An economic study on maize production in some selected areas of Swat District

**Introduction.** Maize production in Pakistan is reduced over the last decades. Many problems are creating in Tehsil Matta in maize production. Which are technical, marketing, and social problems. The technical problem includes the high cost of irrigation, lack of financial capital, lack of scientific knowledge of farmers, lack of quality seeds. Marketing problems include low cost of maize production, high cost of maize inputs. The social problem includes the damage of seeds of birds, the damage effect by insects, and theft in maize cob.

**Materials and Methods.** The present study aims to find the socio-economic characteristics of maize producers and also estimate their profit function under different farm size groups of maize production. Five villages are selected from the Swat District. Namely, villages, Sakhra, Sambat, Bara Drushkhela, Chupriyal, and Beha. Primary data has been collected from 75 farmers. The simple random sampling has been followed, both statistical and tabulation analysis were applied in this study. The average area under maize cultivation was 64 % respondents are the owner and 36 % were least out of selected sample size. A simple average method was used for finding the results.

**Results and Discussion.** The majority 77.33% respondents were literate and 22.67% were illiterate, the main source of seeds 94.67% own, 5.33% fellow farmers and 0 % were government provided. The majority of respondents i.e 33.33% respondent was facing the water problem, while 66.67% of respondent were used the canal for irrigation. Finally, in each kanal total revenue was 35800 and per kanal total cost was 16360. The profit was R.s 19440. It is recommended that the government should provide these inputs and other related support lead to an increased significantly in maize production.

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**INTRODUCTION**

The agricultural sector plays an essential role in Pakistan. Its contribution is 22 percent of total GDP, and also contribute to employment opportunities which are 44.8 percent of labor force, 62 percent are directly required to agriculture sector their fodder claim that [1]. Maize production around the world in the top three positions. In the case of Pakistan also in the top three after rice and wheat production, it is the most prominent production in Pakistan. Maize was measure value-added methods its contribution to GDP is 2.2 percent in the year 2014. Maize cultivation area in Pakistan was 1.2 million Hector. These areas determine maize production, irrigation system through rain about 38 percent while the majority of irrigation through a canal and tube wells are 62 percent. Maize production in Pakistan 4.6 tons in Millions, currently Pakistan is 29th position in maize production around all world [10-13].

Maize is an essential sustenance grain too raw material for consumable oil output. It is likewise utilized produced starch and poultry nourishment blends. The aggregate zone under maize was 1168 thousand hectares in the year 2013–2014 and add up to production amid were 4944 thousand tons. For 2014–2015 region expanded to 1130 thousand hectares, producing 4605 thousand tons. The execution of these products can be additionally enhanced with sufficient seed supplies and homestead hones required to acquire significant returns from cross breed and synthetics. Endeavors to evacuate existing imperative are desperately required to expand the production of these important harvests [14].

| Years    | Area (000 Hectares) | Production (000 Tones) |
|----------|---------------------|------------------------|
| 2011-12  | 1,088               | 4,339                  |
| 2012-13  | 1,061               | 4,221                  |
| 2013-14  | 1,169               | 4,945                  |
| 2014-15  | 1,143               | 4,938                  |
| 2015-16  | 1,145               | 4,921                  |

*Based: Pakistan Bureau of statistics.*

In table 1 illustrated the maize area and production from 2011-12 to 2015-16, this data was collected from Pakistan Bureau of statistics, in 2011-12 total area under maize cultivation is 1088 thousand hectares it's total production is 4339 thousand tones, if the area under cultivation increased from 1088 to 1145 in 2015-16, its production also increased from 4339 to 4921 thousand tones.

