## CHAPTER 2

## AGRICULTURAL PRODUCTION

The current year marks a period of strong recovery in agriculture. Following the run of poor monsoons which retarded agricultural growth during the last few years the country has had excellent rains this year. As a consequence, foodgrain production, which declined to about 138 million tonnes last year is likely to exceed the target of 166.57 million tonnes set for 1988-89 and may even cross the 170 million tonnes mark. The agricultural sector as a whole is likely to record a growth of between 17 to 20 per cent.

2.2 Despite the severity of the drought, the loss of agricultural production last year was less than the losses recorded in similar drought years earlier. In 1979-80, for instance, kharif and rabi foodgrain output had both declined by as much as 19 per cent and 13.7 per cent respectively. The smaller kharif foodgrains loss in 1987-88 is attributable to the more than normal rainfall in the eastern rice region, which in fact experienced floods while the rest of the country was under the grip of a severe drought. The positive growth in rabi foodgrain production, despite moisture stress and other growth retarding effects of monsoon failure which extend into the rabi season, is largely attributable to the timely special measures which Government undertook to maximise rabi production, including steps taken for achieving a more judicious and scientific management of available water resources. These measures also helped poise agriculture for a quick recovery in the current year.

2.3 Apart from such measures, the Government also initiated a number of steps to recover the lost momentum of long-term agricultural growth following the 1987 drought. The targets for 1988-89 were set to offset the shortfalls suffered in the first three years of the Seventh Plan and achieve the target of 175 million tonnes of foodgrain production by the end of the Seventh Plan. For the purpose of achieving this target, a Special Foodgrains Production Programme was prepared with emphasis on the accelerated completion of irrigation projects and adequate availability of inputs like quality seeds, fertilisers, pesticides, weedicides, etc. as well as credit. The programme concentrates on increasing the production of five focus crops, i.e. rice, wheat, maize, arhar and gram in 169 districts, distributed across 14 states. These districts were especially selected as being the most promising for yielding quick results after taking into account local institutional and production conditions, soil conditions, water availability, land development, past growth and availability of the necessary technological package.

2.4 The agricultural situation has been radically altered this year. Production is expected to go up by 17 to 20 per cent during 1988-89 and exceed the production targets fixed for the year in several crops. Thus foodgrain production this year is expected to cross the target of 166.57 million tonnes and may even go up to 170 million tonnes or more. The production of oilseeds and cotton is also likely to show significant increases over the low levels of last year. However, the production of sugarcane, jute and mesta may not record any notable change. This remarkable turn around has been possible mainly because of the good monsoon and the various measures taken by the Government in the wake of the drought, which helped poise agriculture for a quick recovery, and the new Special Foodgrains Production Programme launched during the current year to optimise crop production.

### Rainfall Situation

2.5 After several poor monsoons, the country has had excellent rains this year. Excess or normal rainfall was received almost all over the country. Of the 35 meteorological sub-divisions, 32 meteorological sub-divisions (88 per cent of the districts) received excess to normal rains during the south-west monsoon season (June to September 1988). The sub-divisions of West Rajasthan, East Rajasthan and Hills of Uttar Pradesh record-

ed marginal deficient/scanty rainfall. The rainfall situation can be seen from the following table:—

TABLE 2.1

*Monsoon Rainfall (June—September)*

| | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 |
|---|---|---|---|---|---|---|
| 1. Number of meteorological sub-divisions : | | | | | | |
| (*a*) Excess/ Normal rains | 33 | 26 | 26 | 21 | 14 | 32 |
| (*b*) Deficient/ Scanty rains | 2 | 9 | 9 | 14 | 21 | 3 |
| (*c*) Total . | 35 | 35 | 35 | 35 | 35 | 35 |
| 2. Per cent of districts having normal to excess rains . | 85 | 64 | 65 | 52 | 43 | 88 |

2.6 During the pre-monsoon season (March to May 1988) as many as 24 meteorological sub-divisions had excess or normal rains which is the highest in recent years. The South-West monsoon advanced into Kerala on May 26, 1988 and by the end of the month it covered the north-eastern region and sub-Himalayan West Bengal and Sikkim. By June 5, 1988 the northern limit of the monsoon passed over parts of Karnataka, Tamil Nadu and Sikkim. By June 15, 1988 it further advanced into most parts of Maharashtra, South Gujarat, North Interior Karnataka, South Telengana, Coastal Andhra Pradesh, Orissa, West Bengal, Bihar and Eastern Uttar Pradesh. The onset of monsoon was in time over most parts of the country and by July 1, 1988, monsoon covered the entire country. By the end of September, 1988, the monsoon however withdrew from North-West India including West Rajasthan, West Uttar Pradesh, Punjab, Haryana and parts of Gujarat and West Madhya Pradesh.

2.7 The All India Cumulative Rainfall Index for the entire season, constructed by using area sown under kharif rice in each meteorological zone as weights, indicates that rainfall recorded this year was 109.6 per cent of normal and indeed one of the best monsoons in recent years. (Table 2.2)

TABLE 2.2

*Regional Rainfall Indices*

(June to September)

| Year | All India | West | North | East | South | Centre |
|---|---|---|---|---|---|---|
| 1979 | 77.0 | 85.0 | 52.1 | 84.4 | 94.8 | 69.0 |
| 1982 | 89.4 | 83.5 | 94.9 | 87.8 | 88.8 | 93.1 |
| 1986 | 85.3 | 78.4 | 88.9 | 83.7 | 89.9 | 86.5 |
| 1987 | 88.7 | 75.6 | 62.5 | 103.6 | 75.5 | 77.4 |
| 1988 | 109.6 | 121.2 | 116.5 | 107.6 | 123.9 | 90.3 |

2.8 The excess rainfall was more pronounced in Southern and Western region, but other regions also recorded substantial excess rainfall. The areas which received excess, normal and deficient rainfall are given as under:

| *Rainfall* | *Meteorological sub-divisions* |
|---|---|
| Excess | Arunachal Pradesh; Haryana, Chandigarh and Delhi; Punjab; Himachal Pradesh; Jammu & Kashmir; Gujarat Region; Daman, Dadra and Nagar Haveli; Saurashtra, Kutch and Diu; Madhya Maharashtra; Marathwada; Vidarbha; Coastal Andhra Pradesh; Telengana; Rayalaseema; Tamil Nadu and Pondicherry; North Interior Karnataka; South Interior Karnataka |
| Normal | Andaman and Nicobar Islands; Assam and Meghalaya; Nagaland, Manipur, Mizoram and Tripura; Sub-Himalayan West Bengal and Sikkim; Gangetic West Bengal; Orissa; Bihar Plateau; Bihar Plains; East Uttar Pradesh; Plains of West Uttar Pradesh; West Madhya Pradesh; East Madhya Pradesh; Konkan and Goa, Coastal Karnataka; Kerala; Lakshadweep |
| Deficient | Hills of West Uttar Pradesh; West Rajasthan; East Rajasthan |
| Scanty | Nil |

2.9 The progress of the South-west monsoon during 1988, however, was not uniformly good across all regions. It started favourably everywhere except in Saurashtra region of Gujarat, West Rajasthan, parts of Andhra Pradesh, Karnataka and Madhya Pradesh. Subsequently, the rainfall improved substantially in most regions of the country but not in the districts of Durg, Rajnandagaon and Raipur in the Chattisgarh region of Madhya Pradesh, Bolangir and Kalahandi in Orissa.

2.10 On the other hand in the Bundelkhand area of Uttar Pradesh and Malwa Plateau of Madhya Pradesh there were incessant rainsduring July hindering the sowings, particularly of soyabean. During August there were floods in the Brahmaputra and the Ganga and their tributaries affecting some parts of Assam, Bihar and West Bengal. Finally, during late September sudden

flash floods occurred due to heavy rains in Haryana Punjab, Himachal Pradesh and Jammu and Kashmir.

2.11 These aberrations affected the kharif sowings/output to some extent. Particularly, flash floods caused some damage to the rice crop in Punjab and Haryana. But, on the whole, the monsoon has been excellent and expectations are that the agricultural production may exceed the target.

2.12 During the post-monsoon season, the rainfall till November 1988 has been quite inadequate. However, the situation improved with the rains in the Northern States in the second fortnight of December. So the rainfall during the post-monsoon season (1-10-88 to 31-12-88), taken as a whole, ten meteorological sub-divisions had excess or normal rains. These include Andaman and Nicobar Islands; Arunachal Pradesh; Nagaland, Manipur, Mizoram and Tripura; Assam and Meghalaya; Gangetic West Bengal; West Madhya Pradesh; Vidarbha; Punjab; Haryana and Himachal Pradesh. Elsewhere deficient or nil precipitation was recorded. However such a situation is quite beneficial, especially in the peninsular region which had received incessant rains in the later half of the South-West monsoon season.

2.13 The total live storage available in 47 reservoirs monitored by Central Water Commission this year by September end was 88.4 TMC, represent ing 84 percent of the aggregate capacity of all the 47 reservoirs. In the corresponding period last year the availa ble storage was only 56.7 TMC or 54 per cent of aggregate storage capacity. However, four reservoirs had water level less than 30 per cent of their storage capacity. The storage available this year is the highest as compared to the last five years. After making releases for rabi crops the live storage in January 1989 was 63.92 TMC representing 61 per cent of the designed storage. Hence enhanced releases have been made from the reservoirs during October, 1988 to January 1989. Investigations by the Groundwater Board indicate that there has also been a significant rise in the sub-soil water table level. In parts of Madhya Pradesh, Maharashtra and Gujarat, the substantial increase (more than 2 metres in water level) has been observed. Localised rise has been reported from parts of Punjab, Haryana and West Uttar Pradesh. All this suggests that rabi crops should fare well.

**Seventh Plan Performance**

2.14 The first three years of Seventh Plan were all poor monsoon years. As a consequence, 1985-86 recorded a production of about 150.4 million tonnes of foodgrains which was lower than the previous peak production of about 152.4 million tonnes in 1983-84. The second year 1986-87, recorded a decline to 143.4 million tonnes. Finally, the year 1987-88 registered a further decline to approximately 138.4 million tonnes. (Table 2.3)

