

## COST RETURN ANALYSIS IN WHEAT PRODUCTION IN FEDERALLY ADMINSTRATED TRIBAL AREA, PAKISTAN

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### ABSTRACT

A research study was conducted at Department of Agricultural Extension, Education and Communication, University of Agriculture, Peshawar, Pakistan during the year 2014 to identify cost and return from wheat production at selected area Bajaur Agency of Pakistan. A multi-stage sampling technique was used for selection of sample size. In first stage of sampling, three most wheat growing villages i.e Salarzai, Tangi and Khar were selected randomly. Further, sample size was selected by stratified sampling method. Thus, total of 90 wheat growers were selected for this research study. Primary data were collected from these wheat growers by a well-designed and pre-tested interview schedule. Similarly, simple budgeting technique applied to estimate costs and return of wheat crop which was 86.12 percent on all farms basis. The results indicated that mostly 71.12 and 78.88 percent wheat growers were illiterate and owner land growers, respectively. Total cost of wheat production was Rs. 14327.49 per acre which was incurred on harvesting, threshing fertilizers application and land rent activities. Moreover, average wheat grain yield per acre was observed as 832.51 kg per acre. Therefore, net income return was Rs. 10696.76 per acre. The study suggested that wheat growers should be educated and train in adopting better cropping pattern and management practices to increase per acre. Likewise, input and output price should be kept at stable level to ensure higher income for farmers' family.

**KEYWORDS:** *Triticum aestivum*; growers; credit; education; net income; constraints, Bank loan, Pakistan.

### INTRODUCTION

Pakistan is reportedly considered the 9<sup>th</sup> most wheat producing country in the world. However, it has been recorded as net importer of wheat in international market. Pakistan imported average 1453 thousand tonnes

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(239221 thousand US \$) of wheat annually from 1991 to 2007. Later on, after three years period, Pakistan's wheat export increased over imports but that time it was recorded a fractional improvement while currently in Pakistan the export ratios were observed more than imports (9).

Wheat is considered as a main factor for food security in Pakistan. It is a major source of significant livelihoods and income of a hug number of farmers' community. Wheat possesses a main value in cropping pattern (7). Wheat is the leading food grain of Pakistan occupying the largest area under single crop. Wheat contributes 10.0 percent value added in agriculture and 2.1 percent to GDP. But, wheat cultivated area has decreased from 9199 to 9180 thousand hectares in year 2014. i.e. 0.2 percent decline. Similarly, wheat production was 25.478 million tonnes in year 2014 against 25.97 million tons in 2013 this it decreased by 1.9 percent. Moreover, calculated wheat production also fell from 2824 to 2775 kg per hectare which showed 1.7 percent decline (8).

Wheat crop is more needed in Khyber Pakhtunkhwa province as parallel to other provinces of Pakistan. Its production in KPK province is 1.0718 million tonnes and demand is reported upto 2.6860 million tonnes. The wheat yield in most irrigated area of KP Province is less (1.968 t/ ha) as compared to the national average yield (2.451 t ha<sup>-1</sup>) in the year 2007and 2008 (5).

The research studies (1, 14) indicated that Pakistan is low in ranking of wheat production in the world due to minimum level of productivity. It is significant that National Food Strategic plan should be considerate towards main factors concerns to national food security and requirements. Anyway, the unsatisfactory role of wheat crop has caused food crisis in Pakistan within last past years.

The research studies of Nishimizu and Page (13) and Srinivasan (16) reported that wheat productivity may be divided in two categories of farmers. First one is innovators who adopted new and recommended crop varieties, methods and modern technology for wheat crop and second one is that who show maximum efficiency of applied technologies in the field. The technical skills and capacity building is demand of present era for technologies efficiency (11, 12).

The aim of present research was to find out net income of wheat growers, assess hurdles in wheat cultivation and formulate suggestions and recommendations for policy makers to increase wheat productivity.

**MATERIALS AND METHODS**

Bajaur Agency is spread over an area of 1290 square kilometers. This study was conducted at Department of Agricultural Extension, Education and Communication, University of Agriculture, Peshawar, Pakistan during the year 2014. For this study three villages i.e Salarzai, Tangi and Khar of Bajour Agency selected randomly. Roughly 43 percent of area is covered by barren hills and remaining 57 percent by wide valleys. The valley area is mostly broad, open and used for agricultural activities. Area of Bajour agency is generally semi-mountainous with large tract of undulating land. The weather condition of study area is cold winters and mild summers. From the selected villages, 90 wheat growers were selected by stratified technique which is described below.

$$NI = n \times \frac{Ni}{N}$$

Where,

“NI” represent number of wheat growers in each village. “I” expresses villages in study area i.e 1, 2 and 3 while “n” indicates total sample size.

Similarly, “Ni” shows total growers of each village and “N” means total number of growers in research area. The below formula applied for selection of sample size.

$$N1 = 90 \times 430/900 = 43$$

$$N2 = 90 \times \frac{280}{900} = 28, \quad N3 = 90 \times \frac{190}{900} = 19$$

Sample size and selection criteria is declared in Table 1.

