THE

FIFTH FIVE YEAR PLAN

(1978—83)

SECTORAL PROGRAMMES

(Part II)

PLANNING COMMISSION, GOVERNMENT OF PAKISTAN
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CHAPTER I

AGRICULTURE

PAST PROGRESS

Notwithstanding significant structural changes in the economy of Pakistan over the past two decades of planned development, agriculture still remains the largest sector of the economy in terms of output, employment, contribution to exports. Growth in this sector, therefore, would continue to play a crucial role in any plan of economic development. The agriculture sector grew at an annual rate of about 1.5 per cent during the 1950s. The annual growth during the Second Plan period (1960—65) reached a level of 3.4 per cent and surpassed the population growth rate of 2.6 per cent during the period. This rate of growth was the combined result of institutional changes, increased use of inputs and favourable weather. A rough analysis of the agriculture sector suggests that on a trend basis, the value of crop output grew by about 26 per cent during the five years of the Second Plan (1960—65). Although the contribution of various inputs cannot be easily segregated because of the complex interactions, it is estimated that of the 26 per cent increase, ground water development accounted for about 13 per cent; fertilizer 5 per cent ; plant protection 4 per cent ; improved seeds 3 per cent; and other factors about 1 per cent. During the Third Plan (1965—70), the annual rate of growth in agriculture sector further improved when it reached the level of 4.1 per cent and again surpassed the population growth rate of 3.0 per cent during the corresponding period. It is estimated that the value of crop output increased by 49 per cent during the five years of the Third Plan. Based on a rough analysis, the contribution of various factors to this increase is indicated below :

		Per cent
(*a*)	Water development	18
(*b*)	Fertilizer	14
(*c*)	Improved seeds (including seed based technology) ...	14
(*d*)	Plant protection	1
(*e*)	Others	2
	Total :	49

2. This momentum, however, could not be maintained during the period 1970—78 on account of the following factors :

(*i*) Unusually unfavourable weather and disturbed politico-economic conditions prevailed during 1970—72. The subsequent adverse factors were heavy floods in August-September, 1973, lowest ever canal discharges, Tarbela mishap during 1974-75, followed by damaging floods and untimely and heavy summer and scanty winter rains during 1976. The adverse impact of some of the factors mentioned above continued during the years 1975—77 also. Cotton production during 1975 and 1976 declined substantially due to early and untimely heavy rains and floods, compounded by severe pest attack ;

(*ii*) The water availability increased by about 15 per cent only during 1970—77, against an increase of 23 per cent during 1965—70;

(*iii*) Increase in the cropped area lagged behind the increase in water availability for reasons discussed in the chapter on water; and

(*iv*) There were substantial and frequent increases in the prices of inputs in the international market during 1972—74, particularly in case of fertilizer. Although output prices were also increased, there was inevitably a time-lag before the new relationships could be fully understood and accepted. Frequent adjustments even though they tended to maintain the incentives, had a disturbing effect on production decisions.

3. An assessment of the programmes during 1970—78 *vis-a-vis* the 1969-70 base will not be meaningful or appropriate because of the effect of extraneous factors which are not likely to recur in the same adverse combination. The year 1969-70 was an exceptionally good one with respect to weather and water availability, etc., while the period 1970—78, by and large, faced unusually adverse conditions. The average production during 1970—77 and the estimated actual production for 1977-78 have, therefore, been compared with the average production of 1967—70 (Table 1).

TABLE 1

Average Crop Production during 1967—70 vis-a-vis *Average Production* 1970—77 *and Estimated Actual Production* 1977-78

Crop	Average Production		1977-78 (Estimated) actual	Percentage increase/decrease over 1967—70 (Average)	
	1967—70	1970—77		1970—77	1977-78
	.....000 long tons.....			.....per cent.....	
Total Foodgrains:	**10,020**	**11,430**	**13,115**	**14**	**31**
Wheat ..	6,670	7,586	8,700	14	30
Rice ..	1,946	2,378	2,904	22	49
Maize ..	684	732	808	7	18
Other foodgrains	720	734	703	2	(—)2
Gram ..	497	558	610	12	23
Other pulses ..	191	190	194	(—) 0.5	(—)1.6
Sugarcane ..	21,981	22,940	29,370	4	34
Tobacco ..	122	76	80	(—)38	(—)34
Cotton (lint) ..	518	590	566	14	9
	(2,963)*	(3,369)*	(3,233)*		
Oilseeds:	**1,356**	**1,521**	**1,507**	**12**	**11**
Cotton seed ..	1,037	1,180	1,132	14	9
Rape & Mustard	249	276	290	11	16
Sesamum ..	8	11	12	37	50
Groundnut ..	62	54	71	(—)13	15
Other oilseeds ..			2		

*Figures in thousand bales.

