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Cost and Revenue of Wheat Production in District Musakhail of Balochistan

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Abstract:

The study was carried out in district Musakhail of Balochistan to estimate the cost and revenue of wheat cultivation. A total sample of 40 wheat farmers was selected randomly from three purposively selected village of the study area namely Drug, Nath and Gargogi. Data was collected from the selected respondents with the help of interview schedule by face-to-face interaction. Statistical Package for Social Sciences (SPSS) was used to analyze the collected data. Results of the study showed that most (47.5%) of the respondents were of age group 31-40 years, similarly the majority (35%) of the farmers was found to be illiterate. Average per acre yield recorded for main product (Grain) and by-product (Bhoosa) was 1484 Kg and 1191 Kg respectively. The average total cost of wheat production per acre was estimated to be PKR 39265.40 in which major contributor was the input Labour having 21.37% share in the total cost. On the other hand, average net revenue of wheat growers was estimated to be PKR

15762.10. It was recommended to address farmer's burning issues such as need of improved roads, agricultural financing, trainings and marketing facilities on urgent basis by the government and related agencies to promote commercial farming in the study area.

Key words: Cost, Revenue, Wheat, Musakhail, Balochistan, Simple Budgeting.

1. INTRODUCTION

Agriculture sector has a vital role in Pakistan's economy. Being the second largest sector it has a contribution of over 21 % in the GDP of Pakistan, and employs 45 % of the country's total labor force. The importance of agriculture to the economy is seen in three ways: first, it provides food to consumers for food security and fiber for domestic industry; second, it is a source of scarce foreign exchange earnings; and third, it provides input and output market for industrial goods [Government of Pakistan (GoP), 2010].

Pakistan has two main cropping seasons, rabi and kharif. The kharif season begins with the months of April-June and ends with the months of October-December. Major crops of kharif season are cotton, rice, maize, sugarcane, mash, mung, bajra, and jowar, etc. The rabi season begins with the months of October-December and ends with the months of April-May. Major crops of rabi season are wheat, tobbaco, barley, sunflower, lentil, gram, mustard, and barseem, etc [Government of Pakistan (GoP), 2010].

Agriculture sector is the most important sector of Pakistan's economy like many other developing countries of the world and the most important agricultural product of the country is wheat. About 80% of the farmers that are more than four million and close to 40% of the total cropped area which

contributes about quarter of the total crop sector value added production. (Coleman and Faruquee, 1996).

Wheat being staple food grain of Pakistan provides about 72 percent of the total calories and protein in average diet. According to Pakistan Agricultural Research Council the per capita wheat consumption in the country is 120 kg a year which is considered to be one of the highest in the world (PARC, 1989).

Wheat is the essential diet of population and occupies a central position in agricultural policies of the government. The government announced wheat support price of Rs. 1200 which created interest on the part of farming community. Wheat contributes 10.1 percent to the value added in agriculture and 2.2 percent to GDP. Area under wheat 2012-13, from 8693 thousand hectares showing an increase of 0.5 percent over last year's area. The production stood at 24.2 million tons during 2012-13, against the target of 25.5 million tones which is 5.1 percent decrease while an increase of 3.2 percent over the last year production of 23.5 million tones has been witnessed. The yield per hectare in 2012-13 stood at 2787 (kgs/hec) posted a positive growth of 2.7 percent as compared to negative 4.2 percent growth last year. The overall increase in area was due to enhancement in support price from Rs. 1050 to Rs. 1200. This was further supported by favorable temperature and healthy grain formation [Government of Pakistan (GoP), 2013].

Table 1.1: Area, Production and yield of wheat

Year	Area		Production		Yield	
	(000hectres)	% Change	(000tonnes)	% Change	(Kg/ha)	% Change
2008-09	9046	-	24033	-	2657	-
2009-10	9132	1.0	23311	-3.0	2553	-3.9
2010-11	8901	-2.5	25214	8.2	2833	11.0
2011-12	8650	-2.8	23473	-6.9	2714	-4.2
2012-13 (P)	8693	0.5	24231	3.2	2787	2.7

Source: GoP, 2013.

