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Economic Assessment of Changing Input Use Behaviour under PM-KISAN Scheme in Jammu Region: A Comparative Study

S.P. Singh[1*], Ashish Verma[2], Sudhakar Dwivedi[1], Anil Bhat[1], Harminder Singh[1], Maninder Singh[1] and Neer Somakka, A.N.[1]

[1]*Department of AEABM, Sher-e-Kashmir University of Agricultural Sciences and Technology, Jammu, Chatha, India*
[2]*Department of Agricultural Economics, Indira Gandhi Krishi Vishwavidalya, Raipur, India*

*Corresponding author: singh_sp073@yahoo.com

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ABSTRACT

PM-KISAN Samman Nidhi was introduced as a union government funded scheme in year December 2018 to help farmers purchase various agricultural inputs such as seeds, fertilizers, etc. Payment disbursement under the scheme started from February 2019. It provides each eligible farmer's family an amount of 6000 Rupees (₹) per year in three installments of ₹ 2000 each. Initially, farmers who had less than 2 hectares (ha) of land were eligible were covered under the scheme; subsequently, in the beginning in June 2019, the scheme was extended to all farmers which accounted for about 140 million across India. In India, more than half of its farming households do not had access to formal credit system. In such situation, introduction of cash transfer scheme (Pradhan Mantri Kisan Samman Nidhi, or PM-KISAN) in December 2018 to ease the liquidity constraints of Indian farmers for farmers for procuring inputs is quite salient. This paper analyses the impact in the change in consumption pattern of farmers who have been benefited from the Scheme in Jammu region. It also elaborated the changes in consumption of agri-inputs for the production of local paddy in remotely located border out post (Indo-Pak border) villages in R.S Pura sector.

Keywords: PM-KISAN, Cash Transfer, Consumption and Investment

In India, agriculture is considered to be the backbone sector in its economy. Not only because it provide 54.6% population with jobs but also because it has been a sector which provides strength to other sectors. Whether it may be raw material to industries or food grains to feed people. But since past few years, agriculture sector has lost its popularity as an occupation. This might be due to various reasons but the most basic is due to low return on its investment. Indian farmers are mostly marginal farmers owning less than one hectare of land. Mostly, an Indian farmer borrowed money or invested their personal saving for inputs such as seeds, fertilizers, chemicals, etc. and waited for the harvest to fulfil their needs sometimes even the basic ones. But mostly after harvest, farmer is not able to get his full returns as he is not able to sell his produce even at his cost of cultivation. This is due to enormous increase in the supply of produce in the end of cropping

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reason (particularly in case of paddy cultivators). This results in creating a situation of cash crunch for a marginal farmer. Economically, we can term this situation as "Liquidity Constraint" of a farmer who has his produce in the form of an asset but he is not willing to sell as of fear to incur losses. So, it may lead him to either compensate his demand by borrowing cash or by reducing consumption level. Most farmers consider borrowing as their last resort and try to reduce their consumption. Reduction in consumption leads to reduction in investment in an economy. In other words, we can say that if people reduce their consumption for consumer and capital goods; then it is obvious that industries will reduce to invest capital in producing them. As the investment in a country reduces this leads to reduction in the income level of population.

Sadoulet, de Janvry and Davis (2001) displayed a multiplier effect of similar cash transfers. Many studies imply that a productive investment in short run may lead to sustained long-term impacts. Conceptually, a cash transfer could encourage farmers to spend an amount of money on entrepreneurial activities for several reasons. Firstly, it may help in easing incumbent credit and liquidity constraints on purchasing agricultural advanced inputs such as HYV seeds, chemicals such as pesticides, weedicides, etc. which extremely pertinent in India. Adesina (1996) concluded that access to credit encourages fertilizer use improves productivity and yield in agriculture. Secondly, cash transfer increases the net incomes of farmers and thus, in turn, may encourage their risk-taking capabilities, leading them to undertake riskier but comparatively more productive investments in agriculture. Yet cash transfer beneficiaries' investment for productive activities were limited in developing countries (Maluccio 2010). In general, the effects of cash transfer on outcomes such as education attainment, household consumption, and health are well analyzed (Gertler 2004; Fiszbein and Schady 2009; Adato and Bassett 2009). However, the impacts of cash transfers on agriculture sector are comparatively quite less studied including, importantly their impact on technology adoption in cultivation of crops (examples include Sadulet, de Janvry, and Davis 2001; Gertla, Martinez and Rubio-Codina, 2006; Hanshofer and Shapiro, 2016; and Tirivayi , Knowles and Davis, 2016).In this context, PM-KISAN presents a natural experiment to access the effects of cash transfers. For the intervention to provide long-term impacts, there must be investment in activity that are more productive. In this context, Gertler and Martinez (2006) and Rubio-Codina and Handa *et al.* (2018) have shown that small monthly cash transfers may lead to increased consumption even after the beneficiaries left the programme. Haushofer and Shapiro (2016) showed that a large unconditional transfer to poor household farmers may increase their future earning by encouraging investments in livestock.