4. The data in Table 1 reveal that except for tobacco and groundnut, the average production of crops was higher for the period 1970—77 compared with the base average production (1967—70). Furthermore, the 1977-78 production of major crops is expected to increase significantly over the base production. It is estimated that foodgrain production would increase to about 13.12 million long tons during 1977-78, against the base, average production (1967—70) of 10.02 million long tons, showing an increase of about 31 per cent. It may be pointed out that cotton production after attaining a level of 4 million bales during the period 1971—73, fell to 3.7 million bales in 1973-74 and further to 3.6 million bales in 1974-75. This reduction has mainly been due to the floods of August, 1973 and the slump in the cotton market during 1974-75. Cotton production further declined to 2.9 million bales in 1975-76 and to about 2.4 million bales in 1976-77. This disastrous decline has been attributed to prevalence of abnormally adverse weather conditions during the sowing time and above average pest infestation during these years. Cotton production for 1977-78 is being estimated at 3.2 million bales, which indicates that the reverse trend in cotton production has been checked. A recent report by FAO Cotton and Rice Productivity Mission (January, 1978) suggests that through strengthening of supporting infrastructure and by adopting improved cultural practices it would be possible to recover higher levels of cotton production.

5. The progress made in greater use of inputs and in improving price support arrangements is discussed below:

(*a*) Availability of the irrigation water at farm gate both from the surface and ground sources increased from 75.50 million acres feet (MAF) in 1969-70 to 86.90 MAF in 1976-77, largely due to commissioning of Tarbela Dam and higher rate of installation of tubewells, both in the private and public sectors. The average water availability during 1977-78 is estimated to have further increased to 91.75 MAF, largely on account of increased availability of water from tubewells;

(*b*) Compared to 1969-70, the total cropped acreage during 1976-77 increased by about 9.3 per cent. There are indications of substantial increase in the cropped acreage during 1977-78 as per details given below :

Items	1969-70	1976-77	1977-78	Percentage increase over 1969-70	
				1976-77	1977-78
	....million acres.....			.....per cent....	
***Kharif*:**					
Irrigated	14.560	16.951	17.241	16.4	18.4
Unirrigated	3.320	3.361	3.255	1.2	(—) 2.0
Sub-total:	17.880	20.312	20.496	13.6	14.6
***Rabi*:**					
Irrigated.....	17.020	17.929	18.569	5.3	9.1
Unirrigated	6.550	7.084	6.845	8.2	4.5
Sub-total:	23.570	25.013	25.414	6.1	7.8
Total:					
Irrigated	31.580	34.880	35.810	10.4	13.4
Unirrigated	9.870	10.445	10.100	5.8	2.3
Total :	41.450	45.325	45.910	9.3	10.8

(*c*) The fertilizer use has increased from 312 thousand nutrient tons in 1969-70 to 631 thousand nutrient tons in 1976-77. The consumption target for 1977-78 was placed at 750 thousand nutrient tons (estimated off-take is *680 thousand nutrient tons). At this level, the fertilizer consumption comes to about 31 and 33 nutrient pounds per cropped acre in 1976-77 and 1977-78, respectively, against about 17 nutri en pounds in 1969-70;

(*d*) The plant protection coverage increased from 3,088 thousand spray acres in 1969-70 to 11,678 thousand spray acres in 1976-77. The coverage target for 1977-78 is 12,677 thousand spray acres. The per cropped acre use of pesticides increased from 0.08 lbs. in 1969-70 to 0.25 lbs. in 1976-77. The application is estimated to be about 0.28 lbs. per acre during 1977-78;

(*e*) The quantity of improved seeds used for the major crops increased from 762 thousand maunds in 1969-70 to 1,950 thousand maunds in 1976-77 and to about 1,848 thousand maunds in 1977-78; and

(*f*) Periodic reviews of support prices of major crops were carried out and as a result the support prices of wheat, rice and sugarcane were raised, which provided incentive for greater use of inputs, leading to higher production. The support price programme was extended to maize, cotton, onion, potatoes, selected oilseeds and pulses.

6. It is estimated that during 1970—77 the agriculture sector as a whole grew at an annual rate of 1.5 per cent while the growth for the major crops was about 0.7 per cent. This sectoral growth compares unfavourably with the average annual growth rate of 4.1 per cent and 3.4 per cent achieved during the Third and Second Plan periods, respectively. The reasons for the low performance below the historical level and for growth less than the trend growth path have been enumerated in paragraph 2. The impact of these factors can be seen in the relatively slower rate of increase in the use of various inputs. Against the annual average growth rate of 23 per cent and 29 per cent during the Second and Third Plans, respectively, the fertilizer use increased by 10.6 per cent during 1970—77. In quantitative terms, there was an increase of 319 thousand nutrient tons over a span of seven years. Also, the use of seeds of dwarf varieties of wheat and rice increased at a slower pace and reached almost a point of stagnation in case of Irri rice varieties in the later years. Furthermore, against the increase in water availability of 13.99 MAF during the Third Plan period, the increase during 1970—77 was 11.40 MAF. On the basis of larger availability of water (4.85 MAF), estimated increased use of other inputs as well as infrastructural improvements during 1977-78, the growth rate of the sector works out to 6.4 per cent and to 8.8 per cent for the major crops for the year.

