6

AGRICULTURE

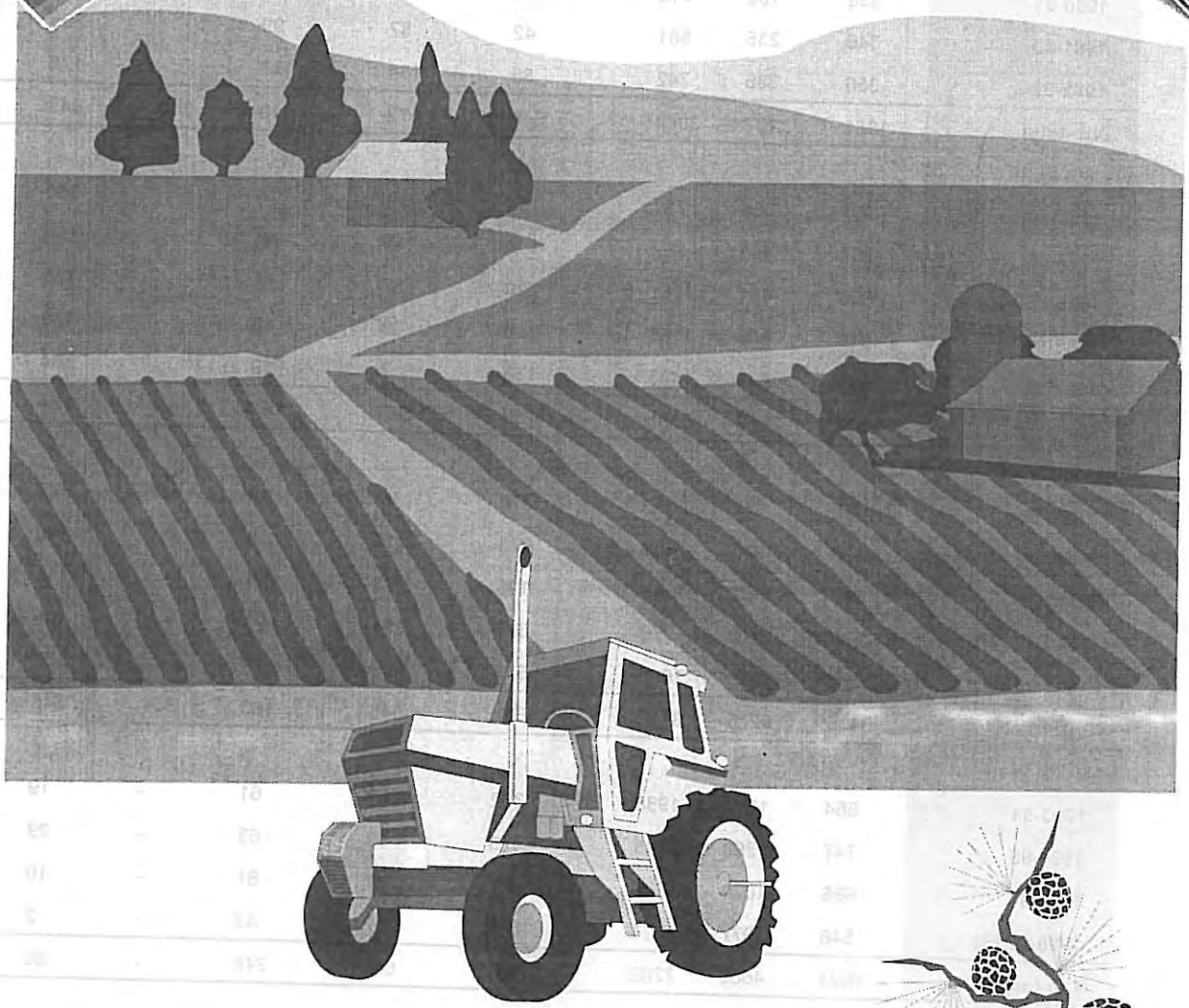


Figure 6.1 AREA AND PRODUCTION OF COTTON

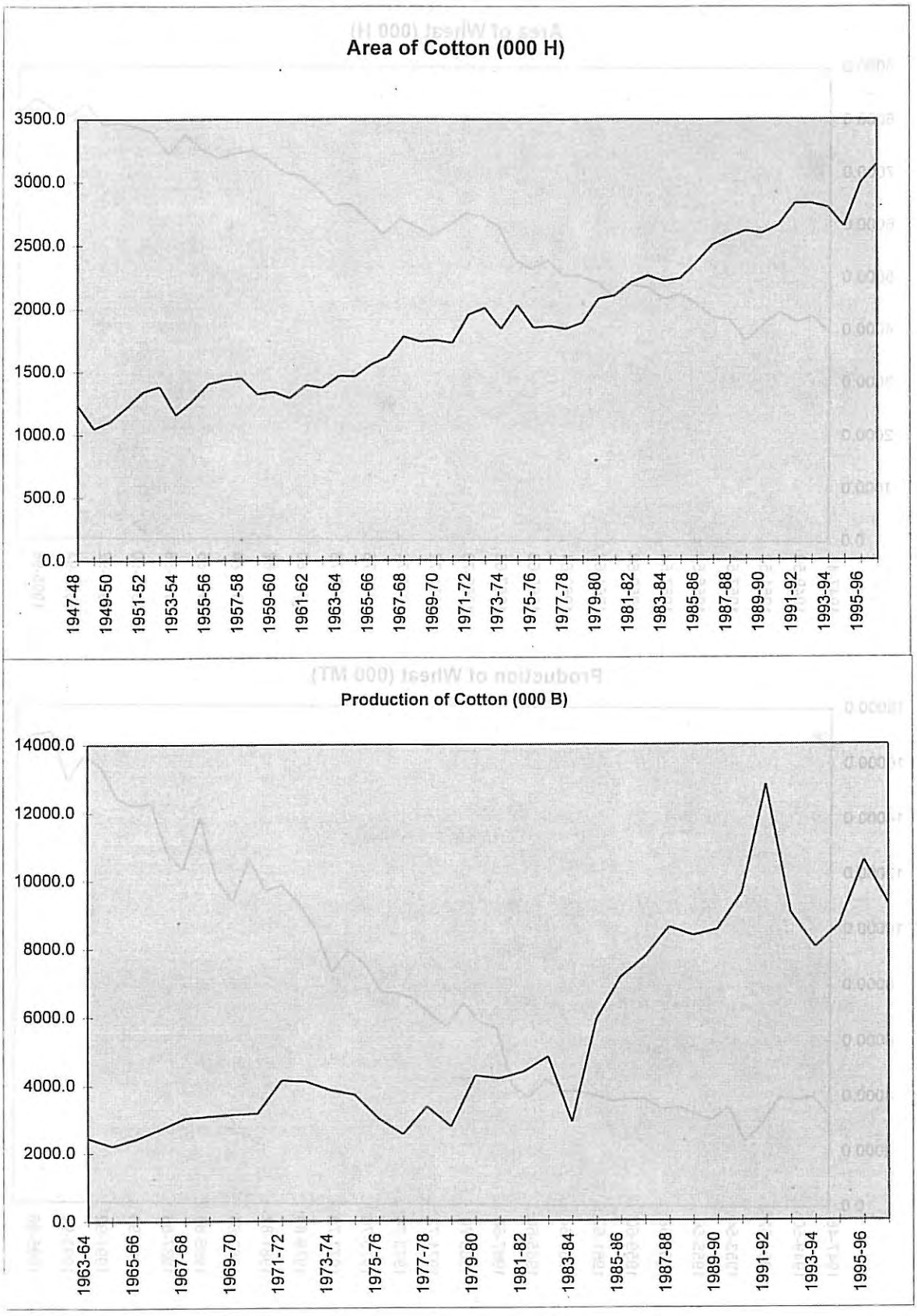
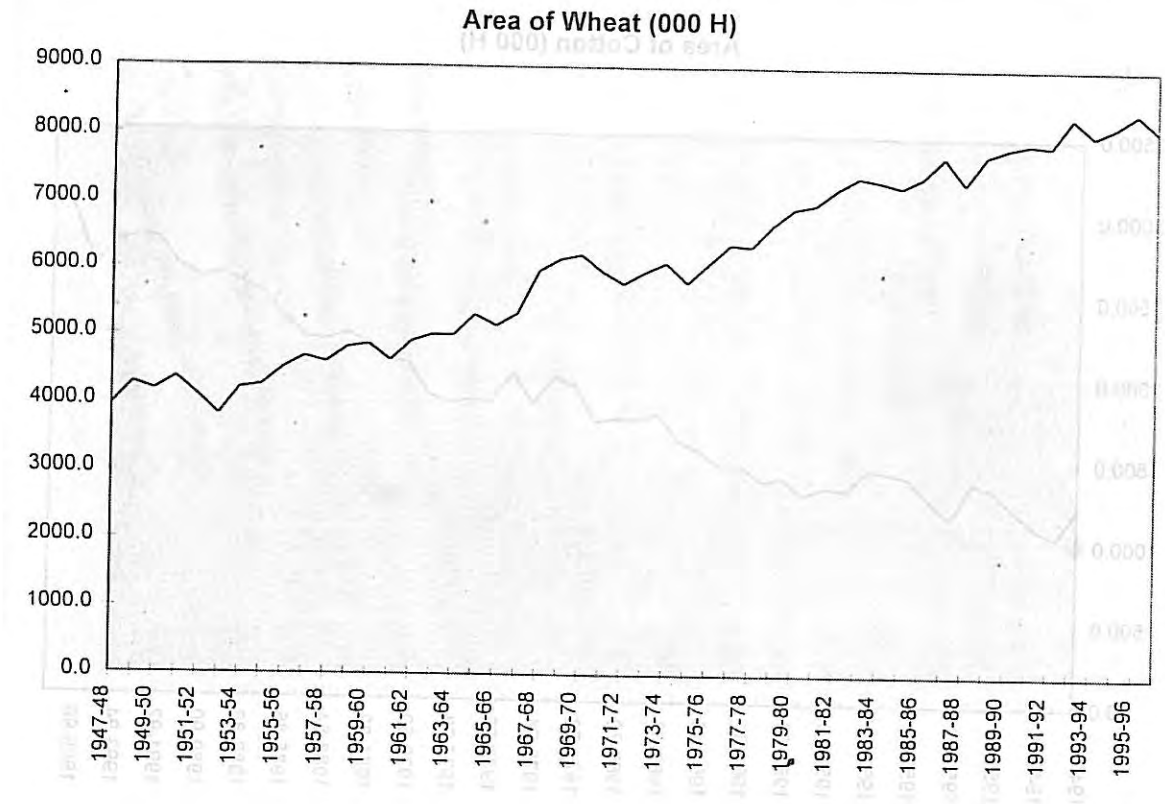
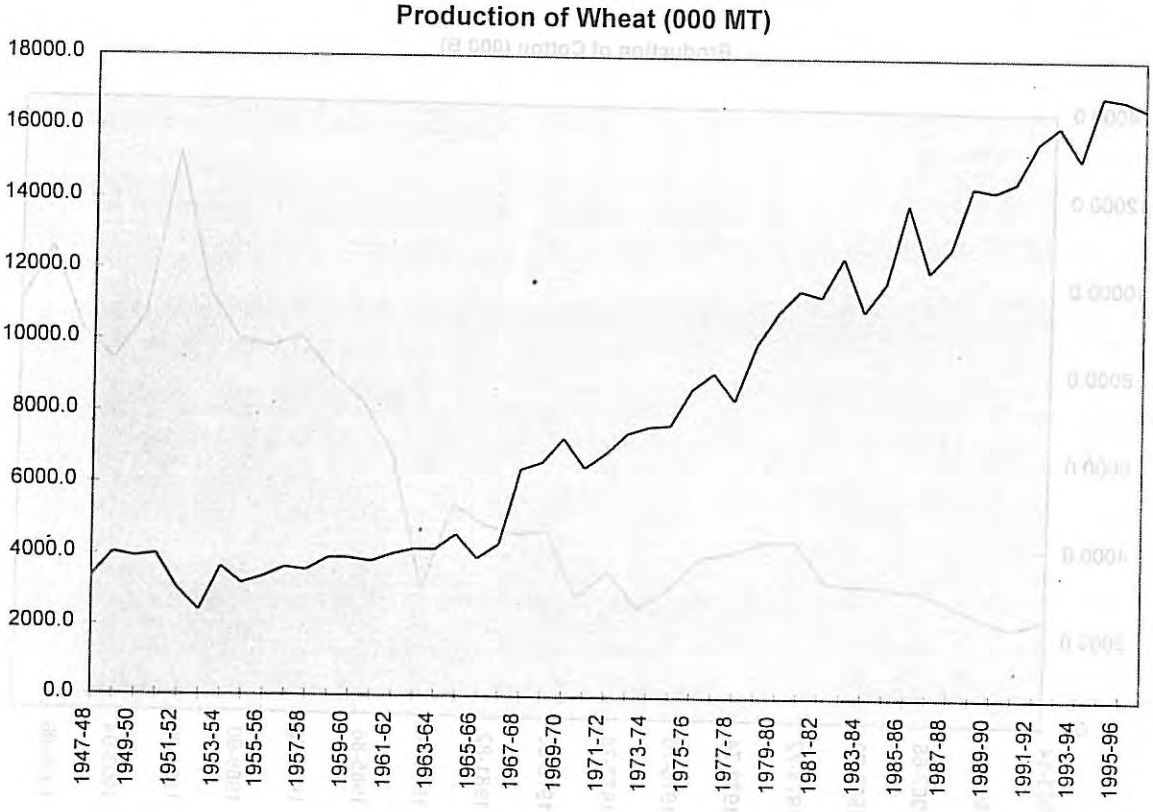


Figure 6.2 AREA AND PRODUCTION OF WHEAT





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AGRICULTURE

Agriculture plays an important role directly and indirectly in generating economic growth. The importance of agriculture to the economy is seen in three ways, firstly, it provides food for consumers and fibers for domestic industry, secondly, it is a source of scarce foreign exchange earning and thirdly, it provides market for industrial goods. Agriculture has a strong backward linkages (by purchasing farm inputs such as chemicals, fertilizers and machinery) and forward linkages (by supplying raw material to food and fibre processing in the non-agriculture sector).

It contributed about 24.5 percent (at constant prices) of the Gross Domestic Product (GDP) in 1996-97. The second major sector contributing 18.1 percent to GDP is manufacturing followed closely by wholesale and retail trade (16.2 percent). The transport and communication sector adds 9.6 percent while others 31.6 percent.

In 1947, agriculture was the dominant sector of the economy. The contribution of the Agriculture Sector to the Gross Domestic Product (at constant prices), though declined gradually since Pakistan came into being from a level of over 59.9 percent in 1949-50 to 24.5 percent in 1996-97, it still remains the major sector of the GDP composition. Since domestic prices for agricultural output are distorted due to a pricing policy which is generally favouring consumers, the apparent share of agriculture in the GDP is reduced. In real terms, agriculture's contribution to the GDP may be greater. Agriculture and agro-based products are the largest source of the country's total export earnings This sector supplies raw materials to many of the major industries. In turn, it consumes a large part of the industrial finished goods. Average agricultural growth has been higher than the rate of increase in population.

