CHAPTER 2

AGRICULTURAL PRODUCTION

As a result of volatile rainfall conditions, agricultural production has fluctuated sharply during the first five years of this decade. Foodgrain production in 1984-85 fell to 146.2 million tonnes, a decline of 6.2 million tonnes from the record level of 152.4 million tonnes achieved in 1983-84. However, inspite of the monsoon rainfall (June—September) in 1985 being marginally more unfavourable than in the preceding year, total foodgrain production may be above the level of 1984-85. Rabi output in 1985-86 is expected to record a marked improvement as the post-monsoon (October—December) rainfall has been particularly good, which should provide ideal soil moisture conditions for the sowing and early growth of rabi crops.

2.2 The record level of 29.17 million tonnes of foodgrain stocks with the public agencies at the end of June 1985 provides further confirmation of the self-sufficiency achieved in the production of the two major crops, wheat and rice. As a consequence of this comfortable stock position, it was possible to initiate substantial improvements in the Rural Landless Employment Guarantee Programme (RLEGP), the National Rural Employment Programme (NREP), as well as provide foodgrains to the weaker sections, specially in the tribal areas, at a price well below the already subsidised price in the public distribution system.

TABLE 2.1

Agricultural Production

(Million Tonnes/bales*)

Crop	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85
Rice	44.05	39.58	48.74	41.92	52.67	53.77	42.33	53.63	53.25	47.12	60.10	58.64
Wheat	21.78	24.10	28.85	29.01	31.75	35.51	31.83	36.31	37.45	42.79	45.48	44.23
Pulses	10.01	10.01	13.04	11.36	11.97	12.18	8.57	10.63	11.51	11.86	12.89	12.20
Kharif foodgrains . .	67.83	59.10	73.89	66.53	77.72	78.08	63.25	77.65	79.38	69.90	89.23	84.72
Rabi foodgrains . .	36.83	40.73	47.15	44.64	48.69	53.82	46.45	51.94	53.92	59.62	63.14	61.50
All foodgrains . .	104.66	99.83	121.03	111.17	126.41	131.90	109.70	129.59	133.29	129.52	152.37	146.22
Groundnut . . .	5.93	5.11	6.75	5.26	6.09	6.21	5.77	5.01	7.22	5.28	7.09	6.74
Rapeseed & Mustard .	1.70	2.25	1.94	1.55	1.65	1.86	1.43	2.30	2.38	2.21	2.61	3.03
Oilseeds@ . . .	9.39	9.15	10.61	8.43	9.66	10.10	8.74	9.37	12.08	10.00	12.69	13.10
Sugarcane (cane) . .	140.81	144.29	140.60	153.01	176.97	151.66	128.83	154.25	186.36	189.51	174.08	173.57
Cotton (Lint)* . .	6.31	7.16	5.95	5.84	7.24	7.96	7.65	7.01	7.88	7.53	6.39	8.46
Jute and Mesta* . .	7.68	5.83	5.91	7.10	7.15	8.33	7.96	8.16	8.37	7.17	7.72	7.98

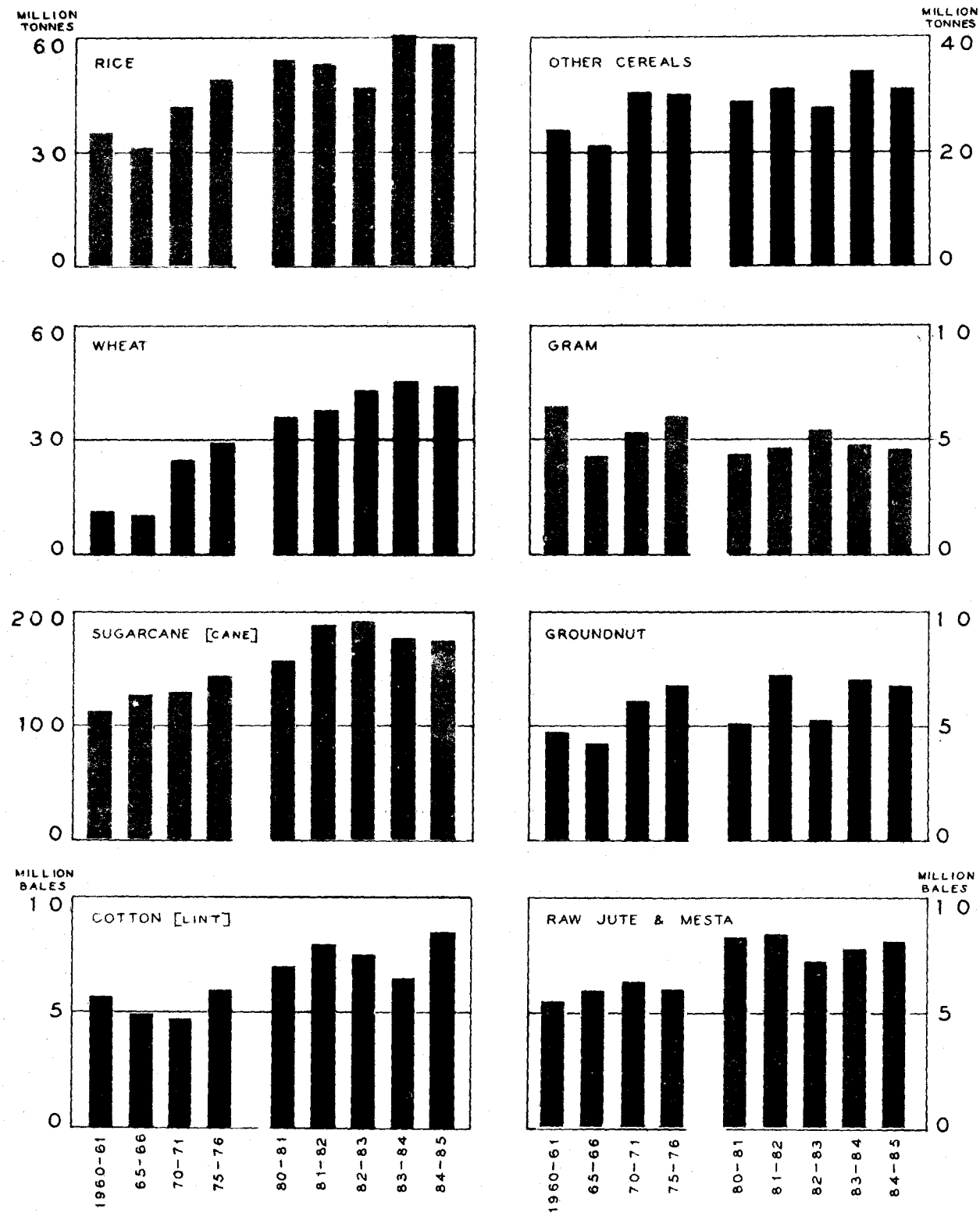
*170 kgs. each for cotton and 180 kgs. each for jute and mesta.

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

2.3 However, marked cropping pattern imbalances have begun to emerge in the agricultural sector largely as a result of technological improvements in certain crops, the expansion of irrigated area, and the effective intervention by the Government to support wheat and rice prices. Despite oilseeds production attaining a record level of 13.1 million tonnes in 1984-85, substantial imports of edible oils were once again necessary to meet the gap between demand and supply. Similarly, the output of pulses, which like oilseeds are grown under dry land conditions, has tended to show secular stagnation.

2.4 Sugarcane production, which declined from the record level of 190 million tonnes (cane) in 1982-83 to 174 million in 1983-84, did not register any measurable further loss in 1984-85. However, the recent two-year sugar policy for the first time announced support prices for cane one year in advance in order to reduce uncertainty for farmers at the time of sowing. As a consequence sugarcane output in 1986-87 is expected to show a considerable improvement. Following years of shortage in the supply of jute-mesta and consequent high prices, a record crop is estimated to have been harvested in 1985-86. Consequently, excess supply conditions arose requiring major market intervention by the Jute Corporation of India and a substantial effort was required in maintaining the minimum support price for jute-mesta.