1.1 Importance of the study

The study helped to find the cost and revenues and the important factors that had major share in the cost of production of wheat. The findings of this study will be helpful for the researchers and policy makers in future. Wheat is sown in rabi season in different areas of Musakhail in the end of October and harvested in mid of April.

1.2 Objectives of the study

The study was carried out with following main objectives:

1. To estimate costs and revenues of wheat production in the study area.
2. To assess the percentage share of different input costs in total cost of production of wheat in the study area.
3. To suggest recommendations on the basis of findings of the study.

2. METHODOLOGY

2.1 Universe of the study

The study was carried out in district Musakhail of Balochistan. Musakhail stands one of wheat production amongst 32 districts of Balochistan. The population of Musakhail is 134,056 according to 1998 population census report of Pakistan.

2.2 Sample size

Sampling is an important requirement of almost all research studies. There are many ways for determination of sample size. However, keeping the budgetary, time and transportation constraints in mind a sample size of 40 farmers was selected for the study.

2.3 Sampling technique

Simple random samling technique was used for the slection of sample for the study to estimate cost and revenues of wheat cultivation in the study area.

2.4 Data collection

Most of the data used for the study was primary data which was collected through a pre-designed interview schedule. The farmers were motivated during the interview so that they provide the correct information that would lead to the generation of accurate results.

2.5 Data analysis

The total cost and net returns of the sampled respondent were established using the following formula (Debertin, 1985 : Varion, 1992).

$$TC_i = \Sigma Px_i * X_i \quad (3.1)$$

Where:

$$TR_i = Py_i * Y_i \quad (3.2)$$

$$NR_i = TR_i - TC_i \quad (3.3)$$

NR_i= Net revenue of ith farmer of wheat crop in the study area. (Rs acre^{-1}).
TC_i= Total cost of production of the respected crop of ith farmer (Rs acre $^{-1}$).
TR_i= Total revenue of the respected crop of ith farmer (Rs acr $^{-1}$).
Py_i= Price of output of the ith farmer (Rs acr $^{-1}$).
Y_i= Quantity of output produced by the ith farmer (Kg acr $^{-1}$).
Px_i= Prices of inputs of ith farmer (Rs Unit^{-1}).
X_i= Quantities of inputs applied by the ith farmer (Unit).

3. RESULTS AND DISCUSSION

3.1 Distribution of the respondents in the study area

A total sample of 40 wheat growers was selected randomly for the study from the three purposively selected village of the study area. It was found that 15 (37.5%) of whea growers belonged to Drug, while 10 (25.0%) and 15 (37.5%) belonged to Nath and Gargogi villages of the study area respectively. Table 3.1 depicts the distribution of the wheat growers in different villages of the study area.

Table 3.1: Distribution of the respondents in the study area

Villages	Sample size	%age
Drug	15	37.5
Nath	10	25.0
Gargogi	15	37.5
Total	40	100

Source: Survey Data, 2014.

3.2 Age wise distribution of the respondents in the study area

All the respondents were divided into 4 groups of different ages (Table 3.2). First group contained the respondent of age 21-30 years; the second group was of age 31-40 years. The third and fourth groups contained the respondents of age 41-50 and 51-60 years respectively. It was discovered from the collected data that there were 7 (17.5%) respondents in the first age group (21-30 years), out of which 2, 3, and 2 were from Drug, Nath and Gargogi village respectively. The second age group (31-40 years) had 19 (47.5%) respondents, out of which 7, 5, and 7 were from Drug, Nath and Gargogi village respectively. There were 10 (20.0%) respondents in the third age group (41-50 years) out of which 5, 1 and 4 belonged to Drug, Nath and Gargogi villages respectively. The last age group (51-60 years) contained 4(10.0%), respondents out of which 1, 1, and 2 belonged to Drug, Nath and Gargogi villages respectively.

Table 3.2 Age wise distribution of the respondents in the study area

Village	Age (year)				Total
	21-30	31-40	41-50	51-60 or above	
Drug	2	7	5	1	15
Nath	3	5	1	1	10
Gargogi	2	7	4	2	15
Total	7	19	10	4	40

Source: Survey Data, 2014.