In 1949-50, the contribution of agriculture to GDP was 59.9 percent. It was followed by wholesale and retail trade (12%), manufacturing sector (5.8%) and public administration and defence (4.3%) and communication (5%). The natural consequence of this skewed distribution resulted in assigning greater importance to the development of other sectors, particularly water, energy and the industrial sector, in the development plans launched subsequently. The net result of such policy is evident from the Table 6.1 below which shows structural changes in the contribution of GDP at constant factor cost.

TABLE 6.1 SHARE OF DIFFERENT SECTORS IN GDP (PERCENT)

Items	1949-50	1969-70	1979-80	1989-90	1996-97
Agriculture	59.9	39.0	29.6	25.8	24.5
Manufactsauring	5.8	16.0	17.0	17.6	18.1
Construction		4.2			3.9
Elect. & Gas Distribution		2.0			4.1
Wholesale & retail Trade	12.0	14.9	15.0	16.5	16.2
Public Administration. & Defence	4.3	6.4	10.0	7.3	6.4
Transportation, Storage & communication	5.0	6.8	7.0	9.5	9.6
Ownership of dwellings		3.4			5.7
Others	13.0	7.3	22.0	23.3	11.5

Source: Federal Bureau of Statistics.

Although the share of agriculture in the economy has been slowly decreasing (and that of industry slowly increasing), agriculture is still the leading sector of Pakistan's economy. A major part of the economy depends on farming through production, processing and distribution of major agricultural commodities. It provides food, feed, fiber, fuel and industrial raw material and earns foreign exchange and dominates foreign trade through export of raw products like rice and cotton, semi processed and processed products like cotton yarn, cloth, carpets, leather products. Export of agricultural products constitute major portion of total export earnings of Pakistan. During 1995-96, export of agricultural products constituted 17.0 % of total export. Among the agricultural products, major items of export were, rice, cotton, citrus fruit, dates, mangoes and cane molasses. Import of agricultural products constituted 16.7 percent of total imports during 1995-96. Major items of imports were, wheat, pulses, sugar, black tea and edible oils (Soyabean and Palm oil).

Agriculture is essential for sustainable improvements in internal and external balances. Of the total export earnings, the share of primary commodities, processed and semi-processed constituted almost 76 percent of the total exports. There have been some structural changes over time but contribution of agro-based products more or less sustained the normal position.

Agriculture is equally crucial to industry. Out of around five thousand industrial establishment in Pakistan, about 58 percent are based on agricultural commodities. The value of their products also represents a substantial proportion of the value of all industrial production in Pakistan.

The share of Agriculture in GDP has inevitably fallen, as other economic sectors such as manufacturing, construction and services which were rudimentary at the time of independence were developed on priority basis. Despite the low industrial base, Pakistan has progressed. The contribution of this sector to DGP, which was 6% in 1949-50 i.e. first year after independence, now stands at 18%. This gain has taken place mostly in agro-industries such as food manufacturing, tobacco, textile, leather, footwear, cotton yarn, wood work, chemical fertilizer, pesticides and agriculture machinery whose value of product according to census of manufacturing industry 1988 was around 60% of the total value of all industrial products.

The sector provides employment to 46.8 percent of the labour force. Even though agriculture's share in the GDP has declined considerably between 1949-50 and 1995-96, its share of employment has declined by far less (from 66 percent to 47 percent). In terms of population count, contribution to national income, markets for industry, supply of raw materials or products for

export, agriculture remains the foundation of Pakistan's economy.

By the grace of Almighty Allah and the efforts of our farmers, the performance of the Agricultural Sector, despite many constraints, has been quite impressive. This performance, however, is much below the real potential of Pakistan's agriculture. The farmers are anxious to enter the next stage of the "Green Revolution" if they are provided with the requisite knowledge, means and incentives.

Pakistan's agriculture has made a long and difficult journey. In 1947, Punjab was considered the granary of the sub-continent. Agricultural surpluses were taken for granted and economic development was considered synonymous with industrialization. The agricultural sector was discriminated against and initial development efforts were directed entirely towards industry. This neglect, alongwith the increasing problem of water logging and salinity, began to take a toll on agricultural production. Yields and productivity were low during these early years and with a severe drought in 1952 the situation became serious. For the first time Pakistan had to import about a million tons of wheat to meet a severe food shortage and the neglect of agriculture became apparent.

During the First Plan period (1955-60) some attention was finally directed towards the agrarian economy. The major achievement of the First Plan was in the realm of institutional change. The first of these changes was the establishment of the Water and Power Development Authority (WAPDA) in early 1958. WAPDA's charter included the investigation, planning and execution of schemes in the fields of irrigation, water supply and drainage; the prevention of waterlogging and the reclamation of the water logged and the saline lands; flood control and the generation, transmission and distribution of power. The charter was amended in early 1959 to merge the electircity department into WAPDA. The Indus Water Treaty with India in 1960 paved the way for a comprehensive agricultural planning, based on the water supplies allocated to Pakistan.

The situation changed rather dramatically during the next two plan periods when agriculture sector grew at 3.8 percent in the second plan (1960-65) and 6.3 percent in the third plan period (1965-70). The overall growth in production of major crops was 4.7 and for minor crops 4.8 percent . During the third plan period major crops grew at 9.1 percent and minor crops at 3.8 percent. The progress during this plan period was assigned to rapid adoption of the new technology, introduction of bio-chemical technology, high yielding varieties coupled with increased availability of inputs and more appropriate price policies.

By the beginning of the Second Five Year Plan (1960-65) the institutional changes had already begun to exert a positive influence. The land reforms were giving rise to new social relationships, conducive to agricultural growth. A comprehensive plan to combat the effects of waterlogging and salinity had been formulated. Subsidies were introduced on fertilizers, improved seeds and plant protection. The policy towards agriculture was aimed at unleashing the entrepreneurial potential of the medium sized farmers and a new, highly productive rural middle class began to emerge.

The initial stimulus for the technological change in agriculture came through a rapid increase in the number of private and public tubewells in the Punjab. Fortunately, new high-yielding varieties of wheat and rice, developed at International Wheat and Maize Institute (CIMMYT) in Mexico and the International Rice Research Institute (IRRI) in the Phillipines respectively were made available.

During the ad-hoc plan period (1970-78), the growth rate declined

sharply to 1.7 percent due to a combination of factors particularly war with India in 1971, floods and droughts, Terbela mishap of 1974-75, OPEC oil price hike and the extremely disturbed political and social conditions.

In 1977 once again the Government embarked upon planned development. The Fifth Plan (1978-83) once again laid emphasis on agriculture sector in order to reduce dependency on food imports and on increasing exports. Fruits and vegetables and livestock and fisheries were also given priority to capture export markets.

In February, 1980 a new national agricultural policy was announced. The emphasis was given to input and output prices. Fertilizer prices were reduced, the pesticides subsidy was eliminated and water charges were raised. The Agricultural Prices Commission was set up in 1981 to recommend such support prices that would i) safeguard the interest of the farmers against undue fall in prices in the post harvest period ii) stabilize the prices and iii) raise the production of crops through interalia price intervention, particularly, those which are either exported or needing import substitution. The programme was extended to 10 major and minor crops.

The performance of the agricultural sector since 1960 has been one of qualified success. The main successes were in the production of wheat, rice, cotton and poultry products. Rice and cotton have contributed substantially to increase export earnings. Sugar production continues to lag behind demand and the deficit in edible oils has been widening. The domestic production of pulses is also inadequate to meet the requirements. In the livestock sub-sector, a spectacular increase in poultry production has blunted the inflation in meat prices but the growing deficit in milk has resulted in increasing imports of powdered dry milk.

Since 1960 agriculture in Pakistan has undergone major structural changes due to large investments in water development, introduction of new technologies and government policies to expand credit and support minimum prices of major agricultural crops. The farmgate availability of irrigation water, the completion of Mangla and Tarbela storage projects, the public and private tubewells increased the cropping area and cropping intensity and yields.

The agriculture sector has shown a great propensity to modernize despite serious policy and institutional constraints. Spectacular has been the adoption of the use of certified seeds and chemical fertilizers, largely under the influence of the "Green Revolution". The number of farm tractors has increased to the extent that literally all the wheat crop is now threshed with mechanical threshers and similar progress was recorded in the use of rice husking machines. Pakistani farmers were relatively slow in adopting plant protection measures but rapid progress has been made in recent years. Effective plant protection is credited with much of the recent breakthrough in cotton yields in the Punjab.

Perhaps the most significant feature of the "Green Revolution" in Pakistan's agriculture have been the realization by the farmers that higher productivity cannot come from any one input but in the use of a balanced package of all inputs and a tacit recognition by the Government that a suitable policy framework is absolutely essential to the realization of the agricultural potential. Effective support prices, subsidies to popularise the new inputs and credit facilities were the major contributors to the successes of the past. Government price supports for wheat, cotton, rice and sugarcane have succeeded in creating a relatively stable and favourable price outlook for these crops enabling the producers to invest in their production with confidence. This has reduced market uncertainty,

including that arising from violent fluctuations in the international markets.

Past successes in agriculture have not been very even and have been confined mainly to wheat, cotton and rice. The increase in sugarcane production came only from increased area in response to attractive prices. In the case of wheat, cotton and rice, however, a greater part of the higher production came from increased yields. The success of both wheat and rice production dates back to the late 1960s when superior high yielding varieties were introduced. These early imported varieties were rapidly adapted to local conditions and within a few years most of the wheat area was under the new varieties, as was a large part of the coarse rice area. The increased availability of key inputs, particularly water and fertilizers, and an active price support policy greatly enhanced this success. Over the years there has been continuing development and improvement in wheat and rice breeding and several new varieties have been developed and disseminated. Because of the importance of these three crops, much attention has been paid to their agronomic and economic requirements. This concentration of policy directed towards these crops led to positive results which have been the mainstay of the country's agricultural development.

Most government and institutional effort has been directed towards the major crops and there has been a neglect of the majority of so called minor crops. "Minor" has unfortunately been confused with unimportant and only recently has the importance of these minor crops, as sources of, both, food and foreign exchange earnings, been recognised. However, this recognition has not yet been translated into the necessary institutional and policy support. As a result, there has been very limited success in the performance of most of these crops.

There have been some successes in fruit production but the full potential of horticultural products remains to be exploited. The main failure has been in oilseeds production. Consequently, edible oil imports remain one of the heaviest and unjustifiable burdens on the foreign exchange resources of the country.

To sum up, during the 25 years period 1960-1985, the average annual growth rate of agriicultural value-added has been 3.9 percent. Growth has not been steady during this period. Weather conditions, periods of rapid technical change, the pattern of pricing and other policy shifts have resulted in the uneven growth pattern. The crop sector outperformed the livestock sector. Since, 1977 however, the latter has shown considerable dynamism, particularly due to the rapid modernization of the poultry industry and increasing investment in the milk animals.

The early 1960s were characterized by a rapid increase in the number of private and public tubewells. There were 8,000 private and 1250 public tubewells in 1960 compared with 90,000 and 6,525 respectively in 1970. After the neglect of the 1950s, subsidies on inputs and various other incentives were introduced. During the mid-1960s the introduction of the newly developed biochemical technology and the high yielding varieties, coupled with the increased water availability, expanded use of fertilizer and more appropriate price policies, brought about significant success in the wheat and rice production. This negated the pessimistic forecasts and compensated for the unfavourable effects of the supspension of food aid in 1965. The technological breakthrough was accompanied by institutional backing and price supports leading to increased and more efficient use of inputs and resources.

Since 1970, however, increases in inputs - fertilizer, land, water, capital and labour - have been the principal source of the increased

growth rather than the technical change. The increased water availability through tubewells and from Mangla and Tarbela Dams was an important factor leading to the increased use of modern inputs, while additions to the total cropped area under the small farmer management, particularly in the early 1970s, led to substantial increases in cropping intensities.

The objectives of the 6th plan (1983-88) depended heavily on the improvement of supply facilities for inputs and tractorization. Despite institutional changes, structural adjustments, propagation and effective use of inputs, irrigation water, and mechanization, the agriculture sector registered a growth rate of only 3.9 %.

The seventh plan period(1988-93) laid heavy emphasis on the achievement of self-sufficiency in basic food items and improvement in productivity through efficient use of inputs and credits. The farmers were provided remunerative support prices. Research and extension services were strengthened. A new National Agricultural Policy was announced in May, 1991 with a basic thrust on deregulation of the sector, establishing a macro-policy climate conducive for agricultural growth and freeing their system from bureaucratic constraints. However, against a targeted growth rate of 4.7 percent per year, a growth rate of 3.8 percent was achieved in 7th plan period. A new National Agricultural Policy was announced in 1997, increasing the support prices of important crops, emphasising the self sufficiency in food items and improving the social conditions of the rural.

Pakistan inherited very few agricultural research institutes at the time of Independence. None of the national research institutes was located in the teritories that constitute Pakistan. Considerable progress has been made in the past 50 years to evolve a respectable network of agricultural education and research institutions. Pakistan has now 3 Agricultural Universties located at Faisalabad, Tando Jam and Peshawar, a Barani University at Rawalpindi, an Agricultural College at Quetta, a Faculty of Agriculture in the Gomal University at Dera Ismail Khan, a College of Veterinary Sciences at Lahore, 65 Research Institutes, 162 Stations, Sub-Stations, Centres and Laboratories, 6 Agricultural Training Institutes for Field Assistants at Rawalpindi, Rahim Yar Khan, Sargodha, Sakrand, Peshawar, Quetta and Rawalakot.

Pakistan Agricultural Research Council (PARC) was established in the mid-Seventies through the reconstitution of the Food and Agriculture Research Council of Pakistan. In 1978 it became an autonomous body at the Federal level. There are a number of other Federal Agricultural Research Institutes in the country. These include: 3 operated direcely by the Pakistan Central Cotton Committee, 3 by the Ministry of Food & Agriculture, 1 by the Irrigation, Drainage and Flood Control Research Council, 3 by the Pakistan Atomic Energy Commission, 3 by the Pakistan Tobacco Board, and 1 by the Water & Power Development Authority.

The overall production of major food items has always been targeted to improve the quality of food and to keep the overall food availability satisfactory throughout the country. The per capita availability of calories and proteins has improved from 2078 calories per day and 62.8 grams protein per day in 1949-50 to 2570 calories per day and 67.88 grams protein per day in 1995-96.

Per capita availability over time has significantly increased in the country. The calories intake has reached the recommended allowance of FAO. The most dramatic of all the changes in the diet is substantial increase in vegetable oil whose consumption has substantially gone up. The increase in per capita income over the years has led to the change in the consumption pattern of food in Pakistan. Besides per capita income, rapid urbanization has also brought

about the change in consumption behaviour of the population. The food consumption pattern in Pakistan is shifting towards products associated with general increase in income. The shift is from cereals to poultry products, fruit and vegetables, milk and milk products and edible oils. Notwithstanding the shift, cereals and milk products occupy lion share in total expenditure on major food items.

There has been, however, some excessive burden on Pakistan's agriculture. It has consistently helped its neighboring countries and so has been instrumental in reducing food insecurity within these countries. The source of such help was both formal and informal channels. Pakistan has had to bear some cost as a result.

SECTORAL PERFORMANCE

CROPS

Most of the Pakistan is classified as arid to semi-arid because rainfall is not sufficient to grow agricultural crops, forests and fruit plants and pastures.