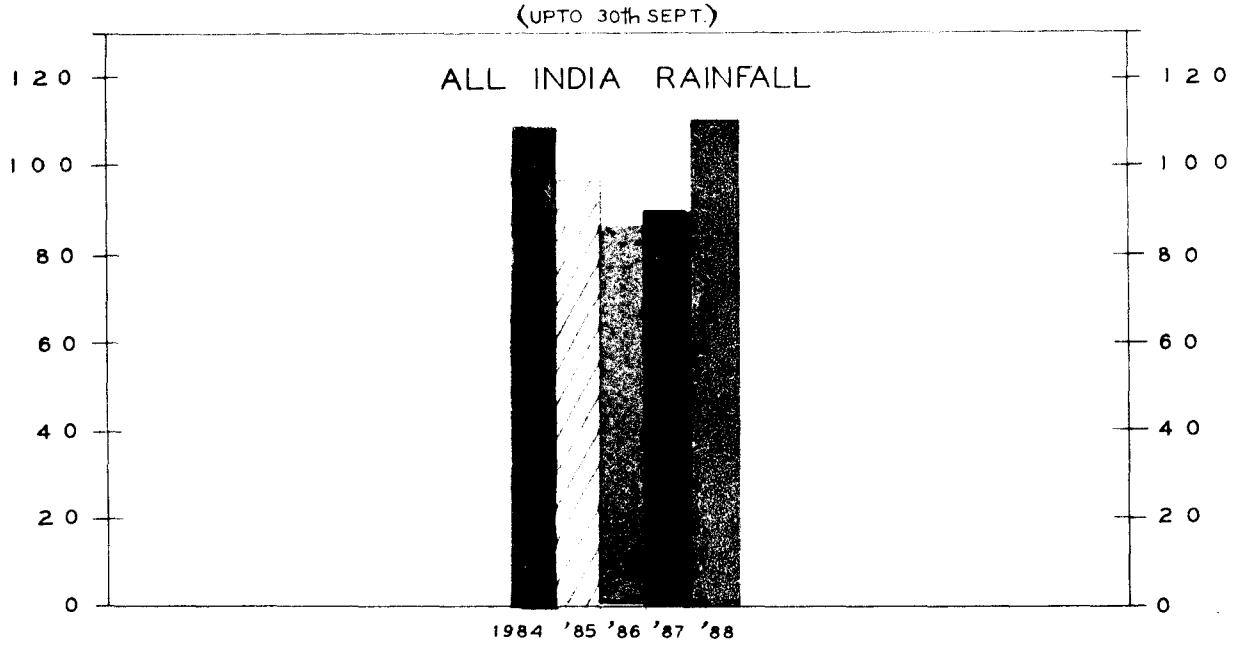
2.15 This setback to agricultural production in the first three years of the Seventh Plan has to be seen against the background of the long-term trends in agricultural production. Whereas the long-term growth rate of agricultural output was around 2.6 per cent for the period from 1949-50 to 1984-85, the growth rate between 1978-79 and 1984-85 rose to 3.5 per cent. An important feature of agricultural growth during the early eighties is its crop composition. The higher growth of rice production has compensated for the slow down in growth in wheat production. Looking at the sources of growth, it is noted that agricultural growth since 1979-80 is almost entirely due to productivity growth rather than an increase in the area under cultivation.

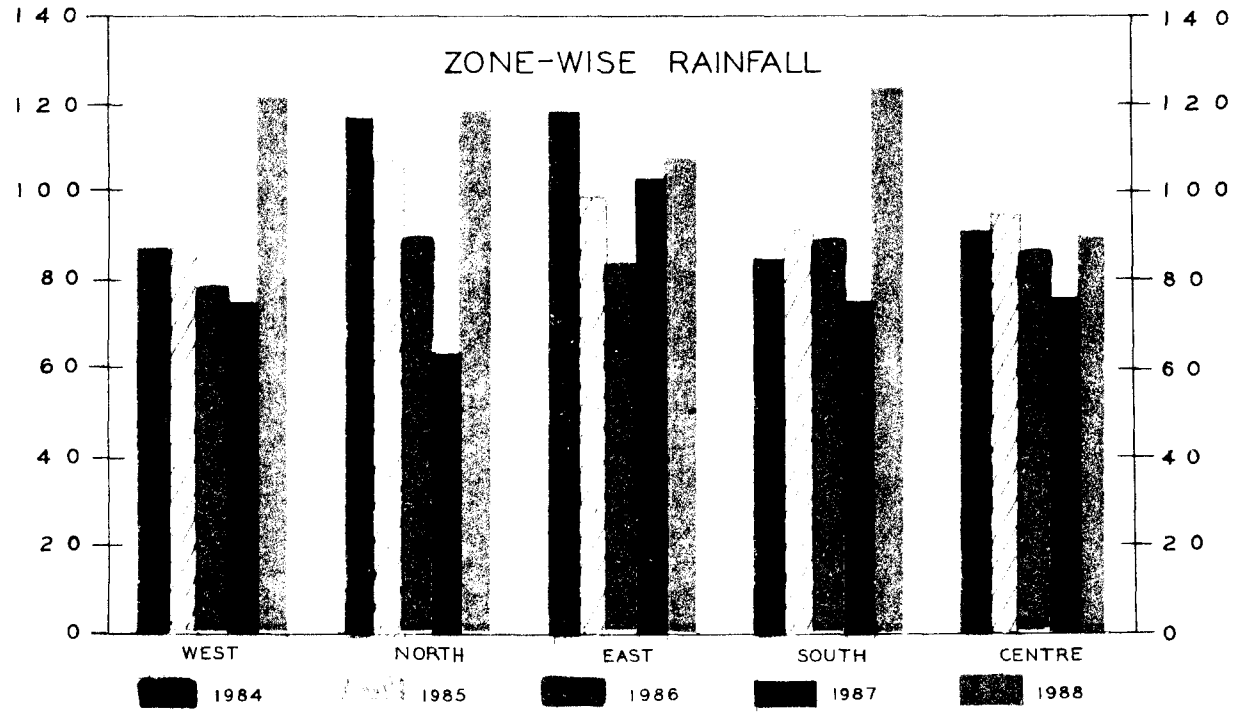
2.16 Following the recommendation made in course of the Mid-Term Appraisal of the Seventh Plan, a Task Force was set up to prepare an Action Plan to achieve the foodgrain production targets of the Seventh Plan. The principal strategy in the Special Foodgrains Production Programme is to capitalise on identified sources of immediate agricultural growth. The analysis of resources and agronomic possibilities was used to identify areas with a growth potential that can be tapped quickly as also the measures required for doing this. On the basis of an analysis of soil conditions, water availability, technological package, existing level of development and rate of growth of the agricultural sector over the past two decades, 169 districts having potential for growth-106 for paddy, 72 for wheat, 28 for maize, 20 for arhar and 28 for gram—were identified. It was envisaged that with the adoption of suggested strategy, foodgrain production will increase to 166 million tonnes in 1988-89 and 175 million tonnes in 1989-90.

# MONSOONS 1984-88

ACTUAL RAINFALL AS PERCENTAGE OF NORMAL

(UPTO 30th SEPT.)




NOTE :-

WEST — RAJASTHAN, GUJARAT AND MAHARASHTRA
NORTH — H.P., J & K, PUNJAB, HARYANA AND U.P.
EAST — ASSAM, W.BENGAL, BIHAR AND ORISSA
SOUTH — A.P., KARNATAKA, KERALA AND TAMIL NADU
CENTRE — M.P.

MINISTRY OF FINANCE, ECONOMIC DIVISION.

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# AGRICULTURAL PRODUCTION

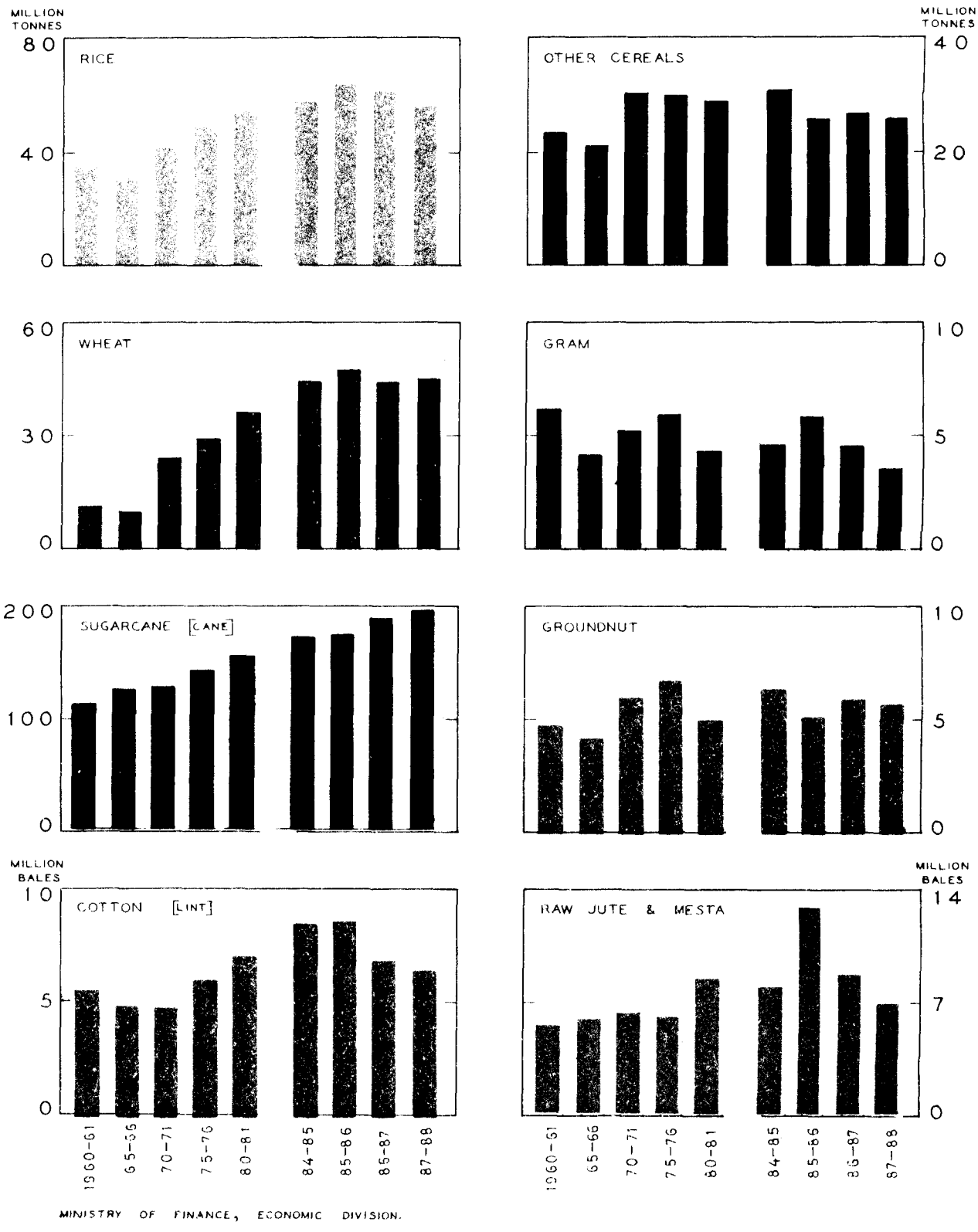


TABLE 2.3

*Agricultural Production*

(Million Tonnes/Bales*)