According to (Khyber Pakhtunkhwa Agriculture report, 2010) total area in 2007-08 maize cultivation 62.4 thousand hectares its production was 104.9 thousand tones, in 2008-09 total area under maize cultivation are 62.4 thousand hectares their production was 101.5 thousand tones. Maize in tehsil Matta is getting to be on the vital harvest in the wheat
cropping system. It has become all finished tehsil in all season. It has extraordinary potential which can contribute to the improvement of the Animal industry and would meat be able to rustic vitality prerequisite. Maize is a flexible yield with high non-exclusive inconstancy and manipulability. The place that is known for Tehsil Matta is appropriate for maize production. Maize is a labor intensive product, it an economic advantage is more prominent than different yields. Maize is attractive and appropriate for human and additionally poultry, domesticated animals, and fisheries. The interest for maize day today because of its broadened employments. It provided human sustenance, bolster and grain for an animal, full for household use in industry. The interest in maize is expanding in Matta because of animals and fishes’ production lines. Maize is nourishment sustenance after rice and wheat it additionally decreased the deficiency of foods.

The top 10 maize producing country in the world such that first USA Production 378.6 million metric tones, second China 225 million metric tones, third Brazil here Production 83 million metric tones, fourth India his Production 70 million metric tones, fifth Argentina his production Annually 40 million metric tones, sixth Ukraine maize producing country its Annual production of 39.3 million metric tones, seventh Mexico its maize output annually millions metric tones is 32.7, eighth Indonesia its productivity in 19 million metric tones, ninth France their Production 17.1 million metric tones, and 10th maize output in tons South Africa its annual maize production 15.6 million metric tones.

1 Objectives of the study
1. To know the socio-economic characteristics of maize farmers;
2. To find how much cost, Revenue per kanal maize production and its profit.

2 Significant of the study
This empirical study is very important and significant because this study investigates to find out the average profit earning from maize production. This study informed the maize productivity level of Tehsil Matta. This study results and policy recommendations are predictable, which are further increase the productivity of maize production at swat as well as the country level. This study is important because maize is the thirds position after wheat and rice. Maize is also a nutrition food after wheat. Maize has decreased the shortage of food. The results were predictable to given evidence about small maize farmers to well produce high maize crops with minimum cost inputs and maximize profit.

3 Limitation of the study
This empirical study was examined in a limited area of Matta tehsil, this study very limited number of respondents due to the limitation of time and resources. If a large area is selected its results are reliable.
This study some limited variable is selected and other was excluded also determine the productivity of maize, due to little resources and time.
LITERATURE REVIEW

J. W. Zalkuwi et al. [2] worked on maize cultivation and its farmer’s profitability in district Rangpur in Bangladesh, gathering data randomly selected 60 farmers. They find agriculture is a 50% contribution to Bangladesh’s GDP. Further maize production is a majority of farmer gets profits, also conclude that majority of farmers discourage due to low prices, during a harvesting time, also find that price of maize is low this is because of maize is loss due to birds and insects. And also no availability of government subsidies.

M. M. Hasan et al. [3] analyzed in the local government area of its efficiency of maize output in the case of Nigeria, by using multiple sampling methods and selected 200 farmers. The author finds results the maize output is expected beneficial to the farmer and also conclude that maize productivity is decreasing due to bad seeds.

B. Bempomaa & H. G. D. Acquah [4] analyzed the efficiency of maize production in the case of Ghana, by using Single-stage modeling from interviews with 306 maize growers. They finding seeds are negatively related to maize productivity, while fertilizer, labor, and land are positively related to maize output.

B. Bempomaa & H. G. D. Acquah [5] written research that maize grower and its efficiency, technological in the case study of Nigeria, by using Tobit Regression analysis. They are finding results, the maize productivity is more increase due to better training of maize grower, and technological changes and also better seeds increased the productivity of maize production.

K. Rashid & G. Rasul [6] worked on Rainfall Variability and Maize Production over the Potohar Plateau of Pakistan. They found that maize is generally planted in July with the onset of the monsoon (rainy season) and it attains maturity as the monsoon recedes from Pakistan in September. After crossing the peak values 300 mm during the growing season, the yield decreases with the increase in rainfall. Planting season is highly risky. If there is persistent rain, it does not provide gap to the soil suitable for seed sowing.

