational efficiency and delivery system of the existing infrastructure. This requires to be urgently remedied

**BOX 8.1**

**Agricultural Development in Ninth Plan (1997-98 to 2002-03)**

- Agriculture contributes 29.4 per cent of GDP, employing 64 per cent of the country's work-force. During the Eighth Plan, 1992-97, agriculture registered an annual growth rate of 3.5 per cent, with foodgrain output growth at 3 per cent. In the Ninth Plan the agriculture growth is aimed at 4.5 per cent.
- Targets to be realised through regionally differentiated strategy based on agronomic, climatic and environment-friendly conditions.
- North-western high productivity regions to promote diversifications and high value crops and to strengthen linkages with agro processing industries and exports.
- Eastern region with abundant water to exploit the productivity potential through flood control, drainage management, improvement of irrigation facilities and, improved input delivery systems.
- Water scarce peninsular region including Rajasthan, to focus on efficient water harvesting and conservation methods and technologies based on watershed approach and appropriate farming system.
- Ecologically fragile regions including Himalayan and desert areas to concentrate on eco-friendly agriculture.

by concerted efforts by States to raise resources for investment in agriculture. Creation of the Rural Infrastructure Development Fund (RIDF) is only a limited step in this direction, since distortions in the financial policies of States cannot be offset by RIDF. The second factor is the absence or virtual stagnation in the evolution of new seed varieties, particularly of key agricultural commodities, namely, rice, wheat, pulses, oilseeds and vegetables. Fruits and vegetables have become an essential ingredient of the consumption basket on account of increasing urbanisation and changes in food habits. Focus of agricultural research should, therefore, shift towards price sensitive critical farm commodities ensuring their growth at a level commensurate with demand. The third factor responsible for slow growth in agriculture, particularly diversification and value addition, is the continuation of restrictive policies regarding trade, movement and storage of agricultural commodities imposed both by the State Governments and the Central Government. Industrial policy reforms cannot just be treated in isolation with agricultural sector continuing to remain fettered. Industry has benefited greatly from deregulation. Similar benefits must be sought for agriculture through phasing out of the numerous restrictions currently imposed by Central and State Governments. Export-import policy for agriculture should ensure exports of high value agricultural products in return for low value essential agricultural commodity imports. Reforms in agriculture sector need to be pursued vigorously so as to improve the climate for a higher growth in agriculture and improvement in its terms of trade.