AGRICULTURAL PRODUCTION

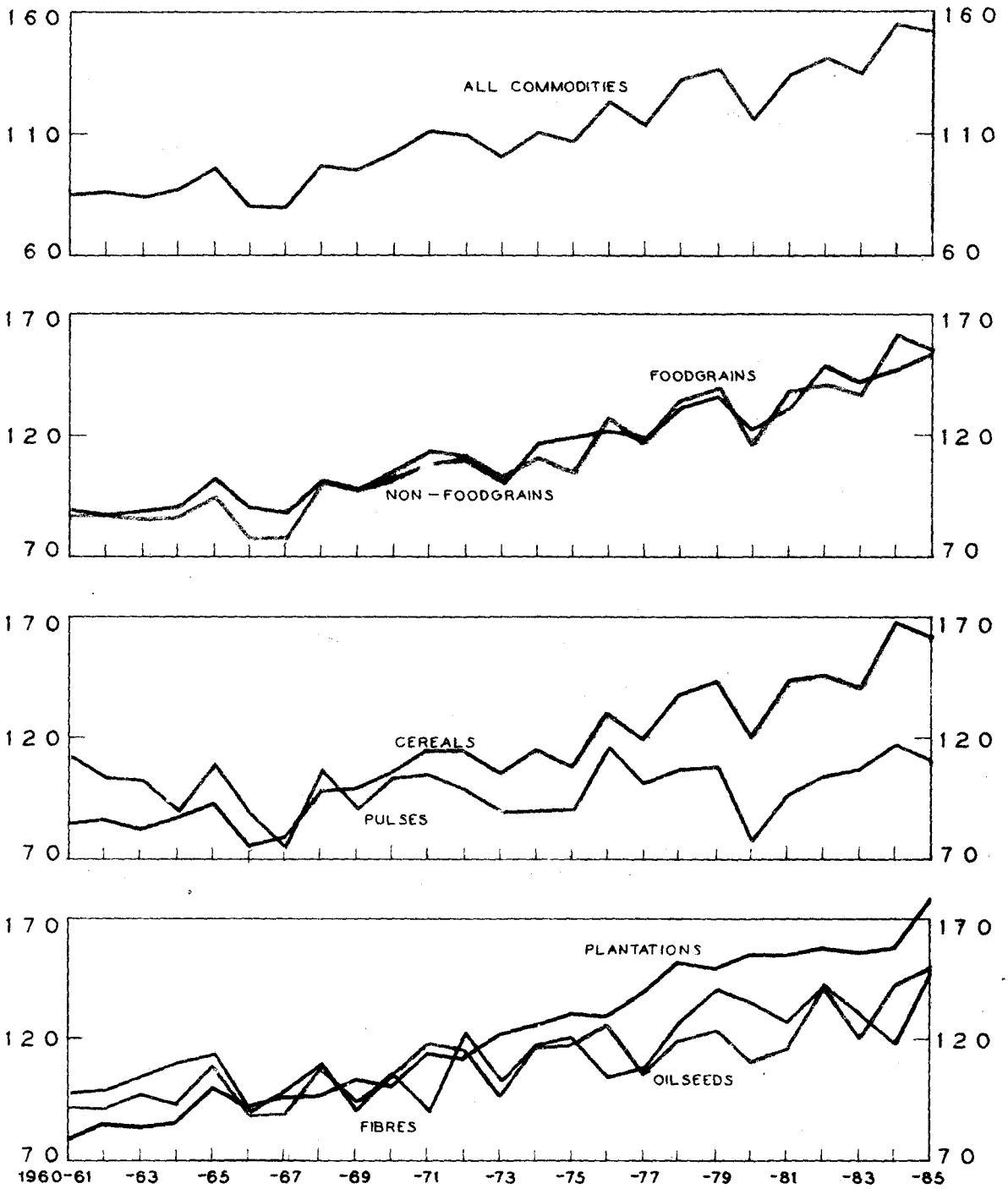


MINISTRY OF FINANCE, ECONOMIC DIVISION.

GMGIPMRND-PLW-469/2/Fin/85-86...Chart 2

INDEX OF AGRICULTURAL PRODUCTION

BASE :- TRIENNIUM ENDING 1969-70=100



MINISTRY OF FINANCE, ECONOMIC DIVISION.

GMGIPMRND-PLN-469/2/Fin/85-86...Chart 3

2.5 A rational price policy in agriculture can act as an instrument not only to restore a desirable cropping pattern but also to reduce wide fluctuations in the supply of certain crops. A clearly defined price policy that provides farmers with a more assured income stream also reduces the risks and uncertainty in agricultural production.

Performance in 1984-85

2.6 Although foodgrain output dropped in 1984-85, its level was still in line with an underlying healthy long term trend growth rate in agriculture. The two earlier years, 1982-83 and 1983-84, had seen extremely unusual weather conditions and are distinct outliers from the trend. The 1982-83 drought conditions brought foodgrain output below trend and the exceptionally good monsoon in 1983-84 took the growth rate far above the long term trend. Consequently, the decline in output in 1984-85 compared to 1983-84 is due to the comparison of a below-average monsoon with near optimal rainfall in the previous year.

2.7 The decline in foodgrains production in 1984-85 occurred mostly in kharif output, with production falling by 5.1 per cent to 84.72 million tonnes in 1984-85 from 89.28 million tonnes in the preceding year. The decline in rabi foodgrains was, by comparison, a modest 2.6 per cent at 61.5 million tonnes. Production decreases occurred in cereals as well as pulses. As against the decline under foodgrains, production of oilseeds, cotton, and jute and mesta increased substantially during 1984-85 and new production records were established in the case of oilseeds and cotton.

2.8 While the overall production declined mainly on account of a drop in yield levels, the differential growth rates for each of the important crops are largely a consequence of changes in acreage allocation. The considerable shifts in acreage and in cropping pattern that occur each year are strongly influenced by the changing relative prices of crops and the sensitivity of farmers to these relative price differentials. A crop-wise analysis of the shifts in acerage in 1984-85 indicates the trend of the supply responsive character of Indian agriculture.

2.9 Production of wheat declined by 2.8 per cent to 44.23 million tonnes in 1984-85. The decline in production was entirely due to a fall in area under the crop of 4.3 per cent from 24.67 million hectares to 23.61 million hectares. The two major wheat growing states are Uttar Pradesh and Punjab. In U.P., production declined marginally (from 16.12 million tonnes to 15.97 million tonnes) in spite of a marginal increase in area (from 8.53 million hectares to 8.55 million hectares). In Punjab, wheat production recorded an increase of 8.1 per cent even though the area under the crop in the State decreased by nearly 1 per cent. Considerable declines in production of wheat occurred in Rajasthan, Madhya Pradesh, Gujarat and Maharashtra, largely due to the extremely poor post-monsoon rainfall in 1984. The wheat crop in these states is generally rainfed and the sources of minor irrigation, wherever available, depend on rainfall for water replenishment.

2.10 Production of rice declined by 2.4 per cent to 58.64 million tonnes in 1984-85, mainly because relatively poor weather conditions led to a fall in yields, as the drop in area under the crop was only 0.2 per cent. Most of the decline in production occurred in Andhra Pradesh (from 8.79 to 7.0 million tonnes), Orissa (from 5.12 to 4.53 million tonnes), Madhya Pradesh (from 4.80 to 3.67 million tonnes) and Maharashtra (from 2.46 to 1.94 million tonnes). Production increased in Tamilnadu (from 4.47 to 5.39 million tonnes), Punjab (from 4.54 to 5.06 million tonnes), Bihar (from 4.97 to 5.32 million tonnes), West Bengal (from 7.94 to 8.09 million tonnes) and Uttar Pradesh (from 6.78 to 7.18 million tonnes). The increase in West Bengal is particularly noteworthy as it occurred in spite of a decline in area under the crop from 5.37 million hectares to 5.20 million hectares.

2.11 Production of coarse cereals, which are generally rainfed crops, showed a marked fall of 8.1 per cent, from 33.9 to 31.2 million tonnes in 1984-85.

2.12 Production of gram declined by 4.2 per cent to 4.55 million tonnes. This was largely due to shrinkage in area under the crop by 4.2 per cent, from 7.16 million hectares in 1983-84 to 6.86 million hectares in 1984-85.

2.13 Production of tur (arhar) increased in 1984-85 by 3.5 per cent to a record level of 2.67 million tonnes. This was achieved inspite of a marginal decline in area under the crop from 3.22 million hectares to 3.21 million hectares. Much of this increase in production occurred in Uttar Pradesh, which showed a gain of 23.3 per cent, almost entirely due to gains in productivity, the increase in acreage being a marginal 0.9 per cent.

2.14 Groundnuts production fell by 4.8 per cent to 6.74 million tonnes in 1984-85. This decline occurred in spite of an increase of 2.8 per cent (to

7.75 million hectares) in the area under the crop. The loss in production was entirely due to substantially lower yields of kharif groundnuts which showed a fall of 7.5 per cent in spite of an addition of 3.2 per cent in the area under the crop. Substantial growth in the area under groundnut, in spite of adverse weather conditions, was apparently due to the higher price of groundnut in relation to competing non-oilseed crops. Area under rabi groundnut, however, showed a comparatively modest increase of one per cent and the rabi output increased by 2.9 per cent to 1.86 million tonnes. In effect, owing to adverse weather conditions during the monsoon season, the yield per hectare of kharif groundnut declined by 10.4 per cent to 748 kgs. per hectare, while the largely irrigated rabi groundnut registered a modest increase of 2 per cent in yield per hectare to 1,515 kgs. Thus, the productivity of rabi groundnut was 102 per cent higher than that of the kharif crop.

