

Research Paper

Economic Aspects of Potato Cultivation in Sultanpur District of Uttar Pradesh

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ABSTRACT

The present study was carried out with objective to estimate cost and returns of potato under different size of sample farms in study area. The study is confined to Kadipur block of Sultanpur district of U.P. as it is one of the major potato producing block of the district with its favourable agro-climatic factor for Potato crop. A sample of 100 potato farmers comprises 85 marginal, 11 small and 04 medium farmers were selected by proportionate random sampling method from five villages. The required data were collected from random selected respondents by using of pre structured schedule for the estimation of per hectare cost of cultivation, income of potato and input-output ratio. The overall average cost of cultivation was estimated ₹ 82560.79 per hectare and net income was # 88993.96 with input-output ratio 1:2.08 which showed the profitability of crop. On the basis of finding of study, it is recommended that the study area is exceptionally potential for potato crop and it is economically viable.

HIGHLIGHTS

- ① The total cost of cultivation of potato was found higher on medium farms and also cost of production was higher than marginal and small farm size group of farms.
- ② Gross return and Net returns was higher on marginal farms compare to small and medium farm because of less increase in yield against the increased input factors at increasing size of farm. Input-output ratio was higher on marginal farms.

Keywords: Potato, cost, gross income, net income, input-output ratio

Agriculture plays a significant role in the process of economic development of any country, particularly in countries where per capita real income is low. Agriculture has helped countries to a greater extent in the process of their industrialization. Thus, agriculture development and industrialization are not alternatives but are complimentary and are mutually supporting with respect to both inputs and output. An increase in agricultural output and productivity tend to contribute substantially to an overall economic development of a predominantly agricultural and over populated country like India. Therefore, the level and pace of development in the country have been and still continued

to be significantly influenced by the pace of its agricultural development. Vegetable are rich and comparatively cheap source of vitamins and minerals. Their consumption is palatable, tasty, appetite-promoting, and helps in protection against some degenerative disease. Besides, vegetable have key role in neutralizing the acids produce during digestion of proteinous and fatty foods. The presence of large number of roughages present in

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them promotes digestion and prevents constipation. Potato is a major food crop, grown in more than 159 countries in the world. According to FAO (2019). In India, it is grown over an area of 26.46 million hectares with total production of potato about 320.77 million tonnes. Uttar Pradesh, West Bengal, Bihar, Madhya Pradesh, Gujarat, Punjab, Assam, Haryana, Jharkhand, Chhattisgarh, Karnataka and Maharashtra are the leading states growing potato on large scale. Uttar Pradesh is the major Potato producing State with 31.26% of production share, followed by West Bengal, Bihar, Gujarat and Madhya Pradesh with 23.29 %, 13.22%, 7.43% and 6.20% share respectively. (Ministry for Agriculture and Farmer Welfare, 2019-20). Potato is consumed by more than one billion people in the world. It is a high-quality vegetable cum food crop. Potato popularly known as the 'king of vegetables', has emerged as fourth most important food crop in India after rice, wheat and maize. Indian vegetable bushel is fragmented without potato. Potato is a healthfully better vegetable due than its palatable energy and consumable protein. It's anything but a vital piece of breakfast, lunch and supper among the bigger population. Being a short palatable protein in lesser span of contrasted with cereals like rice and wheat. Consequently, potato is viewed as a significant yield to accomplish nourishing security of the country.

Vegetables form the most important component of food of mankind, as they not only nutritive, but also indispensable for the maintenance of human health. Potato is a major world food crop and consumed by almost all the people in the world and half of them are in developing countries. It is the staple food in Europe and North America and almost a vegetable in rest of the world including India the diversified uses of potato cover fresh food, processed product, animal feed and raw material for industries.

Keeping in view the importance of the crop supported with above mentioned facts the present study entitled, "Economic Aspects of Potato cultivation in Sultanpur district of Uttar Pradesh" was conducted with following specific objectives:

1. To analyse the different type of cost involve in cultivation of potato.
2. To measure the farm profits received from the cultivation of potato.