**Table 1. Sample size and selection criteria**

Villages	Total wheat growers	Sample size
Salarzai	430	43
Tange	280	28
Khar	190	19
Total	900	90

Primary data were collected from these 90 wheat growers by a well-designed and pre-tested interview schedule. All the wheat growers were directly visited

concern and interviewed in convenient place like hujra (community center), field or farmer home. Further, primary data were put into computer Excel and SPSS programmes for analysis.

Additionally, a report (4) revealed that farmers' profit (net revenue) is equal to total revenue (TR) minus total cost (TC). The formula is expressed below.

$$\text{Profit} = \text{TR} - \text{TC}$$

Where,

$$\text{TR} = P \times Q_0 \quad \text{TC} = V_i \times X_i$$

The above function was used to derive net revenue of wheat enterprise in the study area.

## RESULTS AND DISCUSSION

The data (Table 2) revealed that area cultivated by wheat growers of Tangi were 8.64 acres. Out of this average total cultivated area 90.85 percent applied for wheat cultivation. It was followed by Salarzai (6.80 acres) and Khar villages (5.32 acres). In these 6.80 and 5.32 average cultivated area,

**Table 2. Distribution of Wheat growers by land holding Size (acre)**

Village	Wheat growers	Average total area (acre)	Average Cultivated Area for Wheat (acre)	Percentage
Salarzai	43 (47.78)	6.80	6.40	94.12
Tangi	28 (31.12)	8.64	7.85	90.85
Khar	19 (21.1)	5.32	3.611	67.88
Total	90 (100)	6.92	5.96	86.12

Source: Field Survey, 2014, Figure in parenthesis indicates percentage

94.12 and 67.88 percent used for wheat cultivation as wheat is a major crop of these growers. Research study of Shahbaz *et al.* (15) reported that 30 percent growers have no land for cultivation, while 40 percent growers reported 1-10 kanal (local unit of area, 8 kanals = one acre) arable area for wheat cultivation. They further reported that 15 percent respondents used 20-100 kanals land for wheat cultivation. The remaining 15 percent growers recorded above 100 kanals land for wheat cultivation in mountain area of Khyber Pakhtunhwa. According to Government of Khyber Pakhtunhwa report (5) agriculture is considered the backbone of the province economy. The main crops of KPK are wheat, maize, vegetables, sugarcane and a

variety of fruits. In this province farming is a difficult task especially in hilly area, in these area 41 percent growers are small size of land holders. The small size of land cultivators most probably practice subsistence farming and using family labours in field.

The data (Table 3) further indicated that maximum (71.12%) wheat growers were illiterate followed by 12.23, 10, 4.44 and 2 percent wheat growers were get formal education upto Middle School, Secondary School, College certificate and College degree respectively. Khan and Akram (11) observed that only 34 percent wheat growers were literate in Khyber Pakhtunkhwa Province, Pakistan. Out of these 40 percent were properly educated. Among these educated grower maximum 34 percent were secondary school certificate followed by 28 percent primary school certificate, 19 percent middle school certificate, 15 percent college certificate. Only six wheat growers were graduates and above at Khyber Pakhtunkhwa, Pakistan.

**Table 3. Educational level of the sample Farmers**

Village	Illiterate	Middle	Matric	Intermediate	Graduate	Total
Salarzai	35	2	2	3	1	43 (47.78)
Tange	20	3	4	1	-	28(31.12)
Khar	3	6	3	-	1	19(21.120)
All Villages	64(71.12)	11(12.23)	9(10)	4(4.44)	2(2.22)	90(100)

Source: Field Survey 2014, Figures in parenthesis indicates percentage

The results in (Table 4) expressed tenure status of wheat growers which indicated that majority (78.88%) of wheat growers were owners land cultivator. Most probably, it is that wheat crop cultivated for home consumption.

**Table 4. Tenure status of the wheat growers**

Villages	Owner	Owner-cum tenant	Tenant	Total
Salarzai	39	1	3	43(47.78)
Tange	19	4	5	28(31.12)
Khar	13	4	2	19(21.12)
All Villages	71(78.88)	9(10)	10(11.11)	90 (100)

Source: Field Survey 2014, Figures in parenthesis indicates percentage

The Table 5 expressed bank credit facility achieved by wheat growers and reasons for not availing the facility. The results indicated that only a single wheat grower benefited from the bank credit facility while remaining farmers were not benefiting from bank credit facility. Moreover, in these wheat growers, majority (66.67 %) reported that they do not need it while 20 percent

informed that it was not available on right time. Additionally, 10 wheat growers observed that interest rate was high. Therefore, they did not benefit for bank credit. Shahbaz et al. (15) reported that only a few (less than 10%) wheat growers took loan from bank at northwest region of Pakistan.