| Crop | 1978-79 | 1979-80 | 1980-81 | 1981-82 | 1982-83 | 1983-84 | 1984-85 | 1985-86 | 1986-87 | 1987-88 |
|---|---|---|---|---|---|---|---|---|---|---|
| Rice . . . | 53.77 | 42.33 | 53.63 | 53.25 | 47.12 | 60.10 | 58.34 | 63.83 | 60.56 | 56.43 |
| | (2.09) | ( –21.28) | (26.70) | ( –0.71) | ( –11.51) | (27.55) | (—2.93) | (9.41) | ( –8.12) | ( –6.62) |
| Wheat . . . | 35.51 | 31.83 | 36.31 | 37.45 | 42.79 | 45.48 | 44.07 | 47.05 | 44.32 | 45.10 |
| | (11.84) | ( –10.36) | (14.07) | (3.14) | (14.26) | (6.29) | ( –3.10) | (6.76) | ( –5.84) | (1.80) |
| Pulses . . . | 12.18 | 8.57 | 10.63 | 11.51 | 11.86 | 12.89 | 11.96 | 13.36 | 11.71 | 11.04 |
| | (1.75) | ( –29.64) | (24.04) | (8.28) | (3.04) | (8.68) | ( –7.21) | (11.70) | ( –12.35) | (5.72) |
| Coarsegrains . . | 30.44 | 26.97 | 29.02 | 31.09 | 27.75 | 33.90 | 31.17 | 26.20 | 26.83 | 25.84 |
| | (1.40) | ( –11.40) | (8.60) | (7.13) | (10.74) | (22.16) | ( –8.05) | ( –15.94) | (2.40) | ( –3.69) |
| Kharif Foodgrains . | 78.08 | 63.25 | 77.65 | 79.38 | 69.90 | 89.23 | 84.52 | 85.25 | 80.20 | 73.89 |
| | (0.46) | ( –19.0) | (22.8) | (2.2) | ( –11.9) | (27.6) | ( –5.3) | (0.86) | ( –5.92) | ( –7.87) |
| Rabi Foodgrains . | 53.82 | 46.45 | 51.94 | 53.92 | 59.62 | 63.14 | 61.02 | 65.19 | 63.22 | 64.52 |
| | (10.5) | ( –13.7) | (11.8) | (3.8) | (10.6) | (5.9) | ( –3.4) | (6.83) | ( –2.96) | (2.06) |
| All Foodgrains . | 131.90 | 109.70 | 129.59 | 133.30 | 129.52 | 152.37 | 145.54 | 150.44 | 143.42 | 138.41 |
| | (4.34) | ( –16.83) | (18.13) | (2.86) | ( –2.83) | (17.64) | ( –4.48) | (3.37) | ( –4.67) | ( –3.49) |
| Groundnut . . | 6.21 | 5.77 | 5.01 | 7.22 | 5.28 | 7.09 | 6.43 | 5.12 | 5.87 | 5.67 |
| | (1.87) | (—7.09) | (13.34) | (44.4) | (—20.87) | (34.28) | (—9.30) | (—20.37) | (14.65) | (—3.41) |
| Rapeseed & Mustard. | 1.86 | 1.43 | 2.30 | 2.38 | 2.21 | 2.61 | 3.07 | 2.68 | 2.60 | 3.37 |
| | (12.73) | (—23.12) | (60.84) | (3.48) | (—7.14) | (18.10) | (17.62) | (—12.70) | (—2.78) | (29.61) |
| Oilseeds@ . . | 10.10 | 8.74 | 9.37 | 12.08 | 10.00 | 12.69 | 12.95 | 10.83 | 11.27 | 12.38 |
| | (4.5) | ( –13.5) | (7.2) | (28.9) | ( –17.2) | (26.9) | (2.1) | ( –16.5) | (4.06) | (9.85) |
| Sugarcane . . | 151.66 | 128.83 | 154.25 | 186.36 | 189.51 | 174.08 | 170.32 | 170.65 | 186.09 | 196.72 |
| | ( –14.3) | ( –15.05) | (19.73) | (20.82) | (1.69) | ( –8.14) | ( –2.16) | (0.19) | (9.05) | (5.71) |
| Cotton (lint)* . . | 7.96 | 7.65 | 7.01 | 7.88 | 7.53 | 6.39 | 8.51 | 8.73 | 6.91 | 6.43 |
| | (9.94) | ( –3.89) | ( –8.37) | (12.41) | ( –4.44) | ( –15.14) | (33.18) | (2.58) | ( –20.85) | ( –6.95) |
| Jute & Mesta* . | 8.33 | 7.96 | 8.16 | 8.38 | 7.17 | 7.72 | 7.79 | 12.65 | 8.62 | 6.78 |
| | (16.5) | (—4.44) | (2.51) | (2.57) | ( –14.34) | (7.67) | (0.91) | (62.39) | ( –31.86) | ( –21.34) |

*170 Kgs. each for cotton and 180 Kgs. each for jute and mesta.

@Nine major oilseeds including groundnut, castorseed, sesamum, rapeseed and mustard, linseed, safflower, nigerseed, sunflower and soyabean.

Figures in brackets are per cent increase or decrease over the year.

2.17 In working out the district-wise production targets the following factors were considered:

(i) historical behaviour of production and productivity;

(ii) the primary factors for growth, *i.e.*, irrigation and fertiliser consumption;

(iii) feasible increase in yield level which might be targetted for 1989-90 by taking into account the soil type of district, the major constraints inhibiting agricultural growth therein and the high yielding rice varieties recommended for sowing under various conditions; and

(iv) additional areas which could be brought under irrigation projects as well as sinking of tubewells.

2.18 Among non-foodgrain crops, the production of oilseeds remained below the target in the first three years of the Seventh Plan. However with the special emphasis being laid on the development of oilseeds production it is expected that the target around 15 million tonnes is likely to be achieved in 1988-89, the fourth year of the Plan. In the case of cotton, the output in the first year exceeded the target but in the second and third years its achievement was less than the targetted levels. During the current year production is likely to reach a record level of 90-95 lakh bales but this could still be somewhat lower than the target of 98 lakh bales. While the production of jute and mesta in the first two years of the Plan exceeded the target, the third year registered a fall. During 1988-89 also there may be a shortfall compared to the target. The production of sugarcane remained below the targetted level during the first two years of the Seventh Plan. However, in 1987-88, the production of sugarcane reached a record level of 196.72 million tonnes. It is expected that the target for the current year will also be achieved. (Table 2.4).

TABLE 2.4

*Targets and Achievements of Agricultural Production during Seventh Plan*

(Million tonnes/bales)

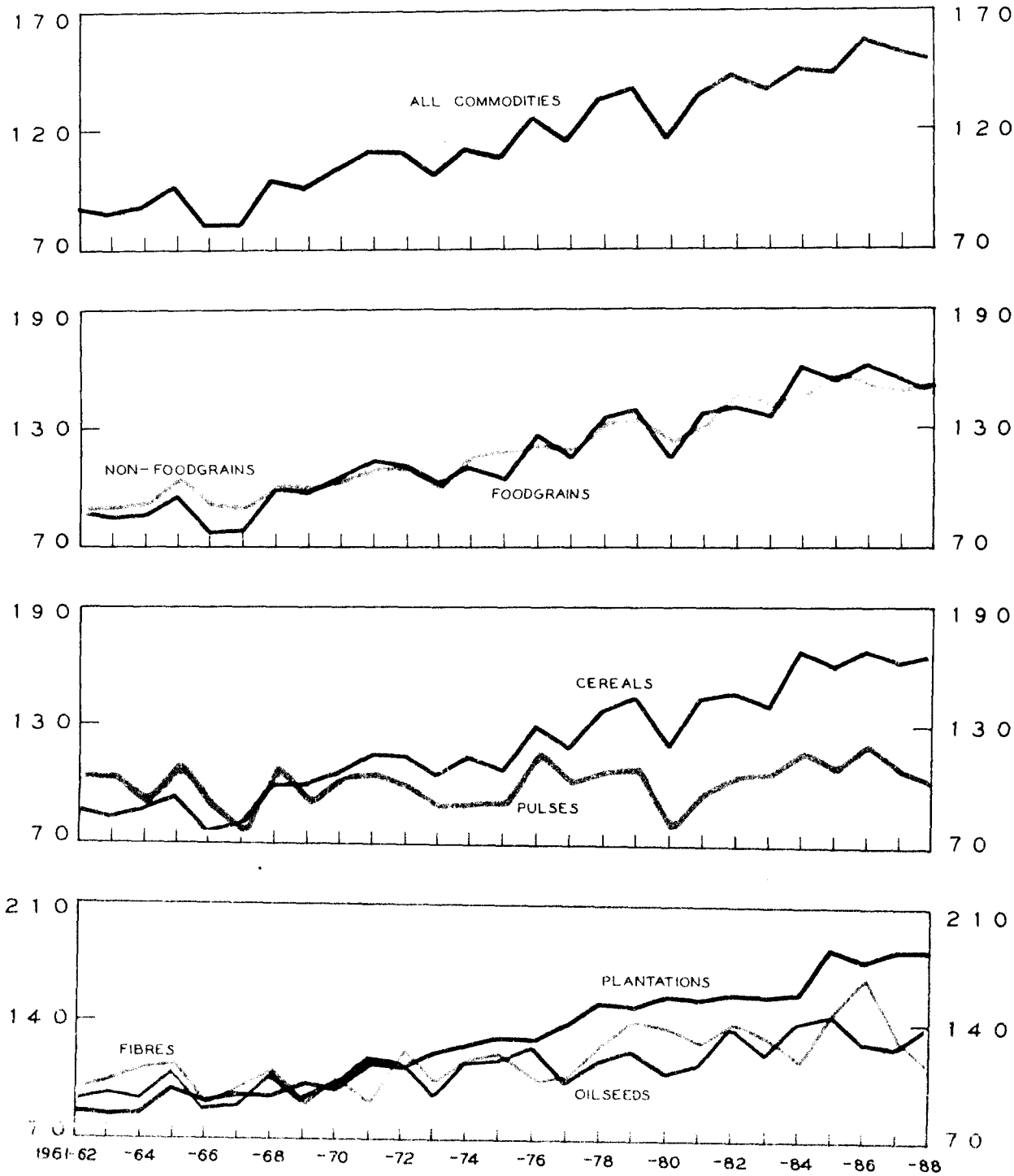
| Crop | First Year 1985-86 | | Second Year 1986-87 | | Third Year 1987-88 | | Fourth Year 1988-89 | |
|---|---|---|---|---|---|---|---|---|
| | Target | Achievement | Target | Achievement | Target | Achievement | Target | Likely Achievement |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| 1. Rice . . . . | 63.50 | 63.82 | 65.00 | 60.56 | 64.00 | 56.43 | 67.95 | 68.0 –69.5 |
| 2. Wheat . . . | 49.20 | 47.05 | 49.00 | 44.32 | 50.00 | 45.10 | 52.32 | 51.0 –52.0 |
| 3. Coarse Cereals . . | 33.00 | 26.20 | 32.00 | 26.83 | 32.00 | 25.85 | 33.00 | 34.0 –35.0 |
| 4. Pulses . . . . | 13.50 | 13.36 | 14.00 | 11.71 | 14.00 | 11.04 | 13.30 | 13.5 –14.5 |
| 5. **Total Foodgrains** . . | **159.20** | **150.44** | **160.00** | **143.42** | **160.00** | **138.41** | **166.57** | **166.5 –171.0** |
| 6. Oilseeds . . . | 13.60 | 10.80 | 14.80 | 11.27 | 14.00 | 12.38 | 15.65 | 14.5 –15.5 |
| 7. Cotton* . . . | 8.60 | 8.73 | 8.80 | 6.91 | 8.80 | 6.43 | 9.80 | 9.00 –9.50 |
| 8. Jute & Mesta@ . . | 8.60 | 12.65 | 8.50 | 8.63 | 8.60 | 6.78 | 9.20 | 7.00 –7.20 |
| 9. Sugarcane . . . | 191.00 | 170.65 | 195.00 | 186.09 | 180.00 | 196.7 | 195.02 | 196.00 –200.00 |

*Bale of 170 Kgs.

@Bale of 180 Kgs.

