EFFECT OF VARIOUS FACTORS ON WHEAT PRODUCTION

MUHAMMAD IQBAL, MUHAMMAD FAHIM, QAMARUZ ZAMAN, MUHAMMAD USMAN, SUNDUS and ATTA UR RAHMAN

1. Department of Statistics, University of Peshawar - Pakistan
2. Department of Health Sciences, University of York, United Kingdom
3. Department of Statistics, Islamia College University, Peshawar - Pakistan
4. Institute of Management Sciences, Hayatabad, Peshawar – Pakistan

*Corresponding Author: miqbal_70@upesh.edu.pk

ABSTRACT

The study was undertaken in three villages of district Peshawar by taking a sample of 234 respondents using a proportional allocation technique. The selected three villages are Regi, Lakaray and Putwar. Main objective of the study was to find out the cost and return from wheat production and to compare the yield of wheat in respect of education, certified seed and flood affected area. Cost and returns of wheat production were estimated through simple budgeting method, and the profit function was estimated through regression analysis. In estimating the cost of wheat production, land preparation cost, seed cost, fertility inputs cost, irrigation cost and labor cost were taken in to account. Total cost incurred in the production of wheat was Rs. 28286.84 per acre. Fertility input, land rent and land preparation cost were 35.22, 30.30 and 15.18 percent respectively of the total cost of production of wheat in the study area. The average yield of wheat per acre is 1554.63 kg and the average net return from wheat production is Rs. 22465.5 per acre, was recorded in the study area. Farmer’s net return is largely determined by output price, cost incurred and total wheat production. The net revenue of the wheat growers is estimated by profit function. The results show that there is a positive relationship between profit and price of wheat, quantity of wheat, price of by-product, quantity of by-product and also show a negative relationship of profit with the total cost. The effect of literacy, certified seed and flood affected area of the farmers has been estimated. The literate farmers produced 99.9 kg more wheat yield per acre than the illiterate farmers. Farmers who used certified seed have 127.41 kg more yield per acre than the farmers who didn’t use certified seed. Similarly for flood affected area the farmers produce 54.88 kg less yield per acre as compare to the non-flood area.

Keywords: Wheat production, cost and returns, certified seed and flood affected area

Citation: Iqbal, M., M. Fahim, Q. Zaman, M. Usman, Sundus and A.U. Rahman. 2014. Effect of various factors on wheat production. Sarhad J. Agric. 30(1): 135-143

INTRODUCTION

Pakistan is an agricultural country. Agriculture is the mainstay of our economy. Pakistan economy has undergone considerable structural changes over the past few years, yet agriculture is the largest sector of the economy. It contributes 21.8% to GDP, employing 44.7% of the total work force. More than (2/3) of country population lives in rural areas and their livelihood continue to revolve around agriculture and allied activities. Like in other developing countries, poverty in Pakistan is largely a rural phenomenon. Therefore, development of agriculture will be a principal vehicle for alleviating rural poverty. Agriculture also provides food and fibers to the growing population and raw material to agribusiness and industrial sector (Government of Pakistan [GOP], 2010).

Wheat, belongs to family Poaceae, has played an important role in the development of man civilization in many countries including Pakistan. It cover two third (2/3) of the acreage under cereals crops in the world. Wheat being the stable food and major source of nourishment of the people of Pakistan, it ranks first in acreage, production and consumption among all food crops. It contributes 14.4% to the value added in agricultural and 3.0% to GDP.

The largest wheat-producing countries of the world are the China, India, United States, Russia and France; extensive wheat growing is carried on also in Pakistan. Figure 1 indicates the world top most wheat producing (in millions tones) countries in the world during 2005-2010.
Wheat is occupying 9.0 million hectares that is the largest area under the single crop. It occupies 70% of rabi crops, 37% of total cropped area and around 74.92% of total area under food grain crops in the country (GOP, Economic Survey of Pakistan, 2009). Table 1 shows that the average area and production of wheat for the last seven years is 8704 thousand hectares and 22722 thousand tons respectively. The area under wheat in Pakistan 2004-05 to 2010-11 increased from 8358 to 8805 thousand hectares, while the production in Pakistan during the same period also increased from 21612 thousand tones to 24214 thousand tones. The main reasons for higher production are: attractive support price of Rs 1050 per 40 kg, significant increase in area under crop, timely rains and subsidy on fertilizers etc.