**Table 5. Farm credit and reasons for not using bank credit facility**

Bank credit facility	Number of wheat growers	If No, Reasons	Number of wheat growers
Yes	1(1.11)	Not needed	60 (66.67)
No	89 (98.88)	Credit not available when needed	20 (22.22)
Total	90 (100)	Interest rate was high	10 (11.11)

Source: Survey Survey, 2014, Note: Numbers in parenthesis are present percentage

The data (Table 6) also revealed economical value of inputs and their parallel expenses in wheat production. It revealed that wheat growers invested maximum Rs.4901 on land fertility per acre, Rs.1668 on wheat management and Rs.1011 on land preparation. Moreover, wheat growers rented land for wheat cultivation on Rs.4378.50 annually. In addition, total Rs.14,976 were invested on wheat crop per season. In a study conducted by Hassan *et al.* (11) of regression model showed that labor cost (0.1%), fertilizer cost (4.3%), seed cost (4.8%), irrigation cost (3.5%) and miscellaneous cost (115.9%) had negative relationship with net revenue obtained by sample respondents.

**Table 6. Estimated Investment on per acre wheat crop**

Items	Per Unit	Cost (Rs.)
Tractor Hours (Per hour)	350.00	786
Land Preparation Cost (Rs.)	--	1011
Seed (Rs.)	11.00	516
Sowing Cost (Rs.)	--	666
Fertility Input Cost (Rs.)	--	4901
Wheat Managment cost (Rs.)	--	1668
Empty Bags	--	100
Labour Cost (Rs.)	--	950
Land Rent	--	4378
Total Cost (Rs)	--	14976

Source: Field Survey 2014, Note 1, Fertilty cost is average investment of urea, dia ammino phosphite (DAP), nitrophos and farm yard mannur application, Note 2, Note:Wheat mangment is average cost of tube well operation, Govt. irrigation charges, weeding cost, manual harvesting and thrashing cost, Note 3.Labour cost indicates loading and un-loading machines, transport cost labour, Labour cost in local market, etc.

The results (Table 7) further disclosed that wheat growers invested Rs. 818.80 on wheat crop at different market aspects i.e Labor charges, transportation fare, land on rented, hired area and loading unloading charges, while Rs. 14976 per acre were spent on wheat production in study area. Thus wheat growers invested total Rs. 15794.80 on wheat crop.

**Table 7. Marketing cost of wheat per acre.**

Items	Unit	Quantity	Rate/Unit	Cost (Rs.)
Labour	Person per days	1.17	150	175.5
Transportation to home or Godown	Rs.			145.23
Opportunity rent of own land	Month per season	1.85	33.24	61.49
Rent hired place	Per Month	0.51	86	43.86
Pesticides used in storage	Bottles	16.64	2.10	35.08
Transportation to market	Beg	16.64	15	246.645
Loading/unloading	Rs.			66.572
Commission	Beg	16.64	2.67	44.43
Marketing Cost (Total)	--	--	--	818.80

Source: Field Survey, 2014

Table 8 showed total return from wheat crop in the study area. It revealed that wheat growers got 832.51 kg wheat grain and 1088.22 kg wheat straw per acre. The wheat grain and wheat straw benefited Rs. 25,024 as gross income, Whereas, wheat growers total net invested Rs. 15794.8 on wheat crop. So it gave them a net profit of Rs.9229.45.

**Table 8. Total return from wheat crop per acre**

Item	Quantity (Kg)	Price (Rs.)	Total Income (Rs.)	Gross income (Rs.)
Wheat grain	832.51	23	19147.86	25024.25
Wheat Bhusa	1088.22	5.4	5876.39	

Source: Field Survey, 2014

In a report (6) on micro credit payment by ADBP on agricultural production in district attock this parameter was tested on cropping intensity, wheat and vegetable production and highlighted constraints in micro credit from ADBP. It is recorded that almost 2<sup>nd</sup> wheat growers used this credit for inputs purchasing which cause increase in cropping intensity, while wheat growers achieved more wheat production due to micro credit. Waqar (18) observed that suitable investment of credit increased monthly income and savings of all wheat growers. However 73 percent wheat growers recorded monthly income improve due suitable investment of credit.

The study showed that maximum wheat growers in study area were small size 6.40 acres (2.51 ha) and owner land cultivator. Most probably, these

growers cultivate wheat for domestic purpose. Similarly, a few educated growers were observed that they were planting wheat crop. According a research study (3) technically inefficient what could boost wheat yield upto 61 percent. Obviously, technical awareness create training and technical education. Further, only one wheat grower evidenced that he got loan from bank for agricultural purpose. Moreover, these growers identified that they do not need loan. Certainly, these growers were not aware of procedure and process of bank loan. Other farmers indicated credit or loan was not provided on right time and interest rate was high. Although, wheat growers are achieving more net income than cost but, still government and concern organization need to focus on the issues facing by wheat growers to boost yield per hectare.

### CONCLUSION

It is concluded that estimation cost return of wheat crop in harvesting and threshing, fertilizers application and hired land were main investment factors and wheat growers earned Rs.9229.45 which was 32.41 percent of total cost in wheat production.

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<b>Faheem Khan</b>	<b>:</b>	<b>Assisted in designing interview schedule, compiled and finalized the manuscript</b>
<b>Muhammad Tahir Ali Shah</b>	<b>:</b>	<b>Contributed and assisted in results and decision writeup</b>
<b>Badar Naseem Siddiqui</b>	<b>:</b>	<b>Helped and contributed in data analysis</b>