

Potato: The Poor's Man Strength Enhancing Net Farming Income Through Institutional Agriculture Credit

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Abstract

A research was done on potato cultivation through institutional agricultural credit. Potato crop is an important family crop. It is one of the major vegetable crops in India and holds an important place among food crops and provides staple food for millions of people from many parts of the world. Various inputs, such as human labor, machine power, expenditure on seeds, potato farming, fertilizer and fertilizer, irrigation and plant protection chemicals were seen to increase, while family use after credit utilization status at their respective levels before credit utilization status. Expenditure on labor and bull labor has decreased. Thus after the credit utilization situation, the total cost of potato cultivation increased by 23.01 per cent to Rs 90.972 per hectare. Potato yield was found to be 212 qt in case of credit use. Per hectare, which increased to 239 qt. Per hectare after credit utilization status. Yield growth was estimated at 12.52 percent. In addition, the net profit of farmers from potato cultivation was found to be increasing from Rs. 44268 per hectare after credit utilization condition, in the case of credit utilization Rs. 58264 per hectare. Thus, there was a 31.61 percent increase in net returns received after the credit usage condition compared to the credit usage condition before. The high net profit realized after the credit utilization situation from potato was due to higher yield and better price received by the farmers.

Key words: Potato, debt, total cost of cultivation and net agricultural income.

Introduction

Potato (*Solanum tuberosum* L.) is one of the important cash crops of the family Solanaceae. It was introduced to India in the 17th century by Portuguese merchants or the British people of the Peruvian-Bolivian region in the Andes (South America). It is one of the major vegetable crops in India and holds an important place among food crops and provides staple food for millions of people from many parts of the world. In India, there is a huge demand and supply

of this crop, which is 47.5 million tonnes and 51.3 million tonnes, respectively. And as such it contributes significantly to exports (395748.12 million tonnes) and revenue (Rs. 41182.5 lakhs) as compared to other food crops. The largest importer of potatoes from India is Nepal, which imports 2.74 million tonnes at 20301.37 lakhs. India accounts for 11–12 percent of world potato production and is the second largest producer after China. India produces about 43.8 million tonnes of potatoes from an area of 2.13 square meters. Among the states, Uttar Pradesh is the leading state with an annual production of 15.55mt from 0.61mha area, but productivity is highest in West Bengal (29.9 million tonnes / ha) (Anon., 2018). Bihar production of 7.7t from 0.3mha area. Has been doing. . The importance of potatoes as virtues as a staple food was declared by FAO chief 2008 as the 'International Year of Potatoes' and corrected as a 'future food' due to its high nutritional value content of energy (77 calories). Identified, carbohydrate (17.49 g), protein (2.05 g), total fat (0.10 g), cholesterol (0 mg) and dietary fiber (2.1 g) (Anonymous, 2018). Potatoes have a high potential to generate revenue to farmers and require high capital to be a highly mechanized crop. Therefore, institutional agricultural credit plays an important role in potato production, especially in developed regions. North-East region of Bihar. With this view, this research has been done in Madhubani district of Bihar to find out the effect of institutional agricultural credit on net agricultural income.

Impact of Institutional Agricultural Credit on Net Agricultural Income

The effect of institutional agricultural production loans on net agricultural income was estimated by comparing costs and returns in crop cultivation of lender farmers before and after using institutional agricultural production loans. Cost and return were calculated using cost concepts as given by Commission for Agricultural Costs and Prices (CACP).

CACP Cost Concept

CACP cost concepts are widely used because of their relevance in the decision-making process. This means that these costs serve to expand the size of the farm, to purchase capital assets expected in the long run, and as expected inputs in the short term. For example, variable costs have an impact on the level of production in the short term, on the other hand decisions such as expanding farm size, buying durable assets, etc. are based on total costs. Crop cost is divided into various cost components, such as cost A1, A2, B1, B2, C1, C2, C2 * and C3.

