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AGRICULTURE PLANS FOR NUTRITIONAL ADEQUACY IN PAKISTAN

by

M. Akmal Khan  
Deputy Director General  
National Agricultural Research Centre  
Islamabad

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Dr. M. Akmal Khan

National Agricultural Research Centre  
Islamabad, Pakistan

## INTRODUCTION:

Pakistan has a great potential for increased agricultural production with fertile soil and an elaborate irrigation net work. Total culturable land in the country is 32 mha of which about 20 mha is being actually cultivated. There is a wide gap of 50 to 80 percent in yield levels obtained by progressive farmers applying a complete package of proven crop production technology in various areas and the farmers using out-moded farming methods.

Agriculture is the largest single sector of Pakistan's economy, accounting for 25 percent of the Gross Domestic Product (GDP). It employs 55 percent of the total labour force and supports directly or indirectly 70 percent of the country's population. The share of agriculture in export earnings amounts to about 70 percent including both raw as well as processed agricultural commodities. Although contribution of agriculture to GDP has declined over the years due to structural changes and relatively faster growth rate in industrial sector, agriculture itself has maintained a steady growth rate of over 4 percent per annum for the last two decades.

The present population of Pakistan has been reported to be 107.5 million with an annual growth rate of 3.1 percent. This is one of the major constraints in the process of development and for nutritional adequacy in the country. However, Pakistan agriculture is capable of providing a variety of food, feed and fibre crops to cater for their demands in the country.

This paper deals with the present state of food and nutrition and future agriculture plans for nutritional adequacy.

## PRESENT STATUS:

### 1. Food Production:

#### Plant Products:

In Pakistan, about 57 percent of the total cropped area is under cereal crops, 9.2 percent is under food legumes while other major food crops, including sugarcane, oilseeds, fruits and vegetable and

spices occupy 4.4 percent and 3.7 percent respectively. The total paddy production has shown a gradual increase from 3.43 million tonnes in 1969-71 to 5.2 million tonnes in 1986 and Pakistan has become the third largest exporter of rice in the world. Wheat is the leading foodgrain crop in Pakistan, occupying the largest area of 7.4 million hectares.

Since the introduction of high yielding, fertilizer responsive, short-statured varieties, the production of wheat has steadily increased reaching a record figure of 13.9 million tonnes in 1986, not only leading the country to self-sufficiency but also enabling it to export in good years. Chickpea is the major legume covering 70-75 percent of the total area under food legumes. The total production of pulses has increased to 0.86 million tonnes in 1986. The production of roots and tubers, mainly consisting of potatoes and sweet potatoes, has shown an increase from 0.35 million tonnes in 1969-71 to 0.55 million tonnes in 1986. The production of nuts and oilseeds in Pakistan is so low that the country is deficient in the production of oilseeds. A marginal decrease from 330,000 tonnes in 1969-71 to 325,000 tonnes in 1985 has been noticed. The total production of fruits and vegetables indicate a rising trend as shown by its uninterrupted increase from 3.2 million tonnes in 1969-71 to 5.2 million tonnes in 1986. Sugarcane is an important cash crop of Pakistan and its area and production reached a record level in 1986 as indicated by 2.2 million tonnes of sugar produced (Table 1).

#### Animal Products:

The total meat production has improved substantially from 0.46 million tonnes in 1969-71 to 0.98 million tonnes in 1986. The egg production has enhanced from 14,780 tonnes in 1969-71 to 217,550 tonnes in 1986. Total milk production has also increased but at a much lower rate from 7.4 million tonnes in 1969-71 to 11.2 million tonnes in 1986. The total fish production has risen from 211,000 tonnes in 1972 to 398,000 tonnes in 1986. The average annual growth rate during 1972-82 period for inland fisheries was 9.3 percent and for marine fisheries it was 4.9 percent. Although fluctuations are observed in the production of both vegetable and animal oils and fats, the production figure indicates an increase from 463,000 tonnes in 1972-74 to 503,000 tonnes in 1979-81. The present production is not satisfying the country's current total annual need of about 800,000

tonnes of which 700,000 tonnes are imported and the rest is acquired by processing the locally available oilseeds, mostly rapeseed and mustard.

## 2. Food Consumption:

An adequate food supply is the first pre-requisite in any country for social tranquillity and economic stability. Daily per capita intake of various food items is given in Table 2.

