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Estimation of Net Returns from Main Crops in District Malakand

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Abstract: This research was aimed to determine the net returns of three main crops, i.e. wheat, rice and maize in District Malakand of NWFP during the year 2000. The cropped area of sampled respondents was 270 acres each in Kharif and Rabi season. Wheat was being grown on 87% of the cropped area during Rabi season where as in Kharif, because of more yield and cash, rice was sown on 75% area and maize on 9% area. From a total cost of 6095, 4073 and 4104 rupees per acre for rice, maize and wheat crops, respectively, with the exception of 12% for rice, 2% for maize and 1% for wheat, the rest was spent on crop rising. For rice crop, 10 and 2% of the total cost was found on nursery raising and marketing, respectively. The total gross returns of rice, maize and wheat were 10932, 7745 and 8613 rupees, respectively. The net return is the subtraction of total cost per acre from the gross returns per acre. So the net returns of rice, maize and wheat were 4837, 3672 and 4509 rupees per acre, respectively. The study as a whole shows that rice gives more net return than wheat and maize in the study area.

Key words: Main product, by-product, gross return, net return, production cost, marketing cost

INTRODUCTION

Agriculture is the backbone of our economic system. Majority of the population directly or indirectly depends on this sector. It contributes more than 24% to Gross Domestic Product and employs around 48.4% of total labour force. It nearly contributes 66% of our export earnings[1]. It contributes to growth as provider of raw materials and as a market for industrial products. The study was conducted in District Malakand of NWFP during the year 2000. Majority of people of this area depend upon agriculture and per acre yield of crops is low as compared to other parts of NWFP. Rice and wheat are the major crops and maize is the minor crop of the research area. The soil of the project area is well suited for rice cultivation. The major crops of NWFP are classified into food crops and non-food crops. The food crops include wheat, rice, maize, coarse grain, grams and other pulses. The cash crops are sugarcane, tobacco and mustard. The major crops of District Malakand include wheat, rice, maize, sugarcane and mustard.

On the basis of net return, the net income of two crops or more crops can be compared. This helps the farmers to decide which crop gives them more per acre net income. Net returns are calculated to know per acre gross return and cost of the crops. Such analysis to assess the net income from crops, use of inputs, cost of production, economic position of farmers and the future of agriculture to help the policy makers to recommend the appropriate technologies for the enhancement of agricultural production.

Net-return is the subtraction of total cost per acre from the gross returns per acre. Cost is the major component of net return. It is determined by calculating expenses on land preparation, purchase of seed and its application, farm yard manure, chemical fertilizer, pesticides, irrigation water, hoeing, weeding, harvesting, heaping of bales, threshing, empty bags, transportation and storage. The technologies that directly affect the crop production are types of seeds, chemical fertilizer, farmyard manure, irrigation water and chemical to control weeds and pests and machinery to cultivate, harvest and thresh crops. But past experience shows that despite the use of these inputs, net return of crops is still low. This is found because many of the farmers especially from small farm community are not using these inputs. Prices of these inputs were reported high. Farmers do not have access with extension services. They have low socioeconomic status and education. Land is fragmented and unirrigated. Sometimes required irrigation water is not available and they have also no access to credit to purchase the required inputs for the crops.

In the past, several studies have been undertaken elsewhere to underscore the net returns of various crops. In these studies efforts have been made to determine the cost of production of crops, marketing costs, marketing

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margins at various levels, net returns to producers and their marketing problems. In general, most of the studies reported that the yield and gross return were higher for small farmers but due to higher cost of production, gross margin was lower for small farmers[2,3]. Some studies reported that higher productivity could be achieved with the use of modern technology[4-6].

Some researcher suggested that high cost of inputs and non-availability of good quality seeds and fertilizers in the market are the main factors for low farm income. Good quality seed and fertilizers are vital for increasing crop production and per acre yield[7,8]. David[9] pointed out that the low prices of rice are due to the increase in world rice production and substitution of wheat for rice. Majid[10] analyzed that delayed planting and poor crop establishment is responsible for low wheat yield. Muhammad[11] examined that profitability of cereal production could be increased through price policy change and substituting machinery for labour.

The main objectives of this research were to estimate cost, production and net returns on per acre basis of main crops and also to find the problems due to which the per acre yield in the research area is low as compared at national and provincial level. The results of the study also suggested the recommendations to improve agricultural production in the research area.

