

Economics of different crops in Kandi area of Jammu (J. & K.)

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ABSTRACT

The present study was conducted in the subtropical Kandi belt of Jammu region to find out the economics of different crops grown in the area. The findings of the study revealed that the food crops like maize and wheat had a much lower benefit cost ratio than pulses and oilseeds. Among the different categories of farmers, maize and wheat had the lowest benefit cost ratio of 1.28 and 1.17, respectively. In contrast to this, the highest benefit cost ratio was 2.61 for Til and 2.49 for Moong. Til and mash when grown as a mixed crop gave a benefit cost ratio of 2.72. Further, the study also showed that the percentage of farmers growing oilseeds and pulses was very low. Not more than 10 per cent of the respondents were growing these crops except Moong which was grown by 13.33 per cent of the respondents. Despite being highly remunerative the area under these crops was also low. Of the total net cultivable area, meagre per cent age was under the cultivation of pulse and oilseed crops.

KEY WORDS : *Kandi*, Economics, Benefit cost ratio, Remunerative

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The sub mountain tract lying in the outer Himalayas of Jammu division of Jammu and Kashmir (32 degree 53"-36 degree 56" N latitude and 73 degree 26"-80 degree 3" E longitude arising gradually from Punjab plains with a gentle slope of 3 degrees comprising mostly of Shivalik system of rocks is locally known as *Kandi* (Gupta, 2009). This unit is an extension of the *Kandi* belt in the states of Himachal Pradesh, Punjab, Haryana and Uttarakhand. The upper portion of Kandi belt consists of low hills covered by shrubs and forest, and the lower terrain has cultivated lands and gully

beds. It has an undulating topography, steep and irregular slopes, erodible and low water retentive soils and badly dissected terrain by numerous gullies. The major land and water management problems being faced in the Kandi belt include excessive runoff, soil erosion, land degradation and erratic rainwater distribution in space and time, thereby hampering agricultural production. The groundwater table in the region is deep. Streams of the area carry huge amount of debris material during rainy season due to fragile geological conditions.

Economically, the farmers of this area are poor with small holdings. This is especially true in case of marginal and small farmers as their low returns from fragmented land holdings can be increased and sustained only by studying the economics of different crops grown in the region. Since agriculture among the farmers is mostly on rain fed conditions, it can be sustained only by analyzing the total cost of cultivation incurred on different operations and inputs and maximizing the output. This will definitely help the farming community to identify those practices where the expenditure

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can be further minimized. This in turn will help to increase the gross and net income of the farmers ultimately improving the overall benefit cost ratio of different crops. Although a lot of work has been done on economics of different crops, but the data are very scarce for 'Kandi' belt of Jammu region. In this backdrop the present study was conducted with the following objectives:

- To find out the different crops grown by the farmers in the *Kandi* area of Jammu region.
- To study the economics of different crops grown in the *Kandi* area of Jammu region.

METHODOLOGY

Locale of the study :

The present study covered four districts; Jammu, Kathua, Udhampur and Rajouri of Jammu region. From each district two blocks were selected. Two Panchayats were selected from each block thereby taking the total number of Panchayats to 16. In the last stage, 15 respondents were selected from each Panchayat thereby taking the total sample size to 240.

Economics of different crops :

It was calculated on the basis of the following assumptions:

Cost of cultivation :

The cost of cultivation involved both fixed costs as well as variable costs. The fixed cost (FC) refers to the value of services for fixed resources. Since they are not the function of output, they are same at all levels of production. Rent, interest on fixed capital, depreciation, taxes and wages of permanent labour constitute fixed cost.

Interests on fixed capital investment :

It includes the interest on fixed capital such as machinery, storage shed etc. It was worked out at the prevailing rate *i.e.* at 10 per cent taken for the duration of the crops.