Cereals constitute the main staple of Pakistani diet and contributes 63.6 percent to the total calorie consumption. As much as 64.8 percent of total protein intake comes from cereals. Among the foodgrains available in Pakistan, wheat is by far the most commonly consumed, constituting 83 percent of the total cereal intake. Wheat alone provides over 50 percent of the total calories and almost 60 percent of the total protein consumed by the population as a whole. Fourteen percent of all cereals consumed nationally is rice, making it the second most important cereal in Pakistan. Compared to cereals, pulses production has been alarmingly low. Contributing only 3.4 and 7.3 percent to the total calories and total protein intake, respectively. The available oil only contributes 17 percent of the total calories and Pakistan is currently facing a crisis involving astronomical increases in the import of edible oil.

The consumption of animal protein is 25.2 g/head/day and seems to have more than doubled in the past decade. The protein calories percent of the diet is 11 percent and is adequate to meet the protein requirement. Maldistribution of food and lack of nutrition education are the major causes of malnutrition in the country. While agricultural progress in Pakistan has been achieved to an extent of being self-sufficient, more efforts should be put towards developing and implementing economic, social and health programmes in order that the nutritional status of population can have a permanent change for the better.

From the national micro-nutrient survey in 1976-77, the average intake of calories by an overall family in Pakistan has been estimated from the individual dietary intake portion and was found to be 3,076 kcals for all Pakistan, 3,283 kcals for rural sector and 2,858 kcals for urban sector. These findings appear most unrealistic when compared to be average 1975-77 calorie supply of only 2,226 kcals per caput per day as reported in FAO Production Yearbook 1981; hence, it would be impossible to have dietary intake greater than the actual supply available. Similarly, in the case of protein, the reported dietary intakes of 86.9 g for all Pakistan, 97.9 g for rural sector and 73.8 g for urban sector for exceed the daily per caput protein supply of 40 g. The iron intake of over 20 milligrams was also found to be greater than the actual supply of less than 20 miligrams. However, vitamin A seems to be the only nutrient with intake less than the actual supply available. Nevertheless, the accuracy of such reported data cannot be assumed with any conficence. The availability of calories and protein (per caput per day) in selected countries are shown in Table 3.

#### 4. Nutritive Value of Pakistani Diet:

In a well-balanced diet, 10-15 percent of the total energy is usually derived from protein, 55-70 percent from carbohydrates and 20-30 percent from fat. The percentages of calories provided by the average national diet from protein, carbohydrates and fats are 13, 61 and 11, respectively. It is evident that national diet is low in fat but is adequate to meet the dietary protein requirements. According to FAO, the protein allowances for different age groups in terms of net dietary protein calorie percent (NDpcal%) are 8.0, 7.8, 5.7, 8.4, 4.6, and 9.5 for infants, toddler, child, adolescent, adult and lactating mother, respectively. The NDpcal% value of national diet is 8.5 and is adequate for all different age groups except lactating mothers (Table 4).

It appears that protein is not a limiting factor in our national diet. There is strong evidence that Pakistan food problem, from the standpoint of a balanced diet, is not one of protein deficiency but caloric inadequacy. If sufficient calories are provided through conventional cereals or edible fats, there would be no protein problem.

Indeed it has been demonstrated that much of the clinically observed protein malnutrition is the secondary consequence of a caloric inadequacy with people whose diet contain sufficient protein but which they are unable to assimilate when caloric intake is inadequate.

#### 5. Malnutrition:

Malnutrition, particularly protein caloric malnutrition (PCM) among the pre-school children (0-5 years) has been found widespread in Pakistan. Vital statistics have been accepted as an index of malnutrition in a community. The mortality rate among children under five years of age is 22.4 percent and is 40 times higher than Japan and 80 times higher than Sweden.

The growth status of Pakistani children under five is not satisfactory. Only 40 percent of the children have satisfactory development and 60 percent are deficient in growth due to imbalance food, poverty, ignorance and infections. In Pakistan, about 80 percent of children under five, regularly suffer from diarrhoea and respiratory infection. Diarrhoea alone kills 30 percent of malnourished babies. Parasitic load is also very heavy in children. The Pakistani children still grow at a rate well below those in Western countries. The weight of an average Pakistani two years old baby is only 75 percent of an American child of the same age. However, it has been shown in a study that Pakistani children, if fed properly, have the potentiality of growth comparable with American children.