7. The slow progress in increasing agricultural output cannot be attributed entirely to adverse weather and other external factors. Quite clearly there is a need to review the performance of existing agricultural agencies and programmes in order to ensure that in future they make a more effective contribution to growth. In particular, agricultural extension has to be strengthened and reorganized, and measures need to be taken for its better coordination with research and education. It is estimated that nearly 42 million acres need protection from waterlogging and salinity, of which about 16 million acres would have received protection by 1977-78.

* Ministry of Agriculture's estimate is about 720 thousand nutrient tons.

The Fifth Five-Year Plan proposes to treat an additional area of 7 million acres through implementation of various drainage schemes. It has been proposed that usable water would be utilized for providing additional irrigation facilities, while research studies would be undertaken to find out best uses of the saline water. Agricultural research has to be coordinated and made more meaningful, water management has to be improved and an integrated approach adopted towards resolving problems of agriculture and rural development. While new concepts and changes in policy are required, the most essential need is for improved management of services in the field.

STRATEGY FOR FIFTH PLAN

8. The high rate of growth in agriculture, postulated for the Fifth Plan, is based on the assumption that a modification in strategy combined with a substantial increase in supply of services and inputs would generate a momentum sufficient to overcome the constraints which have inhibited the growth in recent years. The optimism for the future, reflected in the Plan, is based on a careful assessment of weaknesses in the past performance and concrete measures to remedy them.

9. It is generally believed that the potential of existing technology has not been fully exploited in Pakistan. Some experts are of the view that all the irrigated areas can achieve a cropping intensity of 150 per cent—200 per cent against the present intensity of around 100 per cent. The cereal grain yields can go up to 2—3 tons per acre over at least two-thirds of the cultivated area. The hybrid seed is capable of producing much higher acre-yields than what have been realized so far. The Agricultural Enquiry Committee Report (1975) stressed the need for better exploitation of the existing technology for larger agricultural production. The Government has set up a committee to review periodically the progress on the implementation of the recommendations of the Report. The Punjab Barani Commission Report (1976) made suggestions for development of the *barani* (rain-fed) areas of the province and a committee has been set up to suggest ways and means for implementing the recommendations. Due cognizance of the recommendations of these reports has been taken in identifying agricultural development programmes for the Plan. Commodity policy studies on cotton, sugar, coarse grains and oilseeds, edible oils, oil cakes and meals were prepared by the Food and Agriculture Organization of the United Nations. These reports contain useful findings and recommendations for increasing production of these commodities. The Federal and Provincial Governments have examined/are examining the recommendations made in these reports for implementing them as far as possible. The Plan targets which envisage yields much below the full potential, are technologically not over-ambitious.

10. The Plan envisages a determined and integrated effort to modernise agriculture and increase productivity. There will be equal stress on augmentation in facilities and supplies and on improved utilisation of inputs. In the past, expansion in the acreage has lagged behind the increase in water supply. The Plan aims at reversing the trend. A series of measures including water course management would be taken to ensure better utilisation of the irrigation water, so that increases in water supply during the next 5 years is matched by corresponding higher acreage.

11. The overall position of availability of inputs, both individually and as a package, would be more favourable during the Fifth Plan than at any previous time. The Fifth Plan projects a 12% increase in the supply of water, a 100 per cent increase in fertilizers off-take and 118 per cent increase in distribution of seed (and substantial increase in other inputs). The supplies will accrue largely from completed or ongoing programmes. The recurrent shortages of fertilizers, for example,

which characterised the sixties and early part of the seventies will be avoided. Apart from ensuring an aggregate position of oversupply, distribution facilities will be improved to bring the inputs closer to the farmers. Farmers not using fertilizers will be motivated to take to its use and those using it will be encouraged to use larger quantities in balanced ratios at the right time and in the right manner. Also, the use of micro-nutrients such as zinc, boron, etc., will be encouraged in the deficient soils for efficient response of the macro-nutrients (NPK). Soil testing facilities will be expanded for assessment of proper doses of fertilizers. The modifications in the fertilizer distribution arrangements, carried out two years ago, have proved effective in contributing to a rapid increase in off-take. Measures are being taken to restructure distribution facilities for seed, pesticides and other inputs. Full benefit of the measures adopted recently and those to be initiated shortly, will be realised during the Fifth Plan period.