Depreciation in fixed capital :

It is the loss in value of an asset as a result of the use, wear and tear, accidental damage and time obsolete. It was calculated as per productive life of the individual equipment.

$$\text{Annual depreciation} = \frac{\text{Original value of the asset} - \text{junk value}}{\text{Productive life of the asset}}$$

Estimated rental value of land (ERVL) :

It was taken as the rent paid for a similar land on a given area.

Variable cost :

Variable costs are those costs which are related to the outlay on variable resources. Since these costs are the production of output, they vary with the quantity of

production.

Interest on variable costs :

The interest on variable cost was worked out at the prevailing rate *i.e.* at 12 per cent taken for the duration of the crops.

Total cost :

These costs are the sum of total fixed costs and total variable costs. The total cost stands even when production is zero.

$$\text{Total cost} = \text{Total variable cost} + \text{Total fixed cost}$$

Gross returns were obtained by multiplying the main product and bye product with respective prevailing prices in the study area.

Net return :

Gross return minus total expenses of production is called net return. This was calculated by subtracting total cost from gross returns, *i.e.*

$$\text{Net returns} = \text{Gross returns} - \text{Total cost}$$

Benefit cost ratio :

Benefit cost (B: C) ratio was worked out by dividing gross returns with total cost

$$\text{B: C ratio} = \frac{\text{Gross returns}}{\text{Cost of cultivation}}$$

ANALYSIS AND DISCUSSION

A perusal of the data in Table 1 reveals that maize was grown as a pure crop by 90.41 per cent of the respondents whereas maize with cowpea as a mix crop was grown by 9.59 per cent of the respondents. Similarly in *Rabi*, wheat as a pure crop was grown by 83.33 per cent of the respondents whereas it was grown as a mix crop with mustard by 9.17 per cent of the respondents, respectively. Toria was grown by 9.58 per cent of the respondents, Til by 7.08 per cent, mash by 8.75 per cent and Til and mash as mixed crop by 10 per cent of the

Table 1: Distribution of respondents according to the crops grown (n=240)

Crops grown	No. of respondents	Overall percentage
Maize	217	90.41
Maize + Cowpea	23	9.59
Wheat	200	83.33
Wheat + Mustard	22	9.17
Bajra	240	100.00
Toria	23	9.58
Til	17	7.08
Mash	21	8.75
Til + Mash	24	10.00
Moong	32	13.33
Lentil	15	6.25

* Multiple responses

respondents. Moong was grown by 13.33 per cent whereas lentil was grown by just 6.25 per cent of the respondents.

Table 2 shows the area under different crops. Of the total cultivable area of 230.80 hectare in the selected four

districts, it was found that only 20.50 hectares was under pulse and oilseed crops. In some districts like Jammu and Rajouri, mash and moong were not cultivated even on one hectare. The same was true for others also. Toria, mustard

District	Net cultivable area	Mash	Moong	Toria	Mustard	Til	Lentil
Jammu	59.50	0.25	0.55	0.95	0.60	0.30	0.25
Kathua	57.25	1.10	1.00	1.50	1.65	0.40	0.20
Udhampur	58.90	0.85	1.55	0.75	0.95	1.90	1.15
Rajouri	55.15	0.95	0.65	1.10	0.90	0.85	0.15
Total	230.80	3.15	3.75	4.30	4.10	3.45	1.75

Crops	Total cost of cultivation Rs./ha	Gross returns Rs./ha	Net income Rs./ha	B:C ratio
Maize	23975.84	30662.36	6685.20	1.28
Wheat	21386.93	26270.33	4883.40	1.23
Bajra	15042.64	20452.91	5410.27	1.35
Mustard	17509.32	42850.00	25340.68	2.45
Toria	16512.43	39067.34	22554.91	2.32
Mash	17210.02	36433.73	19223.71	2.12
Til	17423.10	45468.33	28054.23	2.61
Til/Mash	17775.04	35033.33	17358.29	1.97
Cowpea	21744.33	40678.66	18934.33	1.92
Moong	18428.15	45863.65	27435.50	2.49
Lentil	19795.44	38663.87	18868.43	1.95