Cost A₁: The following items are included in cost A₁.

1. Wages of hired humanlabour.
2. Wages of permanent labour.
3. Wages of contract labour.
4. Wages of hired bullocklabour.
5. Imputed value of owned bullocklabour.
6. Charges of hired machinery.
7. Imputed value of owned machinery.
8. Markets rate of manures and fertilizers.
9. Markets rate of seeds.
10. Imputed value of owned seeds.
11. Imputed value of owned manures.
12. Market value of pesticides, herbicides, hormones, etc.
13. Irrigation charges.
14. Land revenue, cess and other tax
15. Depreciation on farm machineries, equipments, farm buildings, irrigation structures, etc.
16. Interest on working capital.
17. Miscellaneous expenses (value of other items which are used up in current production).

Cost A₂: Cost A₁ + Rent paid for leased in land.

Cost B₁: Cost A₁ + interest on value of owned capital assets (excluding land).

Cost B₂: Cost B₁ + imputed rental value owned land (net of the land revenue) and rent paid for leased-in land.

Cost C₁: Cost B₁ + imputed value of family labour.

Cost C₂: Cost B₂ + imputed value of family labour.

Cost C₂*: Cost C₂ estimated by taking into account statutory minimum wage or actual wage rate, whichever is higher.

Cost C₃: Cost C₂* + 10 % of Cost C₂* on account of managerial function performed by farmers.

Gross return

The returns of each selected crops were calculated by multiplying the physical production of the main and by-products with their current year's prices. Calculated by adding returns from crop to main and by-product gross returns.

Symbolic,

$$GR_{ij} = [y_{ij} * p] + [y_{ij} * p]$$

where,

G_{iz} = gross profit from i th crop,

Y_{ij} = physical production of main product from i th crop, y_{ij} = physical production of by-product from i th crop,

P_{ai} = prevailing price of main produce of i th crop, P_{ai} = current price of byproduct of i th crop and i = paddy, wheat, maize and potato.

Farm income measures

These are returns on various costs. Various income measures are obtained using cost concepts. These measures include agribusiness income, family labor income, net agricultural income, agricultural investment income, etc. Agricultural income measures were estimated using the following formulas.

1. General Business Income = Gross Income - Cost A2
2. Generally Labor Income = Gross Income - Cost B2
3. Net Farm Income = Gross Income - Cost C3
4. General investment income = farm business income - wages of family labor.

Level of input in potato farming before and after using institutional agricultural credit

The level of input use in potato farming is given in Table 1. An indication of the table indicates that human labor use before and after credit utilization conditions was 1515 man per hectare and 173 man days per hectare, respectively, which was estimated at 13.07 percent after credit utilization status. Will be increased. The C F ox labor levels before and after credit utilization conditions were 46.07 hours per hectare and 30 hours per hectare, respectively, and

were found to be as low as 34.88 percent after the credit utilization conditions. The machine power utilization was increased from 7.28 hours per hectare to 24 hours per hectare before the credit utilization condition and the increase was estimated to be 229.77 percent. Seed use per hectare with an increase of 16.02 percent, from 1185.43 kg per hectare to 1375.32 kg PE before credit utilization

Table 1: Input use levels in Potato cultivation before and after using the institutional agriculture credit

(Unit/ha)

Sl.No.	Inputs	Before	After	Change (%)
1.	Human Labour (man days)	153	173	13.07
2.	Bullock Labour (hours)	46.07	30	-34.88
3.	Machine Power (hours)	7.28	24	229.67
4.	Seed (Kg)	1185.43	1375.32	16.02
5.	Manure (qtl)	32.43	38.20	17.80
6.	Fertilizer (Kg)	320	430	34.37
(i)	Urea (Kg)	160	180	12.50
(ii)	DAP (Kg)	60	100	66.67
(iii)	MOP (Kg)	100	150	50.00
7.	Plant Protection Chemicals (Kg)	6.44	10.47	62.58
8.	Irrigation (hours)	21.56	28.47	32.05