Table 1. Area, production and yield of wheat in Pakistan during 2004-2010

<table>
<thead>
<tr>
<th>Year</th>
<th>Area (000) Hectares</th>
<th>Production (000) tons</th>
<th>Yield (kg / hectare)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004-05</td>
<td>8358</td>
<td>21612</td>
<td>6342.96</td>
</tr>
<tr>
<td>2005-06</td>
<td>8445</td>
<td>21277</td>
<td>6221.93</td>
</tr>
<tr>
<td>2006-07</td>
<td>8578</td>
<td>23520</td>
<td>6708.52</td>
</tr>
<tr>
<td>2007-08</td>
<td>8550</td>
<td>21700</td>
<td>6053.97</td>
</tr>
<tr>
<td>2008-09</td>
<td>9062</td>
<td>23421</td>
<td>6384.95</td>
</tr>
<tr>
<td>2009-10</td>
<td>9132</td>
<td>23311</td>
<td>6305.91</td>
</tr>
<tr>
<td>2010-11</td>
<td>8805</td>
<td>24214</td>
<td>6792.50</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>8704</strong></td>
<td><strong>22722</strong></td>
<td><strong>6401.53</strong></td>
</tr>
</tbody>
</table>

Source: (GOP, Economic Survey of Pakistan, 2010-2011)

The wheat production at country level is still low as compared to other countries of the world. Various factors are involved that contribute to enhance the wheat production. This research study is designed to analyze the cost of production and cost components, profit, factors affecting production of wheat crop and to compare the wheat productivity of flood hit area with rested area in district Peshawar, wheat productivity of literate and illiterate farmers and certified and conventional seed varieties.

MATERIALS AND METHODS

**Universe and Sampling Design**

In order to obtain the required objectives of the study, the sample respondents were randomly selected from three villages of district Peshawar viz Regi, Lakaray and Putvar by using proportional allocation technique. The total population of the study was 600, so the sample size was taken 234 (Sekaran and Bougie, 2005). To obtain the required number of sample respondents, from each of the selected three villages, a proportional allocation method was used (Panneerselvan, 2010). The proportional allocation method uses the following formula:
Information about the total number of farmers in each of the selected villages and the sampled number of farmers by using proportional allocation method are provided in Table 2.

<table>
<thead>
<tr>
<th>Villages</th>
<th>No. of farmers</th>
<th>Sample Size (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regi</td>
<td>350</td>
<td>135</td>
</tr>
<tr>
<td>Lakaray</td>
<td>150</td>
<td>64</td>
</tr>
<tr>
<td>Putwar</td>
<td>100</td>
<td>35</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>600</strong></td>
<td><strong>234</strong></td>
</tr>
</tbody>
</table>

**Data Collection**

For the collection of required data from the sampled respondents a comprehensive interview schedule/ was designed. A pilot survey was conducted and the interview schedule was pre-tested in the study area, and modified by including relevant information according to the feedback of the sampled respondents. Each respondent was interviewed personally through face to face meetings at their home/hujra/field.

**Data Analysis**

After collecting the required data from the sampled respondents, the collected data was analyzed by using a statistical package for social sciences (SPSS) v.20. Various analytical techniques including descriptive statistics, percentages, frequency distribution and regression analyses were applied to achieve the objectives of the study. All these methods are described in the following sections.

**Cost and Returns of Wheat Production:**

A simple budgeting technique (Debertin, 1986) was applied for estimating the costs and returns of wheat production.

\[
\text{Net Revenue (} \Pi \text{)} = \text{Total Revenue (TR)} - \text{Total Cost (TC)}
\]

Where

\[
\begin{align*}
\text{TR} &= P \times Q \\
\text{TC} &= V_i X_i, \quad \text{(for } i = 1, 2, 3, 4, \ldots , n)\end{align*}
\]

Where, \( P \) and \( Q \) are the respective price and quantity of the output, while \( V_i \) and \( X_i \) denote the price and quantity of \( i^{th} \) input respectively.

\[
\Pi = PQ \sum V_i X_i
\]

Where:

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>( P )</td>
<td>Output price at wholesale level (Rs/kg)</td>
</tr>
<tr>
<td>( C )</td>
<td>Cost per unit produced (Rs/kg)</td>
</tr>
<tr>
<td>( Q )</td>
<td>Output of wheat of total production of wheat (kg)</td>
</tr>
</tbody>
</table>

**Empirical Modeling of Wheat Profit Function**

The empirical model of wheat profit function is given as,

\[
\Pi = \beta_0 + \beta_1 P + \beta_2 Q + \beta_3 C + \epsilon
\]
The empirical model of wheat profit function depicts that profit function \( \Pi \) depends on price \( P \), cost per unit produce \( C \) and output of wheat production \( Q \).

