

# Impact of Kisan Credit Card (KCC) Scheme on Input Use: An Economic Analysis of Non-Basmati Rice Crop

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## Abstract

The Kisan Credit Card (KCC) scheme implemented for fulfilling the short term credit need of farmers was assessed for its impact on non-basmati rice production in R.S. Pura block of Jammu district. The primary data were collected by interviewing the Kisan credit Card holders as well as non-holders directly through pre-tested schedule. The farmers were categorised into small, medium and large farmers and economics of non-basmati rice crop was estimated. Two criteria were applied for assessing the impact of KCC scheme on non-basmati rice cultivation; firstly, a comparison was made between KCC and non-KCC holders and secondly, a comparison of data from same farms was made pre and post use credit drawn under KCC. The total cost of non-basmati rice cultivation was found to be higher in case of KCC beneficiaries by 5.78 per cent as compared to non-KCC beneficiaries. The productivity, net profit, farm business income, farm labour income of non-basmati rice was also higher in case of KCC beneficiaries by 7.97, 2.41, 1.95 and 3.10 per cent respectively as compared to non-KCC beneficiaries. The cost of all the inputs of non-basmati rice has shown significant difference between farms of KCC and non-KCC beneficiaries. The total cost of non-basmati rice, after drawing and using credit under KCC increased by 25.35 per cent whereas the productivity and net profit increased by 10.90 and 52.42 per cent respectively. The results indicate significant improvement in expenditure on input use, yield and profitability of non-basmati rice after use of credit under KCC scheme.

## Keywords:

The Kisan Credit Card (KCC) scheme was introduced in 1998-99 to provide farmers a cheap source of institutional credit. It was aimed to act as an instrument which would allow farmers to purchase agricultural inputs like seeds, fertilizers, pesticides etc. It was always argued that formal financial institutions failed to reach the poorer sections of the rural society (Rao and Priyadarshini (2013). Kisan Credit Card has emerged as an innovative and indispensable credit delivery mechanism (Bhatt 2012). The number of farmers covered under KCC scheme has increased over the years but its feedback, utility and effectiveness remains a matter of discussion and research (Patel, 1999). The cost of cultivation as a whole significantly influenced the credit requirement

under KCC scheme (Patra & Sahu 2010). The total cost of credit as a percentage of borrowed amounts was found to be higher in the non-Kisan credit card category (Sajane *et al.* 2011). Banks also require a clear understanding of mechanism of credit disbursement under KCC scheme for increasing its effectiveness (Dhanabhakya & Malarvizhi, 2012). The majority of farmers were found to adopt KCC scheme because of crop insurance benefits attached to it (Parwate *et al.* 2012). Several limitations of KCC scheme were also found in various studies. Agriculture plays a very prominent role for development of economy of Jammu & Kashmir State. Around 65 per cent of the population in the state gets livelihood directly or indirectly from the agriculture and allied sectors.

Since inception of the scheme up to March 2012, banking system has issued 124365 numbers of KCCs in the state of Jammu & Kashmir.

The real farm level impact of KCC scheme would be evident from any visible shift in expenditure on inputs under different crops. Therefore, a study was conducted to analyse whether there is any change or shift in expenditure on inputs under cultivation of rice other than basmati in Jammu district of Jammu & Kashmir.

## Materials and Methods

The present study was conducted in R.S. Pura block of Jammu district of Jammu & Kashmir state in year 2012-2013. The block was chosen purposively due to the maximum number of Kisan credit cards issued and highest area under rice cultivation. Basmati of R.S. Pura block of Jammu region is world famous

for its high aroma. However, a large area has also been covered under varieties of non-basmati rice which includes coarse varieties such as Jaya, PC 19, IET 1410 (Saket 4), K 39, Giza 14, K-332 etc. and hybrid varieties such as PHB 71, PA 6444, PA 6129, Pusa RH 10 etc. (Gupta *et al.*). The primary data were collected by survey method by interviewing the Kisan credit Card holders as well as non-holders directly through pre-tested schedule. A list of KCC holders was collected in the year 2012 from R.S. Pura branch of Jammu and Kashmir Bank Ltd. The farmers were arranged according to their land holdings and divided into marginal, small and large categories. Ten farmers from each category were then randomly selected to collect the relevant data for the study. Another sample of 30 farmers was randomly selected from a list of non-KCC holders prepared for the same villages as depicted in Table 1.