Potato cultivation costs before and after using institutional agricultural production credit

The various costs incurred in potato cultivation before and after using the component are returned and are given in Table 2. A fraction of the table shows that the total cost of cultivation of potato crop increased from Rs 79028 to Rs 9.972 per credit after use. Hectare. This increase in total cost of potato cultivation was due to increase in expenditure on seeds, manure and fertilizer, irrigation and plant protection chemicals. Spending on human labor on rent increased from Rs. In the event of using credit before 12856 per hectare, Rs. 18,500 per hectare after the credit utilization situation was estimated to be 43.89 percent. Spending on human labor on rent was found to be 16.27 per cent of the total cost before the credit utilization condition and 19.03 per cent of the total cost after the credit utilization condition. The credit utilization situation and expenditure on family labor before Rs was found to be Rs.8.8641 per hectare from 34.49 per cent. 5660 per hectare after loan utilization status. Expenditure on family labor was 10.93 percent of the total cost before the credit utilization condition, which decreased to 5.82 percent after the credit utilization condition. Spending on bull labor also decreased by 54.62 percent from Rs. 764 per hectare before credit utilization status and Rs. 254 per hectare after credit utilization status. Expenditure as a percentage of total cost before the credit utilization condition was 3.50, while it was 1.29 percent after the institutional agricultural production credit utilization condition. Expenditure on machine usage after credit utilization was increased by 229.57 per cent from Rs. 456 per hectare to Rs. 4800 per hectare per hectare. Spending on machine power was 1.84 percent of the total cost before the credit usage situation, which increased to 4.94 percent after the credit situation. Spending on seeds was increasing by about 60 percent from Rs. 18967 per hectare in credit use condition, after the loan utilization rate of Rs. 30257 per hectare. The ratio of expenditure on seeds as a percentage of total cost was 24.00 before the credit utilization position, which increased to 31.12 percent after the credit situation. The amount of expenditure on fertilizers and fertilizers is increasing by 41.36 percent and 41.18 percent by Rs. 6486 per hectare and Rs. 3125 per hectare, respectively in the event of credit utilization of Rs. 9168 per hectare and Rs. 4412 per hectare, respectively after credit utilization status. Expenditure on irrigation and plant protection chemicals were increasing by 32.06 per cent and 62.63 per cent, respectively, following the credit utilization situation. Expenditure on occupied irrigation and plant protection chemicals was 2.73 percent and 1.47 percent of the total cost, before the credit utilization condition, which increased to 2.93 percent and 1.94 percent respectively after the credit utilization condition.

Table 2: Cost of Potato cultivation before and after using institutional agriculture credit
(Rs./hectare)

Sl. No.	Cost items	Potato		
		Before	After	Change (%)
1.	Hired Human Labour	12856 (16.27)	18500 (19.03)	43.89
2.	Bullock Labour	2764 (3.50)	1254 (1.29)	-54.62
3.	Machine Power	1456 (1.84)	4800 (4.94)	229.57
4.	Seed	18967(24.00)	30257 (31.12)	59.52
5.	Manure	6486 (8.21)	9168 (9.43)	41.36
6.	Fertilizer	3125 (3.95)	4412 (4.54)	41.18
7.	Irrigation Charges	2156 (2.73)	2847 (2.93)	32.06
8.	Plant Protection	1159 (1.47)	1884 (1.94)	62.63
9.	Working Capital	48971(61.97)	69022(71.00)	40.94
10.	Interest On Working Capital	1224 (1.55)	1725 (1.77)	40.94
11.	Land Revenue and Other Taxes	62 (0.08)	62(0.06)	0.00
12.	Depreciation On Farm Assets	748 (0.95)	748(0.77)	0.00
13.	Cost A ₁	49719(62.91)	69771(71.77)	40.33
14.	Rental Value Of Own Land	11430 (14.46)	11430(11.76)	0.00
15.	Cost A ₂	49719(62.91)	69771(71.77)	40.33
16.	Fixed Capital (14+15+17+18)	12241(15.49)	12241(12.59)	0.00
17.	Interest On Fixed Capital	696 (0.88)	696(0.72)	0.00