Crops	Total cost of cultivation Rs./ha	Gross returns Rs./ha	Net income Rs./ha	B:C ratio
Maize	22873.74	33111.51	10237.77	1.45
Wheat	19965.76	23500.58	3534.82	1.18
Bajra	15454.21	19880.74	4426.53	1.28
Mustard	16239.09	34928.00	18688.91	2.15
Toria	17245.10	32345.43	15100.09	2.24
Mash	17000.09	32380.00	15379.91	1.90
Til	17441.95	35973.33	18531.38	2.06
Til/Mash	17566.75	47833.33	30266.58	2.72
Cowpea	19854.57	37652.14	17797.57	1.87
Moong	18874.53	36685.57	17811.04	1.94

Crops	Total cost of cultivation Rs./ha	Gross returns Rs./ha	Net income Rs./ha	B:C ratio
Maize	24222.59	34057.14	9834.55	1.41
Wheat	21196.56	24770.75	3574.19	1.17
Bajra	14594.58	19388.89	4794.31	1.32
Mustard	25213.08	55220.00	30006.92	2.19
Toria	18945.34	34567.83	16456.32	2.31
Mash	15976.52	35333.33	19356.81	2.21
Til	15441.50	35833.33	20391.83	2.43
Cowpea	18953.46	35846.12	16892.66	1.89

and lentil were also cultivated on less than one hectare in Jammu district.

Economics :

Total cost of cultivation, gross returns, net income and b: c ratio per hectare of different crops :

The data in Table 3 reveal that total cost of cultivation per hectare was the highest for maize crop (Rs. 23,975.84). However, the gross return was highest in case of mustard (Rs. 25,340.68/ha) in case of marginal farmers. The data in the table further depict the benefit cost ratio of various crops in case of marginal farmers. In case of food crops, the benefit cost ratio was 1.28 for maize and 1.23 for wheat. The benefit cost ratio was highest in case of oilseed crops like mustard having b: c ratio 2.45, toria having b: c ratio 2.32. In case of other crops the benefit cost ratio was highest for Til (b: c ratio 2.61) followed by mash 2.12. The lowest b: c ratio was of cowpea (1.92).

The data in the Table 4 revealed that among the food crops maize gave the highest net returns (Rs. 10,237.77/ha) with a benefit cost ratio of 1.45. In case of other food crop in wheat the benefit cost ratio was 1.18. The oilseed crop, toria had the maximum benefit cost ratio of 2.24 followed by mustard having b: c ratio of 2.15. Similarly, in case of other crops the benefit cost ratio was highest for Til (b: c ratio 2.06) followed by mash with b: c ratio of 1.90. The lowest b: c ratio of 1.87 was that of cowpea. Where Til and mash were grown as a mixed crop, the benefit cost ratio stood at 2.72.

Table 5 analyses the cost of cultivation and gross returns of various crops in case of semi-medium farmers. In case of food crops, again maize had the highest cost of cultivation (Rs. 24,222.59/ha) and highest gross returns (Rs. 34,057.14/ha). As such the benefit cost ratio was 1:1.41 for maize and 1:1.17 for wheat. The benefit cost ratio was highest in case of oilseed crops like toria (b: c ratio 1:2.31), mustard (b: c ratio 1:2.19). Til has the highest b: c ratio of 1:2.43 followed by mash (1: 2. 1) and cowpea (1:1.89).

The data in the Table 6 show the overall average benefit cost ratio from crops. A cursory look at the table reveals that average gross returns from crops were rupees 35639.45 and the benefit cost ratio was 1:1.68. It means every one rupee invested gives one rupee and sixty eight paise back. Further, it shows that the percentage of variable costs in total cost of cultivation was 60.07 and the percentage of fixed cost was 39.93.

