ANALYSE COST AND RETURN OF POTATO IN PURNEA DISTRICT, BIHAR.

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Received May02, 2023 and Accepted May 17, 2023

Abstract: Potato is a significant cash crop that is grown in over 100 countries worldwide, including India. For this study, the researchers focused on the Purnea district in Bihar, selecting it purposively. The study randomly sampled 120 farmers, with 60 being marginal, 45 small, and 15 medium-sized farmers from selected villages in one block. The study found that the cost of potato cultivation was highest for medium-sized farmers (Rs. 96,378.40 per hectare), followed by small (Rs. 86,149.80) and marginal farmers (Rs. 88,449.50). The overall cost of cultivation was calculated to be Rs. 90,335.90 per hectare, with various cost concepts (Cost A1, Cost A2, Cost B1, Cost B2, Cost C1, and Cost C2) used by CACP. The study found that Cost A1 accounted for Rs. 64,846.76 per hectare of the total cost. Cost A1 and Cost A2 were the same since no land was taken on lease. Cost B1, Cost B2, Cost C1, and Cost C2 were calculated to be Rs. 65,555.21, Rs. 86,916.21, Rs. 73,691.12, and Rs. 95,052.12 per hectare, respectively. The cost of production per quintal of potato was found to be Rs. 459.90, Rs. 425.30, and Rs. 464.83 for marginal, small, and medium potato growers, respectively. The study found that the average yield of potato per hectare was 200.74 quintals. On average, potato growers received Rs. 132,591.43 per hectare as net income from cultivation. The B:C ratio, which indicates the profitability of investment, was observed to be 2.46 at the overall level. The most significant problem faced by potato growers in the study area was the lack of awareness regarding market prices of potato.

Keywords: cost of production, CACP, farm income measures, Benefit-cost ratio.

Potato is a major food crop, grown in more than 100 countries in the world. According to FAO (2014), potato is consumed by more than one billion people in the world. Potato (*Solanum tuberosum L.*) popularly known as "The king of vegetables". Potato has become the fourth most important food crop in India, following rice, wheat, and maize **(Borah et al 2016)**. India produced about 54 million tonnes of potatoes and the country had second rank in the world in year 2021. China is on the top position in production of potato. Potato prices remain low during December to February and start rising afterwards and reach maximum during the months of October and November. Indian government has implemented several policies to support potato marketing in the country, including providing subsidies for storage and transportation infrastructure, and setting up market yards where farmers can sell their produce directly to buyers. Overall while potato marketing in India can be challenging, there are many opportunities for farmers to access new markets and improve their profitability through better storage and marketing practices **(Pandey et. al. 2017).** The potato production fluctuates every two to three year besides production increases at increasing rate with increase of prices in the market. It was also found in this study that the large size groups of farmers have much financial resources to invest the variable inputs like fertilizers, irrigation, plant protection and improved varieties whereas the cultivators of small size groups handicapped in investing more on these item **(**Ramchandra et. al. 2012**).**

RESEARCH METHODOLOGY

Selection of the district: In order to study "Production and Marketing of Potato" the present study was undertaken in Purnia district of Bihar. The district was purposively selected because this district had abundant Potato production.

Selection of block: Purnea district have total 14 blocks, among which Purnea East block was selected for study due to the Farmer's land holding capacity and its high production of potato.

Selection of Villages: There 5 per cent villages were selected randomly Out of 77 villages, Namely Harda, Ranipatra, Barsauni, Rampur, Gangaili Bazar.

Farm income Measures

Gross income: This is the total value of potato production during the year, valued at average prices for the year.

Net income: This was calculated by deducting Cost C2 from gross income.

Farm business income: This measures the return to the producer and their family labor and investment on owned land and capital. It was calculated by deducting Cost A1 from gross income.

Family labour income: This measures the return from potato production to family labor. It was obtained by deducting Cost B2 from gross income.

Benefit-cost ratio (BCR): This is the ratio of total gross return to the total cost.

Cost concepts as per the CACP classification

The cost of cultivation standard method of cost cultivation employed by commission for agricultural costs and prices (CACP), directorate of economics

and statistics, government of India was adopted. These include Cost A1, Cost A2, Cost B1 Cost B2 Cost C1, Cost C2, and CostC3. The various costs in this study were determined using the following method:

Cost A1: All variable cost: consists of following 14 costs items:

1. Value of hired human labour.
2. Value of owned bullock labour.
3. Value of hired bullock labour.
4. Value of owned machine labour.
5. Hired machinery charges
6. Value of fertilizers.
7. Value of manure (produced farm and purchased).
8. value of seed, which includes both farm-produced and purchased seed.
9. Value of insecticides, pesticides and fungicides.
10. Irrigation charges (both owned and hired tube wells pumping sets etc.).
11. Canal water charges.
12. Land revenue, cesses and other taxes.
13. Depreciation on farm implements and machinery
14. Interest on the working capital.