3.3 Educational level of the respondents in the study area

Education is an important factor that influences the decisions of a farmer regarding the cultivation of the crops, techniques and input decisions etc ((Pender & Kerr, 1998). The educational level was divided into 6 groups; first group was the illiterate group. Second group was having educational level 1-5 years, the third group was having educational level 6-8 years, and the fourth group was having educational level 9-10 fifth group was having educational level 11-12 year sixth group was having educational level 13-16 year. Table 3.3 shows the educational level of the respondents of all three villages. It is depicted by the table that there were 14 (35.0%) farmers who were illiterate, out of which 2, 4 and 8 belonged to Drug, Nath and Gargogi villages respectively. The number of the farmers who had educational level of 1-5 years was 6 (15.0%) out of which 4, 1 and 1 belonged to Drug, Nath and Gargogi villages respectively. The farmers having educational level of 6-8 years were 4 (10.0%) out of which 2, 1 and 1 belonged to Drug, Nath and Gargogi villages respectively. The number having educational level of 9-10 or years consisted of 11 (27.5%) farmers, out of which, 5, 3 and 3 belonged Drug, Nath and Gargogi villages respectively, The number having educational level of 10-12 or years consisted of only 1 (2.5%) farmers, out who belonged to Gargogi village respectively, The last group having educational level of 12-16 or above years consisted of 4

(10.0%) farmers, out of which, 2, 1 and 1 belonged Drug, Nath and Gargogi villages. Lower level of education in the study area might be due to lack of awareness about education (Ishaq, *et al.* 2007) or poverty might also be a factor for low literacy rate (Khan *et al.* 2006).

Table 3.3 Educational level of respondents in the study area

Village	Educational level						Total
	Illiterate	1-5	6-8	9-10	11-12	13-16	
Drug	2	4	2	5	0	2	15
Nath	4	1	1	3	0	1	10
Gargogi	8	1	1	3	1	1	15
Total	14	6	4	11	1	4	40

Source: Survey Data, 2014.

3.4 Land holding size of the respondents in the study

The respondents of the study area were asked about their total land holding. Table 3.4 depicts the information about the landholding size of the respondents in the study area. It was found that out of 40 farmers, 11 possessed the land of 1 acre while 18, 8, 2 and 1 were those who possessed 2 acres, 3 acres, 5 acres and 10 acres of land respectively.

Table: 3.4 Land holding size of the respondents in the study

Area Name	1 acre	2 acre	3 acre	5 acre	10 acre	Total
Drug	4	9	1	1	0	15
Nath	7	0	1	1	1	10
Gargogi	0	9	6	0	0	15
Total	11	18	8	2	1	40

Source: Survey Data, 2014.

3.5 Land holding size under wheat cultivation of the respondents in the study area

Table 3.5 provides information about the area under wheat cultivation in the study area. It is revealed through the table that the area under wheat cultivation was 65, out of which 25 acres in village Drug, 13 acres in village Nath and 27 acres in

village Gargogi. In terms of seed rate, on average 51.44 kg of seed was used per acre for wheat cultivation. The higher area under wheat cultivation might be due to the fact that wheat is a staple food crop of area (Khan *et al.* 2006).

Table 3.5 Land holding size under wheat cultivation of the respondents in the study area

Area Name	1 acre	2 acre	3 acre	4 acre	Total
Drug	7 (38.9)	7 (35.0)	0 (00.0)	1 (100)	15 (37.5)
Nath	8 (44.4)	1 (5.0)	1 (100)	0 (00.0)	10 (25.0)
Gargogi	3 (16.7)	12 (60.0)	0 (00.0)	0 (00.0)	15 (37.5)
Total	18 (100)	20 (100)	1 (100)	1 (100)	40 (100)

Source: Survey Data, 2014.

3.6 Cost of production of wheat per acre in the study area

Cost of production of a crop is the total cost incurred for raising that crop. It included the pre and post harvest activities and their costs or charges. In the present study factors of cost of production of wheat are seed cost, land preparation cost, fertilizers cost, chemicals cost, irrigation cost, threshing cost, labour cost, land rent and marketing cost etc.

3.6.1 Seed cost

Seed and its cost play an important role in the production of a crop. The data collected in the study revealed that the average seed cost was Rs. 1677.4 total cost of wheat, respectively (Table 3.6). The prices of seed were fluctuating during the study due to demand and supply condition of market. The findings about seed cost are in agreement with that of Lambert, 1997.