The annual variations in temperature provide two distinct crop seasons, i.e., kharif (summer) and rabi (winter). Kharif crops are generally sown between April and June and harvested during October to December. Rabi crops are sown in October-November and harvested in April-May. Cropping system vary widely due to variations in agro-climatic and soil conditions. In each season several crops are raised depending not only on the nature of soil and climatic condition but on the availability of resources. Of the main food crops wheat, gram, rape and mustard seed are the principal rabi crops, while rice, maize, cotton, millet, sorghum and sugarcane are the main kharif crops. In addition a variety of both summer and winter vegetables and fruits are grown in the country. Out of total cropped area food grains account for 56 percent, cash crop 16 percent, pulses 7 percent, oilseeds 3 percent and the rest is occupied by fruits, vegetables and others.

Agricultural production is dominated by crop production which accounts for over 63 percent of agriculture's GDP in 1995-96, (at constant prices). The rest is accounted for by livestock which is over 32 percent. Forestry and fisheries currently make up just over 4.4 percent of the total. There are four major crops, namely wheat, rice, cotton, and sugarcane. The fifth most important crop is maize but its production is low compared ot its potential as a Kharif crop. Among the minor crops the most important are fruits and vegetables, followed by pulses and oilseeds. These crops are important because, not only are they high-value crops, but they also have a great potential for export earnings (fruits and vegetables) and import substitution (oilseeds).

MAJOR CROPS

Over time, the share of the cropped area accounted for by various crops has changed. At present, rice and wheat account for over 46 percent of the cropped area. The share of these two crops has increased since 1960. They have displaced other cereal crops. Pulses and oilseeds both show a decline in area share while sugarcane, cotton, fruits and vegetables all show an increase in area share.

The average rates of growth in physical production of the four major crops since the early 1960s have been fairly high. There has been an increase in both the area and the yields of all four crops except sugarcane. The yield increases have been most impressive for wheat, followed by cotton, and least for sugarcane. The area under sugarcane has, however, increased substantially and the growth in area under sugarcane has been the highest of all the four crops. The area, production and yields of the four major crops and maize are given below in table 6.2.

Table 6.2 CHANGES IN AREA, PRODUCTION AND YIELD OF SOME IMPORTANT CROPS

Year	Crop	Area	Production	yield
1947-48	Wheat	3953.7	3354.0	848.0
1996-97		8901.1	16650.5	2053.3
1947-48	Cotton	1236.7	1156.2	159.0
1996-97		3148.6	9374.2	506.4
1947-48	Rice	789.9	692.2	877.0
1996-97		2251.1	4304.8	1912.3
1947-48	Sugarcane	189.4	5529.3	29.0
1996-97		964.6	41998.4	43.5
1947-48	Maize	363.8	358.7	986.0
1996-97		871.1	1259.4	1446.0

NOTE: Area(000 H), Production(000 Tonnes) except cotton which is (000 bales of 170.09 kg each), Yield(Kg/h) except sugarcane which is (tonne/h)

WHEAT

The most outstanding production success has been that of wheat output. Wheat being the staple food of the people in Pakistan gets the highest priority in the government's agricultural development strategy. About 79 percent of the total wheat crop is irrigated. Its share in total cropped area increased from 34 percent in 1947-48 to 37 percent in 1995-96 which has grown in both irrigated and non-irrigated areas in all provinces.

After the mid 1960s, with the introduction of the new high yielding varieties, wheat production increased dramatically, mainly as a result of the yield increase. Wheat area has also expanded. The main impact has been through the rapid increase in the adoption of the high-yielding, disease resistant varieties, use of chemical fertilizers, water management and other inputs. Almost all the areas that are not under the high yielding varieties are barani areas.

Except in the cotton/wheat zones area expansion has been very low. Yield increases dominate throughout and the principal influence has been the replacement of the traditional with the high-yielding varieties. Although the yields of the modern wheat varieties are substantially higher than the traditional varieties, these yields, having grown rapidly during the late sixties, have not grown much thereafter. Given the crop system constraints, the pricing and research policies which affect the economic attractiveness and physical growth characteristics of the competing crops also have an influence on the achieved wheat yields. Time series of area, production and yield are given in table 6.4.

RICE

Rice is one of Pakistan's two principal export crops. Pakistan is the third largest exporter of rice in the world. The area under rice cultivation in 1995-96 was 2.16 million hectares which represent 9.52 percent of the total cropped area.

The shortage of labour at transplanting time and system of contract transplanting often results in an inadequate plant population. Since the mid 1970s, overall growth in rice production has been much slower than for wheat.

Basmati rice is high export product of Pakistan and generates substantial revenues for the government through export duties. The support price has been increased and the private sector is being encouraged to export packaged rice. Pakistan has now faced with a serious challenge from India, Thailand, and the United States in exporting basmati rice in its traditional export markets, and the government will have to pay much greater attention than ever before to enhance production and maintain its international competitiveness. Time series of area, production and yield are given in table 6.4.

COTTON

Cotton is Pakistan's main export crop. The country is amongst the world's leading producer and exportor of cotton. The area under cotton cultivation has increased from 1.24 to 3 million hectares during the last fifty years, while cotton production attained a peak of 12.8 million bales in 1991-92. In the subsequent years production had been hit hard by the leaf curl virus. The most important factors contributing to the increased production have been the stability in the domestic cotton prices as a result of the support price policy of the government and more extensive use of the pest control methods. Time series of area, production and yield are given in table 6.4.

SUGARCANE

Sugarcane is a labour intensive crop and requires manpower for operations like planting, inter-culture, harvesting, stripping and loading of the produce.

Production of Sugarcane reached the level of 45.23 million tonnes in 1995-96. In 1994-95 the production reached an all time record level of 47.2 million tonnes due largely to a rise in support price of commodity and increase in area.

The Punjab is main growing area for this important cash crop, followed by Sindh and the NWFP. Cane yield have increased only slightly, increases in production have come primarily from area growth. In 1995-96, the area under sugarcane was 963.1 thousand hectares and average yield was 47.0 tons/hec. Average yields in Pakistan are considerably lower than those obtained in many other countries, such as India (53 tons/ha) and Egypt (83 tons/hec).

Sugarcane is a high water delta crop, and requires about 1,500 to 2,000 mm of water from planting to maturity. The growth, development and yield of crop is greatly affected because of water stress during the early period of growth i.e., April to June. At this time, canal water supplies are low, the temperature is high with little or no rains, and the capacity of tubewells where available, is constrained by loadshedding of electricity.

The pattern of the growth of sugarcane is associated exclusively with area expansion. Sugarcane yields have been virtually static since 1970 (42.5 tons/hec.) with marginal improvements in certain years. To meet the domestic demand requirements of the sugar industry, sugarcane cultivation has been encouraged through an attractive price structure. Sugarcane takes up close to two crop seasons and requires large inputs of scarce water. Sugarcane area has expanded considerably, particularly in Sind. This has been despite the fact that Pakistan does not have the ideal climate for sugarcane cultivation. The average yields in Pakistan are still among the lowest in the world. Time series of area, production and yield are given in table 6.5.

MAIZE

Maize is grown in both irrigated and rainfed areas, more than half of the crop is grown in NWFP and almost all the remainder in Punjab. Area under maize has increased from 363.8 to 880.8 thousand hectares from 1947-48 to 1995-96, a little more than double, since Independence but its yield has

not shown any significant improvement as research has failed to produce suitable high yielding varieties and most of the crop in NWFP continues to be grown under rainfed conditions. The yield gap in this crop is one of the highest. Most of Maize, around three quarters, is used for human consumption by subsistence farmers, whereas the remainder is used by industry to produce starch and poultry feed mixes. Time series of area, production and yield are given in table 6.5.

MINOR CROPS

Most government and institutional effort has been directed towards the major crops and there has been a neglect of the majority of so called minor crops. As a result, there has been very limited success in the performance of most of these crops.

Policy measures, both in terms of pricing and technology , have been largely confined to the major crops. Minor crops have generally received little attention and recent half hearted attempts to redress the situation have not met with much success. It is clear that the true potential of most crops in Pakistan has yet to be realized.

Pulses, fruits and vegetables, and oilseeds accounted for the bulk of the minor crops area. Except for fruits and vegetables, all the other minor crops have shown a reduction in their area share. This has been particularly for pulses which declined from 11 percent to 7 percent and oilseeds which came down from 4.0 percent to only 2.4 percent. Minor crops also include barley, gram and spices, while green fodders constitute a substantial crop both in kharif and rabi.

COARSE GRAINS

Sorghum, millet and barley are important coarse grain crops grown in Pakistan. Barley was covering 57.6 % area of these crops which were covering 12 % of total cropped area in 1947-48. Situation is entirely changed in 1995-96. Now these crops cover only 4.4 % of the total cropped area inspite of the 100 % increase in cropped area.

All cereals include wheat, rice maize and coarse grains. These were occupying 56 % of the total cropped area in 1947-48 which are now occupying 55 % in 1995-96. Wheat's share in area of cereals was about 61% in the beginning which is 67 % at present. In production of cereals, share of wheat was 66.76 % which is now 74.33 %. Wheat is replacing the coarse grains.

The relative importance of coarse grains in the Pakistani diet has declined over time, as tastes have changed, and per capita incomes have increased. However, such grains as sorghum, millet, and barley constitute a major source of feed and fodder, and their importance will increase further if the poultry sector expands. Time series of area, production and yield are given in table 6.6.

PULSES

Pulses are still a major source of protein for the poor, consequently, increasing their production is a matter of considerable social importance.

Gram, which accounts for about 70 % of the total acreage under pulses, is a major crop in the farming system of Pakistan. Gram an important source of protein for the middle/low income classes, is widely consumed as popular food in several forms. From 1947-48 to 1995-96, the area and production has shown nominal increase. However, its share in cropped area has decreased from 7.58 % to 4.95 %, inspite of 100 % increase in cropped area. Its yield has decreased which was 677 kg/h in 1948-49 and is 607 kg/h in 1995-96.The performance of the gram has been poor, despite the fact that whole sale and retail prices increased manyfold over the last fifty years. The failure of this crop to develop is mainly due to stagnant technology.

The other important pulse crops are mung, mash and masoor. Based on the area and production, the Punjab is the major producer of pulses followed by Sindh, NWFP and Balochistan. Only mung has shown a nominal increase in area, productionand yield. Mash is at the level of fifty years back. Masoor has shown a decrease in area and stagnation in production and yield. Prices increased more than fivefold since 1970-71, but production did not respond, as these crops have not experienced any technological breakthrough in the last fifty years. Yields of pulses suffer adversely due to ineffective weed and pest control and from lack of measures to control viral infection, especially in the case of masoor and mash. Considerable losses are also incurred at the harvesting and threshing stages due to lack of appropriate technologies in the field. Table below show the raea, production and yield of important pulses. Time series data of all pulses are given in table 6.3.

Table 6.3 CHANGES IN AREA, PRODUCTION AND YIELD OF SOME IMPORTANT PULSES

Year	Pulse	Area	Production	Yield
1947-48	Gram	881.8	472.5	536
1996-97		1100.2	594.4	540
1947-48	Mash	53.1	25.3	477
1996-97		57.4	28.4	495
1947-48	Mung	86.0	30.9	359
1996-97		192.4	89.5	465
1947-48	Masoor(Lentil)	68.3	34.6	507
1996-97		69.3	34.9	504
1947-48	Others	196.2	160.5	
1996-97		155.5	85.1	
1947-48	All	1285.4	713.8	
1996-97		1574.8	832.4	

NOTE: All include Gram, Mash, Mung, Masoor, Arhar, Mattri and other Kharif and Rabi pulses.
Area(000 hectares), Production(000 tons), Yield(Kg/h)

FRUITS AND VEGETABLES

Fruits and vegetables represent a dynamic segment of Pakistani agriculture. The output of fruits and vegetables has been increasing much faster than the growth in population, with the growth of fruits being much higher than that of vegetables. Between 1970-71 and 1995-96 the area under fruits increased by 188.3 percent and fruit production increased by 231.3 percent. The area under vegetable (excluding potatoes and sugar beets) increased by 130.2 percent, while production increased by 155.4 % In 1995-96, the area under fruits was 0.5757 million hectares, while 0.2564 million hectares was under vegetables, out of total cropped area of 22.59 million hectares. There have been successes in fruit production but the full potential of horticultural products remains to be exploited. Time series data of all fruits are given in table 6.7.

OILSEEDS

Oilseeds represent the most notable agricultural policy failure of the past. From self sufficiency, the country turned into a major importer of edible oils. Imports currently represent about two third of domestic consumption. Only one third of the country's requirements of edible oils are met through domestic production. Imports of edible oil remain one of the heaviest and unjustifiable burdens on the

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foreign exchange resources of the country. The area under traditional oilseeds (rapesseed and mustard) has declined and the yield has remained static. The production of oilseeds has remained nearly stagnant for many years, despite the fact that the demand for vegetable ghee, extracted from oil-seed doubled in the last 15 years.

The production of cottonseed, which has always been the major domestic source of edible oil, has increased from 393.4 thousand tonnes in 1947-48 to 3604.4 thousand tonnes in 1995-96, after achieving the maximum, 4362 thousand tonnes, in 1991-92, while rapeseed and mustard production changed nominally from 174.8 thousand tonnes in 1947-48 to 254.5 thousand tonnes in 1995-96.

The steps to introduce and promote nontraditional oilseeds crops, i.e., sunflower, safflower and soyabean were initiated in the seventies. A well orchestrated oilseed sector strategy has resulted in significant increase in traditional and non-traditional oilseed crops. In early eighty's there has been an effort to encourage the production of oilseeds and the introduction of sunflower, safflower and soyabean has been a part of this effort. Sunflower is getting ground but Soyabean and Safflower are dwindling both in area and production. Substantial gains have been achieved in Sunflower and Canola production. Sunflower acreage went to 86210 hectares in 1995-96 against 68377 hectares of 1994-95. The sailaba lands of Balochistan are being brought under Sunflower production.

Traditionally, rapeseed and mustard, groundnut and sesamum have been the main oilseeds, next to the dominant share of cottonseed. Rapeseed and mustard have experienced little varietal improvement and have traditionally been grown mainly on relatively poorer lands. Time series data of oilseeds are given in table 6.8.

LIVESTOCK

Livestock is one of the main sub-sectors of agriculture. It plays an important role in the economy of the country. During 1995-96, livestock contributed 32% to Agricultural GDP and 8% to National GDP. Its share of the value added in agriculture is almost one third of the total. This sector plays an important role in country's economy through making available the most essential items of human diet like milk, meat, eggs and poultry and providing the principal source of power for land cultivation and rural transport.

National herd comprises of 17.9 million cattle, 20.2 million buffaloes, 29.8 million sheep, 45.6 million goats, 5.8 million other animals and 350.0 million poultry in 1995-96 This sector provides 19.9 million tonnes of milk, 2.27 million tonnes of meat, 5.8 billion eggs, 64 thousand tons of wool and 45.6 million hides/skins and about 80 percent of traction power required for agricultural operations. There has been a steady increase in milk production and its total production has improved from 12.1 million tonnes in 1985-86 to 19.92 million tonnes in 1995-96, indicating an increase of about 65 percent in last ten years.