Cost A2: This is the sum of Cost A1 and the actual rent paid for leased-in land.

Cost B1: The sum of Cost A1 and the interest on the value of owned fixed capital assets (excluding land).

Cost B2: This is the sum of Cost B1 and the rental value of owned land.

Cost C1: This is the sum of Cost B1 and the imputed value of family labour

Cost C2: This is the sum of Cost B2 and the imputed value of family labour.

RESULTS AND DISCUSSION

Table- 1. Cost of input factors per ha. of potato in different size groups

Input factor	Marginal (0-1 ha)	Small (2-4ha)	Medium (4 and above ha)	Overall Average
Operational cost				
Human labor	13489.53 (15.25)	11952.84 (13.87)	17031.16 (17.67)	14157.84 (15.67)
Hired	4748.52 (5.36)	4538.71 (5.26)	4132.45 (4.28)	4473.22 (4.95)
Family labor	9731.01 (11.00)	9454.13 (10.97)	5222.59 (5.41)	8135.91 (9.00)
Machine charges	4647.72 (5.25)	2642.14 (3.06)	2501.53 (2.59)	3263.79 (3.61)
Tubers (seeds)	16628.05 (18.79)	20242.15 (23.49)	26998.30 (28.01)	21289.5 (23.56)
Manures	2678 (3.02)	3040.41 (3.52)	2736.60 (2.83)	2818.33 (3.12)
Fertilizer	6840.27 (7.73)	5751.49 (6.67)	4110.58 (4.26)	5567.44 (6.16)
Plant protection measures	2220.86 (2.51)	1765.64 (2.04)	1486.32 (1.54)	1824.27 (2.01)
Irrigation charges	2937.66 (3.32)	2005.81 (2.32)	1696.65 (1.76)	2213.37 (2.45)
Interest on operational cost	1279.25 (1.44)	1036.08 (1.20)	994.12 (1.03)	1103.15 (1.22)
Total operational cost	**65200.60 (73.71)**	**62429.40 (72.46)**	**66910.30 (69.42)**	**64846.76 (71.79)**
Overhead cost				
Land revenue	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
Rental value of own land	21000.00 (23.74)	20503.00 (23.79)	25580.00 (26.54)	22361.00 (25.86)
Depreciation	1578.77 (1.78)	2292.00 (2.66)	2742.77 (2.84)	2204.51 (2.44)
Interest on fixed capital	470.00 (0.53)	719.00 (0.83)	936.33 (0.97)	708.44 (0.78)
Land revenue tax	200.13 (0.22)	206.40 (0.23)	209.00 (0.21)	205.17 (0.22)
Total overhead cost	**23248.90**	**23720.40**	**29468.10**	**25479.13**

	(26.28)	**(27.53)**	**(30.57)**	**(28.20)**

Particulars	**Marginal (0-1ha)**	**Small (1-2 ha)**	**Medium (2-4 ha)**	**Overall**
Cost of Cultivation	88449.50	86149.80	96378.40	90335.90
Production (Q/ha)	192.32	202.56	207.34	200.74
Average price (Rs/Q.)	1025	1100	1200	1108.33
Gross Income	197128	222816	248808	222917.33
Net Income	**108678.50**	**136666.20**	**152429.60**	**132591.43**
B:C – Ratio	**1: 2.23**	**1:2.58**	**1:2.58**	**1:2.46**
Cost of Production (Rs/Q)	459.90	425.30	464.83	421.51
Total cost	**88449.50 (100)**	**86149.80 (100)**	**96378.40 (100)**	**90335.90 (100)**