METHODOLOGY

Purposive cum random sampling technique was used to select the 100 respondents, from 5 villages of Kadipur block of Sultanpur district. For the study all selected farmers were grouped in three categories marginal, small and medium. To justify the interpretation of all category of farmers proportionate random sampling technique was applied. A sum of 85 marginal, 11 small and 04 medium sizes of sample farms were contemplated. The essential information were collected for the year 2018-19 through personal interview with the help of pre-structured schedule for estimating the cost, return and profitability.

Analysis of data

The tabular analysis was used for interpretation of data with the help of following formula:

$$\text{Weighted average} = \frac{\sum W_i X_i}{\sum W_i}$$

Where,

X_i = Variables and; W_i = Weighted average

Cost Concepts

Cost A_1/A_2 : All actual expenses incurred in the potato cultivation.

Cost B_1 : Cost A + interest on value of owned fixed capital (excluding land).

Cost B_2 : Cost B_1 + rental value of owned land.

Cost C_1 : Cost B_1 + imputed value of family labour.

Cost C_2 : Cost B_2 + imputed value of family labour.

Cost C_3 : Cost C_2 + 10 percent of cost C_2 to account for managerial cost of inputs of farmers.

Profitability concepts

Total production: Main product and by-product.

Gross income = Value of main product + value of by product

Farm business income = Gross income – Cost A_1

Family labour income = Gross income – Cost B_2

Net income = Gross income – Cost C_3

$$\text{Input – Output ratio} = \frac{\text{Gross Income}}{\text{Total cost or Cost } C_3}$$

RESULTS AND DISCUSSION

Cost of cultivation of potato

The per hectare costs on various input factors in potato cultivation was worked out and its details are presented in the Table 1. The table indicates that on an overall average, per hectare cost of cultivation of potato was ₹ 82560.79. The cost of cultivation was observed higher on medium farms ₹ 92184.47 followed by small and marginal farms ₹ 86252.55 and ₹ 81630.16 respectively.

The further distribution of the cost on overall average, shows the maximum expenditure on total human labour i.e. 30.48 percent followed by the expenditure on seed 23.14, manure & fertilizer, irrigation and machinery charge corresponding to 7.54, 7.12, and 7.74, percent respectively. It is concluded from the data that costs of cultivation of potato had the negative relationship with the size of farms. Highest cost of cultivation on medium size of farms as compared to small and marginal size of farm occurred due to heavy expenditure on human labour and interest on fixed capital.

Structure of cost and income

The different cost concept like cost A_1/A_2 , B_1/B_2 , C_1 , C_2 and C_3 were considered for the analysis of the data. Similarly, the various income measures such as gross income, net income, farm business income

and family labour income were also calculated for the sample farms. The cost of production of potato ₹/quintal and input: output relationship has also been worked out on the basis of different costs.

Measure of cost and return of potato crop in study area

Per hectare costs and income from the cultivation of potato crop on different categories of farm were worked out and present in Table 2. The per hectare cost C_3 was worked to ₹ 81630.16 on marginal, ₹ 86252.55 on small and ₹ 92184.47 on medium farms with an overall average of ₹ 82560.79. This was because of the fact that use of variable inputs and investment cost comparatively decreased with the increase in farm size.

Per hectare gross income came to ₹ 171552.64 on overall average of farms. Per hectare gross income was maximum on marginal farms that were ₹ 171957.50 followed small and medium size group of farms i.e. ₹ 169675.00 and ₹ 168162.50 respectively. On an overall average net income, family labour income and farm business income per hectare were worked out to ₹ 88993.96, ₹ 109764.57 and ₹ 119434.20.