# INDEX OF AGRICULTURAL PRODUCTION

BASE:- TRIENNIUM ENDING 1969-70=100

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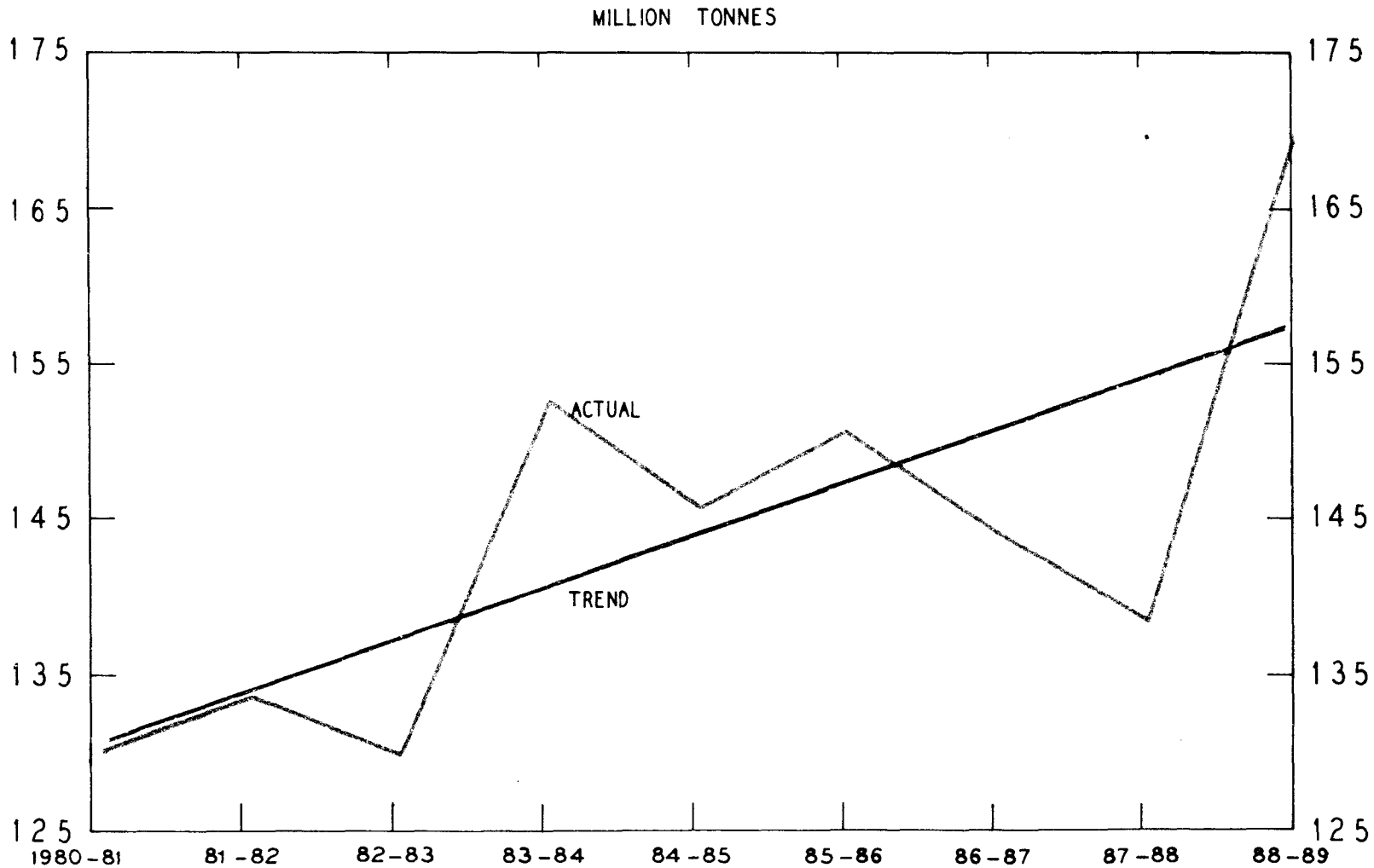
# RECENT TRENDS IN FOODGRAINS PRODUCTION

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2.19 Despite adverse weather conditions which prevailed during first three years of the current Plan, some of the states recorded peak levels of foodgrain production. These include Punjab, West Bengal, Jammu and Kashmir and Himachal Pradesh. The states which did not show any improvement in the foodgrain production during the period are Gujarat, Kerala, Madhya Pradesh, Maharashtra, Karnataka, Orissa and Rajasthan. Areas in Eastern regions such as parts of Uttar Pradesh, Bihar and West Bengal have generally recorded rising foodgrain production trends in the recent period.

**Crop Specific Trends**

*Rice*

2.20 The fall in rice production last year was largely due to lower kharif rice production which declined from 59.39 million tonnes in 1985-86 to 53.56 million tonnes in 1986-87 and further to 48.76 million tonnes in 1987-88. The fall in kharif rice production was partly offset by an increase in rabi rice output. It increased from 4.43 million tonnes in 1985-86 to 7.0 million tonnes in 1986-87 and reached the peak level of 7.67 million tonnes in 1987-88. Total production of rice declined to 56.43 million tonnes in 1987-88 as compared to 60.56 million tonnes in 1986-87 and 63.83 million tonnes in 1985-86. This decline is partly accounted for by a decline in total acreage under rice and partly by a decline in productivity. Except for Andhra Pradesh, Assam, Tamil Nadu and West Bengal, all other major rice growing states recorded decline in rice production in 1987-88. It was significantly lower in Bihar (14 lakh tonnes), Uttar Pradesh (13 lakh tonnes), Punjab (6 lakh tonnes), Orissa (13 lakh tonnes), Haryana (5 lakh tonnes) and Karnataka (4 lakh tonnes).

2.21 A target of 67.95 million tonnes of rice has been fixed for 1988-89, of which 61.5 million tonnes is for the kharif. Keeping in view the existing crop coverage of 39.5 million hectares, against a normal coverage of about 39 million hectares, the crop condition and fertiliser consumption, it is expected that the rice production target for 61.5 million tonnes for the current kharif would be achieved.



2.22 A Centrally Sponsored Special Rice Production Programme is under implementation since kharif 1986 in 439 selected blocks, in Assam (37), Bihar (118), Eastern Madhya Pradesh (40), Orissa (63), Eastern Uttar Pradesh (102), West Bengal (70) and Tripura (9), with a central financial outlay of Rs. 105 crores and matching funds from the States. The total financial outlay for implementation of the scheme during 1988-89 in all the seven states is Rs. 43.90 crores. Under this programme, emphasis is being laid on the spread of improved rice production technology through training of farmers and farm labourers and also on the development of infrastructural facilities like improvement of irrigation and drainage, land development, opening of input sales centres, construction/renovation of godowns etc. To motivate farmers to take up improved rice production technology and use necessary inputs in recommended doses with better management practices, inputs like seeds, fertiliser, pesticides improved farm implements, plant protection equipment etc. are being provided at subsidised rates.

2.23 The intensive efforts made under the programme during 1985-86 in the eastern region have yielded good results. In five out of seven states covered i.e. Assam, Bihar, Orissa, Madhya Pradesh and West Bengal, new records were set both for production and productivity of rice. The share of the eastern states in total rice production increased from 53 per cent in 1984-85 to 56 per cent in 1985-86. Subsequently due to adverse weather conditions there was a shrinkage in area under rice in 1986-87 and 1987-88. However, in 1988-89 the scheme is expected to achieve the targetted level of rice production.

*Wheat*

2.24 Wheat is the most important rabi crop in the country. It occupies 50 per cent of the area under rabi foodgrain crops and contributes 70 to 72 per cent of total foodgrain production in the rabi season. An area of about 23 million hectares is covered under this crop out of which 12 million hectares are under dependable irrigation, 6 million hectares under limited irrigation and 5 million hectares under rainfed conditions. Its overall contribution to total foodgrains is a little over 30 per cent or about 45 million tonnes. In 1985-86, the first year of the Seventh Plan, wheat produc-

tion at 47.05 million tonnes was about 3 million tonnes higher than in 1984-85. However, it was short of the target by 2 million tonnes. In 1986-87 and 1987-88 production was 44.32 and 45.10 million tonnes respectively which was again short of targetted levels. Thus, for the first three years of the current plan, wheat production fell short of targets.

2.25 However, despite the fall in soil moisture content and also adverse effects of the 1987 drought on the subsequent rabi season, wheat production was higher than the previous year's level. This was largely on aecount of the contingency measures taken last year to protect and augment rabi production. Among the wheat growing states, Uttar Pradesh, Punjab, Madhya Pradesh and Maharashtra recorded increase in output while Bihar, Gujarat, Rajasthan and Haryana registered decline in production in 1987-88 as compared to that in 1986-87.

2.26 With a view to achieving the targetted levels of foodgrain production in the remaining two years of the Plan, a target of 52.32 million tonnes of wheat production has been fixed for 1988-89. The increase in production is projected to come through both increases in productivity and acreage. Productivity has been assumed to increase from 2046 kgs. per hectare in 1985-86 to 2180 kgs. per hectare during 1988-89. Acreage under wheat has been placed at 24 million hectares in 1988-89.

2.27 The main thrust of the wheat production programme for 1988-89 is to augment productivity. The strategy consists of (i) increasing the area under high yielding varieties, (ii) provision of high quality seed of new varieties at reasonable rates, (iii) buffer stocking of seed, (iv) use of optimum and balanced doses of fertilisers, (v) rectification of micro-nutrient deficiency, (vi) efficient water management to provide irrigation at critical stages of crop growth, (vii) weed control at proper time and (viii) termite control in endemic areas.

2.28 Following the excellent monsoon during 1988, soil and moisture conditions appear to be favourable for ensuring a good rabi season. As per indications available, the overall area under the crop is likely to be around the level of 24 million hectares and the coverage under high yielding variety is expected to go up marginally. Taking into account the measures taken to increase productivity, the wheat production in 1988-89 is likely to reach 52.0 million tonnes, which is very close to the targetted level of production.

*Coarsegrains*

2.29 The total area under coarsegrains has declined over the years to about 36 million hectares by 1987-88. The production of coarse cereals has also been declining. In the first three years of the Seventh Plan, production has almost stagnated at 26 million tonnes as against 31.2 million tonnes in 1984-85 and a record level of 33.9 million tonnes in 1983-84. This can largely be attributed to diversion of acreage to other food and cash crops. The important coarse cereals are jowar, bajra, maize and barley. Maharashtra is the largest jowar growing state in the country, accounting for about 42 per cent of the area and 50 per cent of production of jowar in 1987-88. Rajasthan, Gujarat and Haryana are the major bajra producing states. Maize is an important crop in the states of Uttar Pradesh, Rajasthan and Bihar. Barley is mainly grown in the states of Uttar Pradesh, Rajasthan and Haryana. The majority of the area under coarsegrains is under unirrigated conditions—bajra (94 per cent), maize (79 per cent), jowar (96 per cent) and barley (about 54 per cent).

2.30 Despite severe drought conditions the production of jowar increased substantially from 9.19 million tonnes in 1986-87 to 11.85 million tonnes in 1987-88. This was however offset by the decline in production of other coarsegrains like bajra, maize and barley. Bajra output declined from 4.51 million tonnes in 1986-87 to 3.28 million tonnes in 1987-88 while maize declined from 7.59 million tonnes to 5.63 million tonnes during the same period. The fall in other coarse cereals was marginal.

2.31 Coarse cereals are an important item of consumption for rural poor. Consequently, efforts are being made to stabilise production of coarsegrains at a higher level. The 1988-89 production target of 33 million tonnes is likely to be achieved. Measures include conservation of soil moisture and its efficient utilisation by adoption of dry farming technique. An integrated watershed concept is being adopted in rainfed areas for enhancing production and

productivity of coarsegrains. Efforts are also being made to step up productivity through the Special Foodgrains Production Programme undertaken during 1988-89.