MATERIALS AND METHODS

The study was conducted in District Malakand of NWFP during the year 2000. This study was carried out in three villages of District Malakand namely Batkhela, Totakan and Khar. A total number of 75 respondents were randomly selected and interviewed for this purpose. Twenty five respondents were interviewed from each village. An interview schedule was used as research instruments for the collection of primary data. The data were collected directly from the farmers through face-to-face interviews. For the estimation of production, cost and revenue, the following simultaneous equations were used. These models are important for the estimation of total output, total cost and net revenue of main crops in District Malakand of NWFP.

$$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, \dots)$$
$$TC = f(Y)$$
$$NR = f(P, TC, Y)$$
X_i = Input used such as land rent and expenditure on seed, FYM, chemical fertiliser, irrigation, harvesting, threshing, sowing, ploughing, weeding/hoeing, packing and transportation to market.

TC = the cost of production of each crop was estimated first by simple method, that is by adding the above-mentioned cost components together.
NR = Net revenue

The net returns per acre for each crop was estimated by subtracted average cost per acre from gross returns per acre:

P = output Price.

Data were analyzed on computer using Microsoft Excel.

RESULTS AND DISCUSSION

Size of holding: The total cropped area of sampled respondents was 270 acres each during Kharif and Rabi season. Wheat was being grown on 87% of the cropped area while in Kharif rice was sown on 75% area and maize on 9% area.

Age of sampled respondents: The age of sampled respondents are more or less equally distributed into various age groups. The largest number (29%) were reported in the age group 31-40 years followed by 27, 23 and 21% belonging to age groups 51-69 years 41-50 years and 20-30 years, respectively.

Educational level of sampled respondents: Sampled respondents of 36% were illiterates. Among literate a large number (24%) were having education up to matric level. The other notable education reported by sampled respondents was FA (15%), primary (13%), middle (7%) and MA (5%).

Tenurial status of research area: The majority (60%) of the sampled respondents of the research area were owners. The remaining 35% and 5% were tenants and owner-cum-tenant, respectively. 64% of the sampled respondents were literates while the remaining 36% were illiterates.

Area under main crops: The total cropped area of sampled respondents was 270 acres each during Rabi and Kharif season. Wheat was being grown on 87% of the cultivable area where as in Kharif, because of more yield and cash, rice was reported the major crop and sown on 75% area and maize was sown on 9% area.

Cost of production of main crops: Table 1 shows that from a total of 6095 rupees per acre, 34% of the total cost of

Table 1: Production cost and contribution of each cost components

	Rice		Maize		Wheat	
Particulars	Cost/Acre (Rs)	% age	Cost/Acre (Rs)	% age	Cost/Acre (Rs)	% a ge
Land rent	2045	34	124	2	974	24
Land preparation	751	12	632	16	397	10
Farm yard manure	31	1	851	21	424	10
Urea	512	8	443	11	369	9
DAP	-	-	271	7	390	10
Seed cost	-	-	278	7	477	11
Nursery cost	594	10	-	-	-	-
Labour cost	1441	24	837	21	499	12
Irrigation cost	208	3	214	5	38	1
Threshing cost	375	6	329	8	487	12
Marketing cost	138	2	94	2	49	1
Total	6095	100	4073	100	4104	100

Table 2: Gross returns of main product and by-product

	Rice			Maize			Wheat		
Particulars	Qty/Acre	GR/Acre (Rs)	% age	Qty/Acre	GR/Acre (Rs)	% age	Qty/Acre	GR/Acre (Rs)	% age
Production									
Main product	1213 (kg)	8491	78	826 (kg)	5369	69	782(kg)	7038	82
By-product	25 (Bales)	2441	22	238 (Bundles)	2376	31	21 (Mnds)	1575	18
Total	-	10932	100	-	7745	100	-	8613	100

Qty=Quantity,   GR=Gross Returns

Table 3: Net returns of main crops on per acre basis

Particulars	Rice (Rs)	Maize (Rs)	Wheat (Rs)
Gross return	10932	7745	8613
Total expenses	6095	4073	4104
Net-return	4837	3672	4509

production for rice was spent on land rent followed by 24, 12, 10, 8, 6, 3, 2 and 1% spent on labour cost, land preparation, nursery cost, urea fertiliser, threshing, irrigation, marketing and farm yard manure, respectively.

For maize crop, from a total of 4073 rupees per acre, 21% of the total cost of production was spent on farm yard manure and labour followed by 16, 11, 8, 7, 7, 5, 2 and 2% each on land preparation, urea fertilizer, threshing, DAP, seed, irrigation, land rent and marketing, respectively.