18.	Cost B ₁	50415(63.79)	70467(72.49)	39.77
19.	Cost B ₂	61845(78.26)	81898(84.24)	32.42
20.	Family Labour	8641(10.93)	5660(5.82)	-34.49
21.	Cost C ₁	59056(74.73)	76127(78.31)	28.90
22.	Cost C ₂	70486(89.19)	87557(90.06)	24.22
23.	Cost C ₂ *	71844(90.91)	88378(90.91)	23.01
24.	Cost C ₃	79028(100.00)	97216(100.00)	23.01

Note: Figures in parentheses indicate percentage share in total cost of cultivation.

Working capital in potato farming has increased by 40.94 per cent to Rs 4094 per hectare after institutional use, credit utilization situation, which is Rs.69022 per hectare before the credit utilization situation. Working capital as a proportion of total cost increased from 61.97 percent to 71.00 percent before the credit utilization situation in the credit utilization condition. The total cost of potato cultivation before credit utilization status was Rs. 79028 per hectare was estimated to be Rs 9.972 per hectare after the credit utilization situation. This increase in total cost of potato cultivation was estimated at 23.01 percent.

Returns obtained from potato cultivation by farmers taking loans before and after taking loans

The returns obtained in potato cultivation over cost are shown in Table 3. The table shows that potato yield is increasing by 12.52 percent from 212Q. Per hectare before credit utilization status to 239 Qt. Per hectare after credit utilization status. The table also shows that the price received by the farmers for their produce is increasing by 12.07 per cent from Rs.650 per quintal to Rs80 per quintal before the credit utilization position after the credit utilization situation.

Table3: ReturnsreceivedfromPotatocultivationbyloaneefarmersinbefore and after credit usesituations

Sl. No.	Output/Income	Potato
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		Before	After	Change (%)
1.	Main product (Qt. per ha)	212	239	12.52
2.	Price Main product (Rs./qtl)	580	650	12.07
3.	Gross returns (Rs./ha)	123296	155480	26.10
4.	Farm business income (Rs./ha)	73577	85709	16.49
5.	Family labour income (Rs./ha)	61451	73583	19.74
6.	Family investment income (Rs./ha)	64937	149820	130.71
7.	Net return (Rs./ha)	44268	58264	31.61

Further, the gross return from potato cultivation before the credit utilization situation was Rs.123296 per hectare, which reached Rs.155480 per hectare after the credit utilization condition, which was found to be 26.10 percent increase. . Net yield derived from potato cultivation also increased from Rs. 44828 per hectare to Rs. 58264 per hectare. This increase was estimated to exceed 31.61 per cent of net profit in the event of debt growth. The analysis of the table shows that the increase in gross returns as well as net returns was mainly due to the production and price increase of potato. The table also shows that the percentage increase in net returns was greater than the percentage increase in gross returns because the percentage increase in gross returns offset the percentage increase in farming costs. It can be inferred that the institutional farm loan assistance given to farmers not only allowed them to use more inputs, but also gave a choice of inputs to each other. Furthermore, the loan not only enabled the farmers to achieve higher yields, but also received better prices for their produce and higher net profits from the crops they grew.