**Dummy Variable Approach**

Dummy variable approach was used to compare the per hectare production of wheat with respect of certified seed and literacy status of farmers in the study area. The following regressing equation was empirically estimated using the ordinary least square (OLS) method (Gujarati, 2003).

\[
Y = \beta_0 + \beta_1 D_1 + \beta_2 D_2 + \beta_3 D_3 + \epsilon_i
\]

Where,

\( Y \) = Dependent variable  
\( \beta_0 \) = Intercept/Constant  
\( \beta_1, \beta_2, \beta_3 \) = Coefficients of Dummy variables  
\( D_1 = 1, \text{if the farmer is literate and 0 otherwise} \)  
\( D_2 = 1, \text{if the farmer is using certified seed and 0 otherwise} \)  
\( D_3 = 1, \text{if the area is flood affected and 0 otherwise} \)  
\( \epsilon_i \) = error term which is assumed to follow a normal distribution with zero mean and constant variance.

**RESULTS AND DISCUSSION**

**Cost of Production of Wheat**

The major component in cost of wheat production were the variable costs \( V \) that includes land preparation, seed, chemical fertilizer, farm yard manure, water charges, pesticides, weedicides, harvesting, and labor cost.

<table>
<thead>
<tr>
<th>Table 3 Per acre cost of wheat production</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cost Items</strong></td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>Deep Plowing</td>
</tr>
<tr>
<td>Rotivator</td>
</tr>
<tr>
<td>Bullock</td>
</tr>
<tr>
<td>Labor in application</td>
</tr>
<tr>
<td><strong>Land Preparation</strong></td>
</tr>
<tr>
<td>Seed</td>
</tr>
<tr>
<td>Labor in application</td>
</tr>
<tr>
<td><strong>Seed &amp; Sowing</strong></td>
</tr>
<tr>
<td>Urea</td>
</tr>
<tr>
<td>DAP</td>
</tr>
<tr>
<td>Nitrophos</td>
</tr>
<tr>
<td>Labor in application</td>
</tr>
<tr>
<td>FYM</td>
</tr>
<tr>
<td>Labor in application</td>
</tr>
<tr>
<td><strong>Fertility Input</strong></td>
</tr>
<tr>
<td>Irrigation/abiana</td>
</tr>
<tr>
<td>Labor in application</td>
</tr>
<tr>
<td><strong>Irrigation</strong></td>
</tr>
<tr>
<td>Pesticide &amp; weedicide</td>
</tr>
<tr>
<td>Labor in application</td>
</tr>
<tr>
<td><strong>Pesticides/fungicides</strong></td>
</tr>
<tr>
<td>Harvesting Labor</td>
</tr>
<tr>
<td><strong>Land Rent</strong></td>
</tr>
<tr>
<td><strong>Total Cost (TC)</strong></td>
</tr>
</tbody>
</table>

Table 3 shows cost spent on important inputs in the production of wheat. The cost components are discus as under:

**Land Preparation**

The first and important phase in wheat cultivation is land preparation that improves the water holding capacity of the soil for long time and also it maximizes the capacity of wheat plant to get required nutrients from soil. Land preparation cost includes tractor, rotivator, bullock working hours which contributes Rs.1461.84/- per acre, Rs.1500.90/- per acre and Rs.942.84/- per acre respectively, whereas an average cost of labor used in land
preparation per acre is Rs.381.00. The average cost of land preparation is Rs.4286.58/- per acre which is 15.16 percent of the total cost of production per acre in the study area (Table 3).

**Seed and Sowing**

Sowing cost is the cost spent on seed and labor used in the application of seeds. The average cost of seed and sowing is Rs.1745.10/- per acre whereas average cost of labor in sowing per acre is Rs.192.00. Total seed and sowing cost is Rs.1937.10/- per acre accounting for 6.85 percent of the total cost of wheat production per acre in the study area (Table 3).