2.32 In the case of rabi jowar the strategy is to increase production by raising productivity from 437 kgs. per hectare (1986-87) to 600 kgs. per hectare. In order to achieve this, the following measures have been undertaken:—

(i) Choice of appropriate high-yielding variety/hybrid seeds for specific areas.

(ii) Expansion of area under high yielding varieties/hybrid.

(iii) Adoption of recommended package of practices, including timely sowing with optimum seed rate, application of recommended doses of fertilisers, timely weed controls and adoption of need based plant protection measures.

(iv) En-block sowing with varieties/hybrid of the same maturity to avoid build up of pests.

(v) Advancing sowings by one month.

(vi) In areas where there is deficiency in soil moisture, pre-sowing irrigation will be given depending upon the availability of irrigation water.

2.33 Taking into account the coverage of better varieties and overall condition of crops, it is assessed that coarse cereals production may even exceed the targetted level of 33 million tonnes.

*Pulses*

2.34 The production of pulses which had reached a peak level of 13.36 million tonnes in 1985-86, declined to 11.71 million tonnes in 1986-87 and further to 11.04 million tonnes in 1987-88. Thus in the first three years of Seventh Plan, the production of pulses remained below the targetted levels. In fact, net per capita availability per day of pulses has declined over the last three decades from 61 grams in 1951 to 36 grams in 1987 and 33 grams for a population of 796.6 million in 1988. The declining trend in production is largely due to the fact that pulses crops are grown almost entirely (above 90 per cent) on rainfed areas where both acreage and productivity have either declined or stagnated. The main pulses producing states are Uttar Pradesh followed by Madhya Pradesh, Rajasthan, Maharashtra, Orissa, Bihar, Haryana, Andhra Pradesh, Karnataka, Tamil Nadu and West Bengal.

2.35 In order to increase per capita availability, despite stagnation in domestic production, import of pulses has been permitted under OGL. However, availability of pulses in the international market is also limited. Hence it has not been possible to arrest the decline in per capita availability of pulses. This has rather serious adverse long-term implications for a country like India since pulses constitute the principal form of protein intake for the large majority of consumers.

2.36 The production of pulses in 1987-88 was 11.04 million tonnes as against 11.71 million tonnes in 1986-87. The slight increase in output of kharif pulses (arhar, moong, urad etc.) was offset by a decline in the production of rabi pulses (gram, peas, lentils, rabi urad, moong etc.) from 7.51 million tonnes in 1986-87 to 6.68 million tonnes in 1987-88. Kharif pulses are grown in an area of about 11 million hectares. Moong, urad and arhar are the main pulses grown during kharif season while gram is the major rabi pulse crop. The production of arhar, which accounts for more than 50 per cent of kharif pulses and which is mainly grown in Uttar Pradesh Maharashtra, Madhya Pradesh, Karnataka, Gujarat and Tamil Nadu, amounted to 2.23 million tonnes in 1987-88 as against 2.27 million tonnes in 1986-87 and 2.44 million tonnes in 1985-86. However, the decline in the output of arhar was more than offset by an increase in the production of other kharif pulses. In the rabi season, the production of gram, which is mainly grown in the states of Madhya Pradesh, Uttar Pradesh, Rajasthan, Haryana, Maharashtra and Bihar suffered a set back due to drought conditions. Production declined from 4.53 million tonnes in 1986-87 to 3.62 million tonnes in 1987-88.

2.37 In order to increase the production of pulses, a centrally sponsored National Pulses Development Programme was launched in 1986-87. The project is considered a district oriented mission and is expected to achieve increased level of production within a time frame. The basic

objective of this programme is to increase the production of pulses by adopting location specific technology. The thrust is on the launching of crop and area specific programmes with regard to major pulses like gram, arhar, peas, lentils, moong and urad. Under this programme assistance is provided to the farmers through (i) block demonstration to demonstrate the effect of varieties, use of fertiliser, use of chemicals etc., (ii) laying out of adaptive trials through State Agriculture Universties in respect of varieties recommended through research so as to judge their adaptability/suitability on farmers' fields, (iii) supply of biological parasites for the control of pod borer of gram and arhar and (iv) organisation of training to educate the extension workers The programme will continue for 1988-89 at a total cost of Rs. 921 lakhs with Central share of Rs. 530 lakhs.

2.38 Given the declining trend in the production of pulses, special emphasis has been laid to increase its output to a targetted level of 13.3 million tonnes in 1988-89. Of this, 4.5 million tonnes consists of kharif pulses and 8.8 million tonnes of rabi pulses. During 1988-89 the Government have also taken up a Special Foodgrains Production Programme on arhar in kharif areas and gram in rabi areas. Twenty selected potential districts are located in the states of Uttar Pradesh (6), Maharashtra (5), Madhya Pradesh (4), Gujarat (4) and Karnataka (1) for arhar. There are in addition twenty eight districts in the states of Rajasthan (8), Madhya Pradesh (7), Bihar (6), Uttar Pradesh (5) and Haryana (2) for gram. An outlay of Rs. 384 lakhs has been earmarked to implement the schemes for increasing area and production of pulses in these identified districts. With the implementation of Special Foodgrains Production Programme, the existing National Pulses Development Programme and satisfactory climatic conditions, it is expected that the target of 13.3 million tonnes of pulses production for 1988-89 may be exceeded.

2.39 However, in pulses it is not just a matter of achieving current targets but the much more difficult and long term issue is of reversing the continuing trend of declining per capita pulse availability which is engaging the attention of Government. As pointed out above, the trend of declining per capita availability has various adverse dietary implications since pulses are the principal form of protein intake for the large majority of Indians. It is worth considering whether pulses ought not to be given the same kind of priority in development policy, as for instance, edible oils has been in recent years under the Technology Mission for Oilseeds.

*Oilseeds*

2.40 In 1987-88 oilseeds were cultivated over an area of 20 million hectares. Of these groundnut and rapeseed and mustard are the most important crops, accounting for 73 per cent of the total oilseeds production. Though sunflower and soyabean have been introduced relatively recently in the country, they have played an important role in augmenting the sources of edible oil. Gujarat is the largest oilseeds producing state, followed by Andhra Pradesh and Uttar Pradesh. Other major oilseeds growing states are Madhya Pradesh, Maharashtra, Rajasthan, Karnataka and Tamil Nadu.

2.41 Despite the severe drought conditions, the production of nine oilseeds increased from 112.7 lakh tonnes in 1986-87 to 123.8 lakh tonnes in 1987-88. This was largely on account of a substantial increase in the acreage and output of rabi oilseeds, especially rapeseed and mustard, which increased from 26.0 lakh tonnes in 1986-87 to a record level of 33.7 lakh tonnes in 1987-88. Rabi oilseeds production totalled 61.0 lakh tonnes in 1987-88 as against 48.9 lakh tonnes in 1986-87. On the other hand, without any perceptible decline in acreage, kharif oilseeds output declined by only one lakh tonnes to 62.8 lakh tonnes in 1987-88.This was mainly on account of a fall in the production of groundnut in the worst drought affected state of Gujarat, where production declined from 12.92 lakh tonnes in 1986-87 to 1.40 lakh tonnes in 1987-88. But Andhra Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Orissa and Tamil Nadu recorded substantial increases in groundnut production. The kharif crop in Gujarat suffered widespread damage because of drought conditions since it is grown under rainfed conditions. Reduced soil moisture content and other delayed effects of drought also affected the rabi crop in the State.

2.42 With the help of special support measures undertaken to boost oilseeds production, rabi

oilseeds output could be stepped up to a record level of 65.0 lakh tonnes. Despite depleted soil moisture conditions, Rajasthan and West Bengal recorded substantial increases in the output of rapeseed.In Rajasthan, production rose from 6.91 lakh tonnes in 1986-87 to 10.32 lakh tonnes in 1987-88 and in West Bengal from 1.77 lakh tonnes to 3.34 lakh tonnes during the same period.Except for Gujarat all other major rapeseed growing states recorded higher production. In fact, all other rabi oilseeds (linseed, nigerseed, safflower and rabi sunflower) registered increases in varying proportions. The production of different oilseeds during 1987-88 may be seen from the following table.

TABLE 2.5

*Production of Oilseeds*

(Lakh tonnes)

| Oilseeds | 1985-86 | 1986-87 | 1987-88 |
|---|---|---|---|
| Groundnut : | | | |
| Kharif . . . | 37.6 | 44.3 | 40.1 |
| Rabi . . . | 13.6 | 14.5 | 16.6 |
| Total . . . | 51.2 | 58.8 | 56.7 |
| Castorseed . . . | 3.1 | 2.3 | 1.8 |
| Sesamum . . . | 5.0 | 4.5 | 5.6 |
| Rapeseed & Mustard . | 26.8 | 26.0 | 33.7 |
| Linseed . . . | 3.8 | 3.2 | 3.7 |
| Nigerseed . . . | 1.9 | 1.3 | 1.8 |
| Safflower . . . | 3.5 | 3.5 | 4.5 |
| Sunflower : | | | |
| Kharif . . . | 1.7 | 2.5 | 2.7 |
| Rabi . . . | 1.1 | 1.7 | 2.4 |
| Total . . . | 2.8 | 4.2 | 6.1 |
| Soyabean . . . | 10.2 | 8.9 | 9.8 |
| **Total** | | | |
| **Kharif . . .** | **59.5** | **63.8** | **62.8** |
| **Rabi . . .** | **48.8** | **48.9** | **61.0** |
| **Total . . .** | **108.3** | **112.7** | **123.8** |

2.43 The increase in oilseeds production over the last few years notwithstanding the supply of edible oils still falls short of demand. Consequently, a large quantity of edible oils is being imported every year. In the oil year (November-October) 1987-88 the imports aggregated 18.5 lakh tonnes upto October 1988 valued at Rs. 1050 crores as against a total import of about 14.97 lakh tonnes valued at Rs. 668 crores in 1986-87. In 1987-88, the import of edible oils in large quantity was necessitated to meet the shortage of edible oils in the country. These oils were being distributed at a concessional rate through PDS and to the vanaspati industry partly at concessional price and partly at the commercial rate. However, from the oil year 1988-89, vanaspati industry will get oil at commercial rates.

2.44 In order to increase the domestic availability of edible oils, emphasis has been laid on accelerating the production of oilseeds through various oilseed development programmes. The Centrally Sponsored National Oilseed Development Project, which has been in operation since 1984-85, aims at providing to the farmers various services such as inputs, extension, credit etc. so as to assist them in increasing the production of oilseeds. The important components of the project include production, distribution and buffer stocking of seeds, distribution of minikits, strengthening of fertiliser distribution channels, more effective farm mechanisation as well as marketing and price support. In addition to the National Oilseeds Development Project (NODP), an Oilseed Production Thrust Project (OPTP) has been in operation since 1987. While NODP is being implemented in 180 districts of 17 states, OPTP covers 246 districts of 17 states. Under OPTP hundred per cent Central assistance is given to the State Governments for the development of four major oilseeds viz. groundnut, rapeseed and mustard, soyabean and sunflower in thrust areas which account for 70 per cent of the total oilseeds area and 85 per cent of total oilseeds production in the country.