12. The Government is fully conscious of the fact that the supply of inputs is not sufficient to ensure rapid growth in agriculture. Determined efforts are being made, therefore, to extend modern technology to small farmers and to the backward areas. The Government intends to try out all possible approaches to overcome the communication barrier which prevents farmers from adopting more efficient and productive methods of agriculture. The measures will include increase in number of the extension workers, improvement and re-orientation in training, greater specialisation, better supervision and more systematic modes of work, devised on the basis of experience in Pakistan and other developing countries.

13. The Fifth Five-Year Plan proposes to launch IBRD-assisted Extension and Development of Agriculture Projects in the Provinces of Punjab and Sind to help provide intensive extension coverage to nearly 40 per cent of the cropped area in the country by 1982-83. The projects envisage to strengthen the extension service both in quantity and quality and also to provide facilities of transport and residential and office accommodations at the place of posting of the staff. It is proposed to increase the number of village extension workers along with expansion of the supervisory staff to cover nearly 500 farm families per village extension worker against the present ratio of 1,000 farm families per extension worker. The basic extension technique of the project envisages a systematic programme of training of village extension workers combined with frequent visits by them to farmers' fields. The system will be organized to give the worker intensive in-service training in specific agricultural practices and recommendations relating directly to farm operations during a given week (or a fortnight). The training will be imparted by the supervisory staff including the subject matter specialists on fixed days of the week (or fortnight). This will enable the workers to visit each of the relatively small groups of farmers they work with him once a week (or once a fortnight) on fixed days known to all the concerned farmers and the supervisory staff. For better coordination with the research service, it is proposed to establish research extension committees at all levels with representation from research and extension services, while the subject matter specialists at various levels will provide the secretariat services for these committees.

14. The Government will continue the policy of providing adequate monetary incentives to farmers for increasing output. This would be done through adjustment of input and product prices, for which a basis has been laid in the practices of the last few years. With improvement in research and analytical capability, the policy instruments will be used with a greater degree of refinement and sophistication. The price support arrangements will be extended to more crops in the next few years.

15. The stress being laid on rural development, particularly in the spheres of water supply, health, primary education, rural electrification and rural roads will also make a considerable impact on modernisation and improvement in agriculture. A major step to stimulate rural development would be the establishment of local bodies.

16. A substantial investment is envisaged in flood protection measures during the Fifth Plan. This would also yield large benefits to agriculture by protecting the cropped areas from losses due to flooding and by encouraging more investment in the development of land and water resources in areas prone to floods.

17. The Fifth Plan envisages a significant change in policies relating to the agriculturally backward areas of the country. These areas mostly outside the irrigation system, are characterised by poverty and low productivity. Simultaneously, the pressure of population is leading to denudation of vegetation and soil erosion with grave long-term consequences both for the local areas as well as for the country as a whole. Recent evidence indicates that process of destruction is proceeding much faster. The policies and projects for these areas would have to be formulated on the basis of three important considerations. Firstly, the long term ecological stability of the Indus Basin system would have to be kept in view. Programmes of forestry, range management, watershed management and agricultural extension would have to be integrated to this end. The immediate needs for higher production would have to be reconciled with protection of long-term potential of the agricultural system of the country. Secondly, an important objective would be to ameliorate poverty and accelerate programmes for infrastructure and social services for these least developed regions. Thirdly, it is proposed to make use of modern technology to bring about a more rapid increase in productivity in agriculture, livestock and forestry. The benefits of using hybrid seed and fertilizer in certain *barani* areas have been demonstrated and hybrid seed technology for wheat and maize would be extended rapidly. A technology appropriate to the level of rainfall and the resource endowment of each area would be developed. For example, in the high rainfall mountainous regions of the north, there will be emphasis on fruit cultivation while in the arid regions of the south, new technologies would be applied to control deserts and develop grazing lands.

OBJECTIVES AND POLICY MEASURES

Objectives

18. The main objectives of agricultural development during the Fifth Plan, in broad terms, are to:

(*a*) achieve a growth rate of 6.0 per cent *per annum* for the agriculture sector;

(*b*) make a transition from self-sufficiency in wheat as the main concern, to export, as the prime objective, increase production of rice for domestic consumption and export, and to increase export of other agricultural commodities to feasible extent, based on proved natural advantages and world market prospects;

(*c*) increase oilseeds production with a view to containing imports of vegetable oil;

(*d*) accelerate production of protein rich foods such as pulses and of meat, milk, egg and fish at a rate higher than the population growth in order to improve nutritional level of common man ;

(*e*) accelerate production and productivity of cotton and sugarcane;

(*f*) accelerate fruit and vegetable production for local consumption and exports;

(*g*) upgrade agricultural production in the ill-endowed areas (arid, hilly, *sailaba* and *barani*) through integrated plans for exploitation of natural resources with a view to minimising inter/intra-regional farm income disparities;

(*h*) improve productivity of small farmers in the irrigated areas who constitute majority of the farming community ;

(*i*) diversify agriculture, possibly through multiple cropping system and by promoting such minor crops as soyabean, sunflower, etc. ; and

(*j*) increase and protect wooded area and to develop range lands for livestock production.

