

Rice Varietal Adoption in Jafarabad District Baluchistan



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AERU, Quetta Staff Paper No. 89-1

**Agricultural Economics Research Unit (PARC)
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PARC/CIMMYT Collaborative Programme
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Abbreviations

AERU	:	Agricultural Economics Research Unit.
A.O.	:	Agricultural Officer.
ARI	:	Agricultural Research Institute.
CIMMYT	:	International Maize and Wheat Improvement Center.
E.A.D.A.	:	Extra Assistant Director Agriculture.
PARC	:	Pakistan Agricultural Research Council.
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RICE VARIETAL ADOPTION IN JAFARABAD DISTRICT BALUCHISTAN

Introduction

High yielding rice varieties play an important role in increasing rice productivity. Rice breeders at various research stations in Pakistan are continuously working to evolve and disseminate high yielding varieties (Khichi et al. 1985). The information on the extent of adoption of rice varieties planted by farmers has not been documented and published in Baluchistan. This type of data can be used by policy makers, rice breeders and pathologists to assess the impact of varietal research and to assess the choice of rice varieties by farmers (Sharif et al. 1988). Furthermore, the assesment of rice varieties on farmers' fields and the relative area planted to different rice varieties will also alert rice breeders and planners to potential losses from insects, pests and diseases of the rice crop. The main aim of this study is to present the extent of varietal diffusion and adoption of rice varieties by farm size and tehsil in Jafarabad district of Baluchistan.

A Perspective on Rice in Baluchistan

Table 1 shows the area, yield and production of rice crop in different provinces of Pakistan. Baluchistan has the highest average yield of rice of all provinces, with much of the rice being planted after fallow, in contrast with much more intensive cropping in other provinces. Rice in Baluchistan is grown mainly on the Indus plains under irrigation. The growing conditions are very similar to those prevailing in the rice zone of Upper Sind (Bhatti et al. 1987). Temperatures are very high during the rice season (June to October) and conditions favour coarse-grained rice production, when water supplies are sufficient.

Table 1: Province-wise Area, Yield and Production of Rice in Pakistan during 1985-86 to 1987-88

	Punjab	Sind	NWFP	Baluch- istan	Pakistan
Average 1985-86 to 1987-88	1124	676	67	96	1964
Average 1985-86 to 1987-88	1293	2036	1687	2717	1635
Average 1985-86 to 1986-87	1455	1386	113	261	3215

Source : Agricultural Statistics of Pakistan 1987-88.

Most of Baluchistan's rice production is in Nasirabad division. This division was created in 1987, and statistics are not yet available for crops by the new statistical divisions. However, before the change, data are available for rice production in Nasirabad district. Rice area, yield and production have grown strongly in the district, assuming the statistics to be reliable (Table 2).

Table 2: Area, Yield and Production of Rice in Nasirabad District, 1970-75 to 1983-86

Years	Area ('000 hec)	Yield (Kg/ha)	Production ('000 tonnes)
Average of 1970-71 to 1974-75	35.3	947	33.6
Average of 1983-84 to 1985-86	102.8	2900	298.5
Annual Growth (%) from 1970-71 to 1985-86	9.3	9.8	20.0

Source: Statistical Bulletin of Rice in Pakistan, SSD, PARC, Islamabad.
Agricultural Statistics of Pakistan 1983-84 to 1985-86.

Research Methods

The rice varietal adoption survey was conducted by AERU, Sariab, Quetta in collaboration with rice scientists in October, 1988. The survey was conducted in Jafarabad district, Baluchistan. This district is made up of two tehsils, Dera Allahyar and Usta Mohammad. A total of eighteen villages was surveyed from Dera Allahyar and Usta Mohammad tehsils. Forty farmers were interviewed from Dera Allahyar and fifty from Usta Mohammad tehsils. Five farmers from each village were interviewed, giving an overall sample of 90 farmers. A comprehensive questionnaire was prepared to collect the data by direct interview. The sample distribution by farm size and tehsils is presented in Table 3. Farmers having less than 10 hectares of cultivated area are classified as small, while those with area from 10 to 20 hectares are placed in medium size

category. Large farmers have area more than 20 hectares. Overall, one third of the sample farmers are tenants, with both tehsils having approximately the same proportion of owners and tenants.

Table 3: Sample Distribution by Farm Size Groups in Different Tehsils of Jafarabad District, Baluchistan 1988

Tehsils	Farm Size Groups			All Tehsils
	Small	Medium	Large	
	(percent farmers)			
Dera Allahyar	22.5	37.5	40.0	44.4
Usta Mohammad	42.0	14.0	44.0	55.6
Over all	33.3	24.4	42.3	100.0

Results and Discussion

Farm Size and Rice Area

Overall, average farm size and average rice area per farm were 35 and 13 hectares, respectively (Table 4). On average, sample farmers allocated 37 percent of the total farm area to rice in Jafarabad district. The average farm size in Dera Allahyar tehsil was almost 33 hectares and for Usta Mohammad around 37 hectares. The average rice area in Usta Mohammad was double that of Dera Allahyar tehsil of Jafarabad district. This is because, Usta Mohammad is generally more suited to rice growing with greater assurance of water supplies. Information on average farm size, rice area and proportion of rice area to total farm area by farm size is given in Table 4. Overall, small farmers devoted 56 percent of their total farm area to rice as compared to only 34 percent for large farmers. Small farmers' behaviour is similar within tehsils but large farmers in Usta Mohammad allocate double the area to the rice crop as compared to that of Dera Allahyar tehsil.