The per capita recommended daily allowance of iron for Pakistan is estimated to be 30 mg. Average intake of iron per person as reported in survey is almost equal the recommended allowance. The prevalence of anaemia as indicated by haemoglobin levels indicates that 59.3 percent of population having adequate haemoglobin level. In spite of adequate intake of iron, prevalence of anaemia in the nation, in general and in children, pregnant and lactating women, in particular has been reported.

The low intake of dietary iron, aggravated by parasitic infestation, phytates and drinking of tea with meal based on cereals are responsible for high incidence of anaemia in Gilgit, Hunza, Skardu and other parts of Northern areas. It appears that anaemia, which hampers the work output of the individual, is a serious nutritional problem facing the country.

Vitamin A deficiency is an important cause of corneal destruction and childhood blindness in many parts of the developing world. In Pakistan for the population as a whole the prevalence of sub-normal Vitamin A levels in the blood is 13 percent. The worst affected groups were pre-school children, pregnant and lactating women. A recent study to assess the plasma Vitamin A status indicated that children under 15 years of the age were at risk. The diets consumed in areas with xerophthalmia show multiple deficiencies not only of Vitamin A but also often of calories and proteins and fat.

About Three percent of the population suffer from some grade of goitre. The Micro-nutrient Survey did not include the mountainous region of the country where the incidence of goitre was very high (57 percent) affecting growing children and adults. This nutritional deficiency causes not only the enlargement of thyroid gland but also results in growth retardation, mental stagnation and cretinism.

In spite of the fact that adequate food is available, malnutrition is still prevalent in the country. It adversely affects mental as well as physical development, productivity, the span of working years - all of which significantly influence the economic potential of man.

It is evident from the available information that there are four deficiency diseases of public health importance widely prevalent: namely protein calorie malnutrition (PCM), nutritional anaemia, Vitamin A deficiency and goitre in some localized areas.

FUTURE AGRICULTURE PLANS:

1. Objectives:

The seventh plan is based on the recommendations of the National Commission on Agriculture set up by the Government in April 1986. The specific objectives of the 7th plan are to accelerate the modernisation of agriculture to achieve a growth rate substantially higher than the population growth rate, to increase agricultural productivity, to consolidate self-sufficiency in grains and to regain self-sufficiency in sugar production and reduce dependence on edible oil export. It aims to diversify agricultural production and rural employment opportunities, to improve price support system, to bring about a major transformation in the productivity of the livestock sector. The development of policy framework to solve fodder and feed deficiencies, improvement of the genetic makeup of livestock, evaluation of integrated programme for developing Barani, riverine and mountainous areas and the strengthening of institutional support and provision of incentives for generating export surpluses by encouraging crop specialization in suitable areas/regions are also other key objectives. The production targets for food crops and livestock products are presented in Tables 5 and 6. In order to achieve these targets, the following strategies have been proposed in the seventh plan.

2. Strategies:

The main elements of the agricultural strategy shall include balanced use of fertilizers and micro-nutrients, application of gypsum on saline sodic soils, strengthening on farm water management programme, increased availability of certified seed, improved agricultural practices such as deep ployghing and integrated pest management. Efforts will be directed towards development of high yielding, disease resistant varieties of crops particularly sugarcane, rice, oilseeds and development of effective linkage and coordination between research, education and extension organizations to minimize the time spent between acquisition and dessionimation of improved technology. A major push to agricultural research programme, intensive use of audio-visual

media for agricultural extension, emphasis on the production of non-traditional oilseeds alongwith conventional ones and the evolution of a package of incentives to promote crop specialization in favourable ecological zones and a more responsive support price system are some of the other suggested measures. In livestock production emphasis would be given on increasing the productivity rather than number of livestock in order not to further strain the feed and fodder resources of the country. High yielding, drought tolerant varieties of food and fodder crops for barani areas shall be developed and the establishment of agro-services in the private sector shall be encouraged.

As a result of the objectives and strategies, the growth rate of the major crops is expected to be 4.0%, the minor crops 5.5%, livestock 5.3% and fisheries 4.9%. Thus resulting in an overall growth rate of 4.7% per annum for the agricultural sector.