There have always been two main streams of livestock production, livestock kept on range in large herds and sedentary stock with farmers and other rural households. The close integration of a good part of the livestock sector with the rural subsistence economy is made possible by the reliance on the crop residues as feed and the growing of fodder crops that fit into the crop cycle. Range land outside the crop growing regions has been the other major source of animal feed.

The livestock sub-sector consists of two fairly distinct activities. The first is the breeding of milk and meat animals (cows, buffaloes, goats, sheep, etc.) and the second is poultry. The rearing of bullocks as work animals

is a specialized complementary activity to crop production and bullocks are still the main source of non-mechanised power in Pakistan agriculture. Though not a direct source of output, and increasingly replaced by tractors, the contribution of bullock power to agricultural output is still crucial.

The breeding of milk and meat animals has been changing from primarily a subsistence activity to commercial undertakings characterized by widespread ownership and the predominance of small herds. It serves firstly to meet farm dietary requirements and secondly as a source of cash income.

With increasing per capita incomes, particularly the urban incomes, there has been a fairly rapid increase in the demand for both milk and red meat. This has resulted in an increase in the livestock activities for commercial purposes, particularly for milk production. The dairy industry in Pakistan has achieved a relatively advanced level of development with high levels of per capita production and a broad array of processed milk products. Milk off-take for human consumption is about 120 Kg per capita. This high level of consumption is greater than a number of developed countries and unmatched by any large country of South Asia.

Milk production has increased from about 7.8 million tonnes in 1971-72 to around 19.9 million tonnes in 1995-96, an increase of about 155 percent. Milk production initially grew less rapidly than the population, but has picked up appreciably since 1980. Its availability for direct human consumption in 1995-96 was estimated at around 16.1 million tonnes giving a per capita availability of a little over 120 litres per annum.

Production figures for the beef indicate 183 % increase from 1971-72 to 1995-96 where as the increase for mutton during the same period is 350.5 %, which has bridged the gap. The current production level is around 2.27 million tonnes per annum, of which 43 percent is beef, 41 percent mutton and about 16 % is poultry. The Government attempts to control meat prices for the benefit of the urban consumers. This has served as a constraint on rearing animals specifically for meat production.

Events in poultry industry have been quite different from the trends in the cattle and buffalo sector. The most dramatic success occured in the production of poultry-meat and eggs. Poultry production has increased considerably over the years and has been the focal point of growth in the livestock sector. Poultry farming has been relatively more commercialized and specialized poultry farming is an increasingly important activity. Commercialization of the poultry industry started in the early sixties with the introduction of hybrid layer and broiler stocks.

The poultry sector was able to maintain an annual growth rate of 10-15 percent per annum since 1963. However, the growth rate has declined to 4.1 percent during the Seventh Plan(1988-93) due to the imposition of income tax in 1988 on certain farms. The increase in production figures of poultry meat is of a qualified success, i.e., 2435 % during the last twenty five years. Its share in meat production has increased from 2.5% to 16% from 1971-72 to 1995-96. During 1995-96, 355 thousand tonnes poultry meat was produced compared to 151 thousand tonnes produced in 1990-91, an increase of 135% in last five years.

The problems faced in poultry development are poor management, poor quality and high cost of feed and poor design of housing and ventilation system. Time series data of meat, eggs and milk are given in table 6.9.

FISHERY

As compared to animal production, fisheries has been a relatively well looked after subsector. Its main importance has

been as a foreign exchange earner. As a source of food, the sub-sector has been relatively unimportant. Fish consumption has traditionally never been a significant part of food except in the coastal regions. Fish prices, especially away from the coastal areas, have also been generally high and even the production of the marine fish has been mainly for the fish meal industry and export.

Although it contributes 1% to GDP and provides jobs to 1% of country's labour force, yet it is the most important economic activity along the coast of Sindh and Balochistan. It is estimated that in 1996-97, about 391,000 fishermen are associated with this sector. Its contribution to country's export earnings is substantial. In 1996-97, fish and fishery products valued at Rs.5.29 billion were exported from Pakistan to various countries.

The total fish production between 1947-48 and 1995-96 increased 1258 percent (from 39,900 to 541,900 tonnes). During 1985-86, the total fish production was over 408,000 metric tons, of which over 81 percent was from the marine waters and the rest from the inland waters. During 1995-96, the total fish production was over 541,900 tonnes, of which over 75 percent was from the marine waters and the rest from the inland waters. There has been a rapid increase in fish production since early seventies. Most of this increase has been utilized for exports and as a component of feed for expanding poultry industry.

A fair amount of infrastructural development has taken place. This has included the commissioning of the Fish Harbour at Karachi in 1959, its expansion and improvement in mid eighty's, the construction of a deep sea fish harbour at Korangi and increased facilities along the Balochistan coastline. For further improvements, special emphasis is being paid on strengthening of infrastructure of fisheries, enhancement of fish production, increases in export earnings as well as domestic consumption of fish, diversification of fishing efforts, exploitation of hitherto untapped resources, and above all upgradation of socio-economic condition of the fishermen communities. Small scale fisheries is generally an activity of poor class of the society. The government accorded highest priority to the socio-economic uplift of this neglected segment of the society and therefore, announced a number of incentives for the socio-economic development of poor fishermen.

In order to improve the fishery sector of Pakistan, a number of projects are being executed by fisheries organizations of Pakistan. Marine Fisheries Department, Karachi and Provincial Fisheries Departments of Punjab, Sindh and NWFP are executing these projects.
Exploitation of deep area resources of the Exclusive Economic Zone of Pakistan was restricted to demersal trawling only. A new policy for the exploitation of fishery resources of deep sea water is required in consultation with provinces of Sindh and Balochistan. Time series data of fisheries are given in table 6.9.

FORESTRY

Forestry is one of the most neglected components of the agriculture sector in terms of its contribution to the agriculture GDP which has declined to 0.4 percent in 1986-87 and to only 0.2 percent in 1996-97. The total area under forests, including Azad kashmir and the Northern Areas, in 1986-87 covered only 5.2 percent of the total land area. This amount to 4.88 million hectares. In addition, the forest department also manages about 6 million hectares of the range land. Of this forest area less than half is capable of producing timber and firewood. In 1996-97 it is 4.2 million hectares which is 4.8 % of the country's area. Per capita forest area is 0.037 which is quite below the world average of 1%.

Firewood consumption in 1984-85 was estimated at 19.7 million cubic meters of which 90 percent came from the farm land and the rest from the state forests while its consumption in 1995-96 is estimated at 28 million cubic meters of which above 95 percent came from the farm land and only .357 million cubic meters from the state forests. The scarcity of both timber and firewood has led to both illegal and excessive cutting of trees, particularly in the Northern areas, leading to excessive soil erosion and flood damage. Time series data of forestry are given in table 6.9.

WATER AND LAND

The development, use and distribution of the physical resources, namely water and land have played a major role in the process of agricultural development in Pakistan. The Development of water and power resources is of vital importance for a developing country like our's. It helps in building the infrastructure of the economy which is essential for the development of agriculture, industry and other sectors.

The use of both land and water has increased over the years. The paucity of high quality agricultural land has been partly overcome through greater intensity of land use and the multiple cropping leading to increases in cropped area, along with the more availability of area as a result of increases in water supplies. Greater water use has been mainly through larger supplies from both surface water sources and ground water. The consequent increase in production and productivity would infact not have been possible without the expanded water availability. Increases in the intensity of land use as well as in the total cropped area and the cropping intensities would have been a dream without the water. In relation to the available land resources, the lack of water has been one of the main limiting factors for agricultural production in Pakistan.

Pakistan's agriculture is mostly dependent on irrigation. It accounts for 76 percent of the total irrigated land in Pakistan against 25 percent for India and 35 percent for Indonesia. Our Agriculture is based pre-dominantly on one of the oldest and largest contiguous gravity flow irrigation system of Indus Basin. The major problem with the system is the supply-based structure. Roughly 85 percent of the annual flow are in the kharif season and 15 percent in the rabi season. The system was basically designed to provide 75 percent intensive cultivation.

At the time of independence the irrigation system consisted of old established canal systems, with the exception of the Thal system, which was being developed for perennial irrigation for an area of 0.66 million hectares. All these systems were dependent on the run-of-the river flows of the Indus and its tributaries. There were no storage dams to store surplus supplies for later use. The total Culturable Commanded Area (CCA) for which the irrigation supplies were derived from weirs and barrages on the rivers was 11 million hectares. Of this, 2.4 million hectares were fed from inundation canals which operated only during the kharif season. In the weir controlled systems, only 8.6 million hectares received the perennial supplies. The average withdrawals of canals from the indus River system in 1947 were about 64 million acre feet (MAF) of which over 10 MAF were from the three eastern rivers, Sutlej, Bias and Ravi. In NWFP 4 MAF withdrawal of canals were from the Kabul, Swat and Kurram rivers.

While the Indus waters negotiations with India were in progress, Pakistan undertook the construction of 3 link canals to insure against the stoppage of supplies by India. The construction of three new barrages on the Indus were also undertaken to convert the existing inundation canals into the weir controlled canals. These barrages, Kotri(1956), Taunsa (1958), and Guddu(1962) had a total CCA of 3

million hectares, of which 0.35 million hectares in the Kotri command area were made perennial. The main benefit of these barrages was to ensure more reliable supplies in the canals and the extended irrigation to the new areas was initially limited.

Since 1960 agriculture in Pakistan has undergone major structural changes due to large investments in water development, introduction of new technologies and government policies to expand credit and support minimum prices of major agricultural crops. Under the provision of the Indo-Pakistan Indus Water Treaty of 1960 several projects were undetaken. These included the construction of the Mangla and the Tarbela reservoirs, five new barrages, eight inter-river link canals, one syphon, and the remodelling of the existing barrages and the link canals. Except for Tarbela, which became operational in 1975-76, all these works were completed during the period 1960-70.

Prior to the Indus Water Treaty, the canal head withdrawals had increased by 23 percent from 64 MAF in 1947-48 to 78.6 MAF in 1959-60. During the next seven years prior to the completion of the Mangla Dam withdrawals had further increased to 87.7 MAF in 1966-67. Before the commissioning of Tarbela in 1975-76 the average canal withdrawals were 98.9 MAF. Since 1975-76 withdrawals have averaged around 103 MAF up to 1992-93, an overall increase, since 1947, of 61 percent. The kharif canal head withdrawals were around 71 MAF and the rabi supplies around 38.5 MAF in 1991-92.

The farmgate availability of irrigation water has about doubled from 58.7 MAF in 1960-61 to 104.7 MAF in 1985-86 and it is 130.9 MAF in 1995-96. These additional water supplies came partly from the completion of Mangla and Tarbela storage projects but mainly from the public and private tubewells. Large scale development of ground water has come about through the introduction of tubewells. Initially, this development started in the public sector in some canal commanded areas but was soon overtaken by the private sector, both inside and outside the command areas. The number of tubewells went up from about 60 thousand in 1960-61 to over 257309 in 1985-86 and 483785 in 1995-96. Part of the enhanced water availability was used to cultivate more land and part was utilized to raise the cropping intensity of existing lands and to increase the crop yields. The cultivated area increased by about 3.43 million hectares from 1960-61 to 1995-96 but the area, cropped more than once, went up from 1.59 million hectares in 1960-61 to 6.31 million hectares in 1995-96, about 297 percent increase. Consequently, the total cropped area increased from 14.86 million hectares to 22.59 million hectares, an increase of 52 percent.

Pakistan has made good progress in improving water availability for agricultural purposes. Formgate availability of water increased from 58.7 million acre feet (MAF) in 1960-61 to 130.9 MAF in 1995-96. The delivery of water improved from 2.28 feet to over 3 feet per irrigated acre during the same period. Increased availability of canal water is about 36 MAF while the delivery from tubewells went up from 2.4 MAF to 38 MAF during the same period which was 48.5 MAF in 1994-95 (decrease is due to the short supply from public tubewells). The scope for further expansion from tubewells is very limited because underground sources of sweet water are running out.

The irrigation system encompasses the Indus River and its tributaries, three major reservoirs, 19 barrages, 48 principal canals. Total length of the canal system is about 63,000 Kilometers with water courses about 110,000 Kilometers and field ditches running another 1.6 million Kilometers. Total irrigation water supplies at farm gate increased by about 123% from 58.7 MAF in 1960-61 to 130.9 MAF in 1995-96. Surface water constituted about 96% in 1960-61, 75% in 1970-71 but fell to 70.74 % by 1995-96(63% by 1994-95), while

share of ground water increased from 3.7% to over 29% during the same period. Ground water is pumped by both public and private tubewells, the performance of private tubewells has been far more impressive. Water supplies from public tubewells increased from 0.6 MAF in 1960-61 to 12.8 MAF in 1994-95 while volume pumped from private sector increased from 1.8 to 35.7 MAF during same period. The exploitation of underground water resources had increased supplies in rabi seasons, the availability of farm gate water for kharif increased by 75.5 percent while in rabi by 112% from 1967-68 to 1994-95. The increase in water availability has not only increased the size of irrigated areas but also enhanced per acre availability of water within the expanded irrigated areas.

Irrigated land has increased from 8.72 million hectares in 1947-48 to 17.58 million hectares in 1995-96. There is thus limited scope for expanding indus irrigated land. There is only a scope of 10 percent expansion in water resources. Thus improvement in the efficiency of water use are to be given high priority.

The ground water supplies provided much needed flexibility in availability of water for irrigation. Surface water irrigation system is supply driven and not demand driven, therefore, underground water supplies have played the vital role in increasing the productivity of irrigated land. It has been recognized that about 60 percent of canal water is actually delivered to the fields, the rest is lost in seepage. The surface irrigation system suffers from substantial losses in the process of conveying water from river to farmagate, 25% of the water from canal head to the outlet and another 15% from outlet to farmgate. In order to conserve this valuable resource and make more efficient use of available supplies, the Government has taken up, in 1976, "ON-FARM WATER MANAGEMENT" (OFWM) programmes to improve the conveyance and application efficiency of water. It includes water course lining, concrete control structures, and precision land levelling. Estimate shows that losses have declined to 30% in the programme areas. However, there is need to develop additional water resources in the country if we want to cope with the challenges of energy and food requirement in the wake of population growth. No significant increase has occurred in water supplies since completion of Tarbela Dam, there is thus need to accord highest priority to the water and energy sectors of the economy.

There are several constraints which affect land productivity in pakistan. These include soil erosion, water logging and salinity and other soil related problems. Although the causes by wind and run off water particularly in the rain fed areas are well known yet the depletion of natural vegetation and excessive tillage has accelerated the problem of soil erosion. Flood damage causing soil erosion has been constantly on the increase. The soil nutrient have been deplated. Some get washed away by irrigation water. Unchanged cropping paterns, years after years, are also responsible for soil degradation.

As a result of increasing population and the law of inheritance, land has been badly fragmented. Almost 80 percent of the farms are below 12.5 acres having 7.4 million hectares. Land holdings in Pakistan are characterized by small farms. There are 5.07 million farms in the country and 81 percent of them are small farms (less than 5 hectare) but account for 39 percent of total cultivated area. The middle size farms (5 - 10 hectares) are 12 percent and account for 22 percent of cultivated area. The large farms (10 hectares and above) are 7 percent of total farms but account for 40 percent of total cultivated area.