**Table 1: Selection of samples for both KCC and non-KCC holders**

Size of sample farmers	Land holding size (ha)	No. of KCC holders	Selected no. of KCC beneficiaries	Non-KCC holder (No.)
Small	0-2	58	10	10
Medium	2 - 4	44	10	10
Large	>4	32	10	10
	Total	134	30	30

The economic indicators for rice crop other than basmati were compared between KCC and non-KCC holders. The economic impact of KCC scheme was assessed by comparing the expenditure on input use under non-basmati rice for KCC and non-KCC holders. The Independent two sample 't' test was applied for testing the significant difference of expenditure between KCC and non-KCC holders. The economics of non-basmati rice was also compared before and after the use of credit under KCC.

## Results and Discussion

### *Cost structure of non-basmati rice crop*

The detail per hectare item-wise cost of rice crop other than basmati for both KCC and non-KCC holders has been presented in Table 2. The highest component of variable cost was the human labour which was followed by machinery labour for both

KCC and non-KCC holders. The variable cost constitutes 61.04% of total cost of non-basmati rice in case of KCC beneficiaries as compared to 58.63% in case of non-KCC beneficiaries. This shows that short term credit drawn under KCC had been used for purchase of critical inputs in cultivation of non-basmati rice.

### *Economic Returns from non-basmati rice crop*

The economic returns from non-basmati rice in case of both KCC-beneficiaries and non-beneficiaries have been presented in Table 3. Both total variable cost (TVC) and total fixed cost were higher for KCC-beneficiaries. The gross profit was also higher in case of KCC beneficiaries. The net profit was also higher but not by any significant amount i.e. just ₹ 568.63 per hectare. The Farm Business Income (FBI), Farm Labour Income (FLI) and Cost-Benefit ratio (C.B ratio) were also higher for KCC beneficiaries.

**Table 2: Cost structure of non-basmati rice crop in sampled farms (per hectare)**

Particulars		KCC-holder			Non KCC-holder				
		Small	Medium	Large	Overall	Small	Medium	Large	Overall
Human labour	Owned	3345.03 (7.70)	2407.42 (5.47)	1259.16 (3.04)	2337.20 (5.44)	3243.51 (7.89)	2017.50 (4.98)	1295.05 (3.35)	2185.35 (5.45)
	Hired	5952.09 (13.70)	6184.77 (14.05)	5761.45 (13.92)	5966.10 (13.89)	4783.88 (11.64)	5278.91 (13.02)	4645.92 (12.04)	4902.90 (12.23)
Total human labour		9297.12 (21.40)	8592.19 (19.52)	7020.61 (16.96)	8303.30 (19.33)	8027.39 (19.53)	7296.41 (18.00)	5940.97 (15.39)	7088.25 (17.69)
Seed		1023.14 (2.36)	987.63 (2.24)	980.28 (2.37)	997.02 (2.32)	950.40 (2.31)	944.00 (2.33)	938.04 (2.43)	944.15 (2.36)
Farm yard manure		1220.45 (2.81)	1150.53 (2.61)	1080.63 (2.61)	1150.54 (2.68)	1159.85 (2.82)	1065.24 (2.63)	1020.24 (2.64)	1081.78 (2.70)
Chemical fertilizers		5543.50 (12.76)	5376.52 (12.22)	4787.82 (11.57)	5235.95 (12.19)	5148.28 (12.53)	4968.70 (12.26)	4602.10 (11.92)	4906.36 (12.24)
Irrigation		1458.82 (3.36)	1390.54 (3.16)	1334.86 (3.23)	1394.74 (3.25)	1394.25 (3.39)	1278.54 (3.15)	1210.43 (3.14)	1294.41 (3.23)
Machinery labour		6653.52 (15.32)	7463.84 (16.96)	7142.62 (17.26)	7086.66 (16.50)	6484.53 (15.78)	6314.31 (15.58)	6252.18 (16.20)	6350.34 (15.85)
Plant protection		1369.64 (3.15)	1298.92 (2.95)	1182.04 (2.86)	1283.53 (2.99)	1282.43 (3.12)	1112.54 (2.74)	1046.67 (2.71)	1147.21 (2.86)
Interest on working capital		796.99 (1.83)	787.81 (1.79)	705.87 (1.71)	763.55 (1.55)	733.41 (1.78)	689.39 (1.70)	630.32 (1.63)	684.38 (1.71)
Total variable cost		27363.18 (62.99)	27047.98 (61.46)	24234.73 (58.56)	26215.29 (61.04)	25180.54 (61.27)	23669.13 (58.40)	21640.95 (56.06)	23496.88 (58.63)
Land revenue		50.50 (0.12)	50.50 (0.11)	50.50 (0.12)	50.50 (0.12)	50.50 (0.12)	50.50 (0.12)	50.50 (0.13)	50.50 (0.13)
Depreciation charges		562.54 (1.30)	1368.92 (3.11)	1542.73 (3.73)	1158.06 (2.70)	420.05 (1.02)	1278.82 (3.16)	1367.42 (3.54)	1022.10 (2.55)
Rental value of land		14000.00 (33.23)	14000.00 (31.81)	14000.00 (33.83)	14000.00 (32.60)	14000.00 (34.06)	14000.00 (34.54)	14000.00 (36.27)	14000.00 (34.93)
Interest on Fixed cost		1461.30 (3.36)	1541.94 (3.50)	1559.32 (3.77)	1520.86 (3.54)	1447.06 (3.52)	1532.93 (3.78)	1541.79 (3.99)	1507.26 (3.76)
Total fixed cost		16074.34 (37.01)	16961.36 (38.54)	17152.55 (41.44)	16729.42 (38.96)	15917.61 (38.73)	16862.25 (41.60)	16959.71 (43.94)	16579.86 (41.37)
Total Cost		43437.52 (100.00)	44009.34 (100.00)	41387.28 (100.00)	42944.71 (100.00)	41098.15 (100.00)	40531.38 (100.00)	38600.66 (100.00)	40076.74 (100.00)