2.15 Production of rapeseed and mustard set a new record at 3.03 million tonnes in 1984-85, showing an increase of 16.2 per cent over the preceding year. The increased production came largely through additional area under the crop. Area under the crop increased by 13.7 per cent to 4.4 million hectares, but the yield per hectare increased by only 2.2 per cent to 688 kgs. With an increase of 30.5 per cent in 1984-85, Rajasthan became the largest producer of rapeseed and mustard at 8.46 tonnes, and Uttar Pradesh (at 8.2 lakh tonnes) took the second place. Haryana (reporting a production of 3.0 lakh tonnes) and Punjab (reporting 1.4 lakh tonnes) gained more than 90 per cent each over their preceding year's production. West Bengal showed an increase of 45 per cent at 1.64 lakh tonnes. Among the major losers were Madhya Pradesh (a decline of 13.5 per cent to 2.0 lakh tonnes) and Assam (a decline of 13.3 per cent to 1.24 lakh tonnes).

2.16 Production of sugarcane showed a marginal decline of 0.3 per cent to 173.6 million tonnes (cane) in 1984-85. This was entirely due to shrinkage of area under the crop by 3.8 per cent to 2.99 million hectares. Uttar Pradesh, which contributes around 41 per cent of the total sugarcane output, showed a fall of 9.7 per cent in output to 70.6 million tonnes and 9.0 per cent in area to 1.54 million hectares. In Tamilnadu, however, the production increased by over 50 per cent to 20 million tonnes, due to higher yield rates as well as an increase of 26.3 per cent in area.

2.17 After a poor crop of 6.39 million bales (of 170 kgs. each) in 1983-84, which was the lowest since 1977-78, the production of cotton recorded a new peak at 8.46 million bales in 1984-85. The increase of 32.4 per cent in production occurred despite a decrease of 3.7 per cent in the area under the crop. Among the major producing states, Gujarat recorded an increase of 43 per cent at 20.7 lakh bales, Maharashtra an increase of 80 per cent at 14.7 lakh bales, and Punjab showed an increase of 75 per cent at 12.4 lakh bales. In Andhra Pradesh, however, cotton production declined by 3.3 per cent in 1984-85 to 9.9 lakh bales.

2.18 The combined production of jute and mesta in 1984-85 increased by 3.3 per cent to 7.98 million bales (of 180 kgs. each). Production of jute increased by 5.5 per cent to 6.68 million bales and of mesta declined by 7 per cent to 1.3 million bales. West Bengal and Orissa reported increased production of jute while Assam and Bihar showed decreases, even though area under the crop increased in all the four States. The total area under jute increased in 1984-85 by 12.4 per cent to 8.5 lakh hectares. Area under mesta also showed an increase from 2.9 lakh hectares in 1983-84 to three lakh hectares in 1984-85. All the leading mesta-growing States reported lower production during 1984-85, with the exception of Orissa which reported an increase of 20.7 per cent at 2.59 lakh bales compared to 2.15 in 1983-84.

Prospects for 1985-86

Monsoon Rainfall

2.19 An area-weighted all-India average @ of rainfall for the monsoon season (June—September) indicates that in overall terms, the monsoon in 1985 was slightly worse than in 1984 and substantially poorer than the excellent monsoon in 1983. However, a single index aggregated for the entire country does not reveal the regional differences in rainfall that are extremely important in determining output of the various crops. Using the meteorological sub-division as a unit, the following table shows that there are considerable regional variations in rainfall and that if the 1984 rainfall pattern was considered unfavourable, the 1985 monsoon was no better.

TABLE 2.2
Monsoon Rainfall
(June 1—Sept. 30)
(Number of meteorological sub-divisions)

	1981	1982	1983	1984	1985*
Excess/Normal .	28	23	32	26	26
Deficient/Scanty .	7	11	3	7	9
No data . .	0	1	0	2	0
TOTAL . .	35	35	35	35	35

@The index is obtained by aggregating the average rainfall for each meteorological sub-division, using the weightage of area under the predominant monsoon crop, paddy, in each sub-division.

2.20 However, levels of precipitation are not the only important consideration, as the timing and duration of the rainfall influence yields a great deal. The monsoon started well in the first week of June in Kerala and moved steadily up to parts of Maharashtra by the end of the month. During this period rainfall was above 'normal'. There was a slackening in the monsoon's activity in July but the shortfall was made up in the first fortnight of August. Thereafter, however, there was a prolonged period of very low rainfall. Vidharbha and Marathwada reported cumulative monsoon rainfall deficiency of 26 and 25 per cent respectively.

2.21 Gujarat and Rajasthan had very poor rainfall.

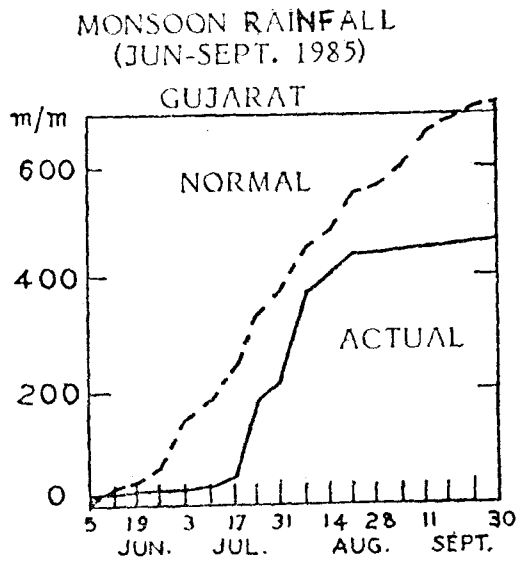


FIG-1

In Gujarat, the start of the monsoon rainfall was delayed by four weeks. From the middle of July to the third week of August, however, there was good rainfall activity. After the third week of August, however, the State experienced extreme drought with the premature withdrawal of the monsoon. Post-monsoon rainfall in the first fortnight of October came a little too late to make any worthwhile impact on the already drought-affected fields. In Saurashtra, the groundnut bowl of the country, monsoon rainfall was deficient by 49 per cent and the deficiency in the remaining parts of the State was 28 per cent. The main crops affected were bajra and other coarse cereals as well as groundnut and cotton.

2.22 The monsoon rainfall pattern in Rajasthan was very similar to that in Gujarat and the monsoon period ended with an overall deficit of 44 per cent in the western and 37 per cent in the eastern parts of Rajasthan.

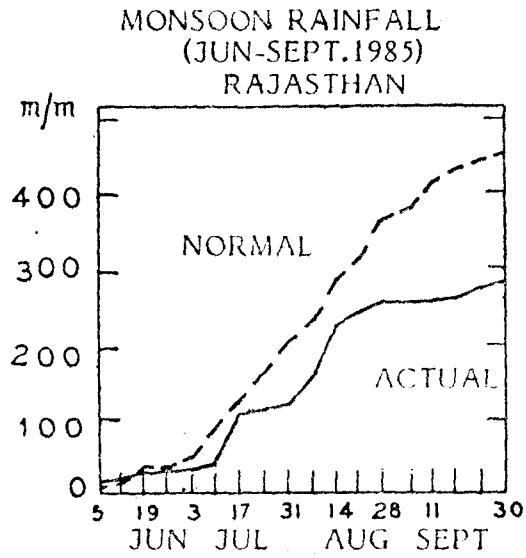


FIG-2

As the State lies in the low rainfall belt of the country, such a heavy rainfall deficit led to a situation of extreme drought. In the previous year, 1984, area under the main kharif crop of the State, bajra, had declined by 14 per cent to 4.3 million hectares. The production of bajra declined by 36 per cent to 1.6 million tonnes in 1984. Owing to the drought in 1985, area and production of bajra as well as other rainfed crops are likely to suffer further decline.

2.23 Areas outside Rajasthan, Gujarat, parts of Maharashtra, Andhra Pradesh and Karnataka generally received normal monsoon rainfall. The area coverage under the paddy has been generally good and the spread of high-yielding varieties is reported to have gathered momentum. The paddy crop in the northern and eastern belts of India is expected to have benefited considerably from the rains during the first fortnight of October. Other determinants of the 1985 kharif harvests show a more promising picture. Fertiliser application in kharif crops shows an increase of around 10 per cent over the previous kharif. The increase is substantial, though less spectacular than the 19 per cent increase in the 1984 kharif over the 1983 kharif. Irrigation facilities have been expanded to cover an additional area of around 2.5 million hectares. Coverage under HYV and other improved seeds has further increased. Seed minikits and minikits for oilseeds and pulses (containing seeds, fertilisers, rhizobium culture, etc.) meant for small and marginal farmers have been distributed to selected beneficiaries in all the blocks of the country.