The Government has launched a new Central Sector Scheme, namely "Pradhan Mantra Kisan Samman Nidhi" (PM-KISAN) in financial year 2019-20. It aims to supplement the financial needs of farmers in procuring various inputs to ensure proper crop health and yields, commensurate with the anticipated arm income at the end of each crop cycle. But the big question is whether the funds that were being injected had any impact in the change in consumption of agri-inputs for cultivation of crops. This paper analyses the impact of PM-KISAN Scheme on the consumption of agri-inputs for farmers in Jammu region.

Methodology

For selection of beneficiaries, multistage stratified random sampling technique was used. At first stage, a list of villages falling in each block was prepared and 5 villages from each block were selected randomly. At the second stage, for every selected village, two separate lists of farmers, one of beneficiaries and other of non-beneficiaries falling in the selected village were prepared and 6 farmers from each list were selected randomly. The ultimate sample consisted of 120 respondents out of which 60 respondents were among from the beneficiaries and rest 60 from the non-beneficiaries.

To analyze the change in consumption of agri-inputs by the beneficiaries and non-beneficiaries of PM-KISAN Scheme; Percentage change method was used. It describes the change from the base year which is 2018 (before implementation of PM-KISAN) to 2021 (after the implementation of PM-KISAN Scheme).

$$\% \ change = \frac{A - B}{B} \times 100$$

Where; A = value after implementation of scheme

B = value before implementation of scheme

The test for analysis was done for both beneficiaries and non-beneficiaries of the scheme and to study the change in their consumption for cultivation of local *Basmati* varieties of paddy (including exported variety of *Basmati 370*).

RESULTS AND DISCUSSION

For the study of change in the consumption of inputs by beneficiaries for the production of local paddy, the percentage change in the consumption of input between year 2018(i.e. before implementation of PM-KISAN) and year 2021(i.e. after implementation of PM-KISAN) with consideration of 2018 as base year.

By analysing Table 1, it was found that the overall percentage change in the consumption of input for the production of local *Basmati* paddy between 2018 and 2021 was 19.5% for marginal farmers, 6.2% for small farmers and 7.9% for semi-medium farmers.

Percentage change in use of inputs for marginal farmers were by 28% in DAP, by 17% in Urea, by 55% in Pesticides, by 48% in Weedicides, by 43% in Disease Control, and by 16% in Seed treatment. Percentage change in use of inputs for small farmers were DAP (11%), Urea (10%), Pesticides (27%), Weedicides (27%), Disease Control (25%), and Seed treatment (3%). Percentage change in use of inputs for semi-medium farmers were by 9.5% in DAP, by 8% in Urea, by 18.5% in Pesticides, by 17% in Weedicides, by 13% in Disease Control, and by 7% in Seed treatment.

It was observed from Table 2; that the overall percentage change in the consumption of input by non-beneficiaries for the production of local *Basmati* paddy during year 2018 and 2021 was 6.42% for marginal farmers, 1.92% for small farmers and 2.48% for semi-medium farmers. Percentage change in use of inputs for marginal farmers were by 5.42% in DAP, by 6.75% in Urea, by 16.76% in Pesticides, by 11.2% in Weedicides, by 16.76% in Disease Control, and by 5.64% in Seed treatment. Percentage change in use of inputs for small farmers were by 3.04% in DAP, by 4.35% in Urea, by 8.91% in Pesticides, by 8.7% in Weedicides, by 14.13% in Disease Control, and by 0.54% in Seed treatment. Percentage change in use of inputs for semi-medium farmers were by 3.70% in DAP, by 3.70% in Urea, by 11.11% in Pesticides, by 4.94% in Weedicides, by 6.17% in Disease Control, and by 1.85% in Seed treatment.