Policy Measures

19. The objectives will be achieved by taking the following major policy measures:

(*a*) encouraging a cropping pattern which, in aggregate, helps meet Plan targets, while promoting a regional cropping pattern best suited to soil and other local conditions ; especially the acreage under wheat would be increased to maintain food self-sufficiency and area under cotton would be expanded to meet higher demands for industry and exports. A significant increase in area is also planned for oilseeds, pulses, fruits and vegetables;

(*b*) launching of vigorous breeding programmes for evolution of new and improved varieties of seeds, particularly of oilseeds, pulses, feed/fodder, sugarcane crops, etc. and making radical improvements in the output, and distribution of improved seeds;

(*c*) ensuring timely availability at reasonable prices of such inputs as fertilizers, plant protection chemicals and equipments, primarily through local production, supplemented by imports when necessary;

(*d*) maintaining a suitable relationship between input and output prices for adequate incentives for modernisation and increased production, including gradual reduction in subsidies. The output prices of important crops would be supported by procurement, storage and marketing arrangements;

(*e*) improving extension services and arrangements for training of farmers to promote rapid dissemination of farm skills and knowledge of improved farm practices;

(*f*) coordinating more effectively farm oriented research, education and extension services;

(*g*) undertaking comprehensive rural development with special emphasis on agricultural production;

(*h*) operating expanded, efficient marketing, cooperatives and credit programmes;

(*i*) evolving special programmes and technologies for water management practices, particularly for small farmers to increase production from the irrigated agriculture;

(*f*) evolution and introduction/adoption of suitable technology for the arid, hilly, rainfed and *sailaba* areas ;

(*k*) implementing extensive and intensive programmes for the development and systematic exploitation of livestock, range and inland and marine fisheries resources ;

(*l*) implementing well-planned programmes of regeneration, afforestation including block and linear plantings, farm forestry and community planting with increased emphasis on forest management, conservation and environmental balance ; and

(*m*) launching of extensive watershed management programmes in suitable catchment areas.

20. The achievement of the above objectives/policymeasures would depend largely on the preparation and effective implementation of sound projects. This would require streamlining and gearing up the work of the institutions engaged in developmental activities. The fields of project identification, formulation and evaluation have remained rather weak in the past. It is felt that sound project identification, preparation and monitoring require full time staff. In order to meet this challenge effectively, special cells would be created, where necessary, at the provincial and federal levels in cooperation with international agencies. Coordinators for all major crops will be appointed at the Federal level for monitoring and review of crop production programmes.

CROP PRODUCTION TARGETS

21. The crop production targets for the major crops for the Fifth Plan have been worked out keeping in view, on the one hand, the requirements for human consumption, industry and exports and, on the other, technical feasibility and resource availability. It, *inter alia*, assumes adoption of such policy measures which would bring about changes in the cropping pattern for larger coverage in the irrigated and un-irrigated areas by such crops as oilseeds and pulses (alongwith the other crops), which, at present, are essentially *barani* area crops and occupy only marginal lands in the irrigated areas, largely because of economic reasons.

22. The targets along with the benchmarks thus worked out for the Fifth Plan are set out in Table 2.

23. The salient features of the crop production targets are highlighted below:

Benchmark Production (1977-78)

24. The benchmark producttion figures represent the estimated production, under normal conditions of weather, international and domestic prices, etc. They do not necessarily represent the actual production estimates for the base year, *viz.*, 1977-78. Such an assumption is necessary to minimize distortion in the production targets likely to arise due to abnormal factors in the base year.