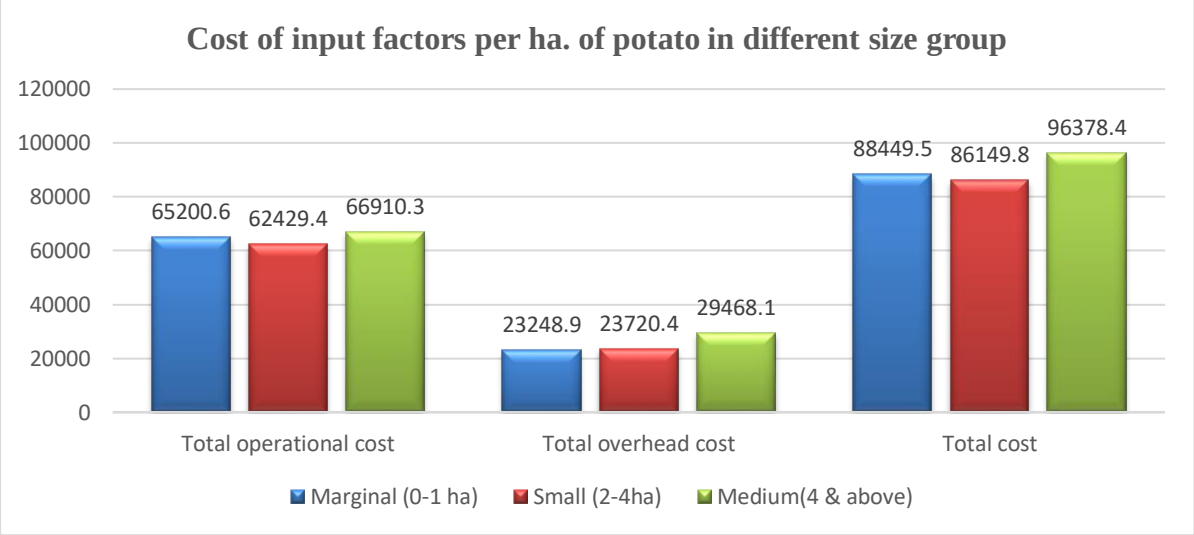


Fig 1: Cost of input factors per ha. of potato in different size group

Fig 1 Revealed that among different size farms of farms during cultivation time, total cost incurred by the medium farmers were high Rs. 96378.40/ha as compared to small farmers Rs. 86149.80/ha and marginal farmers were less Rs. 88449.50/ha in different size of farms group. Out of the total cost, operational accounted for 73.71 per cent, 72.46 per cent and 69.42 percent, whereas overhead cost accounted for 26.28 per cent, 27.53 per cent, and 30.57 per cent in marginal, small and medium farm size households respectively.

2. Cost and Returns in Potato Production

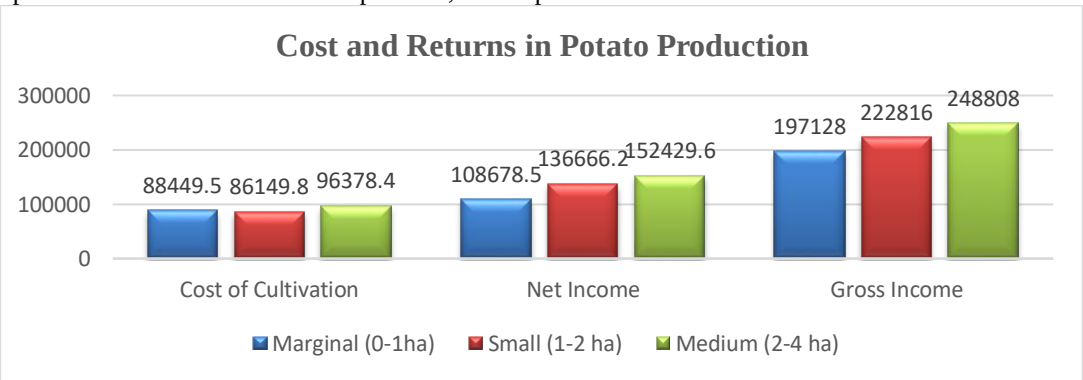
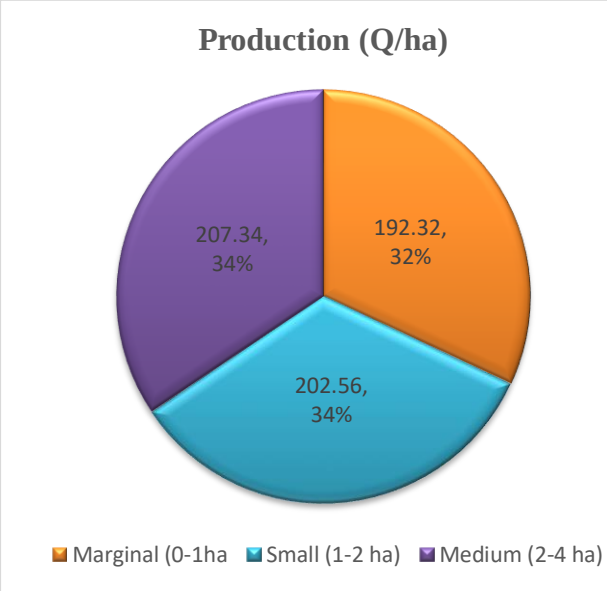
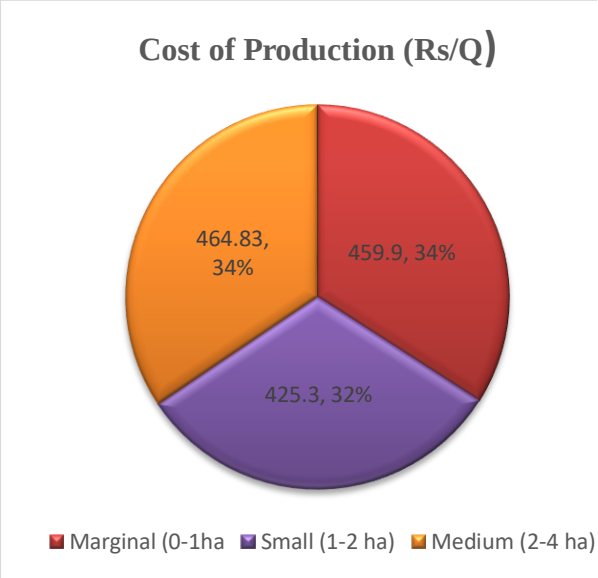


