

## Socio-economic Factors Associated with the Adoption of Groundnut Varieties in the Barani Areas of the Punjab

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**Abstract:** This study was undertaken to determine the impact and influence of socio-economic status of the farmers upon the adoption of new groundnut varieties. The study was conducted in two villages of Tehsil Chakwal. The data was collected with the help of an interviewing schedule and analysed statistically. A non significant relationship was found between groundnut varieties, landholding and adoption process. The relationship between the adoption process, age and education of the farmers was significant. Similarly a higher percentage of adoption is among the owner tenants.

**Key words:** Adoption, awareness, innovations, groundnut varieties, barani areas

### INTRODUCTION

Agriculture is the major sector of Pakistan's economy with majority of the population directly or indirectly dependent on this sector and about one fourth of GDP is contributed by it. During 2001-2002 agriculture sector has achieved 6.1 percent growth compared with the growth of 2.0 percent in 2000-2001<sup>[1]</sup>.

Groundnut is a major cash crop of the rain-fed area and is a good source of edible oil as it contains about 38 % oil of good quality. It is a plant native of South America probably in Brazil and Peru, where more than 100 closely related wild species are found. From there, it has spread all over the world. About 75 % percent of the total world tonnage is produced in India, China, Nigeria, USA and Senegal. India is the single largest producer. In Pakistan, about 85 % of the area under groundnut lies in Punjab, 10 % in NWFP and 5 % in Sindh. The highest average yield (3500 kg / ha) is obtained in Israel, followed by the USA (2500 kg / ha). The highest recorded yield is 5000 kg / ha, obtained in Israel and 3500 kg / ha by the National Agricultural Research Centre in Pakistan. It occupies the second largest area among oilseed crops and is grown on an area of about 97,500 ha annually with a production of 104,000 tones<sup>[1]</sup>. In groundnut, out of 16 varieties, ICGV-86745 gave the highest yield of groundnut<sup>[2]</sup>. Groundnut contributes 70 % to the total edible oil production in India whereas, in Pakistan contribution as edible oil is negligible because it is mostly consumed as roasted nuts and in confectionery. The national average yield ranges between 1000 to 1100 kg / ha, which is one fourth of the potential yield of the existing varieties<sup>[1]</sup>. Present study was conducted to seek out relationship between the adoption

process and the socio-economic characteristics of groundnut growers.

### MATERIALS AND METHODS

The research work was conducted in two villages of tehsil Chakwal. Out of the union councils of the tehsil, one union council was selected randomly in the radius of 20 km away from the municipal limits of Chakwal city. Thereafter, the process of randomisation led to selection of two villages which became the focus of the study. Then the list of the farmers were prepared and finally 90 farmers were selected randomly, forty five from each village. The respondents were all male farmers for examining the diffusion patterns of different groundnut varieties. Four groundnut varieties namely, Banki, Chakori, # 334 and BARI-89 which have been cultivated in the area were selected and each farmer was asked questions regarding his behaviour.

For statistical analysis purpose along with percentage method the Chi-square test was used to test the hypothesis.

### RESULTS AND DISCUSSION

The land holding in the sample area follow the general pattern of individual procession of land in the country. Majority of the respondents i.e., 92 % can be classed as small farmers according to the 1959's land reforms<sup>[3]</sup> definition of subsistence farming. In subsistence farming, farming is done not for market purpose but only to meet the domestic requirements. Little or no saving at all creates an environment of disincentive for adoption of

**Table 1: Association between landholding of the farmers and adopter categories**

Landholding	Adopter Categories				Total
	Early adopter	Percent	Late adopters	Percent	
Up to 5 acres	26	35.14	48	64.86	74
6 acres and above	06	37.50	10	62.5	16
Total	32	35.56	58	64.44	90

$\chi^2_{cal} = 0.032$  is non significant at 0.05 level.  $\chi^2_{tab} = 3.84$  d.f. =1

**Table 2: Association between age and adopter categories**

Landholding	Adopter Categories				Total
	Early adopter	Percent	Late adopters	Percent	
Up to 35 years	07	21.21	26	78.79	33
36-50 years	10	33.33	20	66.67	30
51 years and above	15	55.56	12	44.44	27
Total	32	35.56	58	64.44	90

$\chi^2_{cal} = 7.74$  significant at 0.05 level.  $\chi^2_{tab} = 5.99$ . d.f. =2

**Table 3: Association between education and adopter categories**

Landholding	Adopter Categories				Total
	Early adopter	Percent	Late adopters	Percent	
Illiterate	02	09.09	20	90.91	22
Up to Middle Grade	18	41.86	25	58.14	43
Above Middle grade	12	48.00	13	52.00	25
Total	32	35.56	58	64.44	90

$\chi^2_{cal} = 9.16$  significant at 0.05 level.  $\chi^2_{tab} = 5.99$ . d.f. = 2

**Table 4: Association between income and adopter categories**

Landholding	Adopter Categories				Total
	Early adopter	Percent	Late adopters	Percent	
Up to 60,000	10	27.03	27	72.97	37
Above 60,000	22	41.51	31	58.49	53
Total	32	35.56	58	64.44	90

$\chi^2_{cal} = 1.994$  non significant at 0.05 level.  $\chi^2_{tab} = 3.84$  d.f. =1