Table 4: Average Rice Area by Farm Size Groups in Dera Allahyar and Usta Mohammad Tehsils of Jafarabad District, Baluchistan, 1988

Tehsil/ Farm Size Groups	Average Farm Area (ha)	Average Area Under Rice (ha)	Area Under Rice (%)
Dera Allahyar			
Small Farmers	6.0	3.0	51
Medium Farmers	13.8	5.8	42
Large Farmers	66.0	13.6	21
Total	32.9	8.3	25
Usta Mohammad			
Small Farmers	5.9	3.4	59
Medium Farmers	13.2	8.6	65
Large Farmers	73.6	31.1	42
Total	36.7	16.3	44
Both Tehsils			
Small Farmers	5.9	3.3	56
Medium Farmers	13.6	6.7	49
Large Farmers	70.4	23.7	34
Total	35.0	12.8	37

Number of Rice Varieties Planted by Sample Rice Growers

Overall, three quarters of the farmers grew only one variety (Table 5). The proportion of sample farmers growing one rice variety only in Dera Allahyar was significantly higher than that of Usta Mohammad. Thus more rice growers in Usta Mohammad had two or more varieties. These differences are due to the larger farm size in Usta Mohammad. Large farmers can grow more varieties at one time to spread the risk and to ensure that the use of labour, water and other resources is spread more evenly during the rice season.

Table 5: Number of Rice Varieties Planted by Rice Growers in Dera Allahyar and Usta Mohammad Tehsils of Jafarabad, Baluchistan by Various Farm Size Groups, 1988

Tehsils/ Farm Size Groups	Number of Varieties Planted		
	One	Two	More than Two
(percent farmers)			
Dera Allahyar			
Small Farmers	100	-	-
Medium Farmers	93	7	-
Large Farmers	93	-	7
All	95	3	3
Usta Mohammad			
Small Farmers	91	9	-
Medium Farmers	72	14	14
Large Farmers	27	59	14
All	60	32	8
Both Tehsils			
Small Farmers	93	7	-
Medium Farmers	86	9	5
Large Farmers	54	35	11
All	75	19	6

Main Rice Varieties Planted

The data regarding area planted to different rice varieties are given in Table 6. Clearly, IR-6 is the dominant coarse-grained rice variety (78 percent). Of the fine-grained rices, Karnal Basmati, Mehran and Sugdasi are the most important. Interestingly, a small area of Basmati-385 was grown. One percent farmers tested this very popular new variety of the Punjab (Sharif et al. 1988).

Table 6: Percent Area Under Different Rice Varieties by Farm Size and Tehsils, in Jafarabad District, Baluchistan, 1988

Tehsils Varieties	Farm Size Groups			All Tehsils
	Small	Medium	Large	
(percentage of total rice area)				
Dera Allahyar				
Kernal Basmati	0	4	3	3
Basmati-385	0	0	0	1
IR-6	100	96	97	96
Usta Mohammad				
Kernal Basmati	4	10	18	16
Basmati-385	2	0	0	0
IR-6	94	89	67	71
Sugdasi	0	1	7	6
Mehran	0	0	8	7
Both Tehsils				
Kernal Basmati	3	6	14	13
Basmati-385	1	0	0	0
IR-6	96	93	74	78
Sugdasi	0	1	5	4
Mehran	0	0	7	5

The area under different rice varieties by tenancy status of farmers is given in Table 7. The percentage area under Kernal Basmati is significantly higher on owner operator farms than those of tenants in Jafarabad district. The area under IR-6 rice variety adopted by tenant farmers is significantly higher than that of owner operators in the study area. Because, there is no premium for a fine variety in the market, owners keep most of the output for home consumption. But tenants have to sell the landlord's share of their output, so, they devote more area to IR-6, which is comparatively higher yielding.

Table 7: Percent Area Under Different Rice Varieties Planted by Farm Tenancy Status and Tehsils, in Jafarabad District, Baluchistan, 1988

Tehsils/Varieties	Tenancy Status Groups		All
	Owners	Tenants	
(percentage of total rice area)			
Dera Allahyar			
Kernal Basmati	3	0	3
Basmati-385	0	0	0
IR-6	97	100	97
Usta Mohammad			
Kernal Basmati	17	6	16
Basmati-385	0	3	0
IR-6	69	91	71
Sugdasi	6	0	6
Mehran	8	0	7
Both Tehsils			
Kernal Basmati	13	4	13
Basmati-385	0	2	0
IR-6	76	95	78
Sugdasi	5	0	4
Mehran	6	0	5

Summary and Suggestions

Farmers are aware of the major rice varieties grown in the study area, probably because rice is the major crop of Jafarabad district. The overall performance of the province in terms of yield is very encouraging, although, there is much potential in this area for increasing rice productivity.

The percentage of area devoted to rice crop is higher on small farms in both tehsils. To increase output, large farmers could be encouraged to devote more area to this crop. More than 70 percent of large farmers in Usta Mohammad tehsil grow two or more varieties on their farm, to spread risks and the use of farm resources during the rice season. Large farmers are thus better able to adopt new varieties and experiment with them.

IR-6 is clearly, the dominant rice variety, followed by Karnal Basmati. These two rice varieties are widely adopted in the rice growing area of Baluchistan. It is hoped that the results of this study will be useful for rice breeders and pathologists to assess the impact of varietal research and to determine the choice of rice varieties for farmers in the study area. The findings of this report underline the need for continuous assessment of rice varietal adoption.

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