2.24 Taking an overall view, the kharif target of 27.7 million tonnes for coarse grain production is unlikely to be achieved. Conditions have also not

been favourable for the rainfed areas under pulses and oilseeds. On the other hand, prospects appear quite promising in the irrigated areas and the regions outside the drought-affected areas of Rajasthan, Gujarat and the central region comprising Vidharbha, Marathwada and parts of northern Karnataka. The kharif paddy crop may show an improvement and the loss suffered in 1984 kharif may be made up in spite of the adverse monsoon. In the case of oilseeds, too, production of soyabean may show a further increase over the spectacular gains in the past three years. Jute and mesta, which have been attracting additional area in the eastern region due to high prices, are likely to set output record in 1985-86. Cotton production may be around the record achieved in 1984-85, ensuring comfortable domestic supplies.

Post-monsoon Rainfall

2.25 Rabi prospects are encouraging. Heavy rains in late-September and early October provided good precipitation for soil preparation and rabi sowing was generally carried out under favourable conditions. Moreover, there was widespread rains covering virtually all the major rabi areas during mid-December 1985. This rain was particularly good for the early growth of rabi crops and obviated the need for the first irrigation in the areas where wheat was sown well in time. The overall post-monsoon (October—December) rainfall has been very good in 1985.

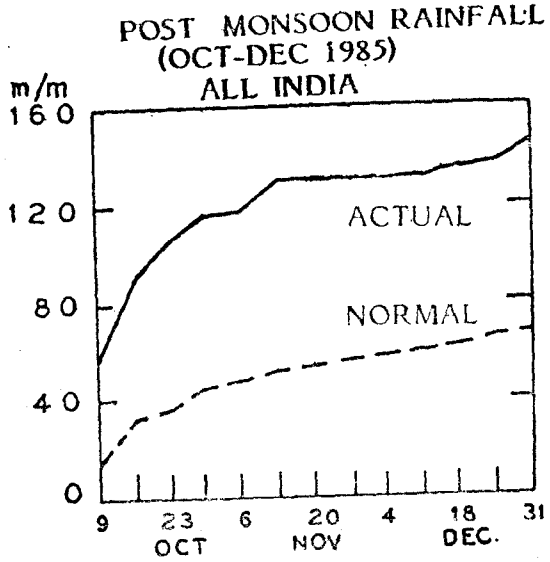


FIG-3

From the very beginning, actual was far above the 'normal' post-moonsoon rainfall. The cumulative area-weighted average of all-India rainfall during October—December, 1985 was 121.21 per cent above the normal.

2.26 The winter rains in the month of January 1986 have been deficient/scanty in 22 out of 35 meteorological subdivisions. Only the peninsular and parts of central and eastern India experienced good precipitation. However, the level of humidity in the atmosphere was quite good due to easterlies, and the rainfall deficiency is not likely to have much adverse impact. If the subsequent winter weather is favourable, the rabi foodgrains production may well set a new record, over the 63.1 million tonnes achieved in 1983-84. The main rabi oilseed crop, rapeseed-mustard, may show a further increase in output after attaining record levels in 1983-84 as well as in 1984-85.

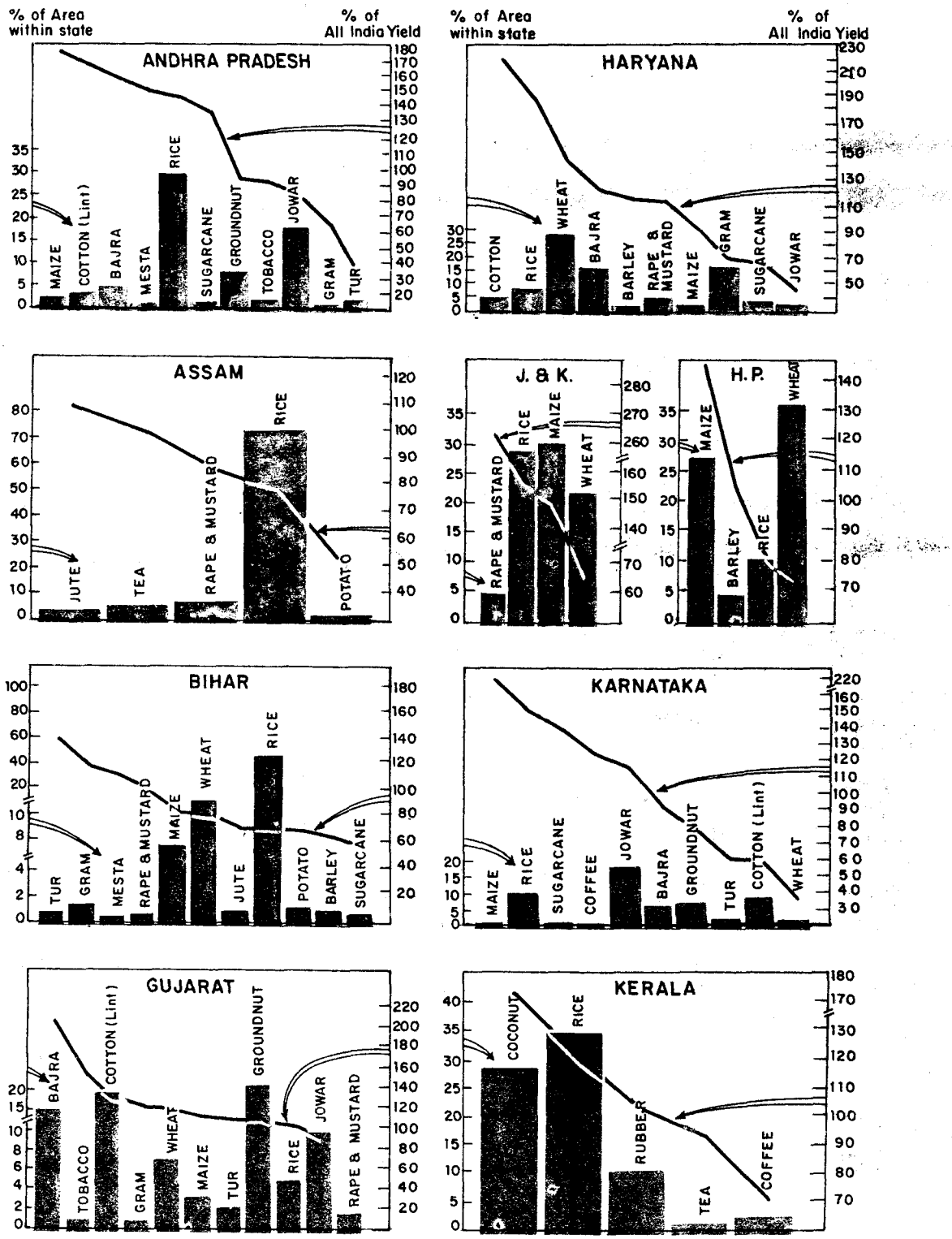
Cropping Pattern

2.27 Despite the continued impressive performance of agriculture, there are signs of emerging imbalances in the cropping pattern. The output of certain crops grew at a faster rate than, and sometimes at the expense of, other crops. A number of factors influence the changing cropping pattern, including differential rates of technological change among crops, the spread of irrigation leading to area shrinkage of dry crops, market intervention and support by the Government in certain crops but not in other crops, and, perhaps most significant of all, the changing relative prices between different crops.