### 3. Self Sufficiency in Food:

For several years the output of food grains in Pakistan has been steadily going up. Except for the edible oils, sugar and milk, the country is self-sufficient in rest of the food items and is also exporting over one third of its rice production and some few thousand tonnes of fruits, vegetable and other processed and semi processed food. The perspective plan aims at maintaining self-sufficiency in food grains, oilseeds and sugar and in production surplus grains for export. Compared to 2.8% increase per annum in population, the plan provides for 3.2% increase per annum in the production of food grains. The need to reduce the import of edible oils and sugar will have to be balanced with the need to increase the export of fruits and vegetables and also by maintaining, at least the present export markets in grains and raw cotton.

With the increase in income and urbanization, the demand for the processed food grows faster. The long term outlook, therefore will be for a higher share of food to be processed industrially rather than in homes. The processed food, apart from assuring greater food

security, also contributes significantly to the reduction of post harvest/kitchen losses which now represent serious drain on food supply. During the plan period not only the production of food crops, but the processing, preservation and packaging will also be given due priorities and this in turn will improve the present imbalance between the contribution to calories by food grains, fats and oils. The per capita availability of major food items over the perspective plan period is given in Table 7. The perspective plan, if implemented, can lead to an average growth of 5.0% per annum in total agricultural production. The annual growth rates of fruits and vegetables, all other crops, livestock and fisheries are expected to be 7.0, 4.0, 5.7 and 2.8 respectively. In short, the plan will improve the incomes, nutritional adequacy and the well-living of the farmers, particularly the small farmers, expanding employment opportunities in rural areas and achieve a substantial increase in agricultural exports.

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TABLE 1  
PRODUCTION OF MAJOR FOOD CROPS

CROPS	(000 MT)	
	1969-71	1986
TOTAL CEREALS	11,668	20,012
PADDY	3,431	5,241
WHEAT	6,796	13,923
OTHER GRAINS	1,441	1,705
TOTAL PULSES	689	857
TOTAL ROOTS AND TUBERS	354	547
TOTAL NUTS AND OILSEEDS (EDIBLE)	330	325
TOTAL FRUITS AND VEGETABLES	3,196	5,163
TOTAL SUGARS (RAW AND REFINED)	1,423	2,210
TOTAL MEAT	462	983
TOTAL FISH	211	398
TOTAL MILK	7,434	11,230
TOTAL EGG (M.T)	14,780	217,550

SOURCE: FAO PRODUCTION YEARBOOK, 1981 AND 1986  
ECONOMIC SURVEY OF PAKISTAN 1986-87

TABLE 2

INTAKE OF FOOD BY FOOD GROUPS

(GRAMS PER PERSON PER DAY)

FOOD GROUP	RURAL	URBAN	ALL PAKISTAN
TOTAL CEREALS	626.0	433.8	532.0
WHEAT	503.8	376.6	448.2
RICE	95.4	47.8	74.6
OTHER CEREALS	26.7	9.5	19.2
PULSES	27.0	20.1	24.0
FATS AND OILS	33.1	82.1	54.9
EGGS	3.4	7.7	5.3
FISH	5.9	6.9	6.3
MEAT	15.8	36.5	24.8
ROOTS	26.3	27.1	26.6
LEAFY VEGETABLES	40.1	24.2	33.1
OTHER VEGETABLES	14.5	19.0	16.4
FRUIT	16.3	1.9	10.0
MILK PRODUCTS	458.6	240.7	363.4
SUGAR INCL. "GUR"	73.1	53.5	64.6

SOURCE: MICRO-NUTRIENT SURVEY. 1978

TABLE 3

AVAILABILITY OF CALORIES AND PROTEIN IN SELECTED COUNTRIES  
(PER CAPITA/DAY)

COUNTRY	CALORIES (K.CALS)			PROTEIN (G)		
	NORMATIVE REQUIREMENT	AVAILABLE	%REQUIREMENT	TOTAL	VEGETABLE	ANIMAL
BANGLADESH	2310	1859	80.5	38.6	34.3	4.3
CHINA	2360	2564	108.6	60.2	51.9	8.4
INDIA	2210	2161	97.8	52.3	46.1	6.3
INDONESIA	2160	2504	115.9	51.4	46.0	5.5
NEPAL	2200	2048	93.1	53.0	44.9	8.1
PAKISTAN	2310	2186	94.6	56.4	42.6	13.8
PHILIPPINES	2260	2313	102.3	48.7	32.7	16.0

SOURCE: 1. FAO PRODUCTION YEAR BOOK (1986)  
2. FOOD COMPOSITION IN ASIA-PACIFIC REGION, FAO (1985)