3.6.2 Fertilizer cost

Fertilizers are very important for raising a good crop. Fertilizers enhance soil fertility and result in good and high yield of a crop. In the study area, most of the farmers were using urea DAP and farm yard manure as fertilizers. Table 3.6 shows that the average fertilizer cost was Rs. 1941.2, Rs. 3172.5 and Rs 3600.0 for urea DAP and farm yard manure as fertilizers for wheat cultivation in the study area. The fertilizers improve production of wheat on per acre basis (Sabbur 1983; Rehman, 1993).

3.6.3 Irrigation cost

Irrigation cost may be the Abiana, or the cost of fuel/energy used for extracting water from the ground. In the study area, all farmers were using diesel engines to extract water from the ground for irrigation. The average cost of irrigation in the study area was Rs. 2055.0 for wheat (Table 3.6).

3.6.4 Chemicals

The chemicals are used in the fields to protect the crop from pests, weeds and harmful insects that deteriorate and reduce the quality and quantity of a crop. Chemicals are considered harmful for the environment, but still they are widely used as they provide immediate results against pests. Table 3.6 shows that the average cost of chemicals for wheat was Rs. 828.5 in the study area. The findings of this study are in agreement with that of Khan *et al.* 2005.

3.6.5 Land preparation cost

The land preparation cost is the cost that is incurred for preparing the land for a specific crop. It includes the tractor hours ploughing, tilling, bullock days, labours used etc and the bullock use for leveling, tilling and ploughing the field where tractor cannot operate. Table 3.6 reveals that tractor cost on

average basis incurred for wheat was Rs. 4297.5 The higher cost of tractor hours and bullock use was due to more and deep ploughings required by wheat for a good uniform emergence of the crop (Jan and Khalil, 2000).

3.6.6 Labour cost

Labour cost includes the actions and activities of the labour in crop production such as handling of crop, application of chemicals, irrigation, pre and post harvest activities etc. Table 3.6 shows that the average labour cost for wheat was found to be Rs. 8392.5. Higher labour cost for wheat was due to more laborious activities.

3.6.7 Threshing cost

Threshing cost is cost incurred for threshing the produce. In the study area, the threshing cost was not monetary, but it was in kind i.e. there was a share for threshing out of total threshed crop. For this study the farmers were asked to estimate the cost of share that they paid for threshing. The table 3.6 shows the information about the threshing cost of the crops. Threshing cost was found to be Rs. 3076.3 in the study area.

3.6.8 Marketing cost

The marketing cost includes the costs that are incurred for loading, unloading, weighing, packing and transporting etc the produce. Table 3.6 shows that the average marketing cost was Rs. 2969.5 for wheat respectively in the study area.

3.6.9 Land rent

Land rent is of two types, first is determined by the owner's willingness while second is the opportunity cost that is earned by the best alternative way. In this study first type of land rent was included that is determined by the farmers. Table 3.6

shows that the average land rent was found to be Rs. 7255.0 for wheat in the study area.

3.6.10 Total cost of wheat production

The total cost of production of a crop includes cost of inputs and cost incurred for marketing that produce. Table 3.6 shows the total cost of wheat production in the study area. The total cost of production on average basis was found to be Rs. 39265.0 per acre. The total cost of production for wheat was higher due to the higher amounts of fertilizer and inputs used.

Table 3.6 Per acre cost of production of wheat in the study area

Input	Unit	Cost	Percentage
Seed (Kg)	48.20	1677.4	4.27
Urea (Kg)	52.50	1941.2	4.94
DAP (Kg)	39.62	3172.5	8.08
Farmyard Manure (Trolly)	0.77	3600.0	9.17
Irrigations (No.)	5.00	2055.0	5.23
Chemical (Kg/Lit)	0.91	828.50	2.11
Tractor (Hours)	4.01	4297.5	10.94
Labor (L.Days)	16.00	8392.5	21.37
Threshing (Rs.)	- -	3076.3	7.83
Marketing (Rs.)	- -	2969.5	7.56
Land rent (Rs.)	- -	7255.0	18.48
Total Cost (Rs.)	- -	39265.4	100.00

Source: Survey Data, 2014.