**Table 5: Association between tenancy status and adopter categories**

Landholding	Adopter Categories				Total
	Early adopter	Percent	Late adopters	Percent	
Owner cultivator	18	38.30	29	61.70	47
Owner-cum-Tenant	10	30.30	23	69.70	33
Tenant/absentee land lord	04	40.00	06	60.00	10

$\chi^2_{cal} = 3.994$  significant at 0.05 level.  $\chi^2_{tab} = 1.84$  d.f. =2

new varieties. Result of the study indicated that the relationship between the groundnut varieties, landholding of farmers and the adoption process is non-significant (Table 1). The study by Amin<sup>[4]</sup> also brought out the fact that there was no association between the size of landholding and farmers tendency toward adoption of plant protection measures. Ali<sup>[5]</sup> investigated some of the socio-economic factors influencing the adoption of improved agricultural practices by the farmers of tehsil Faisalabad and analysis revealed a difference showed that size of landholding was one of significant factors in the adoption of agricultural innovations.

The relationship between the adoption of groundnut varieties and the variables of age and education was found to be significant. At young ages farmers are comparatively more innovative in ideas and they are ready to take chances. The study results show that majority of the farmers i.e., 40 % were in the age bracket of 21-35 years. In Chakwal, the general literacy rate is high as compared to the other parts of the province. In the study area the literacy of the farmers was found 74.36% which is above the national average by 23.16 % point. High literacy and young age encourages the farmer to seek latest information about agriculture and the new varieties fit for cultivation in the area. The observed values reflect a higher percentage of adopters among the respondents of age not exceeding 35 years (Table 2).

Further the Table 3 shows that the higher the education of the farmers, greater is their acceptance of new varieties. Mirza's<sup>[6]</sup> finding that education of his respondents was positively associated with their adoption of plant protection measures is supportive in this regard. Afzal<sup>[7]</sup> discovered that high prices and non-availability of spare parts were main hindrances in the way of adoption of farm implements. Further he found that age and education had no effect on the adoption of farm implements. Tarar<sup>[8]</sup>, discovered that age, education, size of land holding and type of tenure played an important role in determining farmers' attitude towards adoption or rejection of the new idea.

The average annual of the majority of the farmers was morw than Rs. 72000 i.e, 60 %. With present rate of prices of inputs and inflation rate in the country very little is leftover for the adoption of new innovations. Although the data on income was not significantly associated with the adoption, yet from the observed values it can be drawn that higher income group was proportionately higher in the adoption of new ground nut varieties. The study by Javed<sup>[9]</sup> showed a non-significant relationship between education and income of farmers with their adoption of modern agricultural implements. Adoption behaviour regarding groundnut varieties is not associated with farmers' income. However, the observed values reflect a higher adoption rate among the higher income groups (Table 4).

Land tenure system explains the relationship of the land with its tiller. In the study area 43% were found owner cultivator while a little bit higher percentage of farmers belongs to owner-cum tenant i.e., 48 %. Legal right of claim is also an important factor in the adoption of new varieties and innovations in farming practices because certain decision depends upon the consent of the landlords. In table 5 the calculated value of Chi-square is greater than the table value at 5% level of significance. It means that relationship between the two variables that is tenancy status and adopter categories is significant.

Table 6: Respondents knowledge and practices regarding groundnut cultivation

Knowledge about varieties	Frequency	Percent
Banki	28	31.11
Chakori	83	92.22
# 334	25	27.78
BARI-89	72	80.00

N= 90

Table 7: Distribution of the respondents with regard to categories of adoption

Adopter categories	Frequency	Percent
Innovators	12	13.33
Early adopters	20	22.22
Late adopters	55	61.11
Leggards	03	03.33
Total	90	100.00

Further the observed value in the Table 5 reflects a higher percentage of adoption is among owner tenants. Therefore, the hypothesis “The greater adoption rate is largely dependent on the tenancy status of the farmers” is upheld.

The findings get support from Khan<sup>[10]</sup> who found that there was association between socio-economic factors and adoption of new varieties. During the study, the farmers were asked about their awareness of different of groundnut varieties. The data show that the highest awareness was found for the Chakori. It was known by 92.22 % of the farmers. The next in awareness was BARI-89, which was known by 80.00 %. One third knew Banki and # 334, being quite old (Table 6).

Further analysis of the data enabled the researchers to divide the farmers into various classical adopter categories. Innovators were 13.33 %; early adaptors were 22.22 percent and laggards were 3.33 %, while a significant majority of 61.11 % was late adopters.

The data get support from Heisey *et al.*<sup>[11]</sup> who had hypothesized that adoption of new varieties had been a slow process when seed systems were not developed. The socio-economic factors related to adoption of an innovation include both the personal characteristics of farmers and the characteristics of the socio-cultural context in which they act. Groundnut is very important kharif season crop in barani areas. Groundnut is a good source of edible oil but this is not completely harnessed in Pakistan. Per hectare yield of groundnut in Pakistan is low as compared to the other countries. Adoption of new high yielding varieties is slow in the country. According to the study education has a positive impact on the adoption process. More efforts should be made to increase the literacy rate in the barani areas. Legal right of claim is also an important factor in the adoption of new varieties and innovations in farming practices. Process of land consolidation can enhance the adoption process.

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