M. Tariq & H. Iqbal [7] found that the increase in the human population (3%) in the last two decades has nullified increased cereal production. The use of maize in the feed and wet milling industry is growing at a much larger pace than anticipated. Maize is being grown on an area of 1.016 million hectares with annual production of 3.037 million tons and an average grain yield of 2,864 kg/ha. Approximately 66% of the maize in Pakistan has access to irrigation; the remainder is farmed under strictly rain-fed conditions.

A. Tahir & N. Habib [8] found that The forecasted area of maize in Pakistan would be 1031.07, 1034.23, 1036.94, 1039.19, 1040.98 and 1042.32 ha, and the forecasted production of maize in Pakistan would be 4554.48, 4881.23, 5223.19, 5580.35, 5952.72 and 6340.29 thousand tons respectively for the years 2012, 2013, 2014, 2015, 2016 and 2017. Forecast values are very close to actual values and have positive increasing trend in Pakistan. Positive increase is due to availability of high yielding varieties, proper use of inputs and in time availability of inputs for maize in Pakistan.
I. Ahmad et al. [9] found that results of climate adaptation for the future production system indicated that yield would increase by 12–17 % for all GCMs. Both the current and future production systems were negatively affected by climate change. However, improved management as adaptation strategies can offset the potential decrease in yield.

**METHODODOLOGY OF RESEARCH**

1 *Universe of the study*

This Empirical study has been conducted in Tehsil Matta Swat to estimate the average profit of the maize production.

2 *Universe of study area and sample size*

This empirical study has been conducted in Tehsil Matta District Swat, five villages are selected which are, Sakhra, Matta, Bara Drushkhela, Chupriyal, Beha. Simple random sampling methods are employed, total sample size is seventy-five which has been shown blow.

| No | Villages          | Sample size |
|----|-------------------|-------------|
| 1  | Sakhra            | 15          |
| 2  | Sambat            | 15          |
| 3  | Bara Drushkhela   | 15          |
| 4  | Chupriyal         | 15          |
| 5  | Beha              | 15          |
|    | **Total**         | **75**      |

*Source: Author computation.*

3 *Data collection*

This empirical study author used primary data to analyzed estimate profit of maize production in Matta tehsil, Data has been collected through farmer’s interview and also questionnaire.

4 *Statistical analysis*

This empirical study different statistical method are employed, like simple average method was such that \( \frac{\sum x}{n} \), through Scientific calculator.

5 *Theoretical framework*

This study to finding total profit through total revenue minus total cost is equal to profit. Mathematically \( \pi = TR – TC \), where \( \pi \) = Net revenue (profit function), \( TR \) = Total revenue, \( TC \) = Total cost.
RESULTS AND DISCUSSION

1 Socioeconomic characteristics of the sample farmer

The purpose of this description to know about the socioeconomic characteristic of maize grower. It looked upon the numbers of variable their level of living. The socioeconomic environment in which they live and nature and extent of the farmer’s participation in a national developmental activity. It was not possible to collect all information in which they faced the production level. To analyze the socioeconomic level of maize grower, different information occurred: like education level of the farmer, distribution status, irrigation system etc., which has been shown in the following below.

Table 3

| Village name     | Illiterate | Primary | Middle | Matric | F.A/FSc | B.A/BS | M.A/MSc | Others | Total |
|------------------|------------|---------|--------|--------|---------|--------|---------|--------|-------|
| Sakhra           | 5          | 4       | 0      | 2      | 2       | 1      | 1       | 0      | 15    |
| Sambat           | 4          | 4       | 4      | 1      | 1       | 1      | 1       | 0      | 15    |
| Bara Drushkhela  | 3          | 2       | 5      | 1      | 1       | 1      | 2       | 0      | 15    |
| Chupriyal        | 3          | 5       | 2      | 1      | 1       | 1      | 2       | 0      | 15    |
| Beha             | 2          | 3       | 3      | 1      | 2       | 1      | 1       | 2      | 15    |
| Total            | 17         | 18      | 14     | 8      | 9.33    | 6.67   | 8       | 2.67   | 75    |
| Percentage       | 22.67      | 24      | 18.67  | 8      | 9.33    | 6.67   | 8       | 2.67   | 100   |

Source: Author computation.