Impact of Income Institutional Agricultural Production Credit on Net Agricultural Income

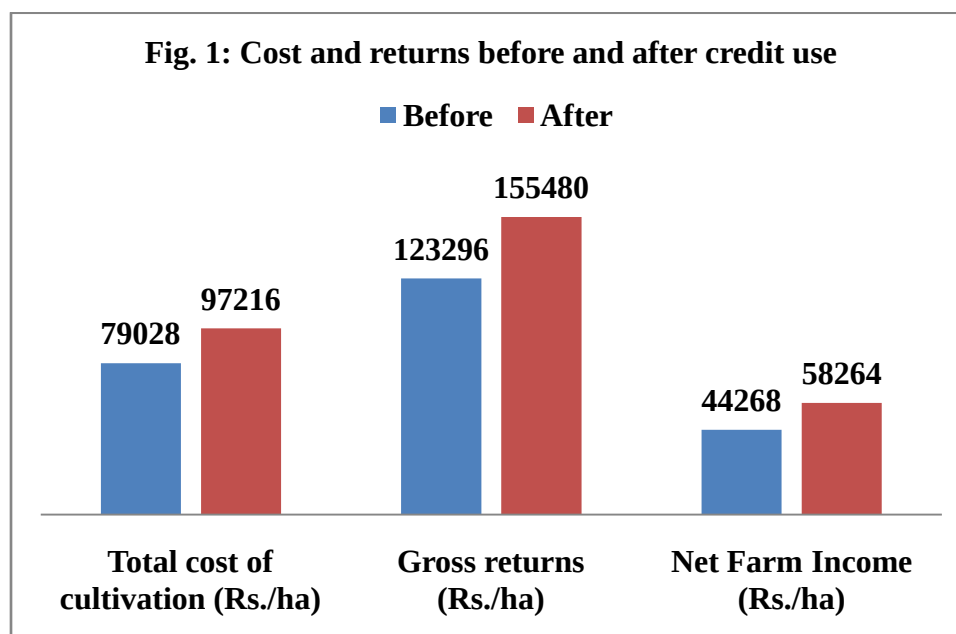
To assess the impact of institutional agricultural production credit on net agricultural income, before and after agricultural credit utilization conditions, the major crops cultivated by farmers include cost of cultivation, gross returns, net agricultural income and net of more than one rupee.

Changes in returns. The magnitude changes and percentage changes with respect to potato are presented in Table 4.

Table 4: Impact of institutional agriculture credit on Net Farm Income

Crop	Cost/Return	Before Using	After Using	Change (%)
Potato	Total cost of cultivation (Rs./ha)	79028	97216	23.01**
	Gross returns (Rs./ha)	123296	155480	26.10****
	Net Farm Income (Rs./ha)	44268	58264	31.61**
	Net Return over one-rupee expenditure	0.56	0.60	7.02

Note: *, ** and **** significant at 1 per cent, 5 per cent and 10 per cent level, respectively.



A section of the table and figure indicates that the cost of potato cultivation before the agricultural credit utilization situation was Rs. 79028 per hectare, which has increased to Rs. 97216 per hectare. This increase was found to be 23.01 percent. The net agricultural income received by potato growing farmers after agricultural credit utilization was Rs. 58264 per hectare, which was about 32 percent higher than the pre-agricultural credit utilization situation. In addition, potato cultivating farmers received Rs. 0.60 net return at the expense of one rupee, which was 7.02 per cent higher than the agricultural loan utilization position (Rs. 0.56).

Conclusion

Expenditure on various inputs in potato farming, eg, human labor, machine power, seeds, manures and fertilizers, irrigation and plant protection chemicals, has increased, while spending on family labor and bull labor has been a credit usage situation since their use. There has been a decrease in the level of credit utilization before the situation. Thus after the credit utilization situation, the total cost of potato cultivation increased by 23.01 per cent to Rs 90.972 per hectare. Potato yield was found to be 212 qt in case of credit use. Per hectare, which increased to 239 qt. Per hectare after credit utilization status. Yield growth was estimated at 12.52 percent. In addition, the net profit of farmers from potato cultivation was found to be increasing from Rs. 44268 per hectare after credit utilization condition, in the case of credit utilization Rs. 58264 per hectare. Thus, there was a 31.61 percent increase in net returns received after the credit usage condition compared to the credit usage condition before. Higher net profit was realized due to higher yield and better price received by farmers after the credit utilization situation from potato.

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