At present about 20% (one fifth) of the cultivated land in the canal command area(CCA) is affected by water logging to varying degrees, and even a greater amount suffers from salinity. The problem of soil

salinity and / or sodicity is of great economic significance to Pakistan as it depresses land productivity over 11.98 million hectares of land. Time series data on land utilization and irrigation by different sources are given in tables 6.10 and 6.11 respectively

PRODUCTIVITY

Of the two kinds of technology available, for enhancing the productivity, Pakistan's agriculture has adopted both, the biochemical as well as the mechanical technologies. Agricultural development has been concerned with both, the development of land and water resources and the increased adoption and availability of modern inputs for improving productivity. The development of water resources have been particularly impresive yet the key role played by human and soil resources can not be minimised. The recent strategy for agricultural development has relied heavily upon ensuring the availability of inputs. The factors which directly contributed to larger increase in production from land mainly comprise of fertilizer, seed, plant protection, mechanisation and water.

USE OF FERTILIZER

The growth in fertilizer use in Pakistan is one of prominent success stories in the field of agriculture. This single most important input played vital role in boosting the yield and production of all types of crops and helped in achieving the desired goals of increase in production of not only food crops but also cash crops. This increase would have not been possible without the availability and application of this single most important input. Use of fertilizer in the country was introduced in fifties but it gained momentum only in sixties, due to Green Revolution coupled with a series of other factors comprising of:

- introduction of high yielding varieties of wheat, rice, and cotton
- expansion in cultivated area especially of wheat
- increase in irrigation water supplies and
- public sector support in terms of subsidies, credit, support prices etc.

Fertilizer off-take which was 14,100 nutrient tonnes in 1954-55 increased to 19400 nutrient tonnes in 1959-60 indicating an increase of 38 percent. The consumption of fertilizer continued to increase and reached a level of 307,700 nutrient tonnes in 1969-70, 1044,300 nutrient tonnes in 1979-80, 1890,100 nutrient tonnes in 1989-90 and 2513,000 nutrient tonnes in 1995-96. Fertilizer use reached about 117 Kgs per cultivated hectare in 1995-96 compared to 2Kgs in 1960-61. The historical pattern reveals that consumption of fertilizer slowed down in 1980-81 and 1981-82 when the sale price of fertilizer were increased with the objective of gradually reducing the subsidy. First reduction was introduced in february, 1980 and further two in March and October, 1982.

The production of fertilizer during these period had also been constantly increasing. The production which was 43 thousand tonnes in 1959-60 increased to 373.25 thousand tonnes in 1969-70, 1155 thousand tonnes in 1979-80, 3048 thousand tonnes in 1989-90 and further to 3826 thousand tonnes in 1994-95. The production continued to increase and reached 3826 thousand tonnes in 1994-95. Imports increased from 51.7 thousand tonnes in 1959-60 to 261 thousand tonnes in 1994-95 after achieving a maximum of 903 thousand tonnes in 1993-94.

There have been various economic, institutional and infrastructural factors that have influenced the use of fertilizers

over time. The fertilizer sector had undergone important structural changes due to government's de-regulation and privatization policy. The government has eliminated all kinds of subsidies on fertilizer and simultaneously deregulated and privatized production, import and marketing of fertilizers with a view to enhancing fertilizer use efficiency and making efficient use of resources. The role of the public sector distribution agencies will however remain relevant for the next few years particularly for carrying fertilizer to remote areas. Time series data on fertilizer off-take are given in table 6.12

IMPROVED SEEDS

It is a recognised fact that the use of improved seeds is one of the most economic way of enhancing agricultural production. Emphasis had, therefore, been placed on the seed programmes. Rice varieties imported from International Rice Research Institute Philippines and wheat varieties developed at International Wheat and Maize Institute (CIMMYT) in Mexico were tried on experimental basis which gave encouraging results.

New seed varieties for other crops, particularly cotton, were also developed and introduced with resultant steady increase in the cotton output but their full potential was not realised untill recently when the inputs package for cotton became more balanced including seed, water, fertilizer and plant protection. The main success of the new seed varieties, to date, remain in wheat and rice and continuous development in cross-breeding and adaptation of wheat and rice seeds has taken place. Breeding of new cotton seed has been fairly continuous. The development of new varieties of sugarcane has been the least satisfactory and grossly inadequate.

Seed deterioration over time is common in many crops and systematic seed replacement is necessary. By the 1970s the production of seed by the Government research stations was expanded and the certification and distribution of the improved seed organised.. Emphasis was particularly given to the biological treatment of the new seeds. Biological method of pest control is not only low in cost, it is self perpetuating and does not have the side effects of chemical control.

USE OF PESTICIDES

Pests and diseases had always taken heavy toll of agricultural production. Farmers have now become fully conscious of the damages done by the pests. The consumption of pesticides had accordingly increased rapidly, from 5000 M. tons in 1982 to 43219 M. tons in 1996. The major share is used on cotton. The government is emphasizing on Integrated Pest Management and Integrated Disease Management techniques. Necessary legal coverage has been given to check adulteration in pesticides which was on the increase. There is a danger, however, of inadequate safety measures and increased health hazards, both due to over competition and inadequate knowledge among the farmers regarding pesticides.

Considerable expension took place in plant protection operations which became 526 thousand hectares under major crops in 1959-60 as against 8 thousand hactares in 1954-55 through ground and aerial operations. Despite these increases, plant protection coverage on the national level is only 12 percent of the total cropped area. The Plant Protection coverage increased from 1.27 spray million hectares in 1980-81 to 9.17 million spray hectares in 1991-92. The important crops which are covered by aerial operations include sugarcane and paddy besides orchards and gardens.

MECHANIZATION OF AGRICULTURE

The progress of agriculture in the developing countries including Pakistan in the last 1 - 1/2 decade reveals that the mechanization has played a vital role in boosting the

agriculture production. Mechanization has become essential to intensify cultivation and increase the speed of pre-harvest and post harvest operations. The use of agricultural machinery for the development / reclamation of new land, cultivation, ploughing, ridging, sowing and harvesting of crop is gradually increasing. The most popular forms of mechanization in Pakistan have been tubewells, tractors, threshers and implements. Tractors, tubewells and other farm machinery have greatly helped in increasing the cultivated area, cropped area, cropping intensity and consequently the production.

Tractors gained importance with intensive farming and because of scarcity of labour in rural areas. As a result of liberal import policy, and increased incentives for local assembly, the tractor production had reached the level of 30,000 per annum. The number of tractors operating in Agriculture increased from 157,310 in 1984 to 178,700 in 1992-93. Total number of tubewells have increased from 86 thousand in 1970 to 483.7 thousand in 1995.

AGRICULTURAL CREDIT

The new technology comprising of high yielding varieties, chemical fertilizers, pesticides, increased mechanisation, and improved irrigation practices increased the monetisation of the agricultural sector. With low savings, the new investment could only be achieved through increased borrowing, particularly when the technology spread all the way to reach the relatively smaller and poorer farmers. For these farmers the rural credit is an essential input in the technology package and the adequate provision of the production credit becomes an essential prerequisite to modernisation. Not only is the provision of the credit essential but the use of this credit for productive purposes is equally important.

At the time of independence, the credit came primarily from non-institutional sources. Credit provided by the government (then commonly known as taccavi) and the cooperative societies covered only a small portion of the capital requirement of the farmers. A study conducted by the Board of Economy Enquiry, Punjab in 1949 showed that the share of institutional sources in the total amount of agricultural credit was 16 percent, the non-institutional sources accounting for the remaining 84 percent.

Immediately after independence, as a measure to develop institutional credit, significant changes were made in the lending rules of the State Bank of Pakistan. The State Bank of Pakistan order 1948 statutorily authorized it to advance short term loans to the provincial cooperative banks for financing agricultural operations and marketing of agriculture produce. The state bank of Pakistan provided credit at concessional rates of interest to cooperatives and the Agricultural Development Bank of Pakistan (ADBP) which was set up in 1961 after amalgamating the Agricultural Development Finance Cooperation (ADFC) and Agricultural Bank. A subsequent major event was the promulgation of the banking reforms of 1972 and constitution of the National Credit Consultative Council (NCCC).

The council was assisted by the Agricultural Credit Advisory Committee in the preparation of credit estimates on the basis of the planned growth rate in agriculture and the acceleration in the use of agricultural inputs as envisaged in the Annual Development Plans. The allocations were made by the NCCC to the various credit institutions (ADBP, commercial banks and cooperatives) in the light of their past performance and future estimated loan requirements.

As a measure to simplify procedures, the Agricultural Purposes Act was promulgated in 1973 to simplify the system of securing mortgage rights, pass book. The pass book contains details of the parcels of land holding by a land owner in a

sub-district, the produce index unit of the land, and its valuation together with encumbrances, if any. The pass book was a step for improving the traditional lending procedures and reducing formalities. It was also directed towards fuller participation of the commercial banks in advancing loans and reorienting the credit system towards the small farmers. The pass book is deemed to be a title deed and accepted as such by the bank for granting different types of loans. So far 871,278 pass books have been issued, 6,22,656 in Punjab, 234,071 in Sindh, 11,861 in NWFP and 2,690 in Balochistan. There is still lot more to be done in this regard to speed up issuance process. Time series data on supply of agricultural credit are given in table 6.12.

AGRICULTURAL MARKETING

The increased modernisation of agriculture has not been accompanied by an expansion of the marketing infrastructure. Consequently the marketing system is still grosslyinadequate relative to the current needs. The marketing system at present is fairly diversified ranging from complete control of the private sector for certain commodities to the major handling by the public sector for others. Spices, fruits and vegetables, gram and pulses, and milk and eggs are marketed entirely by the private sector while there is a great amount of public intervention in the marketing of major grains, cotton and sugarcane.

There is a general lack of proper packing and storage facilities. Despite various attempts the grading and standardisation of products has remained inadequate. Establishment of cold storage and processing facilities are also encouraged. Agricultural Marketing and Storage Limited had been set up under the aegis of the Federal Cooperative Bank to safeguard the interest of producers.

With substantial investment in surface irrigation and tubewells, Pakistan's agriculture has now acquired a certain degree of stability in production, despite inevitable fluctuations in rainfall and weather conditions. It must now move towards greater **technological security** by increasing yields and by improving the post harvest management systems. At the same time it must aim at greater **ecological security** by protecting the resource base of land, water and forests; greater **social security** by raising the productivity of small farmers; and **economic security** by diversifying their sources of income and expanding opportunities for rural employment.

Table 6.4 AREA, PRODUCTION AND YIELD OF COTTON, WHEAT AND RICE

Year	COTTON			WHEAT			RICE		
	Area	Prod	Yld	Area	Prod	Yld	Area	Prod	Yld
1947-48	1236.7	1156.2	159.0	3953.7	3354.0	848.0	789.9	692.9	877.0
1948-49	1051.4	1007.8	163.0	4285.9	4037.8	942.0	839.7	747.8	891.0
1949-50	1110.4	1295.2	198.0	4183.2	3924.0	938.0	932.8	804.7	863.0
1950-51	1220.5	1469.8	205.0	4370.1	3993.1	914.0	968.0	864.7	893.0
1951-52	1342.7	1460.4	185.0	4105.9	3009.5	733.0	883.8	730.5	827.0
1952-53	1384.8	1865.0	229.0	3816.9	2405.0	630.0	907.7	832.1	917.0
1953-54	1161.4	1489.7	218.0	4215.1	3644.6	865.0	1015.7	920.5	906.0
1954-55	1269.1	1654.8	222.0	4261.3	3186.3	748.0	958.7	838.2	874.0
1955-56	1407.1	1754.2	212.0	4521.1	3370.2	745.0	969.2	841.3	868.0
1956-57	1437.8	1788.7	212.0	4689.0	3638.5	776.0	971.6	844.3	869.0
1957-58	1452.8	1785.5	209.0	4608.5	3564.3	773.0	1073.2	875.8	816.0
1958-59	1324.5	1659.0	213.0	4829.0	3906.7	809.0	1150.9	991.7	862.0
1959-60	1342.7	1713.4	217.0	4878.4	3908.7	801.0	1203.5	994.7	827.0
1960-61	1292.9	1767.8	233.0	4638.8	3814.3	822.0	1180.9	1030.3	872.0
1961-62	1395.7	1905.7	232.0	4922.9	4026.6	818.0	1214.4	1126.8	928.0
1962-63	1373.9	2153.5	267.0	5022.1	4169.9	830.0	1185.7	1095.3	924.0
1963-64	1470.6	2460.8	285.0	5018.8	4161.7	829.0	1286.1	1191.8	927.0
1964-65	1466.6	2220.4	258.0	5317.5	4590.5	863.0	1355.7	1350.3	996.0
1965-66	1561.2	2436.8	266.0	5154.8	3915.9	760.0	1393.3	1316.8	945.0
1966-67	1619.9	2723.2	286.0	5343.8	4334.5	811.0	1409.5	1364.6	968.0
1967-68	1785.0	3043.1	290.0	5983.2	6418.4	1073.0	1419.6	1498.7	1056.0
1968-69	1745.4	3101.7	302.0	6159.6	6617.5	1074.0	1554.8	2032.1	1307.0
1969-70	1755.5	3148.7	305.0	6229.2	7294.2	1171.0	1621.9	2400.9	1480.0
1970-71	1733.3	3189.1	314.0	5977.5	6476.3	1079.0	1503.4	2199.7	1466.0
1971-72	1957.6	4159.4	360.0	5797.0	6890.4	1190.0	1456.4	2261.9	1549.0
1972-73	2010.0	4125.6	350.0	5970.6	7442.3	1245.0	1479.6	2329.7	1577.0
1973-74	1844.8	3871.7	360.0	6112.6	7628.9	1245.0	1511.9	2455.1	1623.0
1974-75	2031.1	3728.6	314.0	5812.3	7673.5	1319.0	1604.2	2313.8	1439.0
1975-76	1851.6	3020.5	277.0	6110.6	8690.7	1422.0	1709.7	2617.5	1531.0
1976-77	1864.7	2557.3	233.0	6390.1	9143.9	1431.0	1749.3	2737.4	1565.0
1977-78	1843.2	3380.0	312.0	6360.0	8367.2	1316.0	1899.1	2949.6	1553.0
1978-79	1891.2	2782.6	250.0	6687.1	9950.0	1488.0	2025.6	3272.0	1615.0
1979-80	2081.0	4282.0	350.0	6923.7	10856.5	1568.0	2034.5	3215.8	1581.0
1980-81	2108.5	4201.0	339.0	6983.7	11474.6	1643.0	1933.1	3123.2	1616.0
1981-82	2214.1	4398.3	338.0	7222.9	11304.2	1565.0	1976.0	3429.7	1736.0
1982-83	2262.9	4843.9	364.0	7397.9	12414.4	1678.0	1978.1	3444.7	1741.0
1983-84	2220.7	2907.7	223.0	7343.2	10881.9	1482.0	1998.5	3339.5	1671.0
1984-85	2241.6	5930.4	450.0	7258.5	11703.0	1612.0	1998.5	3315.2	1659.0
1985-86	2364.1	7154.5	515.0	7403.3	13923.0	1881.0	1863.2	2918.9	1567.0
1986-87	2505.2	7759.7	527.0	7706.2	12015.9	1559.0	2065.6	3486.3	1688.0
1987-88	2567.8	8632.9	572.0	7308.4	12675.1	1734.0	1963.0	3240.9	1651.0
1988-89	2619.4	8385.1	544.0	7729.6	14419.2	1865.0	2041.7	3200.2	1567.0
1989-90	2598.5	8559.8	560.0	7844.5	14315.5	1825.0	2106.9	3220.1	1528.0
1990-91	2662.2	9627.7	615.0	7911.4	14565.0	1841.0	2112.7	3260.8	1543.0
1991-92	2835.5	12822.2	769.0	7877.6	15684.2	1990.0	2096.9	3243.1	1546.0
1992-93	2835.9	9053.8	543.0	8299.7	16156.5	1946.0	1973.4	3116.1	1579.0
1993-94	2804.6	8041.1	488.0	8034.2	15213.0	1893.0	2187.1	3994.7	1826.0
1994-95	2652.8	8697.1	557.0	8169.8	17002.4	2081.0	2124.6	3446.5	1622.0
1995-96	2997.3	10594.9	601.0	8376.5	16907.4	2018.0	2161.8	3966.5	1835.0
1996-97	3148.6	9304.8	503.0	8109.1	16650.5	2053.3	2251.1	4304.8	1912.3