Education is the important role in the productivity of maize production, it helps farmer to know about the educational status of technique, cultivation skills, production cost etc. in table 3 Total number of the respondent is 75 to investigate maize growing farmer, the educational level is divided in above table no. 3 into nine parts. 1st uneducated person also called illiterate, 17 respondents are uneducated, which is 22.67%. 2nd is primary education which is (class 1-5) above table 24% are primary level. The 3rd middle level which is (class 6-8) 14 respondent are the middle level which is 18.67% of the total. 4th Matric level is (class 9-10) 6 respondent is Matric level which is 8%. 5th is FA/FSC from (class 11-12) 7 respondent are the intermediate levels that are 9.33%. 6th BA/BSC are (class 13-14) 5 respondent is BA/BSC level, 6.67%. 7th are MA/MSC (class 15-16) 6 respondent is MA/MSC level that is 8%. Lastly, 2 respondents are other education, which is 2.67% of the total. Finally, 22.67 are uneducated while 77.33%.

Land distribution pattern means the land is distributed into two group one is owner and least. The owner is that farmer which have own land, while least are that farmer has not owned land but given to rent. In these five villages, some are owner and least. Sakhra 6 respondent is owner and 9 are least. Sambat 10 respondent owner while 5 is least. Bara Drushkhela 9 respondent is owner and 6 are least. In Chupriyal 11 respondents are owner and 4 are least and Beha 12 respondent is owner and 3 are least. Finally, total 75 respondents, 48 are an owner, 64% while 27 are least which is 36%.
Table 4

| No | Village name   | Owner | % age of owners | Least | % age of least | Total |
|----|----------------|-------|-----------------|-------|----------------|-------|
| 1  | Sakhra         | 06    | 40%             | 9     | 60%            | 15    |
| 2  | Sambat         | 10    | 66.67%          | 5     | 33.33%         | 15    |
| 3  | Bara Drushkhela| 09    | 60%             | 6     | 40%            | 15    |
| 4  | Chupriyal      | 11    | 73.33%          | 04    | 26.67%         | 15    |
| 5  | Beha           | 12    | 80%             | 03    | 20%            | 15    |
|    | Total          | 48    | 64%             | 27    | 36%            | 75    |

Source: Author computation.

Table 5 tells the average farm size and average region under maize cultivation is chose Sakhra, Sambat, Bara Drushkhela, Chupriyal, Beha, in total tehsil. Entire range holding with 75 respondents was 554 average kanal its average rate is 110.8. While 435 kanal are cultivated under maize cultivation, it is 87 kanal average, 78.88%.

Table 5

| Village name   | Average farm size in kanal | Average area under maize crop in kanal | Percentage of maize farm | Sample size |
|----------------|----------------------------|----------------------------------------|--------------------------|-------------|
| Sakhra         | 210                        | 170                                    | 80.95%                   | 15          |
| Sambat         | 39                         | 30                                     | 76.92%                   | 15          |
| Bara Drushkhela| 75                         | 55                                     | 73.33%                   | 15          |
| Chupriyal      | 85                         | 70                                     | 82.85%                   | 15          |
| Beha           | 145                        | 110                                    | 75.86%                   | 15          |
| Total          | 554                        | 435                                    | 394.41%                  | 75          |
| Average        | 110.8                      | 87                                     | 78.88%                   | 15          |

Source: Author computation.