2.45 It is in this context that the Government of India appointed in May, 1986, a Technology Mission on Oilseeds in order to harness the best of production, processing and management technologies to accelerate self-reliance. The Mission has adopted a strategy which successfully earned self-reliance for the country in foodgrains, cotton, jute and dairy products. The immediate objective is to produce 16 to 18 million tonnes of oilseeds by 1989-90, which would cut down the imports by half. Basically, it is a four-pronged strategy consisting of:

(i) improvement of oilseeds crop technology for stepping up yields and profit to the farmer;

(ii) improved processing and post-harvest technology which can increase the oil yield from traditional and non-conventional sources of oil (at present about 5 lakh tonnes of oil are annually lost owing to inefficient processing);

(iii) strengthening services to the farmer, particularly to supply technology, seeds, fertisers, pesticides, irrigation, credit etc., and

(iv) price support to farmers and financial and other support to processing industry.

2.46 After taking into account the development efforts made for increasing the production of oilseeds, a production target of 156.5 lakh tonnes in 1988-89 has been fixed for the nine oilseeds. With the good rains received during the year, the production of oilseeds is likely to be in the range of 145 to 155 lakh tonnes.

*Cotton*

2.47 The output of cotton had risen from around 72 lakhs bales in 1977-78 to a record level of 87 lakhs bales in 1985-86, mainly on account of increase in yield. Thereafter, it declined to 69.1 lakh bales in 1986-87 and further to 64.3 lakh bales in 1987-88 because of drought and the attack of pests in some cotton growing areas. During the current year production is expected to reach a new peak of over 90 lakh bales.

2.48 The significant increase in cotton production has been possible mainly because of the development of hybrids. As a result, the varietal composition of cotton has undergone a significant change; the long and superior long staple cotton now account for over 50 per cent of the total production as against only 20 per cent in the early seventies. Gujarat, Maharashtra, Punjab, Haryana, Andhra Pradesh, Karnataka, Madhya Pradesh, Rajasthan and Tamil Nadu are the major cotton growing states. In 1987-88, the fall in production was more pronounced in the states of Andhra Pradesh, Gujarat, Haryana and Rajasthan. This was, however, partly offset by the increase in production recorded in the states of Punjab, Maharashtra, Karnataka and Tamil Nadu.

2.49 Consequent upon the significant increase in production of cotton, import of cotton has been negligible since 1978-79. Recognising that the country is now surplus in the case of superior long staple cottons, the Government announced a long-term export policy in October, 1986. The country has now emerged as one of the exporting countries and in 1986-87 exports were 14.47 lakh bales. However, there is still some shortage in total availability of cotton. Accordingly, the Centrally Sponsored Intensive Cotton Development Programme was revised during the Seventh Plan and emphasis was laid only for increasing the production of long and medium staple cotton. The scheme is being continued in all the major cotton growing states of Andhra Pradesh, Gujarat, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Punjab and Rajasthan.

2.50 The main strategy of the programme is (i) to increase the production of medium and long staple cotton by distributing certified seeds, laying out demonstration plots and extending the package of improved practices over larger areas and (ii) to set up kapas grading centres in major cotton growing states.

2.51 Taking into account the development efforts made in increasing the output of cotton, a target of 97.8 lakh bales has been fixed for 1988-89. Since climatic conditions have been good in cotton growing areas the production of cotton is expected to be the record one in the range of 90—95 lakh bales.

*Jute and Mesta*

2.52 After reaching the peak level of production at 126.5 lakh bales in 1985-86, the output of jute and mesta declined to 86.3 lakh bales in 1986-87 and further to 67.8 lakh bales in 1987-88. The fall is largely attributable to a decline in acreage, from 14.9 lakh hectares in 1985-86 to 10.7 lakh hectares in 1986-87 and further to 9.6 lakh hectares in 1987-88. A decline in productivity also contributed to the fall in production.

2.53 The production of raw jute which had touched a level of 10.89 million bales in 1985-86 declined to 7.35 million bales in 1986-87 and further to 5.80 million bales in 1987-88. The decline has been reported by all major jute growing states, i.e. Assam, Bihar, Orissa and West Bengal. It was more pronounced in West Bengal, the chief jute growing State, where production declined from 7.39 million bales in 1985-86 to 4.95 million bales in 1986-87 and further to 3.64

million bales in 1987-88. This was in consonance with the decline in acreage.

2.54 The production of mesta also declined substantially from 17.6 lakh bales in 1985-86 to 12.7 lakh bales in 1986-87 and to 9.8 lakh bales in 1987-88. A fall in both acreage and productivity contributed to the decline in output. Mesta is mainly grown in Andhra Pradesh which accounts for 42 per cent of the total production. Bihar, Orissa, Maharashtra and West Bengal also produce a good amount of mesta. Except for Maharashtra, the output was lower in all the other mesta growing states.

2.55 In order to step up the production and quality of fibre, a Centrally Sponsored Scheme of Special Jute Development Programme is under implementation from 1987-88 with 100 per cent contribution by the Central Government. The programme has been taken up in all the agronomically and infrastructurally potential blocks of the selected districts of all major jute and mesta growing states. The main elements of the scheme include (i) ensuring timely availability of critical inputs like certified seeds and plant protection chemicals, (ii) training of farmers and demonstrating the latest technology in the field, (iii) coordinating the existing level of services, namely adoptive research, extension, input, credit, training etc. in general and in selected districts, in particular, (iv) taking care of location specific problems such as correcting the soil acidity and increasing efficiency of fertiliser use in such areas, (v) creating additional retting facilities for improvement of the quality of fibre and strengthening/establishment of the existing or newly proposed fungal culture packets for improving quality of barky fibre and (vi) organising farmers' training programme on jute grading at village level and helping them to receive better returns from better quality fibre.

2.56 Considering the potential created and to stabilise production in line with demand for jute and mesta, production in 1988-89 has been targetted at 92 lakh bales. However, the production of jute and mesta in 1988-89 is likely to be in the range of 70-72 lakh bales.

*Sugarcane*

2.57 Sugarcane is cultivated over an area of 30—32 lakh hectares both in sub-tropical and tropical regions of the country. In the sub-tropical belt, the main sugarcane growing states are Bihar, Uttar Pradesh, Haryana and Punjab, where sugarcane acreage is nearly 20 to 21 lakh hectares. The tropical belt mainly comprises Maharashtra, Andhra Pradesh, Tamil Nadu and Karnataka, covering about 10-11 lakh hectares. As against the target of 180 million tonnes, sugarcane production in 1987-88 was a record at 196.72 million tonnes. This implies an increase of about 10.6 million tonnes over 1986-87. The increase, has mainly come from the expansion of acreage which has gone up from 3.08 million hectares in 1986-87 to 3.29 million hectares in 1987-88. However, productivity declined marginally from 60.4 tonnes per hectare in 1986-87 to 59.9 tonnes per hectare in 1987-88, presumably because of the drought and moisture stress.

2.58 The increase in production was largely contributed by Uttar Pradesh (8.6 million tonnes), Maharashtra (1 million tonnes) and Andhra Pradesh (1.5 million tonnes). Gujarat, Madhya Pradesh and Bihar also registered increases. However, the increase was partly offset by a decline in cane production in Haryana, Punjab and Karnataka, although there was no perceptible change in acreage in these states.

2.59 The continuous increase in the production of sugarcane during the first three years of the Seventh Plan is the outcome of the policy adopted by the Government to announce an attractive Statutory Minimum Price in advance of the sowing season in the case of sugarcane. This policy has reduced the risk and increased the profitability of cane cultivation. The statutory minimum prices of cane have been increased at regular intervals. Thus from Rs. 18.50 in 1987-88 it has now been raised to Rs. 19.50 per quintal, linked to a basic sugar recovery of 8.5 per cent for 1988-89 season. The sugar industry also helped increase production by offering a still higher cane price (as decided by the State Governments) than the statutory minimum price fixed by the Government of India and through their developmental efforts to develop cane cultivation and its quality. For improvements in cane cultivation, loans are being given to sugar factories from Sugar Development Fund. The sugar industry in turn has also been helped

by offering fiscal and financial incentives besides increase in the free-sale quota out of total sugar production.

2.60 Considering the need to step up sugar production, a target of 195 million tonnes of sugarcane output for 1988-89 has been fixed. To help achieve the production target, the increase in productivity of both planted and ratoon crop has received attention. The measures taken to meet this objective include (i) production and distribution of quality seed cane, (ii) increasing irrigation facilities, (iii) judicious use of fertiliser application, (iv) better management of ratoons, (v) larger coverage under plant protection, (vi) transfer of technology through various extension systems and (vii) greater participation of sugar factories in cane development. With all the developmental measures and favourable climatic conditions, the targetted production is expected to be achieved.

2.61 The sugarcane developmental efforts together with other incentives have helped the sugar industry to step up sugar production to a record level of 91 lakh tonnes in the sugar year 1987-88 as against 85 lakh tonnes in 1986-87 and 70 lakh tonnes in 1985-86. The impressive growth in sugar output is mainly attributed to various measures initiated by the Government which, inter alia, include (i) increase in the free-sale sugar quota, (ii) increase in ex-factory price of levy sugar, (iii) incentive for modernisation and expansion of sugar mills, (iv) increase in the price of molasses and (v) judicious licensing policy. Taking into account the likely sugarcane production and the incentives offered to sugar industry, the sugar output may range between 95 to 100 lakh tonnes in 1988-89.

**Agricultural Inputs**

2.62 In order to reap the maximum yield from agriculture, a conscious effort is needed to provide an integrated package of adequate inputs including assured supply of water, improved variety of seeds, fertilisers, weedicides and pesticides, agricultural credit and greater extension effort. Recent major developments with regard to each of this is reviewed below.

*Irrigation*

2.63 Assuring adequate supply of water is crucial not only for achieving greater production but also for stabilising production under uncertain weather conditions. Accordingly, the Seventh Plan set a target of creating additional irrigation potential of 12.9 million hectares as against 10.9 million hectares created in the Sixth Plan. The progress made under the major, medium and minor irrigation works in the Seventh Plan is given in Table 2.6.

TABLE 2.6

*Development of Irrigation Potential and its Utilisation*

(Million hectares)

| Irrigation (Additional area) | Seventh Plan | | 1985-86 | | 1986-87 | | 1987-88 |
|---|---|---|---|---|---|---|---|
| | Assumed base level (84-85) | 1989-90 Target | Target | Achievement | Target | Achievement | Target |
| 1. *Major and Medium Irrigation* | | | | | | | |
| Potential | 30.01 | 4.30 | 0.63 | 0.52 | 0.69 | 0.65 | 0.70 |
| Utilisation | 25.33 | 3.90 | 0.62 | 0.45 | 0.58 | 0.65 | 0·64 |
| 2. *Minor Irrigation* | | | | | | | |
| Potential | 37.52 | 8.60 | 1.70 | 1.57 | 1.73 | 1.67 | 1.68 |
| Utilisation | 35.25 | 7.00 | 1.30 | 1.10 | 1.26 | 1.39 | 1.41 |
| 3. *Total* | | | | | | | |
| Potential | 67.00* | 12.90 | 2.33 | 2.09 | 2.42 | 2.32 | 2.38 |
| Utilisation | 60.40* | 10.90 | 1.92 | 1.55 | 1.84 | 2.02 | 2.05 |

*Cumulative level.