Cotton : Area(000 H), Production(000 Bales) and Yield(Kg/H)
Wheat & Rice : Area (000 H), Production(000 MT) & Yield(Kg/H)

Source: MINFAL

Table 6.5 AREA, PRODUCTION AND YIELD OF SUGARCANE, MAIZE, ONION AND POTATO

	SUGARCANE			MAIZE			ONION			POTATOES		
Year	Area	Prod	Yld	Area	Prod	Yld	Area	Prod.	Yld	Area	Prod.	Yld
1947-48	189.4	5529.3	29.2	363.8	358.7	986	7.3	56.9	7.8	2.8	28.4	10.0
1948-49	197.1	6946.7	35.2	382.4	379.0	991	8.1	73.2	9.0	3.2	37.6	11.6
1949-50	219.3	7849.0	35.8	400.6	407.4	1017	8.5	70.1	8.2	5.3	52.8	10.0
1950-51	188.2	5506.0	29.3	378.4	387.1	1023	11.7	104.7	8.9	4.9	47.8	9.8
1951-52	189.8	5399.3	28.4	392.9	383.1	975	9.3	94.5	10.2	7.3	50.8	7.0
1952-53	253.3	7265.8	28.7	392.5	351.6	896	8.9	70.1	7.9	7.7	62.0	8.1
1953-54	292.2	8956.5	30.7	429.8	408.5	950	9.7	79.3	8.2	7.7	70.1	9.1
1954-55	304.3	8835.6	29.0	429.8	432.8	1007	9.3	77.2	8.3	10.9	64.0	5.9
1955-56	286.5	8199.5	28.6	429.4	457.2	1065	10.5	82.3	7.8	9.7	73.2	7.5
1956-57	318.9	8947.3	28.1	431.0	469.4	1089	8.9	73.2	8.2	10.5	70.1	6.7
1957-58	397.4	11294.4	28.4	431.0	447.1	1037	10.1	81.3	8.0	12.5	100.6	8.0
1958-59	427.7	12489.3	29.2	456.1	488.7	1072	12.1	94.5	7.8	12.5	103.6	8.3
1959-60	396.6	10662.4	26.9	482.4	495.0	1007	14.2	105.7	7.5	12.5	90.4	7.2
1960-61	388.1	11640.9	30.0	479.5	438.9	915	15.4	102.6	6.7	15.0	111.8	7.5
1961-62	444.3	14356.8	32.3	473.1	487.7	1031	12.1	109.7	9.0	14.2	128.0	9.0
1962-63	530.9	18439.3	34.7	458.5	488.7	1066	14.6	130.1	8.9	12.9	117.9	9.1
1963-64	477.5	16139.0	33.8	500.2	526.3	1052	16.6	156.5	9.4	15.0	136.2	9.1
1964-65	503.0	18666.9	37.1	486.4	528.3	1086	19.4	184.9	9.5	18.6	172.7	9.3
1965-66	597.3	22308.6	37.4	541.9	539.5	996	21.4	202.2	9.4	17.0	153.4	9.0
1966-67	649.5	21982.2	33.8	553.6	587.3	1061	21.0	199.1	9.5	19.0	167.6	8.8
1967-68	503.8	18659.8	37.0	607.8	791.5	1302	22.3	212.4	9.5	20.2	189.0	9.3
1968-69	540.6	21971.1	40.6	616.3	625.9	1016	22.3	213.4	9.6	21.0	230.6	11.0
1969-70	620.0	26367.7	42.5	647.5	667.5	1031	23.5	243.9	10.4	17.0	178.8	10.5
1970-71	636.2	23167.0	36.4	639.8	717.7	1125	23.4	246.9	10.4	20.2	228.6	11.3
1971-72	552.3	19963.1	36.2	632.6	705.1	1116	24.1	252.6	10.5	23.0	253.7	11.0
1972-73	533.5	19947.5	37.4	645.0	705.9	1098	17.5	186.6	10.6	23.4	241.3	10.3
1973-74	645.6	23910.5	37.0	632.6	767.1	1208	23.3	239.4	10.3	23.4	238.8	10.2
1974-75	672.8	21241.9	31.6	613.7	746.9	1217	29.5	302.9	10.2	27.7	289.5	10.5
1975-76	699.8	25546.7	36.5	620.0	802.5	1294	30.8	322.7	10.5	28.6	320.8	11.2
1976-77	787.8	29523.0	37.5	624.0	763.8	1224	30.2	331.5	11.0	25.7	318.0	12.3
1977-78	822.5	30076.6	36.6	656.1	820.9	1251	31.8	325.4	10.2	29.8	293.5	9.9
1978-79	752.5	27325.5	36.3	650.2	798.6	1228	38.7	389.7	10.1	37.7	392.4	10.4
1979-80	718.5	27497.7	38.3	701.1	875.2	1248	41.9	434.0	10.4	42.9	448.5	10.4
1980-81	824.7	32359.4	39.2	769.0	970.4	1262	43.2	447.6	10.4	38.0	394.3	10.4
1981-82	946.7	36579.7	38.6	739.1	930.4	1259	43.4	451.8	10.4	45.3	476.6	10.5
1982-83	911.7	32533.5	35.7	789.8	1005.4	1273	45.3	474.8	10.5	51.5	518.1	10.1
1983-84	896.5	34287.3	38.2	798.0	1013.5	1270	47.4	503.4	10.6	49.6	509.8	10.3
1984-85	903.6	32139.6	35.6	808.8	1027.6	1271	48.2	514.6	10.7	54.5	543.3	10.0
1985-86	779.8	27856.3	35.7	803.9	1009.4	1256	49.4	558.5	10.6	62.9	618.4	9.8
1986-87	762.0	29925.8	39.6	816.2	1111.2	1361	51.1	576.8	11.3	60.5	594.3	9.8
1987-88	841.6	33028.8	39.2	853.9	1126.9	1320	55.4	633.1	11.4	58.1	563.2	9.7
1988-89	876.9	36975.7	42.2	865.8	1204.1	1391	57.8	707.0	12.2	63.9	644.8	10.1
1989-90	854.3	35493.6	41.5	862.9	1179.3	1367	58.6	712.9	12.2	80.0	830.9	10.4
1990-91	883.8	35988.7	40.7	845.2	1184.5	1401	58.6	702.4	12.0	72.0	751.3	10.4
1991-92	896.1	38864.9	43.4	847.5	1203.1	1419	64.0	808.9	12.6	75.6	859.8	11.4
1992-93	884.6	38058.9	43.0	867.5	1183.6	1364	67.6	853.7	12.6	76.0	932.8	12.3
1993-94	962.8	44427.0	46.1	878.5	1213.0	1380	70.3	911.5	13.0	79.3	1056.2	13.3
1994-95	1009.0	47168.4	46.7	889.5	1318.1	1482	74.8	1013.1	13.5	79.3	1105.0	13.9
1995-96	963.1	45229.7	47.0	880.8	1283.4	1457	77.9	1097.6	14.1	78.9	1063.5	13.5
1996-97	964.6	41998.4	43.5	871.1	1259.4	1446	80.7	1131.0	14.0	85.8	963.4	11.2

Note: Sugarcane, Onion & Potatoes: Area(000 H), Prod.(000 MT) and Yield(T/H) Source: MINFAL

Maize: " ("), " (") " " (Kg/H)

Table 6.6 AREA, PRODUCTION AND YIELD OF BAJRA, JAWAR AND BARLEY

Year	BAJRA			JAWAR(SORGHUM)			BARLEY		
	Area	Prod.	Yld	Area	Prod.	Yld	Area	Prod.	Yld
1947 - 48	808.50	300.80	372	426.50	205.20	481	167.9	112.8	672
1948 - 49	942.50	345.50	367	477.50	246.90	517	231.9	177.8	767
1949 - 50	958.30	375.90	392	550.80	271.30	493	201.1	148.3	738
1950 - 51	972.40	392.20	403	507.90	247.90	488	173.6	131.1	755
1951 - 52	816.20	269.30	330	453.20	208.30	460	174.4	100.6	577
1952 - 53	895.10	271.30	303	532.60	223.50	420	195.9	93.5	477
1953 - 54	1044.50	468.40	448	611.90	231.70	379	209.6	129.0	616
1954 - 55	886.60	354.60	400	455.30	224.50	493	182.1	105.7	580
1955 - 56	891.10	345.50	388	536.60	253.00	471	182.5	128.0	701
1956 - 57	925.50	368.80	399	549.10	259.10	472	183.3	115.8	632
1957 - 58	746.60	278.40	373	386.10	185.90	482	196.3	127.0	647
1958 - 59	810.60	314.00	387	443.50	215.40	486	198.3	129.0	651
1959 - 60	805.30	329.20	409	456.10	232.70	510	216.9	139.2	642
1960 - 61	746.20	305.80	410	475.50	220.50	464	187.0	119.9	641
1961 - 62	831.60	369.80	445	512.70	247.90	484	186.6	115.8	621
1962 - 63	851.40	421.70	495	486.40	251.00	516	196.3	112.8	575
1963 - 64	741.00	361.70	488	467.00	237.80	509	176.4	110.7	628
1964 - 65	910.50	446.00	490	585.20	292.60	500	185.3	117.9	636
1965 - 66	839.70	369.80	440	593.70	274.30	462	154.6	83.3	539
1966 - 67	837.30	370.90	443	558.50	277.40	497	161.9	88.4	546
1967 - 68	913.80	413.50	453	584.40	290.60	497	173.6	107.7	620
1968 - 69	736.10	330.20	449	473.50	262.10	554	155.8	96.5	620
1969 - 70	631.30	301.80	478	490.50	283.50	578	157.4	103.6	658
1970 - 71	749.90	354.60	473	557.60	329.20	590	140.8	91.4	649
1971 - 72	759.30	359.70	474	507.10	312.10	615	156.8	102.9	656
1972 - 73	611.80	304.10	497	499.90	301.50	603	164.4	108.9	662
1973 - 74	733.20	351.20	479	589.30	378.10	642	204.7	139.5	681
1974 - 75	544.90	265.50	487	445.30	265.60	596	193.7	137.1	708
1975 - 76	623.90	307.90	493	475.70	281.00	591	185.6	130.1	701
1976 - 77	648.00	310.80	482	446.90	261.30	585	174.3	123.6	709
1977 - 78	641.00	318.30	497	519.50	284.10	547	166.7	120.6	724
1978 - 79	658.60	317.40	482	469.20	252.40	538	177.7	129.3	728
1979 - 80	561.30	277.30	494	423.40	249.10	588	159.3	118.1	741
1980 - 81	405.90	214.00	527	393.50	229.80	584	259.4	175.5	677
1981 - 82	559.30	272.40	487	392.50	224.60	572	221.6	157.5	711
1982 - 83	438.10	219.90	502	389.70	221.90	569	263.1	185.3	704
1983 - 84	553.00	256.20	463	390.80	222.10	568	199.9	139.5	698
1984 - 85	605.70	283.70	468	394.80	230.40	584	190.0	131.6	693
1985 - 86	560.80	258.40	461	372.40	218.60	587	188.8	133.7	708
1986 - 87	508.90	232.70	457	399.20	235.50	590	182.3	134.2	736
1987 - 88	292.70	135.30	462	319.80	180.60	565	145.0	111.8	771
1988 - 89	510.00	200.90	394	431.20	248.10	575	158.7	122.5	772
1989 - 90	511.60	204.20	399	440.00	262.20	596	154.7	131.3	849
1990 - 91	490.50	195.80	399	416.50	238.90	574	156.8	142.0	906
1991 - 92	312.80	138.70	443	382.70	224.50	586	149.0	139.9	938
1992 - 93	487.30	203.10	416	403.40	238.40	590	159.5	158.3	992
1993 - 94	302.90	137.50	453	364.70	212.30	582	150.6	145.7	967
1994 - 95	508.50	228.20	448	438.20	263.40	601	165.0	164.0	993
1995 - 96	406.80	161.50	397	417.80	254.80	610	171.6	174.4	1016
1996 - 97	302.90	145.60	481	369.60	219.20	593	152.1	150.0	987

Note = Area (000 H), Production (000 MT), Yield (Kg/H)