Cropping Pattern

25. The estimated additional irrigated cropped area of 4.77 million acres has been allocated to various crops, keeping in view the existing cropping pattern and allowing for certain changes in the pattern in order to : (*a*) achieve and maintain self-sufficiency in wheat ; (*b*) increase oilseed production with a view to containing import of vegetable oil ; (*c*) meet increased demand for pulses ; and (*d*) accelerate production of cotton, rice for domestic consumption and exports. The

major changes projected in the cropping pattern for 1982-83 *vis-a-vis* the existing pattern are the following :

(*a*) Area under wheat in proportionate terms will decrease from about 63 per cent to 62 per cent of the *rabi* acreage. However, the total foodgrain acreage will slightly decrease from 54.9 per cent to 54.5 per cent of the total cropped acreage (*rabi* and *kharif*) ;

(*b*) proportionate share of oilseeds acreage (excluding cotton) will increase from 3.3 per cent to 4.4 per cent, while that of pulses will increase from 8.1 per cent to 8.5 per cent ;

(*c*) share of cotton acreage will increase slightly to 9.9 per cent from 9.6 per cent in 1977-78, while that of sugarcane will decline from 4.1 per cent to 3.7 per cent in 1982-83 ;

(*d*) share of area under vegetables (including potato) will increase from 0.90 per cent to 1.04 per cent ; and

(*e*) in all other cases there is an absolute increase in area, but the proportionate share will decline slightly.

TABLE 2

Benchmarks (1977-78) *and Crop Production Targets for the Fifth Plan*

Crop	Area		Production		Acre-Yield		Percentage increase over Benchmark		
	1977-78	1982-83	1977-78	1982-83	1977-78	1982-83	Area	Production	Acre yield
1	2	3	4	5	6	7	8	9	10
	000 acres		000 long tons		mds/acre			%	
Total Foodgrains	**25,200**	**27,625**	**13,100**	**18,715**	**14.2**	**18.4**	**10**	**43**	**30**
Wheat	15,900	17,700	8,700	12,800	14.9	19.7	11	47	32
Rice	4,500	4,900	2,900	3,900	17.5	21.7	9	34	24
Maize	1,600	1,700	800	1,200	13.6	19.2	6	50	41
Jowar	1,100	1,150	260	310	6.4	7.3	4	19	14
Bajra	1,600	1,650	305	345	5.2	5.7	3	13	10
Barley	500	525	135	160	7.4	8.3	5	19	12
Sugarcane	1,900	1,900	28,000	34,300	401	492	—	23	23
Cotton	4,400	5,000	578	875	3.58	4.76	14	51	33
			(3,300)*	(5,000)*					
Oilseeds	**5,925**	**7,240**	**1,544**	**2,470**	**7.1**	**9.3**	**22**	**60**	**31**
Rape & Mustard	1,300	1,600	300	415	6.3	7.1	23	38	13
Sesamum	75	80	12	13	4.4	4.5	7	8	2
Groundnut	110	160	63	105	15.6	17.9	45	67	15
Cotton Seed	4,400	5,000	1,156	1,750	7.2	9.5	14	51	33
Other Oilseed	40	400	13	187	8.9	12.7	900	1338	43

*Figures in thousand bales.

1	2	3	4	5	6	7	8	9	10
Pulses ..	**3,725**	**4,320**	**830**	**1,125**	**6.1**	**7.1**	**16**	**35**	**16**
Gram ..	2,700	3,000	645	825	6.5	7.5	11	28	15
Mash ..	125	175	25	41	5.4	6.4	40	64	19
Mung ..	160	275	30	74	5.1	7.3	72	147	43
Masoor ..	195	250	30	60	4.2	6.5	28	100	55
Other Pulses ..	545	620	100	125	5.0	5.5	14	25	10
Tobacco ..	130	160	70	100	14.7	17.0	23	43	16
Potato ..	80	125	380	690	129	150	56	81	16
Onion ..	75	100	330	515	120	140	33	56	17
Vegetables ..	335	400	1,660	2,130	135	145	19	28	7
Fodder ..	7,020	7,275	49,000	62,810	190	235	4	28	24
Fruits ..	601	665	2,210	2,930	100	120	11	33	20

26. Since it is very difficult to enforce a particular cropping pattern on the farmers, changes would be brought about through suitable policy measures including pricing policies.

Production Targets

27. The crop production targets for 1982-83 have been worked out by estimating the additional production likely to be obtained as a result of implementation of various input programmes envisaging additional use of water, fertilizer, improved seeds and plant protection measures, as well as better farm management practices promoted by more intensive and better extension activities. The cumulative additional production of various crops, thus worked out, has been added to the benchmark figures to arrive at the production targets. The production figures, thus arrived at, represent the estimates of production under normal conditions of weather and existing relationship of input and output prices.

28. It is expected that availability of the irrigation water at farm gate would increase from 91.75 million acre feet in 1977-78 to 102.90 million acre feet in 1982-83 (an increase of about 12 per cent). Consequently, the irrigated acreage would increase by 4.77 million acres. The Plan envisages doubling the use of fertilizer from the base level of 0.68 million nutrient tons. The plant protection coverage will increase by 73 percent *i.e.*, from 5.41 million acres (actual) in 1977-78 to 9.36 million acres (actual) in 1982-83. The total production of crops will increase by about 30 percent during the Plan, mainly on account of 13 per cent increase in the irrigated cropped acreage and significant improvement in acre-yields. The latter would result from larger use of inputs such as fertilizers, improved seeds, plant protection and improved cultural practices. The contribution of various inputs in achieving the estimated additional production of *major* crops is indicated in Table 3. Crop yield can be raised substantially through better extension of cultural practices and methods relating to proper seed bed preparation, sowing of seed in right quantity, at right time and at proper depth for optimum plant population, proper inter-cultural practices for control of weeds and undesirable plants, etc. However, contribution of cultural practices has been taken at a conservative level in estimating crop production targets for the Fifth Plan, although the potential is believed to be high.