For wheat crop, from a total of 4104 rupees per acre, 24% of the total cost of production was spent on land rent followed by 12% each on labour cost and threshing, 11% on seed, 10% each on land preparation, FYM and DAP, 9% on urea fertilizer and 1% each on irrigation and threshing.

Gross and net returns of main crops: Gross return is the sum of all receipts from main product and by-product produced per acre. While net return is the subtraction of the total cost per acre from gross return per acre.

Table 2 shows that the average rice main product yield of the sample respondents was 1213 kg per acre, which accounted 78% of the total gross returns. The average price of rice main product in the market was Rs. 350/Mnds. The average return of rice main product was

found 8491 rupees per acre. The average yield of rice by-product was 25 bales per acre, which accounted for 22% per acre of the total gross returns. The average price of rice by-product was found Rs.100/bale. Thus the average return of rice by-product was 2441 rupees per acre. Thus the total gross return of rice was 10932 rupees per acre.

In case of maize, the average main product yield of the sample respondents was 826 kg per acre, which accounted 69% of the total gross returns. The average price of main product in the market was Rs.325/Mnds. The average return of main product was found 5369 rupees per acre. The average yield of by-product was 238 bundles per acre, which accounted for 31% per acre of the total gross returns. The average price of by-product was found Rs.10/bundle. Thus the average returns of by-product were 2376 rupees per acre. Thus the total gross return was 7745 rupees per acre.

In case of wheat, the average main product yield of the sample respondents was 782 kg per acre, which accounted 82% of the total gross returns. The average price of main product in the market was Rs.450/Mnds. The average return of main product was found 7038 rupees per acre. The average yield of by-product was 21 Mnds per acre, which accounted for 18% per acre of the total gross returns. The average price of by-product was found Rs.75/Mnds. Thus the average returns of by-product were 1575 rupees per acre. Thus the total gross return was 8613 rupees per acre.

Table 3 shows that the total gross returns of rice, maize and wheat were 10932, 7745 and 8613 rupees per acre, respectively. The total expenses of rice, maize and

wheat were 6095, 4073 and 4104 rupees per acre, respectively. So, the net returns of rice, maize and wheat were 4837, 3672 and 4509 rupees per acre, respectively. The table as whole shows that rice gives more net return than maize and wheat. This is because the study area is more favourable for rice than maize and wheat.

Spurlock and Gillis[12,13] reported that the least expensive crops to produce on per acre basis were soybeans and wheat, followed by maize, rice and cotton. However, cotton and rice had the highest average net revenues. Some observed the gap between actual and potential yield. They estimated that production could be increased two to three times by using artificial fertilizers and dissemination of fertilizer technology[6].

CONCLUSIONS

The research concludes that net-returns of the selected crops are low as compared to the net returns both at provincial and national level. However, the returns from rice were higher than the returns from wheat and maize. This is because of the availability of sufficient irrigation water from river Swat. However, they are lower than the net income from rice crop of other areas. Low returns are mainly due to high cost of production, use of unskilled labour and defects in marketing of the produce. The results of the study suggest the following recommendations to improve agricultural production.

- Net return of rice can be enhanced through the use of latest varieties of seed, use of skilled labour and marketing of the crop on the right time. Improved inputs and skilled labour will also reduce the cost of production.

    The net returns from other two crops i.e. wheat and maize are even lower than rice crop. This was mainly due to low yield, high cost of production, inadequate irrigation water and small land holdings and lack of contacts with extension agents. Production can be increased through the use of improved agricultural inputs/technologies. Credit on low mark-up should be provided to farmers to purchase the required inputs. The increase and appropriate use of inputs is expected to enhance the production, which will consequently reduce the cost of production.

- Production of wheat and maize can further be increased through the installation of tube wells for irrigation. With the help of government or credit from any financial institution, tube wells can be installed on low cost as water level in the study area was reported high due to the location of sampled villages near river Swat.

- To benefit the farming community, the government should revise and fix the support prices of important crops every year. The prices are generally announced before the sowing time. The farmers then plan allocation of area, input and other resources for different crops. Support prices thus contribute to income stability of the farmers.

- The government can also influence the prices of goods by providing necessary infrastructure such as roads, construction of warehouse. The farmers with the provision of these facilities are able to get fair and reasonable price of their produce.

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