Input - Output ratio on marginal, small and medium farms were 1:2.11, 1:1.97, and 1:1.82 on cost C_3 . In respect of overall average of farm, input-output ratio was 1:2.08. It may be concluded that output

Table 1: Per hectare costs of cultivation of potato on different size group of sample farms (in ₹ /ha)

Sl. No.	Particulars	Size group of farms			Overall average
		Marginal	Small	Medium	
1	Human Labour	24685.62 (30.62)	27169.31 (62.31)	29913.75 (32.47)	25167.95 (30.48)
(a)	Family Labour	13453.89 (16.48)	12981.45 (15.05)	10040.31 (10.90)	13265.38 (16.07)
(b)	Hired Labour	11231.73 (13.76)	14187.86 (16.45)	19873.44 (21.57)	11902.57 (14.42)
2	Machinery charges	6298.09 (7.71)	6832.87 (7.92)	7156.81 (7.77)	6391.26 (7.74)
3	Seed	18964.21 (23.23)	19600.32 (22.72)	20652.39 (22.41)	19101.71 (23.14)
4	Manure and fertilizer	6174.44 (7.56)	6321.71 (7.33)	6983.56 (7.56)	6223.01 (7.54)
5	Irrigation	5841.78 (7.15)	6041.37 (7.01)	6289.31 (6.83)	5881.64 (7.12)
6	Plant Protection	564.32 (0.69)	664.12 (0.77)	678.98 (0.74)	579.88 (0.70)
7	Total working capital	49074.57 (60.12)	53648.25 (62.19)	61634.49 (66.89)	50080.07 (60.66)
8	Interest on working capital	2006.58 (2.46)	2145.93 (2.49)	2465.38 (2.68)	2040.26 (2.47)
9	Rental value of land	9000.00 (11.03)	9000.00 (10.43)	9000.00 (9.77)	9000.00 (10.90)
10	Interest on fixed capital	674.20 (0.83)	635.78 (0.74)	667.94 (0.68)	667.94 (0.81)
11	Sub total	74209.24 (90.91)	78411.41 (90.91)	83763.50 (90.91)	75053.65 (90.91)
12	Managerial Cost @10% of sub-total	7420.92 (9.09)	7841.14 (9.09)	8376.35 (9.09)	7505.36 (9.09)
Grand Total		81630.16 (100)	86252.55 (100)	92184.47 (100)	82560.79 (100)

Table 2: Cost concept wise costs and income from the production of Potato crop: ₹ /ha

Sl. No.	Particular	Size group of farms			Overall average
		Marginal	Small	Medium	
1	Cost A ₁ /A ₂	51081.15	55794.18	64099.87	52120.33
2	Cost B ₁	51755.35	56429.96	64767.81	52790.05
3	Cost B ₂	60755.35	65429.96	73767.81	61790.05
4	Cost C ₁	65209.24	69411.41	74808.12	66055.43
5	Cost C ₂	74209.24	78411.41	83808.12	75055.43
6	Cost C ₃	81630.16	86252.55	92184.47	82560.79
7	Gross income	171957.50	169675.00	168162.50	171552.64
8	Net income	90327.50	83422.45	75978.03	88993.96
9	Family labour income	111202.15	104245.04	94394.69	109764.57
10	Farm business income	120876.35	113880.82	104062.63	119434.20
11	Farm investment income	107422.46	100899.37	94022.39	102784.92
12	Yield (qtl./ha)	312.65	308.50	305.75	311.92
13	Cost of production (₹/qtl)	137.15	137.46	136.22	137.14
14	Input-output ratio				
	On the basis of C ₃	1:2.11	1:1.97	1:1.82	1:2.08

input ratio had the positive relationship with size of farms.

CONCLUSION

Per hectare cost of cultivation and yield of potato in medium farm size was higher as compared to marginal and small. The major items on working expenditure were seeds, human labour, irrigation charges, machinery charge, manure and fertilizer, etc. Higher cost of seeds, high cost of fertilizers and non-availability of hired labourers were found to be major production constraints. The use of inputs was carefully and economically extended by the potato farmer to increase the yield. The cultivation of potato in Kadipur block was a profitable proposition. This crop should be cultivated on a larger area gaining desired income for sustainable production of potato. The processing for value addition is the need of the hour and demand of the market, therefore, the government should encourage the local youth under Department of Micro, Small and Medium Enterprise (MSME) schemes.

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