TABLE 3

Estimated Contribution of various Inputs (factors) to additional production of major crops during Fifth Plan

Factors/Inputs	Wheat	Rice	Maize	Sugarcane	Cotton	Rape and Mustard
	——per cent——					
Acreage	17	10	7	—	14	23
Fertilizer and Seed ..	27	18	39	21	24	13
Plant Prtoection	..	4	2	1	10	—
Cultural Practices ..	3	2	2	1	3	9
Percentage increase in production during 1982-83 over the base year (1977-78).	47	34	50	23	51	38

AVAILABILITY OF INPUTS

Land and Water

29. During the period, 1970—77 the farmgate water availability increased from a level of 82·47 MAF to 85·05 MAF in 1974-75 and to 86·90 MAF in 1976-77. It further increased to 91·75 MAF during 1977-78. A substantial increase in water availability at farm gate is envisaged during the Fifth Plan period as a result of expansion of tubewell installation programme both in the private and public sectors and acceleration of other allied water development and conservation programmes. This availability is estimated to increase to 102·90 MAF during 1982-83, showing a net increase of 11.15 MAF over the level achieved during 1977-78.

30. It is estimated that the additional water availability of 11·15 MAF would irrigate about 4·77 million acres of additional area. Thus, the cropped acreage will increase from 45·91 million acres in 1977-78 to 50·68 million acres in 1982-83, showing an increase of 10.4 per cent. The detailed break-down of the irrigated and un-irrigated cropped acreage, by season, is given below :

	1977-78	1982-83
Kharif	Million acres	
Irrigated	17·241	18·961
Un-irriaated	3·255	3·255
Sub-total ..	20·496	22·216
Rabi		
Irrigated	18·569	21·619
Un-irrigated	6·845	6·845
Sub-total ..	25·414	28·464
Total ..	45·910	50·680

31. The year-wise phasing of the additional irrigated acreage to benefit from the expected increased availability of water during the Plan period is shown in Table 4 :

TABLE 4

Season-wise Estimates of net Additional Area to benefit from additional water availability during the Fifth Plan

	Kharif	*Rabi*	Total
	——Million acres——		
1978-79	0·29	0·64	0·93
1979-80	0·31	0·60	0·91
1980-81	0·38	0·60	0·98
1981-82	0·36	0·59	0·95
1982-83	0·38	0·62	1·00
Total Net additional acreage to benefit during Fifth Plan ..	1·72	3·05	4·77

Fertilizer

32. Chemical fertilizer, when used in correct proportions, is one of the most effective inputs for increasing crop production. The increased usage of fertilizers during the Fifth Five Year Plan is expected to play an important role in higher farm production. The data given in Table 5 indicate the field-based fertilizer response ratios which have been used in working out the crop production targets for the Plan. Lower ratios than those used for the projections for the period 1970—75 have been adopted keeping in view the fact that actualr esponses under field conditions tend to be less than those obtained in experiments and on progressive farms. Moreover, these responses represent combined effect of fertilizer and improved seed. The latter might not be used by the farmers in all the cases.

TABLE 5

Fertilizer Response Ratios

Crop	1970—75 (Based on field experiments)	Adopted for the Fifth Plan
Wheat (Dwarf)	1:10	1:7
Wheat (*Barani*)	—	1:7
Rice	1:10	1:7*
Maize	1:10	1:7
Sugarcane	1:130	1:95
Cotton	1:2	1:1·5
Oilseeds	..	1:4

*Since there is little difference in fertilizer response for the IRRI and *basmati* rice varieties, an average of 1:7 has been adopted for both the varieties. However, the IRRI varieties can take higher fertilizer doses than the *basmati* varieties to produce higher yields.

33. Despite several constraints, the growth in fertilizer usage in Pakistan is one of the prominent success stories in the field of agriculture. Against a nominal use of about 31,000 nutrient long tons in 1959-60, its consumption increased to about 87,000 nutrient long tons during 1964-65, and further to 312,000 nutrient long tons in 1969-70. This showed an annual growth rate of 23 per cent during the Second Plan period, which peaked to 29 per cent during the Third Plan, despite the higher base achieved. This momentum could not be kept during the period 1970-77. The fertilizer consumption increased at the annual rate of 10·6 per cent only during this period with an off-take of 631 thousand nutrient long tons in 1976-77.