Source: MINFAL

Table 6.7 AREA AND PRODUCTION OF TOBACCO, ALL PULSES AND FRUITS

Year	TOBACCO			ALL PULSES		ALL FRUITS	
	Area	Prod.	Yield	Area	Prod	Area	Prod
1947-48	12.1	14.4	1184	1285.4	713.8	-	-
1948-49	15.0	18.3	1221	1645.9	993.3	-	-
1949-50	16.6	25.6	1542	1632.6	847.4	-	-
1950-51	20.6	29.9	1451	1686.3	1011.5	-	-
1951-52	21.9	35.5	1625	1367.9	666.2	-	-
1952-53	17.0	25.9	1521	1326.9	539.8	-	-
1953-54	24.7	38.1	1543	1624.4	836.8	-	-
1954-55	43.3	73.8	1703	1789.3	847.8	-	-
1955-56	31.6	48.8	1546	1888.6	944.0	-	-
1956-57	29.9	46.1	1540	1808.4	925.7	-	-
1957-58	36.4	55.7	1528	1692.4	881.1	20.6	132.1
1958-59	36.0	58.2	1617	1787.2	806.3	28.7	205.2
1959-60	38.4	60.5	1574	1713.9	851.4	32.0	205.2
1960-61	38.8	60.1	1546	1664.6	855.1	34.4	238.8
1961-62	45.3	70.2	1549	1733.8	845.9	41.7	495.8
1962-63	46.1	71.1	1542	1688.7	882.4	41.3	227.6
1963-64	44.1	75.4	1709	1608.4	829.7	38.8	241.8
1964-65	49.0	82.6	1687	1668.9	875.9	51.4	348.5
1965-66	58.3	110.0	1888	1537.3	735.6	51.0	361.7
1966-67	71.6	139.7	1950	1747.4	860.5	52.6	635.0
1967-68	70.4	129.9	1844	1627.7	715.1	53.0	617.8
1968-69	64.7	125.0	1930	1380.4	706.7	51.8	443.0
1969-70	60.3	116.4	1930	1326.0	680.4	55.0	496.8
1970-71	60.7	113.0	1863	1315.4	667.6	199.7	1601.6
1971-72	50.6	87.0	1716	1417.2	711.7	202.5	1661.0
1972-73	44.0	62.8	1430	1453.8	748.2	224.9	1803.1
1973-74	46.5	65.7	1411	1625.5	835.5	217.8	1926.3
1974-75	54.2	76.7	1411	1375.4	714.8	235.4	2059.5
1975-76	44.9	58.0	1293	1476.5	783.7	235.4	2111.6
1976-77	50.5	72.6	1437	1533.3	843.5	252.0	2142.3
1977-78	53.2	74.4	1399	1544.7	811.6	273.1	2089.7
1978-79	47.7	68.1	1429	1676.7	735.8	266.6	2203.2
1979-80	49.9	77.8	1561	1550.8	510.3	286.7	2381.4
1980-81	42.9	67.2	1567	1252.6	525.5	305.8	2532.0
1981-82	43.1	69.2	1604	1321.1	488.2	344.1	2942.0
1982-83	41.3	64.7	1565	1335.4	693.7	368.7	3170.6
1983-84	46.2	79.6	1724	1306.7	709.9	390.3	3269.1
1984-85	50.2	87.2	1737	1415.3	725.5	407.7	3414.3
1985-86	45.6	78.3	1717	1451.5	796.7	430.5	3608.9
1986-87	39.0	69.2	1776	1521.6	790.9	460.2	3638.4
1987-88	41.6	69.5	1671	1222.3	556.1	427.2	3586.4
1988-89	43.2	73.9	1711	1394.9	641.7	444.6	3792.5
1989-90	40.9	68.1	1664	1496.4	768.5	449.8	3880.7
1990-91	43.9	75.0	1708	1538.2	732.1	456.3	3955.2
1991-92	53.8	97.3	1807	1420.4	706.2	463.8	3989.4
1992-93	58.2	101.6	1745	1453.2	547.1	476.4	4112.2
1993-94	57.4	100.2	1746	1480.9	614.0	539.8	4850.1
1994-95	47.4	80.9	1705	1511.3	777.7	566.4	5153.7
1995-96	46.1	79.9	1734	1599.0	918.6	575.7	5306.8
1996-97	48.9	91.6	1883	1574.8	832.4	629.1	6187.3

All pulses include Gram, Mung, Mash, Masoor, Arhar, Matri, Other Kharif and Rabi Pulses

Source: MINFAL

Area (000 H), Prod.: Tobacco & Fruits(000 MT) & Pulses(MT), Yld(Kg/H)

Table 6.8 AREA, PRODUCTION AND YIELD OF OILSEEDS

Year	GROUNDNUT			LINSEED			RAPE & M. SEED			SEASUM		
	Area	Prod.	Yld.	Area	Prod.	Yld.	Area	Prod.	Yld	Area	Prod.	Yld
1947-48	0.4	a	0	2428	1016	418	428.6	174.8	408	26.3	9.1	348
1948-49	0.0	0.0	0	2428	1016	418	452.4	188.0	415	17.4	6.1	350
1949-50	2.4	1.0	418	2428	1016	418	367.0	144.3	393	19.8	6.1	307
1950-51	0.4	0.0	0	3237	2032	628	461.3	199.1	432	23.5	8.1	346
1951-52	0.4	0.0	0	3237	2032	628	552.4	200.2	362	25.1	7.1	283
1952-53	0.4	1.0	2511	3237	1016	314	426.5	127.0	298	24.3	6.1	251
1953-54	0.4	1.0	2511	6880	4064	591	435.4	165.6	380	27.1	6.1	225
1954-55	1.2	1.0	837	2251	2032	457	516.0	219.5	425	24.3	6.1	251
1955-56	1.6	2,0	1255	4451	2032	457	575.9	221.5	385	23.5	6.1	260
1956-57	2.4	3.0	1255	8498	4064	478	552.4	225.6	408	24.7	6.1	247
1957-58	4.5	4.1	913	4451	2032	457	545.1	232.7	427	25.9	6.1	235
1958-59	3.6	4.1	1116	4451	2032	457	552.4	266.2	482	23.9	6.1	255
1959-60	3.2	5.1	1569	6475	3048	471	561.3	238.8	425	30.8	8.1	264
1960-61	11.3	16.3	1435	4856	3048	628	499.0	214.4	430	31.6	7.1	225
1961-62	10.9	15.2	1395	4451	2032	457	450.8	205.2	455	43.7	11.2	256
1962-63	12.1	14.2	1172	6475	4064	628	494.5	257.1	520	29.9	8.1	271
1963-64	15.8	17.3	1094	6070	3048	502	474.7	211.3	445	26.7	8.1	304
1964-65	16.6	20.3	1225	6475	4064	628	488.4	214.4	439	33.6	9.1	272
1965-66	23.5	29.5	1225	6070	3048	502	441.5	181.9	412	28.3	7.1	251
1966-67	34.0	46.7	1375	6475	3048	471	459.7	203.2	442	30.4	7.1	234
1967-68	50.6	74.2	1466	7284	4064	558	542.3	274.3	506	32.0	9.1	286
1968-69	34.8	52.8	1518	6880	3048	443	442.3	228.6	517	27.5	8.1	295
1969-70	42.5	62.0	1459	5665	3048	538	479.1	255.0	532	22.7	8.1	359
1970-71	30.3	44.7	1476	6174	3383	544	509.9	269.3	526	30.8	10.2	341
1971-72	41.1	57.2	1392	7679	4129	535	562.0	301.2	535	41.6	13.5	323
1972-73	31.0	44.2	1420	8799	4805	544	533.8	286.8	535	29.7	10.4	350
1973-74	38.0	54.1	1420	9171	4796	526	535.7	292.4	544	32.9	12.4	378
1974-75	40.5	57.1	1411	7953	4396	553	451.5	248.0	553	22.8	8.1	360
1975-76	43.6	61.6	1411	7916	4458	563	470.1	267.3	569	28.1	10.7	378
1976-77	45.1	64.1	1421	7928	4360	550	518.8	296.4	572	30.3	12.0	397
1977-78	50.7	72.4	1428	10269	5621	547	412.3	236.1	571	31.6	12.6	399
1978-79	36.5	45.5	1245	12525	6655	531	433.0	248.2	573	45.9	18.7	409
1979-80	40.8	50.3	1233	10280	6264	609	409.4	247.1	604	46.2	19.3	419
1980-81	46.5	57.4	1234	10712	6508	608	417.0	252.5	606	44.1	18.3	414
1981-82	59.7	72.2	1208	9808	5904	602	390.9	238.8	611	42.8	16.6	388
1982-83	69.3	84.1	1214	8414	5059	601	385.5	246.0	638	28.5	10.8	379
1983-84	72.6	88.0	1213	8728	4986	571	313.3	217.0	693	22.4	8.8	394
1984-85	59.1	69.1	1170	9419	5170	549	346.9	234.8	677	34.2	13.5	397
1985-86	54.9	63.1	1148	10491	5622	536	350.6	249.9	713	37.5	14.9	398
1986-87	62.8	75.0	1194	9856	5340	542	302.8	213.2	701	33.2	12.5	375
1987-88	66.5	52.1	784	8853	4624	522	268.9	204.2	759	18.0	7.2	398
1988-89	68.1	77.6	1140	9235	4779	517	333.6	249.0	746	24.9	10.1	405
1989-90	80.1	81.7	1019	8683	4465	514	307.1	233.1	759	37.7	15.2	403
1990-91	82.6	89.4	1082	8202	4126	503	303.5	228.3	752	52.9	21.4	406
1991-92	88.9	96.1	1080	8751	4365	499	286.5	219.7	767	69.5	28.7	412
1992-93	94.8	101.1	1066	8338	4102	491	284.6	206.9	727	82.2	34.0	414
1993-94	92.0	95.9	1042	7606	3901	513	268.5	197.4	735	73.1	32.3	441
1994-95	96.6	105.7	1094	7727	4151	537	300.6	229.4	763	80.2	36.2	451
1995-96	102.3	112.8	1103	8303	4609	555	319.6	254.5	796	89.5	39.5	441
1996-97	104.8	117.4	1120	8346	4591	550	353.9	285.6	807	99.5	44.8	450

Area/Prod./Yield (000H/000MT/Kg/H) except Linseed which is (H/MT/Kg/H)

Cont.

Table 6.8 AREA AND PRODUCTION OF OILSEEDS

	SOYABEAN		SUNFLOWER		SAFFLOWER		CASTROSEED		
Year	Area	Prod	Area	Prod	Area	Prod	Area	Prod	Yld
1970-71	2441	927	670	482	-	-	14312	4676	323
9971-72	1904	932	1250	873	-	-	1307	852	673
1972-73	2660	1159	776	486	-	-	487	465	959
1973-74	2199	1002	516	246	-	-	11995	3313	277
1974-75	957	443	569	259	-	-	1146	1156	1005
1975-76	833	403	483	228	-	-	11050	8286	750
1976-77	1662	615	389	188	-	-	15243	11216	536
1977-78	3049	1290	37	35	-	-	17333	12680	732
1978-79	3437	1755	479	311	-	-	45986	35349	769
1979-80	3512	1326	592	355	-	-	23148	17936	775
1980-81	3162	1342	4679	3492	-	-	23460	18283	779
1981-82	3691	1535	7235	5855	-	-	22475	17515	779
1982-83	4906	2086	22662	18811	8093	4479	31499	25551	811
1983-84	4465	1571	18257	15155	2947	1631	29873	24417	817
1984-85	4457	1602	21760	18063	2129	1178	26545	21938	826
1985-86	5446	2585	19806	17587	2674	2925	26833	22242	829
1986-87	5980	3775	33273	36256	2508	890	15102	10824	717
1987-88	2758	1526	43112	42531	1141	472	573	406	709
1988-89	2269	1169	29479	34415	206	102	13102	8459	646
1989-90	1495	849	25899	24579	449	234	15696	10293	656
1990-91	1875	930	31418	34649	374	198	15111	9937	658
1991-92	2193	1327	63328	83312	800	543	3050	2092	686
1992-93	4177	2373	56727	61804	1628	635	7784	5743	738
1993-94	6613	5298	45343	50019	1696	840	2159	1575	730
1994-95	6013	7228	68377	85699	1702	932	10008	7474	747
1995-96	2132	2694	86210	109515	1271	779	11410	8638	757
1996-97	5649	7311	98736	128568	1612	1079	6301	4742	757

Source : MINFAL

Table 6.9 PRODUCTION OF FISH, MEAT, EGGS, MILK AND WOOD

	FISH PRODUCTION				PRODUCTION			MAJOR FOREST PRODUCTS		
Year	Marine	Inland	Total	Year	Meat	Eggs	Milk	Timber	Fire Wood	Total
1947	32.9	7.1	40.0	1947-48	-	-	-	37	586	623
1948	33.8	8.4	42.2	1948-49	-	-	-	62	697	759
1949	35.2	9.9	45.1	1949-50	-	-	-	99	934	1033
1950	37.2	10.4	47.6	1950-51	-	-	-	127	708	835
1951	39.9	12.3	52.2	1951-52	-	-	-	102	663	765
1952	40.8	15.0	55.8	1952-53	-	-	-	116	869	985
1953	41.3	15.5	56.8	1953-54	-	-	-	127	784	911
1954	41.7	16.0	57.7	1954-55	-	-	-	82	784	866
1955	46.0	16.3	62.3	1955-56	-	-	-	113	680	793
1956	48.1	16.8	64.9	1956-57	-	-	-	142	983	1125
1957	49.5	17.0	66.5	1957-58	-	-	-	215	535	750
1958	49.8	17.2	67.0	1958-59	-	-	-	147	609	756
1959	51.3	18.0	69.3	1959-60	-	-	-	142	490	632
1960	62.2	18.5	80.7	1960-61	-	-	-	142	541	683
1961	64.9	19.0	83.9	1961-62	-	-	-	130	371	501
1962	67.0	19.8	86.8	1962-63	-	-	-	164	348	512
1963	75.2	20.1	95.3	1963-64	-	-	-	190	391	581
1964	83.4	21.0	104.4	1964-65	-	-	-	195	589	784
1965	89.8	22.0	111.8	1965-66	-	-	-	229	459	688
1966	118.6	22.6	141.2	1966-67	-	-	-	272	433	705
1967	116.7	23.3	140.0	1967-68	-	-	-	467	544	1011
1968	117.6	28.0	145.6	1968-69	-	-	-	303	484	787
1969	135.8	28.2	164.0	1969-70	-	-	-	351	513	864
1970	139.8	18.7	158.5	1970-71	-	-	-	292	470	762
1971	137.3	18.0	155.3	1971-72	568	583	7800	334	544	878
1972	173.2	18.0	191.2	1972-73	591	695	7899	249	481	730
1973	196.6	17.6	214.2	1973-74	623	811	8044	320	473	493
1974	150.0	21.4	171.4	1974-75	649	907	8193	176	329	505
1975	154.1	20.0	174.1	1975-76	684	1159	8348	170	323	493
1976	177.1	33.6	210.7	1976-77	715	1443	8524	238	549	787
1977	234.8	33.1	267.9	1977-78	749	1557	8704	130	459	589
1978	257.8	35.2	293.0	1978-79	783	1805	8888	229	576	805
1979	259.6	40.8	300.4	1979-80	819	2094	9075	232	430	662
1980	233.0	46.3	279.3	1980-81	856	2319	9267	182	446	628
1981	261.5	56.3	317.8	1981-82	894	2664	9462	208	485	693
1982	278.2	59.1	337.3	1982-83	947	3200	9662	210	476	686
1983	283.1	60.3	343.4	1983-84	1010	3619	10242	261	345	606
1984	308.0	70.6	378.6	1984-85	1079	4093	10856	330	454	784
1985	333.3	75.1	408.4	1985-86	1199	3460	12052	313	385	698
1986	331.7	84.0	415.7	1986-87	1271	3800	12669	407	543	950
1987	336.1	91.6	427.7	1987-88	1357	4140	13319	367	445	812
1988	348.9	96.5	445.4	1988-89	1447	4300	14003	296	385	681
1989	341.2	105.0	446.2	1989-90	1507	4670	14723	255	422	677
1990	369.8	113.2	483.0	1990-91	1581	4490	15481	221	851	1072
1991	402.8	115.9	518.7	1991-92	1685	4914	16280	232	259	491
1992	431.5	121.6	553.1	1992-93	1872	5164	17120	371	320	691
1993	499.2	122.5	557.1	1993-94	2000	5740	18006	187	516	703
1994	418.6	139.5	558.1	1994-95	2114	5927	18986	338	346	684
1995	405.5	165.0	541.9	1995-96	2271	5757	19919	363	357	720
1996	395.4	160.1	555.5	1996-97	2416	5915	20950	126	217	343

Note: Meat = Beef + Mutton + Poultry Milk = Cow + Buffalo + Sheep + Goat

Source: MINFAL

Production: Fish, Meat, Milk (000 MT), Forest (000 Cu. M), Eggs (Million)

Table 6.10 LAND UTILIZATION STATISTICS

(Million Hectares)