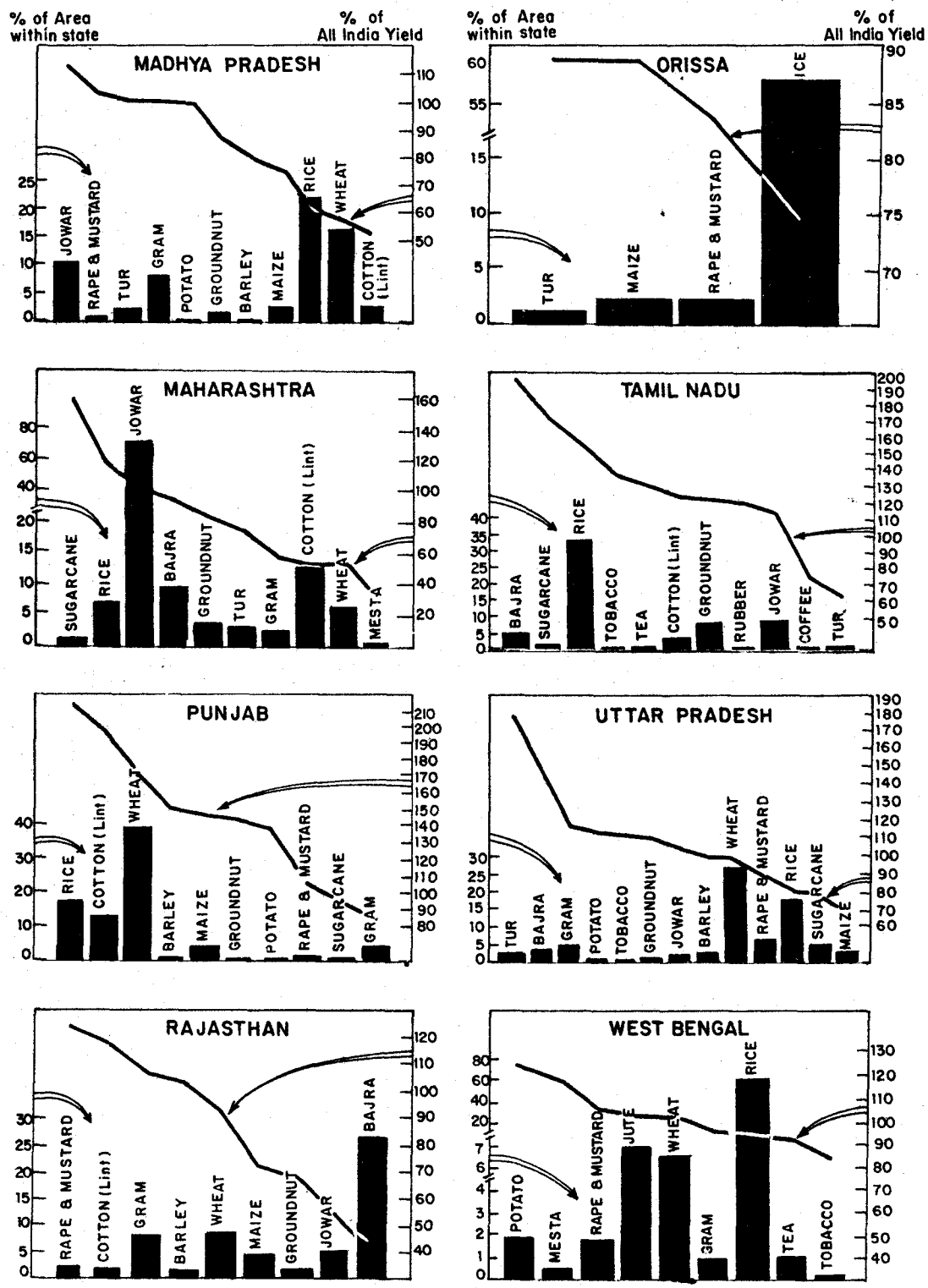
2.28 An indicator of the emerging imbalance in the supply of different crops is the shortfall in domestic production of edible oilseeds and sugarcane, necessitating substantial imports of edible oils and sugar, while at the same time stocks of wheat, rice and jute rise about the desired levels. Clearly, it is not feasible to continue sizeable imports of edible oils over a long period and efforts need to be made to encourage domestic production of oilseeds.

2.29 In any attempt to redress cropping pattern imbalances, regional differences in yields and costs of production need to be taken into consideration. A State level study of cropping pattern by the National Council of Applied Economic Research indicates that, at least with respect to yields per acre, in several States the cropping pattern does not match the States' comparative advantage in yields. Crops for which the conditions are most suitable are under-produced and there is over-production of crops which are not suitable (Charts 4 and 5). While a number of agronomic factors exist which prevent the substitution of one crop for another and several other factors, besides yields need to be taken into account in deciding on an appropriate cropping pattern, nevertheless it is clear that serious regional distortions have emerged.

COMPARATIVE ADVANTAGE IN YIELDS IN DIFFERENT STATES



COMPARATIVE ADVANTAGE IN YIELDS IN DIFFERENT STATES



These distortions have developed over a period of time and will require a phased programme over the next few years to encourage improvements in the supply-demand position at the national level for major crops and shifts towards more optimal cropping pattern at the regional level.

Agricultural Inputs

2.30 In the Seventh Five Year Plan agricultural production is targeted to grow at an annual rate of 4 per cent. Land stock, seeds, irrigation, manure, fertiliser, pesticides, insecticides and agricultural implements and machinery are the basic input requirements in agriculture. Obviously, it would be unrealistic to expect any significant increase in the net sown area over the current level of around 143 million hectares. It is estimated that, at the most, a total area of 15 lakh hectares may be reclaimed during the next five years through land reclamation and development programmes. Another 4 lakh hectares may be reclaimed through soil and water conservation measures. Not all the reclaimed land would, however, become available for raising agricultural crops. The addition to net sown area during the Plan is unlikely to exceed one million hectares. Planned increases in agricultural production in the coming years will, therefore, have to be obtained through raising yields per hectare. This will involve more intensive use of inputs like improved/high-yielding variety (HYV) seeds, manure, chemical and bio-chemical fertilisers and plant protection measures. Larger areas have to be brought under improved farm practices including water management and drainage, timely sowing, and the optimal cropping patterns have to be evolved. Also, fresh irrigation potential has to be created and, more importantly, the rate of utilisation of the potential has to be improved. Additional irrigation and evolution of quick maturing crops would make it possible to raise gross cropped area, without increasing the net sown area. Most importantly, major increases in yields can be expected from the improvement of degraded and waste lands. A wastelands development programme needs to be launched on a massive scale.

Seeds

2.31 The rapid expansion of the HYV seeds is the mainstay of the green revolution and the programme continues to be an important plank of the country's agricultural strategy. The following table shows the recent trends in the adoption of HYV seeds.

TABLE 2.3

Trends in the coverage of HYV Seeds

(Percentage of the HYV area to the total area under the crop)

	1982-83	1983-84	1984-85
Paddy	49.1	52.7	60.4
Wheat	75.4	78.5	83.1
Jowar	26.8	32.3	32.5
Bajra	43.1	45.8	49.1
Maize	29.8	32.2	36.2
TOTAL*	49.9	53.7	58.7

*Of the five major cereal crops.

2.32 The above estimates may somewhat exaggerate ground level achievements because of the slow pace of seed replacement in the HYV areas. Even so, except for wheat and, to some extent, paddy and bajra, the coverage under HYV seeds is still very low. The rate of growth in the distribution of quality seeds has considerably slackened in the past two years :

TABLE 2.4

Distribution of Certified/Quality seeds

	Lakh quintals	Percentage increase over the preceding year
1981-82	29.8	19.2
1982-83	42.1	41.3
1983-84	45.0	6.9
1984-85	48.5	7.8

2.33 This slow-down in the rate of increase in the distribution of certified/quality seeds is a very disturbing development and has to be corrected. It is necessary to find the weaknesses in the existing programmes for the establishment of additional seed processing plants, proper storage facilities (including air-conditioned storage), seed laboratories, certification agencies and for the development of seed farms. It is estimated that more than 120 additional seed processing plants of 1,000 tonnes capacity each are required to be established during the next five years to meet the seed requirements flowing from any realistic assumptions of replacement percentage. Each plant costs upwards of Rs. 30 lakhs. Considerable funds would need to be allotted to improve the production and distribution of certified seeds.

Irrigation

2.34 The expansion of irrigation potential and its optimum utilisation occupies a high priority in the programme of agricultural development. Over the decade 1972-73 to 1982-83, the irrigated area under oilseeds increased by 138 per cent, wheat by 58.5 per cent, sugarcane by 48 per cent and cotton by 35 per cent. Area under irrigated barley has, however, declined by 42 per cent as cultivators switched over to alternative, more remunerative crops. Total area under barley declined from 2.4 million hectares in 1972-73 to 1.5 million hectares in 1982-83. The bulk of the area under sugarcane (79.2 per cent) and wheat (72.4 per cent) is irrigated. Irrigation is available to 46.5 per cent of the area under barley and 41.9 per cent of the area under paddy.

TABLE 2.5

Irrigated Area Under Selected Crops

	Million hectares		Percentage change over the decade	Irrigated Area as percentage of total area	
	1972-73	1982-83		1972-73	1982-83
Rice	14.42	16.07	+11.4	39.1	41.9
Wheat	10.77	17.07	+58.5	57.7	72.4
Maize	1.09	1.22	+11.9	18.8	21.3
Barley	1.20	0.70	—41.7	48.8	46.5
Jowar	0.55	0.61	+10.9	3.3	3.7
Bajra	0.56	0.66	+17.9	4.5	6.0
Oilseeds	1.07	2.55	+138.3	7.2	14.9
Cotton	1.72	2.32	+34.9	21.0	29.5
Sugarcane	1.88	2.79	+48.4	75.0	79.2

2.35 Table 2.6 shows the progress achieved in the creation of overall irrigation potential and its utilisation during the Sixth Plan.

TABLE 2.6

Irrigation Potential and its Utilisation

Million hectares

Year	Major & Medium Schemes		Minor Schemes		All Schemes	
	Potential	Utilisation	Potential	Utilisation	Potential	Utilisation
1979-80	26.6	22.6	30.0	30.0	56.6	52.6
1980-81	27.3	23.7	31.4	31.4	58.7	54.1
1981-82	28.2	23.2	32.8	32.8	61.0	56.0
1982-83	29.1	24.0	34.2	34.2	63.3	58.1
1983-84	30.0	24.6	35.6	34.0	65.6	58.6
1984-85	30.5	25.3	37.4	35.2	68.0	60.5

NOTE : Prior to 1983-84 utilisation and creation of irrigation potential in minor irrigation were taken as the same.