3.7 Per acre average output, market price, gross and net revenues of wheat in the study area

The average per acre output of wheat in the study area is provided in table 3.7 along with the average market price of output of crop. The average output of wheat main product (Grain) was 1484 kg per acre with a market price of Rs. 33.10 per kg while the average output of wheat by product (Bhoosa) was 1191 kg per acre with a market price of Rs. 4.94 per kg. The average gross revenue of wheat production (main product and by product) was Rs. 55027.50 per acre while the net revenue of wheat was Rs. 15762.10 per acre in the study area.

Table 3.7 Per acre average output, market price, gross and net revenues of wheat in the study area

Output	Unit	Revenue (Rs.)
Output Main Product (Kg)	1486	49135
Output by Product (Kg)	1191	5892.5
Gross Output (Kg)	2675	55027.5
Net Revenue		15762.1

Source: Survey Data, 2014.

4. SUMMARY

A study was carried out to estimate the cost and revenues of wheat crop of the study area, Primary data was collected from 40 farmers of wheat crop selected randomly from three different villages i.e. Drug, Nath and Gargogi. The data collected was put in to the computer and was analyzed by Statistical Package for Social Science (SPSS). The findings of the study are described below.

Based on the age years, farmers of the study area were categorized into 4 groups having age years 21-30, 31-40, 41-50, and 51-60 or above. Majority 19 (47.5%) of the respondent were of age group 31-40, while 7 (17.5%), 10 (20.0%), and 4 (10.0%) growers were of age group 21-30 and 41-50 and 51-60 years or above respectively.

Based on the literacy level, farmers of the study area were categorized into 5 groups. First group was illiterate, while second, third, fourth and fifth groups were of education level 1-5 years, 6-8 years, 9-10 years, 11-12 years, and 13-16 years respectively. It was found that out of total 40 farmers, 14 (35.0%) were illiterate while 6 (15.0), 4 (10%), and 11 (27.0%) 1 (2.5%) and 4 (10.0%) were having education level of 1-5 years, 6-8 years, 9-10 years, 10-12 and 13-16 years respectively.

The average seed rate for wheat was 48.20 kg per acre in the study area. Cost of production of wheat was found to be Rs. 39265.40 per acre. The major factor of cost of production of wheat was labour cost of Rs. 8392.5 having 21.37% share in the

total cost of production while the other factors of cost of production for wheat were seed cost, urea cost, DAP cost, farmyard manure cost, irrigation cost, chemical cost, Land preparation cost, threshing cost, marketing cost, and land rent (4.27%), (4.94%), (8.08%), (9.17%), (5.23%), (2.11%), (10.94%), (7.83%), (7.56%) and (18.48%) share in the total cost of production respectively.

5. CONCLUSION

Wheat crop is the edible seed grain crops of district Musakhail of Balochistan. This crop is grown in the rabbi season. Wheat is mainly grown as a staple food crop. Most of the growers of wheat crop were illiterate. In all villages, majority 19 (47.5%) of the farmers were of age 31-40 years. Major factors of cost of production of wheat (in order of share) were labour cost, land rent, land preparation cost, farmyard manure cost, DAP cost, threshing cost, marketing cost, irrigation cost, urea cost, seed cost and chemical cost. The output of wheat was found to be (1484 kg per acre). The gross revenue and net revenue was found to be Rs. 55027.50 and Rs. 15762.10 per acre of wheat production in the study area.

6. RECOMMENDATIONS

Based on the findings of the study following recommendations are being suggested to improve the efficiency of the wheat growers in the study area.

- The farmers of the study area should be trained by extension workers so that they acquire new information, technology and better cultivation techniques and enhance their efficiency in agriculture. For this purpose more and more visits of the official to farmers and extension services should be provided in the study area.

- Agriculture credit facilities should be provided in the study area so that the poor farmers could benefit from them to afford high quality inputs and consequently improves their efficiency.
- The infrastructure facilities such as road, storage facilities and processing plants should be provided in the study area so that more and more formers could benefited from these facilities which will lead to the development and socio economic life of the people will be improved.

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