2.64 The data brings out the gap not only between target and achievement in terms of the potential created but also between potential and utilisation. The major factors responsible for this shortfall in respect of major and medium irrigation projects is the normal time taken by farmers in acquiring realistic knowhow to switch over from traditional rainfed cultivation to irrigated farming, non-development of land in the command area through shaping levelling and construction of field channels. Extension work to encourage farmers to avail of existing irrigation facilities also appears to be insufficient. Additionally, the anticipated benefits from a project often do not flow to the extent envisaged on account of changes in actual cropping patterns from those originally planned at the project planning stage. In the case of minor irrigation, inadequacy of power supply is among the factors leading to underutilisation of potential created.

2.65 Irrigation potential created would require to be optimally utilised so that investments made do not become infructuous. Priority should be accorded to completion of ongoing schemes/ projects. The Command Area Development Programme has been initiated primarily to narrow down the gap between the potential and utilisation of major and medium irrigation projects. Covering an area of 17.3 million hectares, this programme envisages farm development comprising construction of field channels, land levelling, land shaping and introduction of warabandi for equitable distribution of water. The Seventh Plan envisaged a target of 6.8 million hectares in field channels, 1.82 million hectares in land levelling and 8.04 million hectares in warabandi. However, during the first three years of the Plan, the states fixed lower targets amounting to 3.46 million hectares in field channels, 0.61 million hectares in land levelling and 4.06 million hectares in warabandi. The benefits derived during the period 1985-86 to 1987-88 as percentage of these targets are 58 per cent in field channels, 45.6 per cent in land levelling and 60 per cent in warabandi. The programme has not been able to attain full progress because of inadequate provision of funds in the States' Plans and difficulties in land acquisition. In the states of Assam and Bihar, flood problems also hampered the progress.

2.66 Minor irrigation development has received added emphasis with funds flowing from banks, Rural Electrification Corporation, Integrated Rural Development Programme, Land Development Banks etc. Investment in this sphere has been of the order of Rs. 647 crores in 1985-86 and Rs. 730 crores in 1986-87. Since a multitude of agencies are engaged in financing, monitoring the financial and physical progress becomes essential. Presently, REC monitors the impact of its disbursement under the Special Project Agriculture Programme.

2.67 One of the components in the multi-pronged strategy outlined by the Task Force for Special Foodgrains Production Programme is the provision of assured irrigation through both major and medium irrigation projects and minor irrigation schemes. Given the estimates of groundwater potential it has been proposed to instal annually 6 lakh shallow tubewells in the identified districts of Uttar Pradesh, Bihar, Orissa, West-Bengal, Assam and Andhra Pradesh. These tubewells will provide assured irrigation facilities at low cost in these potentially high output and yield areas. Similarly, the ongoing major and medium irrigation projects which can provide immediate benefits in 1989-90 have been taken up for providing additional irrigation in the identified districts—the additional irrigated area is estimated at about one lakh hectares.

*Seeds*

2.68 Seeds constitute an important input and the strategy for enhancing agricultural production lies in increasing the yield per unit area rather than extension of area under agriculture. In keeping with this, increasing area has been brought under High Yielding Varieties of paddy, wheat and other cereal crops. Against a Sixth Plan target of bringing 56 million hectares under HYV, the achievement was of the order of 54.14 million hectares. Greater emphasis on bringing areas under HYV has placed the terminal year target of Seventh Plan at 70 million hectares. The progress made however, in the first three years of the Plan has not been very encouraging. Achievement fell short of the target by 5.7 per cent in 1985-86, 7.4 per cent in 1986-87 and in 1987-88 the anticipated shortfall is around 17.9 per cent. Table 2.7 gives the

area under HYV for different crops over the Seventh Plan period.

TABLE 2.7
*Area under HYV*

(Million hectares)

| Crop | 1979-80 | 1984-85 | 1985-86 | 1986-87 | 1987-88* | 1988-89** |
|---|---|---|---|---|---|---|
| Paddy | 15.99 | 22.78 | 23.47 | 24.02 | 20.75 | 29.00 |
| | (40.60) | (55.30) | (57.00) | (58.90) | (54.79) | |
| Wheat | 15.03 | 19.09 | 19.08 | 19.14 | 19.61 | 22.00 |
| | (67.60) | (81.00) | (83.00) | (83.90) | (86.50) | |
| Jowar | 3.05 | 5.07 | 6.08 | 5.50 | 5.44 | 6.00 |
| | (19.30) | (32.80) | (37.80) | (35.20) | (34.74) | |
| Bajra | 2.96 | 5.17 | 4.99 | 5.27 | 3.49 | 5.50 |
| | (28.00) | (48.70) | (46.90) | (47.00) | (36.09) | |
| Maize | 1.35 | 2.03 | 1.80 | 2.19 | 1.94 | 2.50 |
| | (23.70) | (35.00) | (31.00) | (37.30) | (35.19) | |
| TOTAL | 38.38 | 54.14 | 55.42 | 56.12 | 51.23 | 65.00 |

*Provisional **Targets

NOTE : Figures in parenthesis give the percentage of HYV area to the total area under the crop.

2.69 It will be noticed that while in the case of wheat, the HYV coverage in relation to gross area has exceeded the Seventh Plan target of 79 per cent, progress has been tardy in the case of paddy. Against 73 per cent of the area under paddy projected to be brought under HYV in the Seventh Plan, the actual coverage was of the order of 54.8 per cent in 1987-88.

2.70 Distribution of certified/quality seeds over the Sixth Plan and the first two years of the Seventh Plan has been highly erratic as reflected in the table given below :

TABLE 2.8
*Distribution of Certified/Quality Seeds*

| Year | Distribution (lakh quintals) | Percentage increase over the preceding year |
|---|---|---|
| 1980-81 | 25.01 | .. |
| 1981-82 | 29.81 | 19.2 |
| 1982-83 | 42.06 | 41.1 |
| 1983-84 | 44.97 | 6.9 |
| 1984-85 | 48.46 | 7.8 |
| 1985-86 (Anticipated) | 55.01 | 13.5 |
| 1986-87 (Likely Achievement) | 55.83 | 1.5 |
| 1987-88 (Tentative) | 56.30 | 0.8 |

2.71 The main reasons accounting for these erratic trends are demand of seeds for a specific crop/variety, diversification of area from one crop to another, particularly from high seed rate crops like groundnut (125 kgs per hectare) to low seed rate crops like rapeseed and mustard (5 kgs. per hectare) and the choice of crops requiring less irrigation which in turn have lower seed rates than wheat, paddy, groundnut etc. Inadequate breeder seed production is another constraint which needs to be resolved.

2.72 For the production of breeder seed, it has been mentioned that decentralisation and certification will mitigate the problem of inadequacy. Though decentralisation is in progress by appointing sponsored breeders, certification of breeder seed is not carried out because breeder seed is outside the purview of Seeds Act, 1966. However, seed testing and quality control have been given added emphasis. During 1987-88, 86 varieties of seeds were notified to be brought under the purview of quality control.

2.73 A National Seed Project, is being implemented with World Bank assistance, which aims at assisting farmers by ensuring timely availability of quality seeds of suitable varieties at economical prices, through the expansion and modernisation of the seed industry. This is sought to be achieved by :—

(*i*) reorienting the operations of national and state level Public Sector Seed Corporations along commercial lines, with emphasis on strengthening management and ensuring continued autonomy in production, pricing and management decisions ;

(*ii*) stimulating greater private sector investment in the industry;

(*iii*) improving the management of public sector variety development programmes and

(*iv*) ensuring development of adequate facilities for seed industry regulations and quality seeds.

2.74 In order to make the seeds available to the farmers at short notice in the event of unforseen contingencies like floods, drought, diseases etc., a scheme of buffer stock of seeds has been in operation since 1978 and implemented by National Seeds Corporation. From 1987-88, the scheme was modified to enable the participation of States through their respective Seeds Corporations, if they so desire, on the basis of sharing of the cost with the Centre. Under the

revised scheme, State Seeds Corporations are allowed to maintain buffer stock of seeds of coarsegrains, pulses and oilseeds. However, the National Seeds Corporation is maintaining buffer stocks for meeting the requirements of North-Eastern States for paddy, maize, pulses and oilseeds.

2.75 To facilitate upgradation of seeds/planting materials and providing to the farmers the best materials available in the world so as to increase productivity, a new policy on seeds development has been adopted and introduced with effect from October 1, 1988. The new policy lays special emphasis on the import of quality seeds, strengthening/modernising plant quarantine facilities and provision of incentives to encourage the domestic seed industry to make the country self reliant in the seed sector. The liberalised import of seeds of coarse cereals, pulses and oilseeds as also import of seeds of vegetables, flowers and planting materials under OGL is expected to step up productivity and incomes of the farmers.

*Fertilisers*

2.76 With the introduction of HYV crops and enhanced acreage brought under assured irrigation, the consumption of fertilisers has been showing a steady rising trend, except during years of abnormal weather conditions. As compared to 8.2 million tonnes in 1984-85, the consumption of fertilisers is expected to touch a level of 12.3 to 12.5 million tonnes by the terminal year of the Seventh Plan. In 1988-89 the figures of consumption is anticipated to be around 11.3 million tonnes against the target of 10.2 million tonnes. (Table 2.9)

TABLE 2.9

*Consumption of Chemical Fertilisers*

(Million tonnes)

| Years | Nitro-genous | Phos-phatic | Potassic | Total NPK |
|---|---|---|---|---|
| 1970-71 | 1.49 | 0.46 | 0.23 | 2.18 |
| 1975-76 | 2.15 | 0.46 | 0.28 | 2.89 |
| 1978-79 | 3.42 | 1.11 | 0.59 | 5.12 |
| 1979-80 | 3.50 | 1.15 | 0.61 | 6.26 |
| 1980-81 | 3.68 | 1.21 | 0.63 | 5.52 |
| 1981-82 | 4.07 | 1.32 | 0.67 | 6.06 |
| 1982-83 | 4.22 | 1.44 | 0.73 | 6.39 |
| 1983-84 | 5.21 | 1.73 | 0.77 | 7.71 |
| 1984-85 | 5.49 | 1.88 | 0.84 | 8.21 |
| 1985-86 | 5.66 | 2.00 | 0.81 | 8.47 |
| 1986-87 | 5.77 | 2.11 | 0.86 | 8.74 |
| 1987-88 (Estimated) | 5.82 | 2.27 | 0.92 | 9.01 |
| 1988-89 (Anticipated) | 7.38 | 2.81 | 1.14 | 11.33 |

2.77 Production of fertilisers has increased from 30.05 lakh tonnes in 1980-81 to 71.31 lakh tonnes in 1987-88. While the production trend has been rising, the level of import has been fluctuating and the quantum of imports showed a decline during 1982-83, 1983-84 and again in 1986-87. During 1987-88 imports were of the order of only 9.84 lakh tonnes. Correspondingly, fertiliser subsidy, particularly subsidy on indigenous fertilisers has been steadily mounting and the total subsidy was of the order of Rs. 2164 crores in 1987-88. (Table 2.10)

TABLE 2.10

*Fertilisers : Production, Imports and Subsidies*

| Year | Production (000 Tonnes) | Imports (000 Tonnes) | Subsidies (Rs. crores) | | |
|---|---|---|---|---|---|
| | | | On imported fertilisers | On domestic production | Total |
| 1979-80 | 2983 | 2005 | 282 | 321 | 603 |
| 1980-81 | 3005 | 2759 | 335 | 170 | 505 |
| 1981-82 | 4093 | 2041 | 100 | 275 | 375 |
| 1982-83 | 4404 | 1132 | 55 | 550 | 605 |
| 1983-84 | 4533 | 1355 | 142 | 900 | 1042 |
| 1984-85 | 5181 | 3624 | 727 | 1200 | 1927 |
| 1985-86 | 5756 | 3399 | 323 | 1600 | 1923 |
| 1986-87 | 7070 | 2308 | 197 | 1700 | 1897 |
| 1987-88 | 7131 | 984 | 114 | 2050 | 2164 |
| 1988-89 | 8600@ | 1402† | 250 | 2750* | 3000 |

*Budget estimates.