**Fertility Inputs**

Chemical fertilizers and farm yard manure (FYM) are both important inputs. Both inputs make the soil more fertile and have direct influence on the yield. Chemical Fertilizers such as Urea, DAP and Nitrophos were commonly used by farmers in the study area. The per acre cost incurred on Urea, DAP, Nitrophos and labor application in Table 3 are Rs. 3663.27, Rs. 2566.84, Rs. 636.85 and Rs. 349.02 respectively, whereas the cost of FYM is Rs. 2458.84 and cost of labor for FYM is Rs. 293.75. The total average cost per acre of fertility inputs is Rs. 9968.57 contributing 35.24 percent to the total cost of wheat production in the study area.

**Irrigation**

Water is considered a vital part for farming and agriculture. Irrigation water is the important factor of agricultural production. Canal is the main source of irrigation in the study area. Abiana (water charges) is charged for canal-irrigated system, which is Rs. 364.17 per acre per season. Labor cost in irrigation water is Rs.267.00/- per acre. Therefore, the average cost of irrigation becomes Rs. 631.14/- per acre which has 2.23 percent contribution to the total cost of wheat production in the study area (Table 3).

**Pesticides/fungicides and Weedicide**

The average cost of weeding and application of fungicides is Rs. 894.35/- per acre showing 3.16 percent share in the total cost of wheat production in the study area as present in the study area (Table 3).

**Harvesting**

Harvesting is the final and very important activity in the production process of wheat. Harvesting includes cutting of the crop and also heaping of bales. Harvesting is carried out either by family labor, hired labor or Asher (Asher means some friends and relatives work together voluntarily to accomplish a task). Mostly, the respondents carried out harvesting by family labors along with some hired labors. The average cost of harvesting is Rs. 1995.00/- per acre which contributes 7.05 percent to the total cost of wheat production in the study area (Table 3).

**Land Rent**

The second highest cost is the rent of land in the study area. The average cost of land rent is Rs. 8571.37/- per acre which contributes 30.30 percent of the total cost per acre of the wheat production in the study area (Table 3).

**Gross Return from Wheat Production**

Results regarding per acre gross returns obtained from the wheat production in the study area are displayed in Table 4.

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Quantity(kg)</th>
<th>Price (Rs./kg)</th>
<th>Revenue (Rs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Product (Wheat grain)</td>
<td>1554.63</td>
<td>24.27</td>
<td>37730.87</td>
</tr>
<tr>
<td>Bi-Product (Wheat Bhusa)</td>
<td>967.52</td>
<td>13.46</td>
<td>13022.81</td>
</tr>
<tr>
<td>TOTAL REVENUE(TR)</td>
<td></td>
<td></td>
<td>50753.70</td>
</tr>
</tbody>
</table>

**Main Product (Wheat Grain)**

Higher grain yield depends on various factors i.e. availability of improved seed, adequate irrigation water, proper dosages of fertilizer, use of pesticides, weedicides; etc,. On average wheat yield of 1554.632/- kgs per acre is obtained in the study area. Large amount of the wheat are stock at home for home consumption. Average market price of wheat is Rs. 24.27/- per kg hence, the gross revenue generated from the main product is Rs. 37730.87/- per acre as given in Table 4.
**Bi-product (Wheat Bhusa)**

Wheat bhusa is the by-product of wheat production that increases the returns from wheat grain sold in the market. Farmers used wheat bhusa as a ration for animals. Most of the farmers stored wheat bhusa in the shape of Bhussara and later transferred to home for feeding to livestock. The average quantity of bi-product (wheat bhusa) produced per acre is 967.5214 kg per acre and the average cost of wheat bhusa is Rs. 13.46 per kg. The gross revenue generated from the bi-product is Rs. 13022.81 per acre in the study area (Table 4).

The total gross revenue (combining gross revenues generated from main product and bi-product) generated from wheat production in the study area is Rs.50753.70 per acre.

**Net Revenue from Wheat Production**

\[
\text{Net Revenue (NR)} = TR - TC
\]

Where

\[
\begin{align*}
TR &= \text{Total Output} \times \text{Output Price} \\
TC &= \text{Quantity of Input} \times \text{Input Price} \\
NR (\pi) &= 50752.34 - 28286.84 \\
&= \text{Rs. 22465.5}
\end{align*}
\]