From Fig. 1, it was observed that a greater impact of funds utilized by paddy cultivators could be seen in the consumption of agri-inputs for the production of local-basmati. Beneficiaries of the scheme invested more on agri-inputs especially for pesticides,

Table 1: Percentage change in the consumption of inputs by beneficiaries for production of local *Basmati* paddy during 2018 and 2021

Farm category		DAP (kg)	Urea (kg)	Pesticides (ml)	Weedicides (ml)	Disease Control (ml)	Seed treatment (gm)	Total
Marginal	2018	37.47	37.47	60	359.80	359.80	359.71	473.61
	2021	48.00	43.94	92.80	534.00	513.60	416.85	565.80
	%age	28.00	17.00	55.00	48.00	43.00	16.00	19.50
Small	2018	76.67	76.67	122.60	736.00	736.00	736.00	969.00
	2021	85.40	84.37	155.80	936.00	922.60	758.67	1029.20
	%age	11.00	10.00	27.00	27.00	25.00	3.00	6.20
Semi-medium	2018	168.75	168.75	270.00	1620.00	1620.00	1620.00	2133.00
	2021	184.75	182.25	320.00	1900.00	1825.00	1732.50	2301.75
	%age	9.50	8.00	18.50	17.00	13.00	7.00	7.90
Overall average	2018	94.30	94.30	150.80	905.20	905.20	905.24	1191.89
	2021	106.05	103.52	189.40	1123.40	1087.00	969.34	1298.90
	%age change	12.46	9.78	25.60	24.09	20.09	7.08	8.98

Table 2: Percentage change in the consumption of inputs by non-beneficiaries for production of local *Basmati* paddy during 2018 and 2021

Farm Category		DAP (kg)	Urea (kg)	Pesticides (ml)	Weedicides (ml)	Disease control (ml)	Seed Treatment (gm)	Total
Marginal	2018	37.47	37.47	60.00	359.8	359.80	359.71	473.61
	2021	39.50	40.00	70.00	400.00	420.00	380.00	504.00
	%age	5.42	6.75	16.76	11.20	16.76	5.64	6.42
Small	2018	76.67	76.67	122.60	736.00	736.00	736.00	969.00
	2021	79	80.00	134.00	800.00	840.00	740.00	987.70
	%age	3.04	4.35	8.91	8.70	14.13	0.54	1.92
Semi-medium	2018	168.75	168.75	270	1620	1620.00	1620.00	2133.00
	2021	175.00	175.00	300	1700.00	1720.00	1650.00	2186.00
	%age	3.70	3.70	11.11	4.94	6.17	1.85	2.48
Overall average	2018	94.30	94.30	150.80	905.2	905.2	905.24	1191.89
	2021	97.83	98.33	160.00	940.00	960.00	910.00	1209.17
	%age change	3.75	9.78	6.05	3.84	6.05	0.53	1.45