†Upto December, 1988.

@Target

2.78 In order to step up fertiliser consumption a series of measures were undertaken in 1987-88. These included arrangements for ensuring supply of fertilisers, promotion of sale of fertilisers through the District Lead Fertiliser Scheme, extension support of fertiliser industry and T. V. system, soil analysis and advice by a network of soil testing laboratories on the judicious use of fertilisers based on the results of soil analysis.

2.79 In addition, a National Project on Development of Fertiliser use in low consumption rain-fed areas has also been initiated. The project covers 60 districts and provides for opening of additional retail outlets in selected districts, laying of block demonstrations, organising training programmes and opening of additional soil testing laboratories.

*Pesticides*

2.80 Oilseeds and pulses are normally prone to pest attack and pest survelliance and monitoring are crucial for plant protection programmes. The overall position regarding pesticides availability is satisfactory. Under a centrally sponsored scheme of "Control of Pests and Diseases of Agricultural Importance", assistance is being extended for the control of identified pests and diseases on selected crops. Further, in order to encourage larger use of pesticides a number of pesticide intermediates have been exempted from excise duty. Customs duty was also reduced in the last budget in respect of a number of pesticides and pesticide intermediates from the existing levels of 105 per cent and 147 per cent to 70 per cent and 60 percent *ad valorem*. Also selected pesticides items are being allowed to be imported freely by the designated State and cooperative societies so as to ensure that existing manufacturers do not indulge in monopolistic practices.

2.81 The direction for the future should focus on improved demand forecasting, evaluation of improved standards and practices including bio-technology methods, developing an effective pesticide industry along with an adequate distribution network and evolving an integrated pesticide management system.

*Credit*

2.82 Agricultural credit policy has been so designated as to subserve the basic objective of extending institutional support to the farmers with special focus on the small and marginal farmers and provision of larger credit support to areas covered under special programmes like dryland farming, special rice production programme and National Oilseeds Development Project. Channelising of this credit is being done through a multi-agency approach consisting of cooperatives, commercial banks and regional rural banks. In order to facilitate greater flow of credit, financing institutions have been provided with specific target of disbursement of credit to the thrust areas. Central assistance to the Cooperatives facing deficit in non-overdues cover is being provided so as to facilitate functioning of weak District Central Cooperative Banks. The quantum of agricultural credit disbursed has been on the increase as seen in the table below :

TABLE 2.11

*Disbursement of Agricultural Credit*

(Rs. crores)

| | 1986-87 (Provisional) | 1987-88 (Provisional) | 1988-89 (Targets) |
|---|---|---|---|
| *Cooperatives* | | | |
| Short-term . . | 2822 | 3123 | 4153 |
| Medium-term . . | 532 | 351 | 422 |
| Long-term . . | 522 | 583 | 866 |
| | 3906 | 4057 | 5441 |
| *Commercial Banks/ Regional Rural Banks* | | | |
| Short-term & Term Loans . . . | 3695 | 3934 | 6310 |
| GRAND TOTAL . | 7601 | 7991 | 11751 |

2.83 To counter the adverse effects of drought in 1987-88 a number of measures had been resorted to such as re-schedulement of loans, conversion of short-term loans into medium-term loans and lowering of rate of interest in some cases. To bring down the cost of agricultural credit, the rate of interest on crop loans upto Rs. 7,500 was reduced by 1.5 per cent to 2.5 per cent. Similarly, interest rate for crop loans exceeding Rs. 7,500 and upto Rs. 10,000 was brought down to 11.5 per cent from 12.5 per cent and interest rate on crop loans exceeding Rs. 10,000 and upto Rs. 15,000 was brought down to 14 per cent. In order to increase the flow of credit at reduced cost, public sector banks have been instructed to extend direct finance to agriculture to the tune of 17 per cent of their total advances by the end of 1988-89. The target for outstanding availability of direct credit by banks (including Regional Rural Banks and Cooperative Banks) to the primary sector is expected to increase by over Rs. 3,000 crores in 1988-89. A National Agricultural Credit Relief Fund has been set up to provide relief to the farming community on a systematic basis.

2.84 Despite the rapid strides made in the field of agricultural credit, the credit cooperatives are facing a serious situation of mounting overdues. Increasing overdues have inhibited further credit, expansion for want of re-cycling of funds and ineligibility of the institutional agencies for borrowing additional funds from the financing agencies. At the end of June, 1986 the percentage

of over dues to demand at the primary agricultural credit assistance level was about 40.9 per cent while at the level of primary land development banks branches it was about 38.8 per cent.

### Crop Insurance

2.85 The basic objectives of the comprehensive crop insurance scheme (introduced from April, 1985) are to provide financial support to the farmers in the event of a crop failure on account of natural calamities, restore credit eligibility to farmers after a crop failure and stimulate production of cereals, pulses and oilseeds. All the farmers availing crop loan from cooperatives, commercial banks and regional rural banks for raising paddy, wheat, millets, oilseeds and pulses crops are covered under the scheme. A differential insurance premium is charged for the different crops. 50 per cent of the premium payable by the small and marginal farmers is subsidised by the Central Government and concerned State Governments in equal proportions.

2.86 Though the scheme was temporarily suspended in April, 1988, it has been re-introduced since September, 1988 in the present form during the kharif season with a proviso that the insured amount may be limited to Rs. 10,000 for the farmer irrespective of the quantum of the loan taken and that the total sum insured will be reduced from 150 per cent to 100 per cent of the crop loan.

2.87 The details regarding the progress made in implementation of the comprehensive crop insurance scheme is given in the Table 2.12.

TABLE 2.12
*Crop Insurance Scheme*

| | Kharif 1985 | Rabi 1985-86 | Kharif 1986 | Rabi 1986-87 | Kharif 1987 | Rabi-1987-88 (as on 1-11-88) |
|---|---|---|---|---|---|---|
| No. of States | 11 | 13 | 15 | 14 | 18 | 17 |
| No. of Union Territories | 2 | 3 | 3 | 3 | 3 | 3 |
| No. of Farmers covered (lakhs) | 26 | 12 | 40 | 11 | 47 | 21 |
| Area covered (lakh hectares) | 54 | 20 | 77 | 21 | 84 | 32 |
| Sum Insured (Rs. crores) | 543 | 238 | 856 | 242 | 1140 | 475 |
| Premium collected (Rs. crores) | 9 | 4 | 15 | 5 | 19 | 9 |
| Claims Paid/payable (Rs. crores) | 83 | 3 | 1544 | 3 | 9 | .. |

### Agricultural Marketing

2.88 The development of marketing has been playing an important role in overall agricultural development. In order to help the farmers to get a better price of their produce, markets and market practices have been regulated. By the end of March 1988, 6052 agricultural markets in the country had been regulated. These include 2149 primary markets yards and 3903 sub-markets. To improve the marketing of agricultural produce the scheme for establishment/development of regulated markets, rural markets and grading centres are being integrated into one composite scheme viz., Development of Agricultural Produce Markets. To prevent distress sale by the farmers, particularly the small and marginal farmers, after harvest at prevailing low price, rural godowns have been set up. At the end of March, 1988, 3992 rural godowns with a storage capacity of 21.31 lakh tonnes have been approved.

2.89 The role of cooperatives in the marketing of agricultural produce has been progressively expanding. To help the farmers in getting remunerative price, cooperatives have assumed a major role in price support operations in coarsegrains, oilseeds and pulses and market intervention for potato, onion, copra and ginger. In fact, public sector commodity corporations like Food Corporation of India, Cotton Corporation of India and the Jute Corporation of India have been increasingly utlising the services of cooperatives to procure specified commodities from the farmers. The cooperative marketing structure comprises 2633 general purpose primary cooperative marketing societies at the mandi level, covering all the important mandies in the country, 3290 specialised primary marketing societies for oilseeds etc. 172 district/Central Federations and the National Agricultural Cooperative Marketing Federation of India at the national level.

2.90 The cooperatives performed very well in the marketing of agricultural produce during the Sixth Plan when they handled agricultural produce worth Rs. 3,032 crores as against a target of Rs. 2,500 crores. The Seventh Plan envisaged doubling of performance with a target of handling

agricultural produce worth Rs. 5,000 crores during the terminal year 1989-90. Cooperatives exceeded their target in handling agricultural produce worth Rs. 4,014 crores, as against a target of Rs. 4,000 crores during 1986-87. However, because of drought there was a set back in their operation during 1987-88 when they handled agricultural produce worth Rs. 3,910 crores as against a target of Rs. 4,400 crores. For the year 1988-89 a target of Rs. 4,700 crores has been set.

2.91 While in the case of wheat and paddy. FCI, in the case of jute, JCI and in the case of cotton, CCI act as Government of India's procurement agencies for ensuring support prices to the farmers, these corporations engage the cooperatives in varying degrees in their procurement operations. Since 1985-86 NAFED has been designated as the nodal agency for undertaking price support operations in respect of groundnut, mustard/rapeseed, soyabean, sunflower seed for a period of five years. NAFED has also been designated as the nodal agency for undertaking price support operations in respect of coarsegrains during 1987-88 marketing season and again for coarsegrains and pulses during 1988-89 season.

2.92 The marketing operations of cooperatives during 1987-88 reveal that while they had a major share in handling wheat, sugarcane, cotton and jute, the same was not the case in commodities like coarsegrains, oilseeds, fruits and vegetables, pulses etc. With a view to strengthening the cooperative marketing societies, particularly in the 169 districts in 14 states covered under the Special Foodgrains Production Programme, the State Governments have been advised to take appropriate action to revitalise them by availing of financial assistance from National Cooperative Development Corporation for strengthening the share capital base.

**Outlook**

2.93 The excellent monsoon this year has brought in a period of strong recovery in agriculture. The run of poor monsoons culminating in the drought of 1987-88 had arrested the momentum of agricultural growth and production fell short of targetted levels during the first three years of the Seventh Plan. In order to recover the lost ground and achieve the targetted level of foodgrain production by the terminal year of the Plan i.e. 1989-90, a Special Foodgrains Production Programme has been taken up in certain areas where the potential can be quickly exploited. Irrigation and the availability of adequate inputs at reasonable prices forms the core of this programme. Special emphasis has been laid on increasing production of rice, wheat, maize, arhar and gram under the programme. In order to achieve self sufficiency in edible oils, alongwith other oilseed development programmes, a Technology Mission on Oilseeds has been functioning actively. The increase in production is expected to come through increase in productivity rather than acreage. To ensure this, adequate measures have been taken for the supply of various inputs at reasonable rates by providing fiscal and financial support. Judicious use of irrigation facilities is being ensured.

2.94 With all these developmental efforts and good climatic conditions, it is anticipated that the production target for 1988-89 will not only be achieved but may be exceeded in certain crops like foodgrains. The increase in foodgrain production would help replenish the dwindled stocks and establish the buffer stock which served so well to carry the country through the last drought. Steady progress is also being maintained with regard to availability of inputs, credit etc. and other support activities like the development of regulated markets. However, the development of pulses needs greater priority than it has received so far.