2.36 The irrigation potential created over the years has not been fully utilised. In 1979-80, the unutilised potential created under major and medium schemes was about 4 million hectares. The gap increased to 5.2 million hectares in 1984-85. The non-utilisation of the created potential occurs mainly due to delays in the construction of field channels and drains and in land levelling/shaping. Excessive withdrawal of water by the upstream beneficiaries is also an important factor hindering the overall utilisation of the potential created by an irrigation scheme.

2.37 Command Area Development Programme (CADP) was taken up with a view to narrowing the gap between the potential created through the major/medium irrigation projects and its ground-level utilisation. The basic objective of the CADP is to maximise productivity in the irrigation command areas through an integrated approach to water and crop management. The programme broadly covers on-farm development works including construction of field channels and field drains, land shaping wherever necessary, and the introduction of rotational supply of water to ensure equitable and assured distribution of water to individual farm holdings. Anticipated results have not been achieved under the CADP, largely because of the lack of co-ordination between the functionaries responsible for water release and control and those in charge of extension and supply of agricultural inputs. The production potential indicated in the demonstration farms is much higher than the actual productivity in the command areas. It is envisaged that during the Seventh Plan greater participation of the farmers in the various activities of the CADP would be encouraged through the formation of farmers' co-operatives. In addition to the responsibility for distribution of water within their jurisdiction, these co-operatives may take up the responsibility of providing inputs and of marketing facilities for output. Research institutes may also be involved in working out the area-specific optimum cropping patterns in each major command area, in the context of the availability of water, soil and weather parameters, cultivators' home requirements and the marketing outlets. It may also be useful to organise training courses for farmers in on-farm water application and avoidance of water-logging and drainage problems. Similarly, the irrigation staff should also be given training in water management and rotational water supply for reducing operational losses and to ensure equitable and timely distribution of available water supplies.

2.38 It is also necessary to undertake the renovation and modernisation of the existing irrigation works whose irrigation potential has been eroded

owing to a lack of regular maintenance. This activity merits higher priority over the starting of new major/medium irrigation works and it is necessary that adequate funds are ensured for this purpose in State budget. Advance planning in making available financial resources, manpower, materials and equipment and the close monitoring of the progress of modernisation need to be given high priority. In most States gross receipts from irrigation works are insufficient to cover even working expenses and this could be a major factor in the neglect of existing irrigation works. It is observed that the majority of existing projects have not received maintenance grants conforming to the recommendations of the successive Finance Commissions.

Fertilisers

2.39 Along with the adoption of HYV seeds, the consumption of chemical fertilisers has also risen impressively. With the rise in the base level the percentage annual growth has, however, tended to slow down. During the Sixth Plan, the rate of increase in fertiliser consumption has generally fluctuated between 5 and 10 per cent, though over the five years as a whole, the consumption increased by an impressive 56.1 per cent, largely due to the spurt of 20.7 per cent noticed in 1983-84 (Table 2.7). The Indian fertiliser consumption scene, however, is still characterised by geographical and cropwise concentration.

TABLE 2.7

Offtake of Fertilizers

(Lakh tonne of nutrients)

Year	Nitrogenous	Phosphatic	Pottasic	Total NPK	Percentage increase*
1979-80	35.0	11.5	6.1	52.6	2.7
1980-81	36.8	12.1	6.2	55.2	4.9
1981-82	40.7	13.2	6.7	60.6	9.9
1982-83	42.2	14.4	7.3	63.9	5.3
1983-84	52.0	17.3	7.8	77.1	20.7
1984-85	54.8	18.9	8.4	82.1	6.5
1985-86 (Targets)	63.5	22.0	10.0	95.5	16.5

*In total consumption over the preceding year.

TABLE 2.8

Fertilizers : Production, imports and subsidies

Year	Production ('000 Tonnes)	Imports ('000 Tonnes)	Subsidies (Rs. crores)		Total
			on imported fertilizers	on domestic production	
1979-80	2983	2005	282	321	603
1980-81	3005	2759	335	180	515
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	632	1200	1832
1985-86*	5734	N.A.	601	1450	2051

*Estimated.

2.40 Table 2.8 underlines the steep escalation in fertiliser subsidies in the recent years, reaching an estimated level of over Rs. 2,000 crores in 1985-86. In order to prevent the continued escalation of this drain on resources, fertiliser prices were increased in January, 1986. With these increases, fertiliser prices have been brought to the levels prevailing in 1981-82, i.e. before the price reductions effected in 1983. Although fertiliser use is responsive to price changes, it would be erroneous to conclude from this that continuous price reductions in real terms are required from year to year in order to sustain the growth in fertiliser use.

2.41 The importance of promotional agencies like extension workers, credit institutions and distribution agencies is demonstrated by a slow but steady growth of fertiliser use on unirrigated areas under virtually all crops. In Gujarat, for example, even though the irrigated area is less than 20 per cent, it has the highest level of fertiliser consumption per hectare among all States and Union Territories with irrigation levels of upto 40 per cent. Relatively faster growth of fertiliser use on unirrigated areas of Gujarat is mainly due to the efforts of the State's fertiliser promotion machinery and the pressure from the supply side, especially from the fertiliser factories located in the State.

Pesticides

2.42 The present use of pesticides is estimated at around 55,000 tonnes per annum. More than half of all the chemical pesticides used in agriculture is for cotton. Rice and fresh vegetables/fruits also receive some pesticides application. Oilseeds, pulses and sugarcane, though quite susceptible to damage by pests, nevertheless, receive very little protection. Recent increases in the use of plant protection measures on rape and mustard crops have led to increased yields and reduced uncertainties, and have made these

crops much more remunerative. There is a considerable scope for expanding the use of plant protection chemicals, particularly in the case of pulses and oilsced crops. Pesticides must, however, be handled with extreme care and used judiciously.

Crop Insurance

2.43. A crop insurance scheme has been introduced from the 1985 kharif season. The scheme provides financial support to insured farmers in the event of a crop failure. All the farmers availing crop loans from co-oeprative credit institutions, commercial banks and regional rural banks for raising cereal crops or for raising dry land crops i.e. pulses and oilseeds, are eligible for insurance to the extent of 150 per cent of the crop loan. The premium rates are 2 per cent of the sum insured in the case of rice, wheat and millets, and 1 per cent in the case of oilseeds and pulses. Small and marginal farmers are entitled to a subsidy of 50 per cent on the premium payable by them under the scheme. Moreover, the amount of premium payable is added to the crop loan sanctioned to the farmers intending to obtain the insurance cover. An 'area approach' has been adopted to determine the indemnity entitlement of the insured farmers. Thus, if the actual average yield per hectare of the insured crop for the defined area falls short of the 'threshold yield' (taken to be 80 per cent of the 5-year average yield of the defined area), all the insured farmers in the area become entitled to indemnity to the extent of such shortfall, irrespective of the actual yield per hectare obtained by the individual insured farmer.

2.44 Sixteen States and three Union Territories have indicated their agreement to implement the crop insurance scheme. Actual proposals during 1985 kharif season, have, however, come from only 12 States and one Union Territory, covering a total area of about 39.5 lakh hectares with 22.6 lakh farmers. The total sum insured under there proposals is around Rs. 524 crores. Thus, the initial coverage under the crop insurance scheme is not insignificant, though greater participation of farmers could have been secured in view of the obviously attractive features of the scheme. Perhaps, many farmers are unaware of the scheme due to its inadequate publicity, or they might be having reservations on its specific aspects. A high-powered committee has been set up in the Ministry of Agriculture to examine the various suggestions for modifications in the crop insurance scheme.

2.45 As farming is a high-risk occupation in India, particularly in the rainfed areas, it is essential that every effort be made to expand the coverage under the crop insurance scheme. In the event of a crop failure, crop insurance restores the farmers' credit eligibility for the next crop season. Agencies extending credit for farming operations should also find the crop insurance scheme very helpful in reducing the currently high incidence of repayment defaults, at least to the extent that such defaults are for reasons of crop failures. Indeed, the combination of crop insurance and the regime of minimum support prices can play a powerful stabilising role in Indian agriculture. The crop insurance scheme can be modified in some aspects to provide incentives for adoption of modern technologies and the use of purchased inputs.

Rural Credit

2.46 The main sources of institutional credit to the agricultural sector are commercial banks, regional rural banks and co-operative banks. According to the terminal year target under the Sixth Plan, rural credit was to reach the level of Rs. 4,000 crores for production credit and Rs. 5,700 crores for investment credit by the end of 1984-85. The anticipated achievement by these institutions was Rs. 3,860 crores and Rs. 7,353 crores respectively.