The net revenue from wheat production are determined by the price of wheat (PW) received by the farmers, quantity produce of wheat (QW), price of bi-product (PBP) received by farmers, quantity produce of bi-product (QBP) and total cost (C) incurred on the production of wheat. The estimated wheat profit function shows the significance of the above mentioned factors. The estimated model along with F-ratio, R² and Adj. R² is given as:

\[
\pi = -51578.6 + 1806.82PW + 23.80QW + 788.34PBP + 11.11QBP - 1.001C
\]

\[
p-values = (0.00) (0.00) (0.00) (0.00) (0.00) (0.00)
\]

\[
R^2 = 0.99 \quad \text{Adj. } R^2 = 0.98 \quad F = 2569 \quad \text{Sig.} = 0.00
\]

F-test shows the overall goodness of fit of the model. In this case F-test value determines the overall significance of the model. The coefficient of determination (R²) indicates that 99 percent variation in the dependent variable has been explained by the independent variables. The sign of the explanatory variables are in complete agreement with the economic theory. The p-values of the regression coefficients suggest that, net revenue (\(\pi\)) significantly determined by the prices (PW and PBP), quantities (QW and QBP) and per unit cost (C). Keeping all other inputs constant a one rupee increase in per kg of (PW) will increase the net revenue by Rs.1806.83, producing another kg of (QW) will increase the net revenue by Rs.23.8. Similarly, a one rupee increase in per kg price of bi-product (PBP) will increase the net revenue by Rs.788.34, producing another kg of QBP will increase the net revenue by Rs.11.11, while each additional unit of per kg cost (C) will decrease net revenue by Rs.1.001. The estimation of net revenue function indicates that revenue is significantly affected by respective prices, total quantities produce and per unit cost of wheat production. However, increase in prices significantly contributes towards higher profit for the farmers.

**Regression Analysis with Dummy Variable Approach**

To compare the yield, revenue, cost and profit of wheat regarding educational level of the farmers, certified seed and flood hit area, regression analysis with dummy variable were performed. Dummy variable approach in comparison to independent samples t-test gives the direction as well as magnitude of the difference between the two categories. In general, the following regression model with dummy variable (D) was used:

\[
Y_i = a + bD_i + e_i
\]

Where, for dependent variable \(Y\), \(i = 1, 2, 3, 4\) (i = 1 for Yield, i = 2 for Revenue, i = 3 for Cost and i = 4 for Profit); and for Dummy variable D, \(i = 1, 2, 3\) (i=1, Literate, i=2, Certified Seed, i=3, Flood affected area). In each of the model D = 1 if the specified characteristic is present and 0 otherwise. The results of regression analysis with dummy variable approach are given in the following subsections.
**Education**

\[
\begin{align*}
\text{Yield} & = 1515.10 + 99.9 D_1 \\
P\text{-value} & = (0.000) \quad (0.08) \\
\text{Revenue} & = 49485.36 + 2724.37 D_1 \\
P\text{-value} & = (0.000) \quad (0.05) \\
\text{Cost} & = 27489.34 + 1119.23 D_1 \\
P\text{-value} & = (0.000) \quad (0.032) \\
\text{Profit} & = 21996.02 + 1605.14 D_1 \\
P\text{-value} & = (0.000) \quad (0.170)
\end{align*}
\]

Note: \((D_1 = 1, \text{if the farmer is literate and 0 otherwise})\)

Education plays a vital role in implementation of improved technology and attaining higher productivity level. The educated farmers could achieve several farm practices in a better way. The result of dummy variable approach shows that yield for the farmers who are illiterate is 1515.10 kg per acre whereas for the farmers who are literate is 1615 kg per acre. Its shows that literate farmer has an additional yield of 99.9 kg as compare to the farmers who are illiterate. The result of dummy variable for revenue of the farmers who are illiterate is Rs. 49485.36 and for the literate farmers revenue is Rs. 52209.73. It shows that literate farmers receive additional revenue of Rs. 2724.37 as compare to the illiterate farmers. The cost of illiterate farmers is Rs. 27489.34 and for literate it is Rs. 28608.57. It shows that literate farmer spent extra amount of Rs. 1119.23 on improved quality of farm inputs like fertilizer and use of chemical weeding. The result also shows profit of illiterate farmers is Rs. 21996.02 while the profit for literate farmers is Rs. 23601.16. It reveals that literate farmers earn an extra amount of Rs. 1605.14 per acre as compare to the illiterate farmers. The result also reveals that yield, revenue and cost are statistically significant while result of profit is insignificant for literate farmers.