**Table 3. Economic Returns from non-basmati rice crop for KCC and Non- beneficiaries**

₹/hectare)

Cost	KCC Beneficiaries	Non- beneficiaries
Total Variable Cost (TVC)	26215.29	23496.88
Total Fixed Cost (TFC)	16729.42	16579.86
Total Cost (TC)	42944.71	40076.63
Yield (qt./hectare)	40.50	37.51
Gross profit	67064.68	63628.07
Net profit	24119.97	23551.34
Farm Business Income (FBI)	41612.94	40815.57
Farm Labour Income (FLI)	26092.08	25308.31
Cost-Benefits ratio (C.B ratio)	1 : 1.56	1 : 1.58

The increase in returns and net income cannot be directly correlated to credit use for any crop based on the data for one or two years. However, the change in expenditure can be considered as one of the indicator for direct impact of cheap credit available in the form of KCC. Therefore, in order to test that whether there is a significant difference in cost structure of non-basmati rice between KCC beneficiaries and non-beneficiaries, independent two sample 't' test was applied for testing the following hypotheses:

$H_0$ : The expenditure on inputs is same for KCC and non-KCC beneficiaries

$H_1$ : The expenditure varies between KCC and non-KCC beneficiaries

The results of independent 't' test have been presented in Table 4 which depicts the comparison of mean for expenditure under different inputs used by KCC and non KCC beneficiaries under non-basmati rice crop. It can be observed that all the inputs namely; seed, labour, FYM, fertilizer, irrigation, machinery and pesticides show significant difference between KCC and non-KCC holders.

**Table 4: Change in expenditure on inputs by KCC holders in non-basmati rice crop**

Variables	Levene's Test for Equality of Variances		t-test for Equality of Means		
	F- value	p- value	Equality of Variances	t- value	p- value
Seed	0.281	0.598	Assumed	2.542	0.014
Labour	0.339	0.563	Assumed	4.646	0.00
FYM	0.193	0.662	Assumed	0.519	0.606
Fertilizers	0.003	0.960	Assumed	0.596	0.554
Irrigation	0.085	0.772	Assumed	1.329	0.189
Machinery	10.444	0.002	Not Assumed	3.258	0.002
Pesticides	1.027	0.315	Assumed	1.586	0.118

p-value < 0.05 shows significant difference in the corresponding variable

### *Pre and Post KCC comparison of cost structure for non-basmati rice crop*

The change in investment and income pattern of non-basmati rice was assessed by comparing

the economic indicators before and after availing credit under KCC. The detail of such change in cost structure has been presented in Table 5 which revealed that both variable and fixed cost increased after availing credit under KCC scheme. The share

of fixed cost to total cost remains quite high after drawing credit under KCC scheme. The increase in fixed cost indicates that farmers utilized the credit amount for purchase of some low cost fixed assets

also, namely; electric motor, water pump, sprayer etc. as stated by the respondents. It can also be observed that the total cost of cultivation for non-basmati rice crop decreases with increase in size of farm.