Year	Geog-raphi-cal area	T. area reported Col.(4+5 +6+7)	For-est area	N.A. for Culti vation	Cult-urable waste	Total Culti. area Col. (8+9)	Curr-ent fall-ow	Net area sown	Area so-wn more than once	T. cropp-ed area Col. (9+10)
1	2	3	4	5	6	7	8	9	10	11
1947-48	79.61	46.07	1.38	20.82	9.01	14.70	4.01	10.68	0.96	11.63
1948-49	79.61	46.27	1.35	20.63	9.13	15.16	3.75	11.41	0.93	12.34
1949-50	79.61	46.55	1.37	20.88	9.32	14.99	3.62	11.36	1.12	12.48
1950-51	79.61	46.45	1.39	20.75	9.16	15.15	3.54	11.61	1.27	12.88
1951-52	79.61	46.44	1.40	20.57	9.36	15.11	3.82	11.29	0.95	12.24
1952-53	79.61	46.58	1.28	20.76	9.25	15.28	4.03	11.25	0.83	12.09
1953-54	79.61	46.59	1.24	20.67	9.14	15.54	3.42	12.12	1.15	13.26
1954-55	79.61	46.66	1.26	20.71	9.37	15.32	3.46	11.86	1.42	13.27
1955-56	79.61	46.56	1.28	20.63	8.99	15.66	3.34	12.32	1.57	13.89
1956-57	79.61	46.65	1.30	20.61	8.73	16.01	3.38	12.63	1.53	14.16
1957-58	79.61	48.48	1.30	20.50	10.44	16.24	3.69	12.55	1.38	13.93
1958-59	79.61	48.46	1.29	20.38	10.50	16.20	3.29	12.92	1.41	14.33
1959-60	79.61	48.46	1.34	20.59	10.02	16.51	3.44	13.08	1.60	14.69
1960-61	79.61	50.99	1.68	18.73	12.46	18.12	4.84	13.27	1.59	14.85
1961-62	79.61	50.92	1.67	18.57	12.79	16.68	4.26	13.64	1.61	15.25
1962-63	79.61	50.83	1.67	18.43	12.70	18.03	4.25	13.78	1.69	15.46
1963-64	79.61	51.38	1.80	18.38	12.87	18.33	4.92	13.41	1.72	15.13
1964-65	79.61	52.83	1.97	18.78	13.36	18.72	4.56	14.16	2.09	16.24
1965-66	79.61	53.04	2.08	18.70	13.02	19.24	5.31	13.93	1.61	15.54
1966-67	79.61	52.93	2.08	18.54	13.05	19.26	5.03	14.23	2.18	16.41
1967-68	79.61	53.16	2.28	18.87	12.58	19.42	4.55	14.88	2.06	16.94
1968-69	79.61	52.95	1.88	20.53	11.25	19.29	5.04	14.25	1.99	16.24
1969-70	79.61	52.93	1.84	20.40	11.46	19.23	4.70	14.53	2.24	16.77
1970-71	79.61	53.55	2.83	20.40	11.11	19.21	4.77	14.44	2.18	16.62
1971-72	79.61	53.49	2.27	20.43	11.25	19.09	4.75	14.34	2.26	16.60
1972-73	79.61	53.75	2.81	20.73	11.09	19.12	5.05	14.07	2.86	16.93
1973-74	79.61	53.91	2.85	20.53	11.15	19.38	4.19	15.19	3.09	18.28
1974-75	79.61	53.92	2.80	20.32	11.25	19.55	4.78	14.77	2.60	17.37
1975-76	79.61	53.92	2.84	20.63	10.63	19.82	4.77	15.06	2.96	18.02
1976-77	79.61	54.97	2.86	21.47	10.88	19.76	4.69	15.07	3.14	18.21
1977-78	79.61	54.96	2.89	20.92	11.05	20.10	4.88	15.22	3.27	18.49
1978-79	79.61	53.59	2.77	19.77	11.07	19.98	4.57	15.41	3.89	19.30
1979-80	79.61	53.71	2.76	18.84	11.88	20.23	4.62	15.61	3.61	19.22
1980-81	79.61	53.92	2.85	19.91	10.86	20.30	4.89	15.41	3.92	19.33
1981-82	79.61	57.91	2.81	21.96	12.72	20.42	4.89	15.53	4.25	19.78
1982-83	79.61	57.76	2.87	21.72	12.81	20.36	4.59	15.77	4.36	20.13
1983-84	79.61	58.18	2.96	22.36	12.53	20.33	4.67	15.66	4.33	19.99
1984-85	79.61	58.13	3.16	23.26	11.10	20.61	5.00	15.61	4.31	19.92
1985-86	79.61	57.78	3.12	24.52	9.47	20.67	4.91	15.77	4.51	20.28
1986-87	79.61	57.78	2.92	23.61	10.33	20.92	4.86	16.06	4.54	20.60
1987-88	79.61	57.78	3.46	24.40	9.26	20.66	5.94	14.72	4.84	19.56
1988-89	79.61	57.90	3.43	24.06	9.39	21.02	4.93	16.09	5.73	21.82
1989-90	79.61	57.97	3.38	24.84	8.81	20.94	5.12	15.82	5.64	21.46
1990-91	79.61	57.61	3.46	24.34	8.85	20.96	4.85	16.11	5.71	21.82
1991-92	79.61	57.87	3.47	24.48	8.86	21.06	4.87	16.19	5.53	21.72
1992-93	79.61	58.06	3.48	24.35	8.83	21.40	4.95	16.45	5.99	22.44
1993-94	79.61	58.13	3.45	24.43	8.74	21.51	5.29	16.22	5.65	21.87
1994-95	79.61	58.50	3.60	24.44	8.91	21.55	5.42	16.13	6.01	22.14
1995-96	79.61	58.50	3.61	24.35	8.87	21.68	5.19	16.49	6.10	22.59
1996-97	79.61	58.51	3.62	24.39	8.91	21.59	4.85	16.74	6.19	22.93

Source = MINFAL & Provincial Agriculture Departments

Table 6.11 AREA IRRIGATED BY DIFFERENT SOURCES

(Million Hectares)

Year	Total	Canals	Tube wells	Wells	Canal Tubewells	Canal Wells	Tanks	Others
1947-48	8.72	7.15	-	0.97	-	-	0.05	0.54
1948-49	8.96	7.30	-	0.92	-	-	0.04	0.70
1949-50	9.13	7.35	-	1.04	-	-	0.05	0.70
1950-51	9.51	7.73	-	1.08	-	-	0.10	0.60
1951-52	9.08	7.51	-	0.98	-	-	0.06	0.53
1952-53	9.12	7.51	-	1.04	-	-	0.06	0.52
1953-54	9.62	8.00	0.02	0.96	-	-	0.05	0.59
1954-55	10.13	8.43	0.04	0.95	-	-	0.06	0.66
1955-56	12.11	8.47	0.05	0.88	-	-	0.06	0.63
1956-57	10.30	8.61	0.06	0.86	-	-	0.06	0.71
1957-58	10.27	8.70	0.07	0.79	-	-	0.06	0.64
1958-59	10.21	8.66	0.08	0.78	-	-	0.06	0.62
1959-60	10.54	8.72	0.36	0.76	-	-	0.03	0.67
1960-61	10.40	8.59	0.25	0.86	-	-	0.01	0.70
1961-62	10.75	8.90	0.26	0.93	-	-	0.01	0.64
1962-63	11.01	9.09	0.44	0.89	-	-	0.01	0.58
1963-64	11.03	8.82	0.45	1.00	-	-	0.01	0.73
1964-65	11.44	9.00	0.54	1.02	-	-	0.01	0.87
1965-66	11.47	8.69	0.80	0.96	-	-	0.01	1.01
1966-67	12.03	8.87	1.04	0.93	-	-	0.01	1.18
1967-68	12.49	9.27	1.27	0.89	-	-	0.01	1.05
1968-69	13.06	9.43	1.38	1.14	-	-	0.01	1.11
1969-70	12.77	9.63	1.94	0.69	-	-	0.01	0.50
1970-71	12.95	9.17	2.29	0.67	-	-	0.01	0.80
1971-72	12.99	9.57	2.10	0.67	-	-	0.01	0.64
1972-73	13.06	9.80	2.21	0.51	-	-	0.01	0.53
1973-74	13.64	10.06	2.41	0.52	-	-	*	0.65
1974-75	13.34	10.09	2.38	0.44	-	-	*	0.43
1975-76	13.63	10.19	2.39	0.43	-	-	*	0.62
1976-77	13.83	10.10	2.69	0.45	-	-	*	0.59
1977-78	14.22	10.43	2.79	0.35	-	-	*	0.65
1978-79	14.47	10.01	3.49	0.26	-	-	*	0.71
1979-80	14.74	10.74	2.74	0.34	-	-	*	0.87
1980-81	14.84	8.14	1.83	0.21	3.95	0.10	*	0.61
1981-82	15.30	8.24	1.99	0.19	4.17	0.11	*	0.60
1982-83	15.48	8.09	1.98	0.18	4.53	0.07	*	0.63
1983-84	15.46	7.95	1.95	0.18	4.58	0.08	*	0.72
1984-85	15.28	7.78	1.97	0.19	4.68	0.08	*	0.58
1985-86	15.79	7.84	2.05	0.19	4.95	0.08	*	0.68
1986-87	16.31	7.96	2.20	0.18	5.16	0.07	*	0.74
1987-88	15.68	7.73	2.30	0.16	5.23	0.07	*	0.19
1988-89	16.64	7.86	2.46	0.16	5.53	0.08	*	0.55
1989-90	16.89	7.74	2.57	0.16	5.72	0.08	*	0.62
1990-91	16.75	7.89	2.56	0.13	5.87	0.08	*	0.22
1991-92	16.85	7.85	2.59	0.16	5.93	0.11	*	0.21
1992-93	17.33	7.91	2.67	0.18	6.23	0.10	*	0.24
1993-94	17.13	7.73	2.78	0.14	6.22	0.09	*	0.17
1994-95	17.20	7.51	2.83	0.17	6.41	0.10	*	0.18
1995-96	17.58	7.60	2.89	0.18	6.58	0.11	*	0.22
1996-97	17.85	7.81	2.88	0.18	6.61	0.11	*	0.26

* Nominal - Not available P Provisional

Source: MINFAL

Table 6.12 SUPPLY OF AGRICULTURAL CREDIT AND FERTILIZER OFF-TAKE

SUPPLY OF AGRICULTURAL CREDIT BY INSTITUTIONS (Million Rs.)						FERTILIZER OFF-TAKE (000 N/T)			
Year	ADBP	Taccavi	Coopera-tives	Comm Banks	TOTAL	N	P	K	TOTAL
1952-53	0.08	4.20	-	-	4.28	1.0	-	-	1.0
1953-54	0.06	7.70	15.50	-	23.26	14.8	-	-	14.8
1954-55	1.10	3.80	-	-	4.90	14.1	-	-	14.1
1955-56	1.00	6.40	25.40	-	32.80	6.6	-	-	6.6
1956-57	1.70	7.10	27.80	-	36.60	9.0	-	-	9.0
1957-58	3.60	12.80	29.20	-	45.60	16.4	-	-	16.4
1958-59	5.70	17.20	32.60	-	55.50	18.0	-	-	18.0
1959-60	24.80	17.90	44.90	-	87.60	19.3	0.1	-	19.4
1960-61	30.90	14.80	58.10	-	103.80	31.0	0.4	-	31.4
1961-62	42.70	12.20	92.90	-	147.80	37.0	0.5	-	37.5
1962-63	40.70	9.80	82.80	-	133.30	40.0	0.2	-	40.2
1963-64	46.70	12.00	70.30	-	129.00	68.0	0.7	-	68.7
1964-65	40.50	30.50	56.50	-	127.50	85.0	2.2	-	87.2
1965-66	68.00	12.70	51.70	-	132.40	69.2	1.3	0.0	70.5
1966-67	100.50	11.20	83.50	-	195.20	107.8	3.9	0.1	111.8
1967-68	106.20	13.00	59.50	-	178.70	177.5	12.7	0.2	190.4
1968-69	82.10	12.20	47.40	-	141.70	203.5	38.6	2.5	244.6
1969-70	91.30	10.60	53.50	-	155.40	272.6	33.9	1.2	307.7
1970-71	92.70	10.20	55.50	-	158.40	251.5	30.5	1.2	283.2
1971-72	80.00	8.90	39.10	-	128.00	341.2	37.3	0.7	379.2
1972-73	168.80	10.20	42.00	85.70	306.70	386.2	48.7	1.3	436.2
1973-74	415.20	67.50	144.20	286.40	913.30	341.9	57.8	3.2	402.9
1974-75	395.50	12.10	81.60	520.90	1010.10	362.9	60.5	2.1	425.5
1975-76	532.20	25.70	91.80	808.10	1457.80	445.3	102.5	2.8	550.6
1976-77	638.80	13.10	45.80	959.40	1657.10	511.1	118.2	2.5	631.8
1977-78	430.50	8.80	206.30	1277.50	1923.10	550.9	156.8	5.9	713.6
1978-79	416.90	12.70	263.70	1381.10	2074.40	684.2	188.0	7.6	879.8
1979-80	711.60	9.20	601.20	1537.20	2859.20	806.2	228.5	9.6	1044.3
1980-81	1066.60	8.60	1128.30	1816.10	4019.60	843.0	226.9	9.6	1079.5
1981-82	1557.40	8.50	1100.80	2436.10	5102.80	832.6	225.6	21.8	1080.0
1982-83	2310.40	11.40	1414.90	2338.40	6075.10	952.7	265.3	25.6	1243.6
1983-84	3131.70	7.60	1449.90	3770.80	8360.00	914.3	259.8	28.5	1202.6
1984-85	4167.90	6.30	1567.60	4544.40	10286.20	934.8	293.8	24.7	1253.3
1985-86	5307.90	4.60	2048.60	5324.60	12685.70	1128.2	350.3	33.2	1511.7
1986-87	6031.20	13.30	2494.70	7313.10	15852.30	1332.4	408.8	42.6	1783.8
1987-88	7716.10	9.10	3020.30	5174.50	15920.00	1282.0	392.9	45.1	1720.0
1988-89	8667.50	24.90	2730.70	3054.10	14477.20	1324.9	390.4	24.5	1739.8
1989-90	9389.90	55.60	815.10	3629.50	13890.10	1467.6	382.4	40.1	1890.1
1990-91	8323.90	56.30	3017.40	3517.60	14915.20	1471.6	388.5	32.8	1892.9
1991-92	6996.40	56.30	3247.00	4179.60	14479.30	1462.6	398.0	23.3	1883.9
1992-93	8643.40	50.80	2978.00	4525.90	16198.10	1635.3	488.2	24.1	2147.6
1993-94	8989.30	-	2621.50	4063.30	15674.10	1659.4	464.2	23.2	2146.8
1994-95	14575.70	-	3756.70	4040.80	22373.20	1738.1	428.4	16.6	2183.1
1995-96	10339.00	-	3803.40	5044.70	19187.10	1983.6	494.5	29.7	2507.7
1996-97	11687.11	-	3431.13	4429.43	19547.67	1985.1	419.5	4.5	2409.1

NPK Nitrogen Phasphate and Potash

Source: State Bank of Pakistan & MINFAL