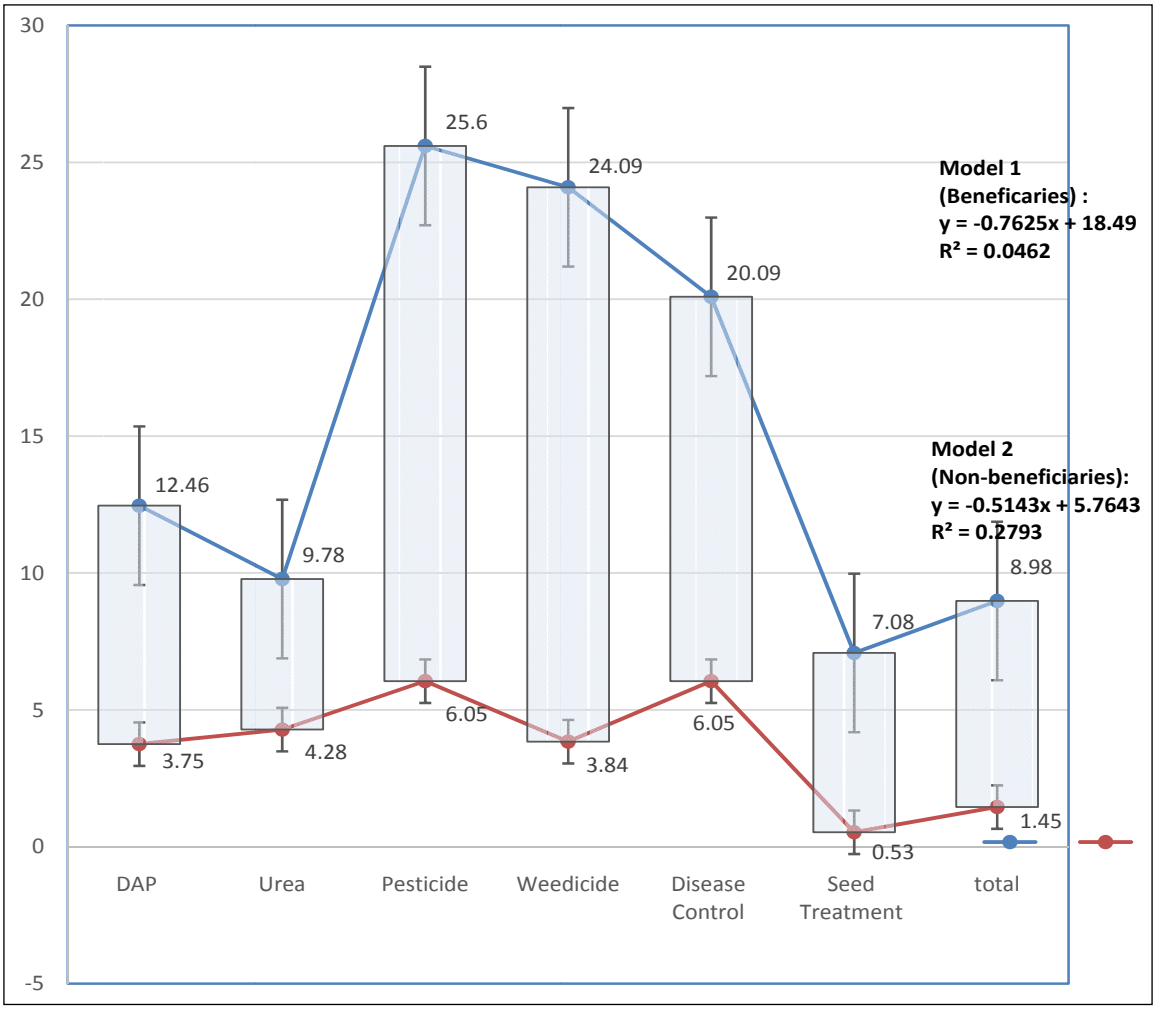

Fig. 1: Percentage Change in Beneficiaries and Non-beneficiaries of PM-KISAN Scheme