Table 6

| Village name   | Canal | Percentage | Tube well | Percentage | Rain only | Percentage | Sample size |
|----------------|-------|------------|----------|------------|-----------|------------|-------------|
| Sakhra         | 08    | 53.33%     | 2        | 13.33%     | 05        | 33.34%     | 15          |
| Sambat         | 15    | 100%       | 0        | 0%         | 0         | 0%         | 15          |
| Bara Drushkhela| 15    | 100%       | 0        | 0%         | 0         | 0%         | 15          |
| Chupriyal      | 09    | 60%        | 02       | 13.33%     | 4         | 26.7%      | 15          |
| Beha           | 03    | 20%        | 03       | 20%        | 09        | 60%        | 15          |
| Total          | 50    | 66.67%     | 7        | 9.33%      | 18        | 24%        | 75          |

Source: Author computation.

In table 6, 50 respondents and 66.7% have the accessibility of waterway for irrigation and residual 7 (9.33), 18 (24) percent agriculturalists hang on Tubwells and rain. The canal source of irrigation is 53.3 percent in Sakhra, 100 percent in Sambat, 100 percent in Bara...
Drushkhela, 60% percent in Chupriyal and 20 percent in Beha. The Tub well system of irrigation is 13.33 percent in Sakhra, 0% percent in Sambat and Bara Drushkhela while in Chupriyal and Beha are tub wells system 13.33, 20 percent out of 100 percent.

Table 7

| No | Village name     | Use | Percentage | No use | Percentage | Sample size |
|----|------------------|-----|------------|--------|------------|-------------|
| 1  | Sakhra           | 12  | 80%        | 03     | 20%        | 15          |
| 2  | Sambat           | 14  | 93.34%     | 01     | 6.66%      | 15          |
| 3  | Bara Drushkhela  | 14  | 93.34%     | 01     | 6.66%      | 15          |
| 4  | Chupriyal        | 10  | 66.67%     | 05     | 33.33%     | 15          |
| 5  | Beha             | 08  | 53.33%     | 07     | 46.67%     | 15          |
|    | Total            | 58  | 77.34%     | 17     | 22.67%     | 75          |

Source: Author computation.

Fertilizer is a most important source of increasing maize productivity. In table 7 display 58 respondent have used fertilizer material which is 77.34%, while 17 respondents has not used the fertilizer which is 22.67%.

Table 8

| No | Village name     | Use | Percentage | No use | Percentage | Sample size |
|----|------------------|-----|------------|--------|------------|-------------|
| 1  | Sakhra           | 06  | 40%        | 09     | 60%        | 15          |
| 2  | Sambat           | 12  | 80%        | 03     | 40%        | 15          |
| 3  | Bara Drushkhela  | 10  | 66.67%     | 05     | 33.33%     | 15          |
| 4  | Chupriyal        | 09  | 60%        | 06     | 40%        | 15          |
| 5  | Beha             | 05  | 33.33%     | 10     | 66.67%     | 15          |
|    | Total            | 42  | 56%        | 33     | 44%        | 75          |

Source: Author computation.

Table 8 demonstrates the data about utilizing or no utilization of weedicides by respondents for maize in the chose villages. Permitting the information along 42 (56) percent out of aggregate table estimate i.e 75 (100) percent respondents were utilizing weedicides and the rest of the 34 (45.34) percent were not utilizing weedicides. Town survey data were recorded as, In Sakhra, Sambat, Bara Drushkhela, Chupriyal, and Beha, 6 (40) percent, 12 (80) percent, 10 (66.67), percent 9 (60) percent and 5 (33.33%) were utilizing weedicides spray.

