FOODGRAIN HANDLING AT VILLAGE LEVEL IN PAKISTAN

by

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Introduction:

The Islamic Republic of Pakistan has a population of about 84 million and covers a total land area of some 80 million ha. Agriculture is the most important sector in the Pakistan economy, providing employment to about 60% of the labour force, account for about 32% of GNP and producing nearly two-thirds of Pakistan's export earnings. Crops provide 69% of agricultural GDP, the remainder comes from livestock, fisheries and forestry[1].

About 3/4th of Pakistan's populations mainly comprising small and medium sized farmers and landless tenants live in rural areas scattered in nearly 45,000 villages, as compared to the people in the urban areas, the poverty, lack of education, un-employment food shortage, lack of health cover and other socio-economic imbalances have visible effects on the life of rural masses. The present paper deals with the foodgrain handling systems in the rural areas of Pakistan.

Major Grain Crops

The main grain crops being grown in Pakistan are wheat, rice, maize and pulses. About one third of the rice production is being exported every year. During the recent years, the country has also achieved

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self-sufficiency in wheat requirements which is the staple food grain in the area. The wheat production has increased by 34%, whereas the production level of other food crops namely rice, maize, pulses etc. has not changed in the last five years. (Table 1). Pakistan has made fairly satisfactory progress in cereal production during the past ten years (1971-81). The growth rates of cereal production and population in selected countries of the Asia and Pacific Region are given in Table 2.

Consumption:

The intake of foodgrains in rural and urban areas of Pakistan is given in Table 3. According to Micro-nutrient survey of Pakistan[2] (1978), cereals constitute the main staple of the Pakistani diet. Wheat is by far the most common foodgrain consumed, constituting 83% of total cereal intake. Wheat alone provides over 53% of the total calories and 59% of the total protein consumed by the rural population. The present survey found that cereals contribute 14% more to total calories consumption among rural dwellers than urban inhabitants. In the case of proteins, the share of cereals in total intake is 5% greater in the countryside than in the towns and cities. Pulses contribute 6.1% in the rural areas and 4.5% in urban areas to total protein intake.

Marketing:

The marketable foodgrain surplus varies with farm size and is different for different food grains. Except for local barter trade, the quantity of foodgrain enterning commercial marketing channels from farms upto three acres appears to be negligible. By contrast, farms with large land holdings market more than 50% of their production. For wheat and rice

marketable surplus is estimated at about 40% to 45% of total production while for other foodgrain, less than 30% of farm productions enters commercial marketing channels. The majority of farmers sell their surplus foodgrains immediately after harvest in village markets which are dominated by food grain marchants (Arthis) who often are also money lenders, advancing farmers cash against future grain. Large farmers generally sell to the Food Department. Transportation of food grains from the farm to local markets and to food Departments is mainly by tractor trollies, truck, donkey, bullock or camel cart.

Storage and Losses:

Women in Pakistan's farm families are traditionally responsible for the storage of food, especially cereal grains. On-farm foodgrain storage is mainly for grain needed for family consumption, local bartering and seed. According to an estimate[3] , about 54% of wheat, 20% of rice and 70% of total maize production in the country is stored at farm level. For storing small quantity of grains, containers made of woven plant material plastered with mud, and wooden boxes are common. Larger amounts of grain are stored usually in separate rooms in the farm house or in outdoor or indoor bins constructed of mud and straw or of bricks. In order to control pests, DDT powder, mercury , phosphine, neem leaves and sundrying are commonly used.

The foodgrain losses are reported to be as high as 1.5% in wheat, 1.98% in rice and 1.63% in maize at the national level[3]. The factors causing losses in grains are given in Table 4. The main reasons for the losses seem to be most farmers unfamiliarity with appropriate on-farm storage technology and poorly constructed and maintained stores. These

problems in turn are at least in part the results of inadequate attention given so far in Pakistan to grain storage research and extension.

The losses are not only quantitative but also qualitative, as the nutritive value of food drops considerably due to infestation, the infestation also results in contamination with pathogenic organisms and filth. Nutrient losses due to infestation in different cereals have been reported[4] in (Table 5).

Recently, the Pakistan Agricultural Research Council has given high priority to post harvest protection research and has established a post harvest protection unit at PARC to coordinate research work in the field of crop protection including grain storage research and extension training at national level. A survey of farm level storage losses in major crops is also being undertaken by PARC to establish food losses during storage at village level[5]. There is also need to conduct research on the effect of storage on the protein quality of food-grains. In order to equip the agricultural graduates and extension workers with the knowledge of post harvest technology, there is urgent need to introduce a course on post harvest technology in the agricultural institutes.