TABLE 2.9

Rural Credit: Targets and Achievements, 1984-85

(Rs. crores)

Type of Credit	Target	Anticipated Achievement
Production Credit . . .	4,000	3,860
Short term		3,610
Medium term . . .		250
Investment Credit (Long Term)	5,700	7,353

2.47 The disbursements of credit by co-operatives during 1984-85 is estimated at Rs. 3,250 crores, consisting of Rs. 2,500 crores of short term and Rs. 750 crores of medium and long term loans. In the case of commercial banks, according to provisional estimates, the credit for agriculture amounted to Rs. 7,657 crores (outstandings) as on 31 March, 1985 compared with Rs. 6,144 crores a year ago. The Regional Rural Banks (RRBs) network has also been expanded and at the end of 1984-85 there were 183 such banks. The agricultural loans issued by the RRBs and outstanding at the end of March 1985 amounted to Rs. 673 crores as against Rs. 509 crores at the end of June 1984.

2.48 The National Bank for Agricultural and Rural Development (NABARD) provides refinance support to banks for supplementing their resources for increasing their agricultural advances. Refinance

commitments of NABARD in 1984-85 increased to Rs. 1,233 crores, as against Rs. 1,170 crores during the previous year. Its refinance disbursements to the banks under schematic lendings increased from Rs. 892 crores in 1983-84 to Rs. 1,061 crores in 1984-85. Short term credit limits sanctioned to the State Co-operative Banks for seasonal agricultural operations aggregated Rs. 1,233 crores during 1984-85 as against Rs. 1,245 crores in 1983-84. However, the utilisation of the limits was higher during 1984-85 at Rs. 868 crores, as against Rs. 803 crores in the previous year. The RRB's were sanctioned credit limits aggregating Rs. 243 crores during the year 1984-85 for short-term and medium-term lending against Rs. 271 crores sanctioned in the previous year.

TABLE 2.10

Agency-wise and Purposewise Distribution of NABARD Refinancing

(Rs. crores)

	1983-84	1984-85
Agency		
State land development banks	314	314
Commercial banks	450	570
Regional rural banks	87	140
State co-operative banks	41	37
TOTAL	892	1061
Purpose		
Minor Irrigation	312	335**
Land Development	29	43
Farm Mechanisation	204	170
Plantation/Horticulture	38	47
Storage	3	6
Market Yards	6	6
Forestry	5	2
IRDP	233	354
Others	62	98
TOTAL	892	1061

**Inclusive of the amount provided to State Electricity Boards (Rs. 18 crores), SPA Programme (Rs. 74 crores) and Massive National Programme of assistance to small and marginal farmers (Rs. 23 crores).

2.49 The high level of overdues of banks has been a matter of concern. This has affected, to some extent, the lending capacity of banks. The percentage of overdues to demand of the banks is indicated in Table 2.11.

TABLE 2.11

Overdues of Rural Credit, 1984-85

Type of Banks	Percentage of overdues
Land development banks	40.00
Central cooperative banks	40.63
Commercial banks	53.00*
Regional rural banks	49.87

(*On the basis of sample data).

Foodgrains

Rice

2.50 During the Sixth Plan, the average annual production of rice was 54.55 million tonnes. This marked an increase of 13.9 per cent over the average annual production of the preceding five years. The annual increase during the Plan works out to around 2.8 per cent. This marks an improvement over the annual growth rate of about 1.9 per cent during the decade of 1970s, but is far below the target of the compound annual growth rate of 4.2 per cent.

2.51 The main thrust to the increased production of rice occured in the northern belt comprising Punjab, Haryana and western Uttar Pradesh. During 1970-71 to 1983-84, rice production in this region grew at a compound annual rate of 10.21 per cent which reflected the combined effort of growth of 5.31 per cent in yield rates and 4.56 per cent per annum in area. In the southern region, comprising the States of Andhra Pradesh, Karnataka, Tamil Nadu and Kerala, the growth rate in production was a poor 1.77 per cent. The compound growth rate was a most unsatisfactory 0.92 per cent per annum in the eastern region comprising eastern Uttar Pradesh, Bihar, West Bengal, Orissa and Assam. The growth rate of yield in the eastern region was 0.72 per cent and of area 0.20 per cent. The most recent trend is towards a decline in the area under paddy, especially in the eastern region. However, there has been an impressive increase in yield rates, the eastern region showing a better performance than the All-India average (Table 2.12). Even so, the current yield rates in the eastern region are about 22 per cent lower than the all-India average. In comparison to Punjab, the yield rates in the eastern region are lower by 64.5 per cent.

TABLE 2.12

Recent Trends in Rice : Eastern Region[1] and all-India

	1978-79[2]	1981-82[2]	1983-84[2]
Trends in Area (Million hectares)			
All-India	39.76	40.09	39.75
Eastern Region	20.74	20.63	20.17
Percentage change over the preceding period :			
All-India		+0.83	—0.85
Eastern Region		—0.53	—2.23
Trends in yields (kgs. per hectare)			
All-India	1,244	1,241	1,349
Eastern Region	1,030	961	1,052
Percentage change over the preceding period :			
All-India		—0.24	+8.70
Eastern Region		—6.70	+9.47

[1]The data for Eastern Region in this table relate to the States of Bihar, West Bengal, Orissa, Assam and Uttar Pradesh.

[2]The data represent three year averages for the periods ending 1978-79, 1981-82 and two years' average for the period ending 1983-84.

2.52 A study group set up by the Planning Commission has worked out the potential for rice productivity in the eastern region using two alternative methods. In the first approach, the results of experiments on cultivators' fields, specially obtained from Indian Agricultural Statistics Research Institute for the study group, have been made use of. In the second approach the States of the region have been divided according to agro-climatic zones and in each zone the average yield is compared with the highest yield obtained in a district falling in that zone. Following the first approach it is estimated that the yield potential in the eastern region as a whole is 400 per cent over the actual yields, as against the corresponding figure of 244 per cent for the rest of the country. Through the second alternative it is seen that the eastern region has a potential of a further 25 per cent, which can be immediately achieved by providing infrastructure and inputs at par with the best district in each agro-climatic zone of the region. Even a partial realisation of the potential will add significantly to the all-India production of rice, as the eastern region accounts for over 50 per cent of the all-India area under the crop.

Wheat

2.53 Average annual production of wheat during the Sixth Plan was 41.25 million tonnes. This marked an increase of 31.4 per cent over the average production of the preceding five years. This is largely due to higher yields per hectare. Wheat is now available in abundance. Procurement price of wheat has, nevertheless, been raised from year to year. The price of Rs. 157 per quintal applicable for the 1984-85 crop has been further raised to Rs. 162 for 1985-86 crop, compared to Rs. 117 for the 1979-80 crop. These prices have the attributes of minimum support price as the producer of wheat is completely free to sell his produce to the traders instead of the official procurement agencies.

2.54 In 1984-85, Punjab produced over 10 million tonnes of wheat, obtaining an average yield of 3.29 tonnes per hectare. The all-India average yield is 43 per cent lower at 1.87 tonnes. Area under wheat in Punjab, however, constitutes only 13 per cent of the all-India acreage. A substantial increase in the all-India yield can be obtained by launching special efforts in the areas that currently lag behind. The eastern region, comprising eastern Uttar Pradesh, Bihar, West Bengal and Orissa, offers attractive possibilities. Already, the productivity growth of wheat has been, in general, higher than that of rice in the eastern region due to better coverage under irrigation and HYV.

Pulses

2.55 Per capita daily availability of pulses has come down from around 70 grams in the fifties to around 40 grams in the current decade. The production level of 13 million tonnes achieved in 1975-76 has not been reached since then. Annual average production during the Sixth Plan was 11.82 million tonnes, as against the average of 11.42 million tonnes per annum in the preceding five years. Marginal, dry land is generally used for pulses, with the minimal application of modern inputs. Weather-induced fluctuations in the area under pulses are consideraable, as are the fluctuations in yield. This leads to sharp price fluctuations which, in combination with output uncertainties, makes this a high risk crop to cultivate.

2.56 The Sixth Plan average annual area under pulses at 23.08 million hectares recorded a decline of 1.24 per cent over the similar average of the preceding five years. The minimum support prices of the various pulses have been raised by 60-70 per cent between 1979-80 and 1984-85. During the same period, the procurement price of wheat has been raised by only 34 per cent and of paddy (common variety) by 44 per cent. However, the improvement in relative prices was obviously inadequate as farmers did not bring additional area under pulses. Since uncertainty is a major factor against the cultivation of pulses, the coverage of pulses under the scheme of crop insurance introduced since the 1985-86 kharif should help improve conditions for expansion in area under the crop and may induce a higher level of investment and input application.

Coarse cereals

2.57 Like pulses, the area under coarse grains, too, has been declining with the spread of irrigation. In fact, the decline in area under coarse grains has been sharper. During the Sixth Plan period, the annual average area under coarse grains was 2.88 per cent less than the similar average of preceding five years, compared with the area shrinkage of 1.24 per cent for pulses over the similar period.