Table 9 shows that the maize growers’ main source of seed its own Sakhra, Sambat, Bara Drushkhela, Chupriyal, and Beha, 11, 15, 15, 15, 15, for each out of 75. Sums of owns sources are used 71 (94.67) percent own, 4 (5.33) percent fellow farmer and 0 (0) percent government provide.
Table 9

| No | Village name | Own | Fellow farmers | Government provide | Sample size |
|----|--------------|-----|----------------|-------------------|-------------|
| 1  | Sakhra       | 11  | 04             | 0                 | 15          |
| 2  | Sambat       | 15  | 0              | 0                 | 15          |
| 3  | Bara Drushkhela | 15 | 0             | 0                 | 15          |
| 4  | Chupriyal    | 15  | 0              | 0                 | 15          |
| 5  | Beha         | 15  | 0              | 0                 | 15          |
| -  | Total        | 71  | 04             | 0                 | 75          |
| -  | Percentage   | 94.67% | 5.33%          | 0%               | 100%        |

Source: Author computation.

Table 10

| No | Village name | Bullock | Percentage | Tractor | Percentage | Sample size |
|----|--------------|---------|------------|---------|------------|-------------|
| 1  | Sakhra       | 04      | 26.67%     | 11      | 73.33%     | 15          |
| 2  | Sambat       | 0       | 0%         | 15      | 100%       | 15          |
| 3  | Bara Drushkhela | 03 | 20%        | 12      | 80%        | 15          |
| 4  | Chupriyal    | 04      | 26.7%      | 11      | 73.33%     | 15          |
| 5  | Beha         | 05      | 33.33%     | 10      | 66.67%     | 15          |
| -  | Total        | 16      | 21.33%     | 59      | 78.67%     | 75          |

Source: Author computation.

Cultivation is applying two methods, one is Bullock and second is the tractor. Table 10 gives information about Bullock and tractor technique of cultivation. Aggregate utilization of Bullock procedure in all selected villages, 16 respondents have utilized Bullock technique, 21.33%, while 59 respondents is used tractor system of cultivation which is 78.67%.

Table 11

| No | Village name | Manual | Percentage | With the help of thresher | Percentage | Sample size |
|----|--------------|--------|------------|---------------------------|------------|-------------|
| 1  | Sakhra       | 01     | 6.67%      | 14                        | 93.33%     | 15          |
| 2  | Sambat       | 0      | 0%         | 15                        | 100%       | 15          |
| 3  | Bara Drushkhela | 0 | 0%        | 15                        | 100%       | 15          |
| 4  | Chupriyal    | 01     | 6.67%      | 14                        | 93.33%     | 15          |
| 5  | Beha         | 02     | 13.33%     | 13                        | 86.67%     | 15          |
| -  | Total        | 04     | 5.33%      | 71                        | 94.67%     | 75          |

Source: Author computation.

In table 11 shows the data about the Manual and threshing procedure of harvesting. In total selected area 4 respondent are utilized Manual procedure of cultivation, 5.33% while residual are utilized 94.67% with the help of thresher.
In Sakhra, Sambat, Bara Drushkhela, Chupriyal, and Beha are 14 out of 15, 15 out of 15, 15 out of 15, 14 out of 15, 13 out of 15, are used harvested through thresher, while Sambat and Bara Drushkhela are not used manually, and Sakhra 1 out of 15, Chupriyal 1 out of 15, and Beha 2 out of 15 are used harvesting manually.

2 Maize production cost

Cost of inputs and agriculture output is an essential role in the agriculture sector. This is because farmer decisions are affected due to the cost of inputs. Farmer are buying the following inputs and its cost has been shown in the following table.