Fig 2-Cost and Returns in Potato Production

Parameter like cost of production Rs/Qt. of potato was found to be 459.90, 425.30, and 464.83 in case of marginal, small, medium potato growers respectively. Cost of cultivation, gross income and net return of potato cultivators were found to be higher in case of medium farm household as compared to those in case of small, and marginal farms households. On the average, per hectare yield of potato came to 200.74 quintals. It is revealed from the table 3.2 that on an average potato growers received Rs. 132591.43 per hectare as net income from cultivation of potato. Further





, this table shows that on an average benefit-cost ratio was 1:2.46.

Fig 2.1: Production and Cost of production

Table 3: Cost of Potato of Potato in terms of cost concepts (Rs/ha.)

Sl. No.	Costs/ Category	Marginal (0-1 ha)	Small (1-2 ha)	Medium (2-4 ha)	Overall Average
I.	Cost A1	65200.60	62429.40	66910.30	64846.76
II.	Cost A2	65200.60	62429.40	66910.30	64846.76
III.	Cost B1	65670.60	63148.40	67846.63	65555.21
IV.	Cost B2	86670.60	83651.40	90426.63	86916.21
V.	Cost C1	75401.61	72602.53	73069.22	73691.12
VI.	Cost C2	96401.61	93105.53	95649.22	95052.12

The various cost concepts (Cost A1, Cost A2, Cost B1, Cost B2, Cost C1 and Cost C2) used by CACP have been worked out and presented in table 3.3. As perusal of table Indicates that overall, cost A1 accounted 64846.76 per hectare of total cost. There was no land was taken on lease hence, Cost A1 and cost A2 were found to be same. Cost B1, cost B2, cost C1 and C2 was found to be 65555.21, 86916.21, 73691.12 and 95052.12 per hectare respectively.

Conclusion:

The cost of cultivation shown increasing trend from marginal to large farmer. It due to fact that large size of holding farmer could incur more expenditure on modern farm input like quality of seed, hired labor, manure, fertilizers, plant protection and machine labor charges etc. cost of production Rs/Qt. of potato was found to be 459.90, 425.30, and 464.83 in case of marginal, small, medium potato growers respectively. An average potato growers received Rs. 132591.43 per hectare as net income from cultivation of potato. The cost of input factor was very high in marginal as compared to small and marginal farmers because they are not that much rich to purchase. The Study suggested that the farmers burn more cost on the machine charges and chemical fertilizer in the potato, if farmers save it and reduce the machine charges and chemical fertilizer cost than their operational cost will reduce, which improve their return on investment. The government make proper road ways so the farmers can easily go to the market and have to charge less on transport. There should be

establishment of market committee of the respective area and day to day functioning of market should be supervised by the officials of the market committee.

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