Edible Oilseeds

2.58 The major edible oilseeds cultivated in the country are groundnut, rapeseed and mustard, sesamum, nigerseed, safflower, soyabean and sunflower seed. The total production of these seven edible oilseeds averaged 8.2 million tonnes per annum during the first half of the Seventies (1970-71 to 1974-75). The annual average production for the next five years was 8.84 million tonnes. Thus, the production increased by only 7.7 per cent in a period of five years. The increase was wholly inadequate in the context of the rising demand. During the five years ending 1984-85, the average production of the seven edible oilseeds increased by 20.8 per cent to 10.68 million tonnes per annum. Although better than the poor performance in the preceding five years, it is still far short of requirements.

2.59 Summing the production of different oilseeds may be somewhat misleading as they do not yield oil in the same proportion. For the purpose of aggregation, it would be more appropriate to express the production of various edible oilseeds in terms of their oil-content. The annual average production of seven edible oilseeds (expressed in terms of oil-content) was 31.3 lakh tonnes during the Sixth Plan (1980-81 to 1984-85), compared to 26 lakh tonnes, being the average annual production during the preceding five years (1975-76 to 1979-80), and 24.5 lakh tonnes during the years 1970-71 to 1974-75.

TABLE 2.13

*Trends in production of edible oilseeds**

('000 Tonnes)

	1970-71 to 1974-75	1975-76 to 1979-80	1980-81 to 1984-85
Average annual production			
(*i*) By weight of seeds	8,203	8,838	10,678
		(+7.74)	(+20.82)
(*ii*) By oil-content .	2,448	2,598	3,128
		(+6.13)	(+20.40)

*The seven oilseeds included are Groundnut, Sesamum, Rape and Mustard, Nigerseed, Safflower, Sunflower and Soyabean.

NOTE : The figures in brackets show the growth over the preceding quinquennium.

2.60 In order to provide edible oils at stable prices for consumers, imports of oil were significantly stepped up since 1976-77. Imports were around 10-12 lakh tonnes per annum upto 1982-83. In the past two oil years (November-October) 1983-84 and 1984-85 imports of edible oils rose markedly to levels of 13—16 lakh tonnes, costing Rs. 1100—1300 crores per annum. At this level, imported oil constituted almost one-half of the total edible oil obtained from domestic sources.

2.61 Clearly, such high levels of imports are unsustainable in the long run. Every effort has to be made to bring about a substantial increase in the domestic production of edible oilseeds and to reduce the magnitude of year-to-year fluctuations in their production. The recent trends in production seem to be encouraging. In 1983-84, a record was achieved when the production of the seven major edible oilseeds reached the level of 11.84 million tonnes. In 1984-85 even though the weather conditions were generally less favourable than in 1983-84, the production increased further to 12.24 million tonnes. The main thrust has been provided by the rabi season crops—rapeseed and mustard and summer groundnut—which are not as highly prone to fluctuations as the monsoon (kharif) season crops. Among kharif crops, soyabean has achieved the fastest percentage growth in recent years, in terms of area as well as production. The expansion has taken place largely in Madhya Pradesh, which has emerged as the 'soyabean State' of the country, recording a very fast expansion of soyabean processing capacity (faster than the rate of growth in soyabean production). Good extension work, a ready market and an attractive price regime have contributed to the rapid strides in soyabean production.

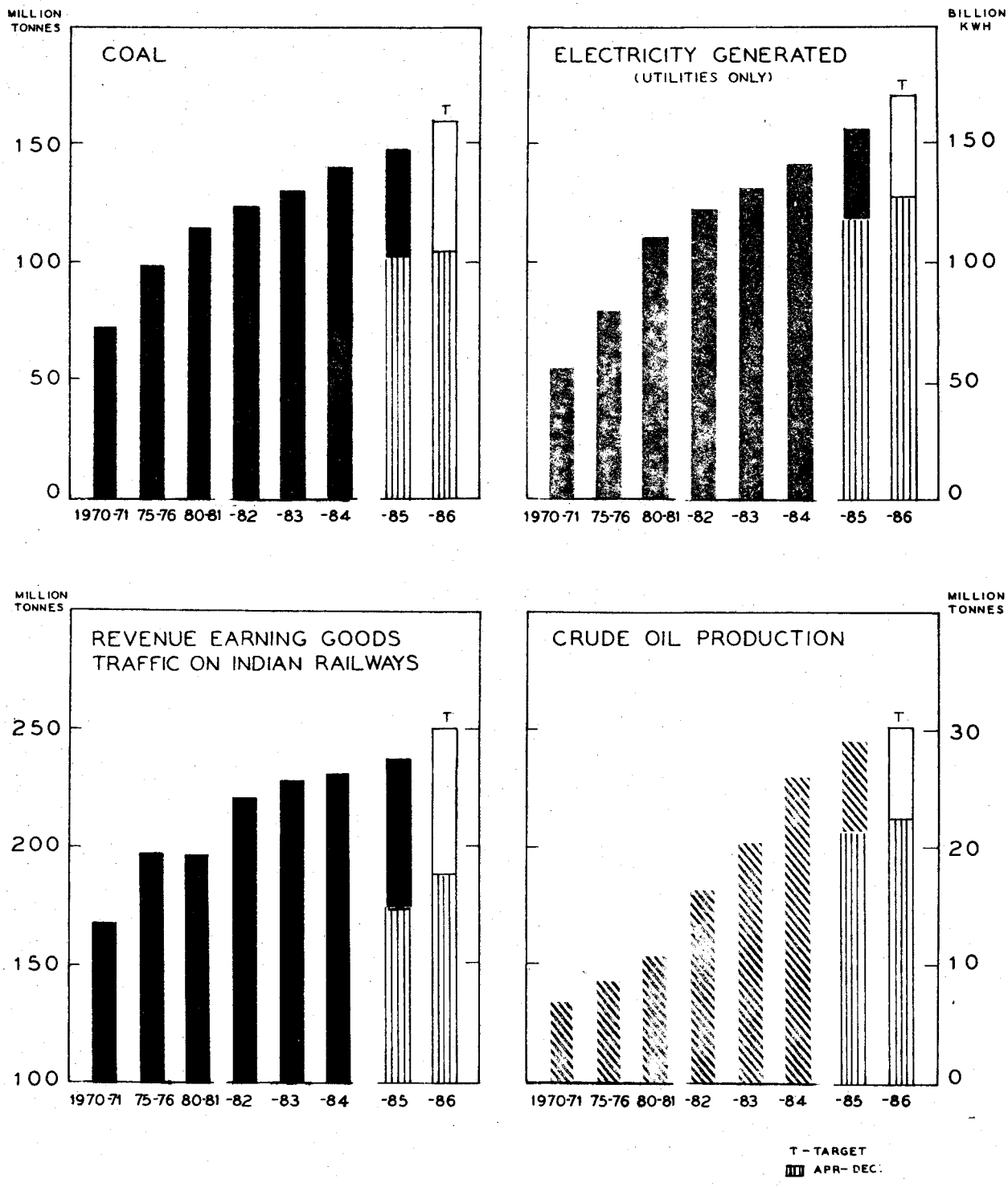
2.62 To sum up, if allowance is made for the exceptionally good monsoon year of 1983-84 relative to 1984-85, the total output of foodgrains in 1984-85 at 146.2 million tonnes should be viewed as a reasonable performance, even though it was 6.2 million tonnes less than the total foodgrains harvested in 1983-84. Production in the rabi season is, clearly, less prone to weather-induced fluctuations than the output of kharif season crops grown in the monsoon period. During the year 1984-85, oilseeds (in aggregate) and cotton achieved record production levels. However, sugarcane failed to recover the ground lost in 1983-84, while jute-mesta achieved only a weak recovery.

2.63 The process of modernisation of Indian agriculture needs to be further speeded up. Considerable growth in the consumption of modern inputs, like chemical fertilisers, HYV and improved seeds and pesti-

cides, testifies to the receptivity of the Indian farmer to new ideas and the willingness to try out modern methods and accept the associated risks, if properly motivated by research and extension workers. In this context R & D and extension services need to be improved further. Problems of water-management and drainage do not seem to have received the desired attention. Further research is required in the field of biological fixation of nitrogen and to increase fertiliser-use-efficiency. Research must also focus on the need to evolve varieties incorporating multiple resistance against pests, diseases and adverse environmental conditions.

2.64 Emerging distortions in the cropping pattern can no longer be overlooked. Broadly, the country's cropping pattern should reflect the overall comparative advantage of regions and take into account the changing demand conditions. A rational price structure has to be evolved for both inputs as well as output in order to bring about the desired changes in the cropping pattern . Strengthening of the marketing infrastructure and adequate arrangements for undertaking price-support purchases need to be given high priority for the effective implementation of the price policy.

PERFORMANCE OF INFRASTRUCTURE SECTORS



MINISTRY OF FINANCE, ECONOMIC DIVISION.

GMDIPMRND-PLN-469/2/Fin/85-86...Chart-6