Table 12
Per kanal cost of maize production

| No | Name item             | Unit | Price/unit | Number of units | Cost | Percentage |
|----|-----------------------|------|------------|-----------------|------|------------|
| 1  | Land used cost        | kanal| 900        | 1               | 5100 | 31.1735941 |
| 2  | Cost of cultivation   |      |            |                 |      |            |
|    | Tractor               | kanal| 950        | 1               | 950  | 5.80684597 |
|    | Bullock               | kanal| 350        | 1               | 350  | 2.1393643  |
|    | Sub total             | kanal| 1300       | 1               | 1300 | 7.94621027 |
| 3  | Cost of human labour  |      |            |                 |      |            |
| 4  | Seed cost             |      |            |                 |      |            |
| 5  | Fertilizers cost      |      |            |                 |      |            |
|    | Urea                  | K.g  | 50         | 8               | 400  | 2.44498778 |
|    | D.A.P                 | K.g  | 60         | 8               | 480  | 2.93398533 |
|    | Sub total             | K.g  |            |                 | 880  | 5.37897311 |
| 6  | Sprays cost           |      |            |                 |      |            |
|    | weedicide             | Bottle| 600       | 1               | 600  | 3.66748166 |
|    | Sub total             |       | 600       |                 | 600  | 3.66748166 |
| 7  | Farm yard measure cost| Maund | 80        | 6               | 480  | 2.93398533 |
| 8  | Threshing cost        |      |            |                 |      |            |
|    | Manual                | Maund| 250        | 1               | 250  | 1.52811736 |
|    | Thresher              | 1 hour| 1600    | 1               | 1600 | 9.77995111 |
|    | Sub total             |       | 1850      |                 | 11.3080685 |
| -  | Total cost            |       |            |                 | 16360| 100        |

Source: Author computation.

2.1 Land used cost
A former are using their land its own or least averagely cost appeared Rs 5100 and its contribution to total cost is 31.1735941%.

2.2 Land cultivation cost
Land cultivation is done by two methods, one is tractor while second is Bullock. Tractor cost for maize cultivation is 950 for each kanal, which contribution in total cost is 5.80684597%. The second procedure for maize cultivation is Bullock its cost is 350 their contribution to sub cost is 2.1393643. Further aggregate cost of both tractor and Bullock are 1300 its contribution to aggregate cost is 7.94621027%.
2.3 Cost of human labour

Cost of human labor occurred due to different working in maize growing system. Labor is required in working seeds bowing, harvesting etc. The prevailing wage rate in the market for hired labour was considered as the opportunity cost of family supplied labor in the study area. The average wage rate of per day is 700, for each kanal eight labor is required. The sub cost of labour was estimated 5600 in each kanal. Cost of labor contributes to aggregate cost 34.2298289 %.

2.4 Cost of seed

Cost is seeds are changing due to the quality of seeds and availability of seeds. For each kanal aggregate cost of seeds for maize production were calculated 550, they contribute to sub cost 3.36185819%.

2.5 Cost of fertilizers

Generally, maize grower used various types of inorganic fertilizer in producing maize. In the study area farmer commonly utilized Urea and DAP. DAP cost in each kanal is R.s 480 while Urea cost is estimated R.s 400. Further aggregate cost is 880, it pays in sub cost 5.37897311%.

2.6 Cost of weedicides

Farmer uses weedicides to keep clean their maize cultivation area. In each kanal cost of weedicides is 600, its contribution to aggregate cost is 3.66748166%.

2.7 Cost on farmyard manure

Usually, the farmer in the study areas used cow dung as manure for producing maize. In each kanal cost is 480 its pay in sub cost is 2.93398533%.

2.8 Harvesting cost

Harvesting is last cost of maize output. It's done by two sources. First is manual while second is thresher. In each kanal manual cost is R.s 250 while second is threshing cost is R.s 1600. Its contribution to sub cost is 11.3080685%.

2.9 Aggregate cost

In each kanal maize, the total production cost is estimated in table 12, which is R.s 16360.

3 Maize production revenue

Maize production revenue, it’s are collected through three sources for maize grower (i) Income from the grain of maize, (ii) fodder income and (iii) maize cob income.
Table 13

Average revenue of maize production

| Name item   | Unit | Quantity | Price per Maund | Revenue | Percentage |
|-------------|------|----------|----------------|---------|------------|
| Maize grain | Maund | 6        | 2100           | 12600   | 35.1955307 |
| Maize fodder| -     | -        | -              | 20000   | 55.8659218 |
| Maize cob   | -     | -        | -              | 3200    | 8.93854749 |
| Total Revenue| -   | -        |                | 35800   | 100        |

Source: Author computation.