**Table 5: Cost structure of non-basmati rice crop before & after availing credit under KCC**

Cost under different farm sizes		Before taking KCC	After taking KCC
<b>₹ per hectare</b>			
<i>Small</i>			
Variable cost		22953.86 (64.57)	27363.18 (65.19)
Fixed cost		12591.00 (35.42)	16074.34 (34.81)
Total Cost		35544.86 (100.00)	43437.52 (100.00)
<i>Medium</i>			
Variable cost		21331.40 (62.14)	27047.98 (63.69)
Fixed cost		12995.70 (37.85)	16961.36 (36.31)
Total Cost		34327.10 (100.00)	44009.34 (100.00)
<i>Large</i>			
Variable cost		19617.84 (59.62)	24234.73 (60.84)
Fixed cost		13286.10 (40.37)	17152.55 (39.15)
Total Cost		32903.94 (100.00)	41387.28 (100.00)
<i>Overall</i>			
Variable cost		21301.00 (62.17)	26215.29 (63.28)
Fixed cost		12957.60 (37.82)	16729.42 (36.71)
Total cost		34258.64 (100.00)	42944.71 (100.00)

*Note: Figures in parenthesis indicate percentage to total*

### ***Pre and Post KCC comparison of productivity and income for non-basmati rice crop***

The detail of change in productivity and income for non-basmati rice crop, after availing credit under KCC scheme has been presented in Table 6 and it

can be observed that productivity, gross income and net income increased under all the categories after availing credit under KCC scheme. It can also be seen that productivity of non-basmati rice crop decreased with increase in farm size.

**Table 6: Comparison of productivity and returns before and after taking KCC**

Size of sample farmers	Before taking KCC	After taking KCC
	Small	
Productivity (q./ha.)	38.00	41.50
Gross income (₹/ha.)	51450.50	68120.40
Net income (₹/ha.)	15905.64	24682.88
	Medium	
Productivity (q./ha.)	36.90	41.00
Gross income (₹/ha.)	49980.00	67043.42
Net income (₹/ha.)	15652.90	23034.08
	Large	
Productivity (q./ha.)	36.00	40.50
Gross income (₹/ha.)	48820.50	66030.23
Net income (₹/ha.)	15916.56	24642.95
	Overall	
Productivity (q./ha.)	36.97	41.00
Gross income (₹/ha.)	50083.67	67064.68
Net income (₹/ha.)	15825.00	24119.97

The variation in productivity and net returns from non-basmati rice crop before and after the use of credit under KCC scheme in its cultivation has been presented in Table 7. The large farms showed highest variation in cost structure and the medium farms witnessed highest variation in yield and net

income. This shows that large and medium farmers were able to use more funds in cultivation of rice crop other than basmati due to the credit available under KCC which otherwise they could not be able to use in absence of money.

**Table 7: Variation in yield and net returns after credit use through KCC**

Size of sample farmers	Changes in cost (₹/ha.)	Variation (%)	Changes in yield (qt./ha.)	Variation (%)	Changes in net income (₹/ha.)	Variation (%)
Small	7892.66	22.20	3.50	9.21	8777.24	55.18
Medium	9682.24	28.21	4.10	11.11	7381.18	47.16
Large	8483.34	25.78	4.50	12.50	8726.39	54.83
Overall	8686.07	25.35	4.04	10.90	8294.97	52.42

## Conclusion

The economic impact of Kisan Credit Card (KCC) scheme was assessed in case of non-basmati rice production in R.S. Pura block of Jammu district. The total cost of production was ₹ 42944.71 per hectare in case of KCC beneficiaries and ₹ 40076.74 per hectare in case of non-KCC beneficiaries. The productivity of non-basmati rice crop was 40.50 quintals per hectare

in case of KCC beneficiaries and 37.51 quintals per hectare in case on non-KCC beneficiaries. The net profit was ₹ 24120.11 per hectare in case of KCC beneficiaries and ₹ 23551.34 per hectare in case of non-KCC beneficiaries. Therefore the cost-benefit ratio was 1:1.56 and 1:1.58 in case of KCC and non-KCC beneficiaries respectively. The results of independent 't' test confirmed that cost of all the inputs significantly differed between farms of

KCC and non-KCC beneficiaries. The total cost of non-basmati rice crop on same farm increased from ₹ 34258.64 per hectare to ₹ 42944.71 per hectare after the use of credit drawn under KCC. The productivity of rice crop other than basmati increased from 36.97 to 41.00 quintals per hectare and net profit increased from ₹ 15825.11 to ₹ 24119.97 per hectare.

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