Conclusion :

The research study provides useful information about the crops grown in the *Kandi* area of Jammu region. The economic analysis of the various crops grown in this rain fed area of Jammu region gives an insight into the cost of cultivation of different crops. The findings of the study revealed that the

Table 6 : Average gross returns, net returns and benefit cost ratio from crops per hectare per household

Inputs/operations	Cost (Rupees)	% of total cost
Variable costs		
Seed	1823.63	8.59
Manures and fertilizers	645.80	3.04
Herbicides	366.71	1.73
Manual labour	4670.76	22.01
Animal labour	1541.05	7.26
Machine labour	2926.91	13.80
Total	12022.33	56.68
Interest on V.C	721.33	3.40
Total variable cost	12743.66	60.07
Fixed costs (F.C)		
Total depreciation	89.07	0.42
ERV* [*]	7977.88	37.61
Total	8066.95	38.02
Interest on F.C	403.35	1.90
Total fixed cost	8470.30	39.93
Total cost	21213.96	-
Gross returns	35639.45	-
Net returns	14425.49	-
B:C ratio	1:1.68	-

*Estimated rental value of land

food crops like maize and wheat had a much lower benefit cost ratio than pulses and oilseeds. Hiremath *et al.* (1984) estimated gross returns, costs and profits per acre of major crops in Malaprabha command area and they also reported that the net profit (Rs. 406.83/acre) in hybrid maize was found to be marginal with gross returns of Rs. 1082.22 per acre and total cost of Rs. 675.39. In the cultivation of hybrid jowar, farmers obtained net profit of Rs. 426.92 by incurring a total cost of Rs. 637.45 per acre. In this study also the lowest benefit crop ratio of maize and wheat from different categories of farmers was 1.28 and 1.17, respectively. In contrast to this, the highest benefit cost ratio was 2.61 for Til and 2.49 for Moong. Til and mash when grown as a mixed crop gave more returns from every rupee invested. Further, the study also showed that the percentage of farmers growing oilseeds and pulses was very low. Not more than 10 per cent of the respondents were growing these crops except Moong which was grown by 13.33 per cent of the respondents. Despite being highly remunerative the area under these crops was also low.

Recommendations :

The rain fed area is vital for food security of the country. Of the total geographic area of 329 m ha, 141 m ha (43%) was net cultivated area of which about 60 per cent was rain fed (Kumaraswamy, 2011). In Jammu and Kashmir 58.03 per cent of the area is rain fed (Anonymous, 2008). Therefore farmers

should be encouraged to cultivate their crops on scientific lines. If we look at the different costs involved in the cultivation of crops (Table 6) we find that 22.01 per cent of the total costs accounted for manual labour. This cost can be significantly reduced by scientific cultivation of crops. Similarly the expenses on manures and fertilizers (3.04%) and on herbicides (1.73 %) can also be reduced by following integrated techniques like integrated pest, weed and disease management. The practice of using animal dung as manure can reduce the amount being spent on chemical fertilizers which besides being harmful are costlier also. The study also came out with the result that a very less amount of area was under the pulse and oilseed crops. This is despite the fact that these crops are more remunerative and less labour intensive. Growing of such crops in the relatively short duration *Zaid* season can definitely augment the income of the farming community. Majority of the farmers are still being outside the net of financial institutions. These institutions are reluctant to give credit to the resource poor farmers. Others who have some kind of resources failed to do so because of the complexity of procedure in availing the credit. Agricultural insurance is another area which requires immediate attention. The farming community in India consists of about 121 million farmers of which only about 20 per cent avail crop loans from financial institutions and only three fourth of those are insured. The remaining 80 per cent (96 millions) are either self-financing or depend upon informal sources for their financial requirements (Raju and Chand, 2008). Most of the farmers were illiterate

and did not understand the procedural and other requirements of formal financial institutions and, therefore, shy away from them. As such the farmer's awareness has to be raised by the use of various mass media methods. It should be ensured that the financial institutions provide hassle free loans to the farming communities. The priority sector lending for agriculture sector should be strictly adhered to.

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