Table 13 claim that output in each kanal is six Maund maize grain, each Maund cost is 2100, so revenue for maize grain is R.s 12600 its contribution to aggregate revenue is 35.1955307%. Per kanal maize fodder revenue is R.s 20000 its contribution to aggregate revenue is 55.8659218%, while maize cob revenue is R.s 3200 its contribution to aggregate revenue is 8.93854749%. Further aggregate revenue is R.s 35800.

4.3 To find profit with the help of profit function

\[ \Pi = TR - TC, \]

where: \( \Pi = \) profit, \( TR = \) total revenue, \( TC = \) total cost.

Total cost is: Rs 16360. Total revenue: R.s 35800. The profit should be: \( \Pi = 35800 - 16306 \).

\( \Pi = 19440. \) So per kanal profit from maize production in research area is R.s 19440

**CONCLUSION AND POLICY RECOMMENDATION**

1 Summary

This empirical study is based on primary data. Which were collected the author itself, through direct interviewing the sample farmer. In order to achieve the objectives. Survey was conducted in villages namely, Sakhra, Sambat, Bara Drushkhela, Chupriyal, Beha under District swat. Primary data were collected are 75 respondents. A random sampling was followed.

In studying socioeconomic characteristic are: education level of respondent about 77.33% majority of primary level farmer, 22.67% are uneducated, in each farmer 110.8 kanal averagely, only in each farmer has 87 kanal area in maize cultivation, 36% were least while the remaining are 64% are owner, 56% farmer were used weedicides and remaining 44% were not used, 33.33% were irrigated through rain and tub wells, while the residual are depend on canal, 22.67 are utilized fertilizer and residual are not used, the majority of farmer utilized their own seeds, about study area 94.67%, while remaining are utilized 5.33% fellow farmer while government not provides seeds to farmer, out of 75 respondent 33.33% were used bullet procedure of cultivation while residual are tractor, 94.67% farmer harvesting with the help of thresher while the remaining are Manually.

Cost of inputs are: In each kanal use of land cost was R.s 5100, in each kanal land cultivation cost was R.s 1300, human labour used cost was R.s 5600, fertilizer cost is R.s 880, while 550
are seeds cost, weedicides cost was R.s 600, farm yard manure cost was R.s 480, while total harvesting cost is 1850. However total cost in each kanal was estimated to 16360.

R.s 12600 are average revenue in each kanal from food grain, R.s 20000 fodder revenue was estimated, while maize cob revenue is 3200. As well as aggregate revenue is estimated R.s 35800 in each kanal.

In each kanal total revenue was 35800 and per kanal total cost was 16360., the profit was R.s 19440.

2 Conclusion

The study was examined the economics study of maize production in selected region of district swat. We conclude that cost of inputs is very significant role in production decision of maize production. Maize production are influenced due to high cost of inputs, labor cost is higher than other cost, and about 34.2298289% contribute to aggregate cost. Further profit of maize output is 19440 in each kanal. However maize crops are acceptable for profit.

3 Policy Recommendation

The above result shows that seeds, fertilizer, cultivation and thrashing cost have increased production of maize, but the cost of this inputs are very high, so government should provide these inputs and other related support lead to increased significantly of maize production.

Majority of maize farmer has not aware the efficient use of given resources, they are used inefficiently, to increase the production of maize government should provide training to farmer its results the maize production further rises.

Majority of maize grower could not aware the benefit of maize production, so the farmer does not produce maize if government aware message sent to farmer its results production of maize further increases.

The farmer used the traditional variety of seeds, its results the maize production not increase, so if the government provides the high yielding variety of seeds the maize production further increased.

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