TABLE 4

PROTEIN QUALITY OF PAKISTANI COOKED DIETS

DIETS	TRUE DIGESTIBILITY (%)	BIOLOGICAL VALUE (%)	NET PROTEIN UTILISATION (%)	NET DIETARY PROTEIN CALORIES (%)
NATIONAL DIET	92.0	72.0	66.0	8.5
1. WHEAT BREAD, MEAT+POTATO	94.0	69.0	65.0	8.3
2. WHEAT BREAD, BENGAL GRAM(DHAL)	92.0	66.0	60.0	7.3
3. WHEAT BREAD, SPINACH+POTATO	93.0	69.0	54.0	5.9
4. WHEAT BREAD, GREEN PEAS+POTATO	94.0	65.0	61.0	7.3
5. WHEAT BREAD, BEANS	92.0	69.0	63.0	6.8
6. WHEAT BREAD, MUSTARD LEAVES, SKIMMED MILK	92.0	76.0	70.0	8.2
7. WHEAT BREAD, GHEE, SUGAR, SKIMMED MILK	95.0	76.0	72.0	7.3
8. RICE (BOILED), LENTILS	91.0	65.0	59.0	5.4
9. RICE (BOILED), SUGAR, MILK	92.0	80.0	73.0	6.4
NORTHERN AREA DIET	88.0	70.0	61.0	7.6

SOURCE: KHAN AND EGGUM (1978) J. SCI. FD AGRIC. 29, 1023

TABLE 5

CROP PRODUCTION TARGETS

CROPS	(000 TONNES)		
	BENCHMARK 1987-88	TARGETS 1992-93	PERCENTAGE ANNUAL INCREASE OVER BENCHMARK
GRAINS			
WHEAT	13930	17000	4.1
RICE	3380	4120	4.0
MAIZE	1075	1400	5.4
OTHERS	620	648	0.9
SUGARCANE	33500	43576	5.4
OILSEEDS			
COTTONSEED	2552	2995	3.3
RAPE AND MUSTARD	267	370	6.7
NON-TRADITIONAL	60	321	40.0
PULSES			
GRAM	570	695	4.0
OTHERS	200	280	7.0
VEGETABLES			
ONIONS	540	750	6.8
POTATOES	570	750	5.6
OTHERS	2450	3279	5.6
FRUITS	3520	4493	5.0

SOURCE: SEVENTH FIVE YEAR PLAN, 1988-93 AND PERSPECTIVE  
PLAN, 1988-2003

TABLE 6

PRODUCTION TARGETS FOR LIVESTOCK PRODUCTS

(000 TONNES)

PRODUCE	BENCHMARK 1987-88	TARGETS 1992-93	PERCENTAGE ANNUAL INCREASE OVER BENCHMARK
MEAT	1305	1683	5.2
BEEF	595	723	4.0
MUTTON	570	756	5.8
POULTRY	140	204	7.8
MILK	12900	16654	5.2
EGGS	5.9 (MILLION NUMBERS)	8.6 (MILLION NUMBERS)	8.0

SOURCE: SEVENTH FIVE YEAR PLAN, 1988-93 AND  
PERSPECTIVE PLAN, 1988-2003

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SOURCE: SEVENTH FIVE YEAR PLAN, 1988-93 AND  
PERSPECTIVE PLAN, 1988-2003

TABLE 7  
PER CAPITA AVAILABILITY TARGETS OF MAJOR FOOD ITEMS  
(G PER DAY)

FOOD GROUPS	1987-88	1992-93	1997-98	2002-03
TOTAL CEREALS	417.5	554.5	563.6	578.1
WHEAT	324.1	440.5	452.9	469.3
RICE	51.8	62.2	62.2	62.2
OTHER GRAINS	41.6	51.8	48.5	46.6
PULSES	20.0	20.0	20.0	20.0
EDIBLE OILS	32.9	36.4	40.5	44.7
MILK	335.1	371.8	413.2	451.2
MEAT	33.7	30.7	34.2	37.5
EGGS (No.)	0.2	0.2	0.3	0.3
VEGETABLES	115.1	124.4	146.3	169.0
FRUITS	86.6	92.1	106.3	120.5
SUGAR	41.4	49.6	56.2	63.3
Total Calories(Kcal)	2515	3088	3215	3445
Total Protein (g)	64.5	78.0	81.6	85.5

SOURCE: SEVENTH FIVE YEAR PLAN 1988-93 AND PERSPECTIVE PLAN 1988-2003