**Certified Seed**

\[
\begin{align*}
\text{Yield} & = 1504.21 + 127.41 D_2 \\
P\text{-value} & = (0.000) \quad (0.024) \\
\text{Revenue} & = 49741.16 + 2080.74 D_2 \\
P\text{-value} & = (0.000) \quad (0.134) \\
\text{Cost} & = 27532.16 + 1011.48 D_2 \\
P\text{-value} & = (0.000) \quad (0.052) \\
\text{Profit} & = 22209.0 + 1069.26 D_2 \\
P\text{-value} & = (0.000) \quad (0.362)
\end{align*}
\]

Note: \((D_2 = 1, \text{if the farmer use certified seed 0 otherwise})\)

Improving access to good quality seed is a critical requirement for viable agricultural growth and food security. Effective use of improved and certified seed can result in higher agricultural production, which leads to increased net incomes of farming families (GOP, 2012). The result of dummy variable approach shows that the per acre yield of the farmers who use conventional seed is 1504.21 kg while yield for the farmers who use certified seed is 1631.62 kg. It reveals that farmers who use certified seed produce extra 127.41 kg of yield as compare to the farmers who use conventional seed. The result for revenue of the farmer who use conventional seed is Rs. 49741.16 whereas for the farmers who use certified seed is Rs. 51821.9. It shows that the farmers who use certified seed receive Rs. 2080.74 extra revenue as compared to the farmers who used conventional seed. The cost for the farmers who use conventional seed is Rs. 27532.16 per acre whereas the cost for the farmers who use certified seed is Rs. 28543.64. The reason of high cost for certified seed is that it is more expensive than conventional seed. The result also shows that the profit of the farmers who use conventional seed is Rs. 22209 whereas for the farmers who use certified seed is Rs. 23278.26. It reveals that the farmers who use certified seed earn extra amount of Rs. 1069.26 per acre as compared to the farmers who use conventional seed. The result also shows that yield and cost are significant at 5% level of significance while revenue and profit are insignificant for certified seed.


Flood Affected Area

\[ \text{Yield} = 1588.96 - 54.88 D_3 \]

\[ \text{Revenue} = 51528.65 - 1539.43 D_3 \]

\[ \text{Cost} = 27629.69 + 487.99 D_3 \]

\[ \text{Profit} = 23898.93 - 2027.42 D_3 \]

Note: \( D_3 = 1 \), if flood affected area 0 otherwise

The result of dummy variable approach indicates that per acre yield for flood affected area is 1534.08 kg whereas for the rest of the area it is 1588.96 kg. Its shows that there is a reduction of 54.88 kg yield per acre for flood affected area as compare to the rest of the area. The reason of this reduction in yield is mainly due to large amount of weeds, lack of water availability because canals were fill up with mud, fertile surface of land washout by the flood. The revenue for non-flood area is Rs. 51528.65 while for flood affected area it is Rs. 49989.22 per acre. It shows that flood affected area generates less revenue of Rs. 1539.43 per acre as compare to the rest of the area. The per acre cost for non-flood area is Rs. 27629.69 whereas for flood affected area it is Rs. 28117.68. It shows that the farmers of flood affected area spent extra amount of Rs. 487.99 per acre on land preparation, labors, chemical weeding etc. as compare to the rest of the area. The result of profit for non-flood area is Rs. 23898.93 while for flood affected area it is Rs. 21871.51. It shows that the farmers of flood affected area earn less profit of Rs. 2027.24 per acre as compare to the farmers of non-flood area.

CONCLUSION AND RECOMMENDATIONS

The present study investigated various factors of wheat production, to estimate the total net returns per acre, and to compare the wheat productivity in terms of educational level, use of certified seed and flood affected areas in district Peshawar. Total cost which was incurred in the production of wheat in the study area was Rs.28284.11/- per acre. Fertility input, land rent and land preparation cost were 35.24, 30.30 and 15.16 percent, respectively of the total cost of production of wheat in the study area. Farmer’s net return is largely determined by output price, cost incurred and total wheat production. A positive relationship between profit and price of wheat, quantity of wheat, price of by-product, quantity of by-product and also shows a negative relationship of profit with the total cost. Furthermore, literacy and certified seed have a positive and significant impact on the total production of wheat. Whereas, flood affected area has negative and insignificant impact on wheat production as compared to non-flood area. Based on the results, it is recommended to educate the farmers about the factors considered for wheat production. Government is required to make policy regarding floods affected area to protect the rights of farmers. In addition, government should provide certified seeds and good quality of pesticides on subsidized rates for enhancing their crop production.

REFERENCES