34. During the Fifth Plan, the consumption of fertilizers is envisaged to increase from the estimated off-take of 0·680 million nutrient long tons in 1977-78 to 1.360 million nutrient long tons in 1982-83. This would mean an annual compound growth rate of 14·9 per cent compared to the corresponding rate of about 10·6 per cent achieved during the period 1970-77. In terms of per acre use, fertilizer consumption would increase from 33 lbs. per cropped acre in 1977-78 to 60 lbs. per cropped acre in 1982-83. The fertilizer off-take during the Fourth Plan period

was depressed by shortages in the earlier years, distribution bottlenecks (since removed) and frequent changes in prices due to external causes. The higher growth rate proposed for the Fifth Plan is justified in view of the increased availability ofwater from Tarbela and other sources, extension of seed-based technology to new areas and crops, launching of proposed programmes for spreading of imporved technology to the *barani* areas, and the planned improved supply and distribution system.

35. The year-wise fertilizer off-take targets alongwith the sources of availability are shown in Table 6 :

TABLE 6

Off-take Targets of Fertilizer

Years	Quantity to be distributed				Percentage increase over the preceding year	Estimated Availability from	
	N	P	K	Total		Local production	Imports
	—thousand nutrient long tons—				—per cent—	thousand N/long tons	
1977-78	530	143	7	680*		334	346
1978-79	612	160	8	780**	15	480	300
1979-80	695	190	10	895	15	718	177
1980-81	750	265	15	1030	15	770†	260
1981-82	835	330	20	1185	15	908†	277
1982-83	935	400	25	1360	15	1036†	324

*Ministry of Agriculture's estimate is about 720 thousand nutrient long tons.

**Annual Plan target 820 thousand nutrient long tons.

†Total local production would be 819 thousand nutrient tons during 1980-81,1178 thousand nutrient long tons during 1981-82 and 1381 thousand nutrient long tons during 1982-83.

36. The increase in fertilizer off-take in 1982-83 over 1977-78 will be 100 per cent, which gives an annual compound growth rate of 14.9 per cent. If fertilizer demand proves to be greater than the estimates used in the Plan, the provision would be modified. It is proposed not to take any restrictive measures to contain fertilizer consumption within the Plan targets.

37. It is expected that after 1980-81 the country will be self-sufficient in its requirements of nitrogenous fertilizers but may have to import some quantities of phosphatic and all of potassic fertilizer.

38. The crop-wise allocation of fertilizer use has been assumed on the basis of data of a survey conducted by the ESSO Pakistan Fertilizer Company in 1974 and information supplied by the Government of the Punjab. Certain *ad hoc*

adjustments have been made to bring the data to an all Pakistan basis. The relevant data are presented in Table 7 :

TABLE 7

Estimated Crop-wise use of Fertilizer

Crop	ESSO Survey 1974	Punjab Estimates for 1974-75	Fifth Plan	Average *Fertilizer use per acre	
				1977-78	1982-83
	—per cent—			—nutrient lbs—	
Wheat	49	53	48	46	83
Rice	9	11	12	41	75
Maize	2	5	7	67	125
Cotton	21	17	16	55	97
Sugarcane	10	11	9	72	144
Others	9	3	8	7	13
Total ..	100	100	100		

*total fertilizer used for the crop / total area of the crop.

39. As far as fertilizer use is concerned, the farmers faced a number of difficulties in the past largely arising from :

(*a*) non-availability of fertilizer at the right time and at reasonable prices ;

(*b*) lack of easy and abundant availability of credit;

(*c*) too many organizational changes in the fertilizer distribution systems;

(*d*) frequent upward changes in the sale prices of certain fertilizers.

40. It needs to be pointed out that over most of the past decade, supply bottlenecks have been a usual feature with resultant black marketing of the commodity during periods of peak demand. However, during the last two years Government have succeeded in maintaining a situation of over supply and most of the restrictions on sale of fertilizer have been removed. During the Fifth Plan, Government will endeavour to maintain an abundant supply of fertilizer. This would now be easier to achieve because of increased domestic output. Competition and access to multiple sources of supply will be maintained. Rural outlets will be further expanded and multiple marketing channels for sale of fertilizer will be encouraged. To ensure free availability, possibility will be explored of placing fertilizer imports on free list. Extension services would be intensified, particularly to popularise fertilizer in the *barani* areas. Above all, equal attention would be given to the use of balanced fertilizers. Rs. 5295.00 million have been provided for subsidy on fertilizer during the Plan period. Relationship between input-output prices, appropriate to off-take targets, would be kept under review to provide incentives to growers. Adequate credit would be provided.