Processing:

Women are mainly responsible for local food processing and the main user of related technologies. Milling of wheat is done by burr mills called Chakki in the rural areas. These mills provide a custom milling service for rural farm and non-farm families. Hand operated Chakki is also used for milling of wheat at home level. Whole flour is commonly used in making bread (Chapati) for consumption. Milling of rice is carried out by small out-dated milling equipment, which is

maintained in very un-satisfactory condition. These mills cannot produce adequate quantity of by-products such as rice bran to be used efficiently. Threshing of rice paddy by women using wooden stick is also practised in some areas.

Parboiling of rice is used to preserve certain nutrients that otherwise are lost in the pounding or milling process. The process includes soaking of the paddy, followed by steaming and careful drying. As a result, the grain losses less of its nutrients when it is milled. In addition, the heat used in drying hardens the outer coat and results in the grain being more resistant to insect invasion and more suitable for storage.

Germination or Sprouting of grains is limited to some areas. Germination results in increased levels of vitamins and other important nutrients. It also improves digestibility, taste and flavour. Sprouted grains are eaten raw or cooked, cooking time being significantly reduced. They are also dried and milled into flour. Porridge made from such flour has been used as food for infants and small children and in case of diarrhoea and other illnesses.

Processing of legumes: Grains legumes are a very important source of protein in rural areas. Being rich in lysine, they provide a valuable supplement to the cereal diet. The traditional milling (Splitting) techniques are not only insufficient, but result in losses due to breakage and powdering.

Methods and technologies tradionally used to convert food crops into edible food have remained unnoticed in planning and research aimed at increasing food availability and nutrional levels. It is therefore

recommended that traditional methods of food processing should be encouraged , properly investigated and improved and given high priority.

Refrences.

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4. Chaudhry, I. (1975) Evaluation of Nutritional losses caused by Tribolium castaneum and Rhyzopertha dominica . M.Sc. Thesis, University of Agriculture , Faisalabad.

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Table 2: Growth rates of Cereal production and population in selected countries of the Asia and Pacific Region(1971-81)

Country	Cereal Production (Percent) (1971-81)	Population (Percent) (1970-80)
Bangladesh	2.3	2.6
China	3.8	1.7
India	2.3	2.1
Malaysia	2.3	2.6
Sri Lanka	3.4	1.7
Thailand	3.1	2.5
Philippines	4.3	2.8
Pakistan	3.9	2.8
Australia	4.1	1.4
Asia-Pacific Region	3.1	2.0
World	2.6	1.9

Source: Adapted from FAO Production year book 1981.

Table 1: Production of major Foodgrains in Pakistan (million tons) during 1977-78 to 1981-82

Year	WHEAT	RICE	MAIZE	PULSES
	Production (m.t)	Production (m.t)	Production (m.t.)	Production M.t)
1977-78	8.37	2.95	0.82	0. 81
1978-79	9.95	3.27	0.80	0.74
1979-80	10.86	3.22	0.88	0.51
1980-81	11.47	3.12	0.95	0.53
1981-82	11.22	3.34	0.91	N.A.

Source: Agricultural Statistics of Pakistan 1981 MINFA.

Table 3: Consumption of foodgrain in rural and urban areas of Pakistan

Food grains	grams/ person/day		
	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

Source: Micro-Nutrient survey of Pakistan (1978) Planning Division, Government of Pakistan.

Table 4: Factors causing storage losses in foodgrain at farm level in Pakistan.

Foodgrain	Storage loss.	Birds	Insects	Dampness	Demoisturization	Rodents	Others
		(In percentage)					
Wheat	1.55	10.02	56.76	7.90	4.97	16.24	4.10
Rice	1.98	11.96	28.73	10.25	32.02	9.58	7.45
Maize	1.64	18.20	40.37	17.42	22.05	1.96	-

Source: Chaudhry, M.A. (1980) Foodgrain losses during storage in Pakistan. University of Agriculture, Faisalabad.

Table 5: Nutrient losses caused by Insects in Foodgrains.

Foodgrains	Name of Insect	Nutrient losses (%)			
		Crude Protein	Available Carbohydrates	Fat	Ash
Wheat	R.dominica	49.8	42.4	86.3	56.9
Rice	-do-	-	-	52.5	52.5
Maize	-do-	24.6	25.7	86.1	54.6

Source: Chaudhry, I (1975) M.Sc. Thesis, University of Agriculture, Faisalabad.