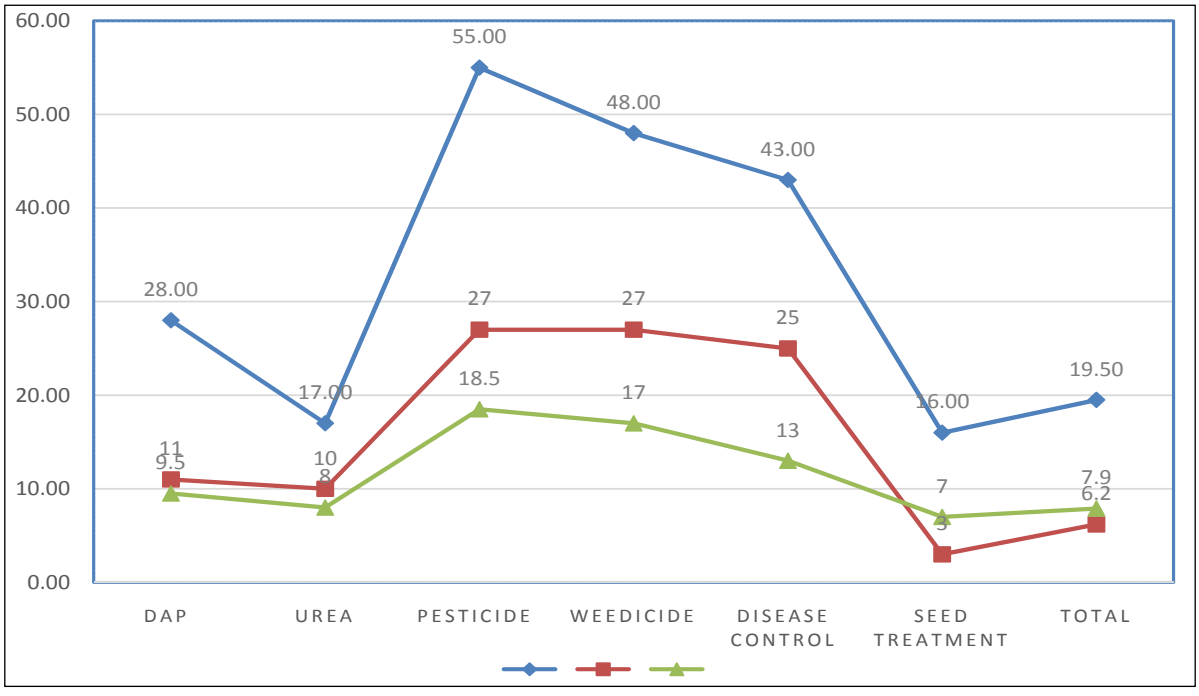

Fig. 2: Percentage increase in Consumption of Different categories of Beneficiary Farmers under PM-KISAN Scheme

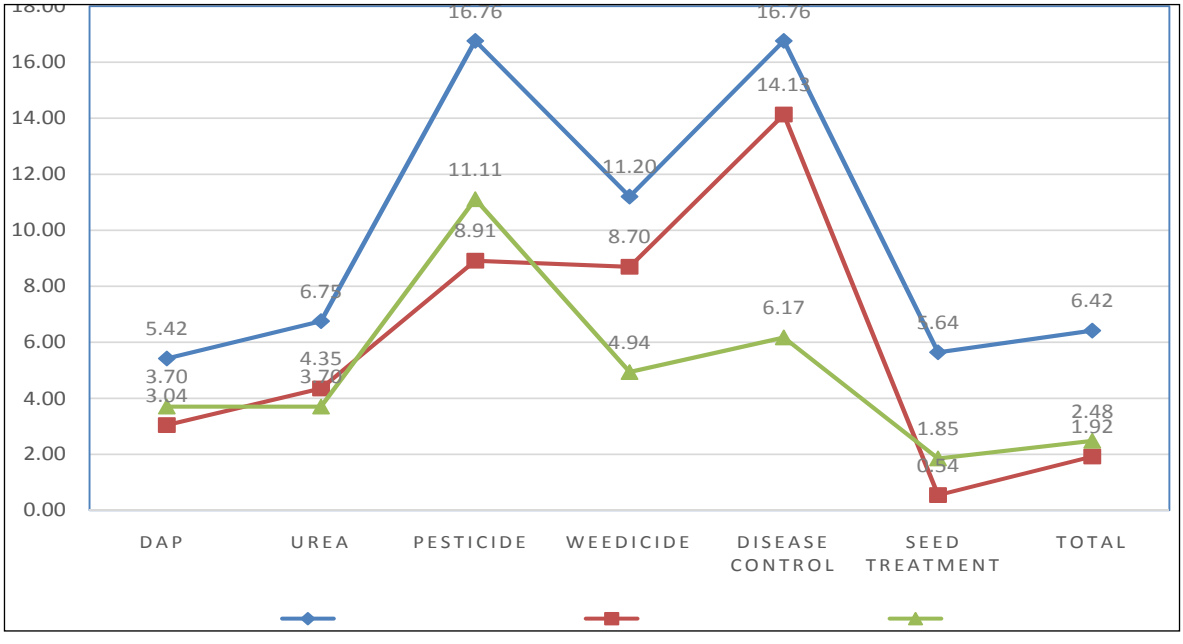

Fig. 3: Percentage Increase in Consumption of different categories of Non-beneficiary Farmers under PM-KISAN Scheme

weedicides and disease control when compared to non-beneficiaries of the scheme. From the graph we could derive growth models (Model 1 & 2) to better understand the trend of increase in consumption of agri-inputs.

From Fig. 2, it could be seen that greater increase in the consumption of beneficiary marginal farmers was seen for agri-inputs when compared to small and semi-medium farmers. This was especially observable for the consumption of chemicals for

pesticides, weedicides and disease control. Similarly from Fig. 3 also, it could observe that a much higher increase in the consumption for agri-inputs could be seen in non-beneficiary marginal farmers, when compared with small and semi-medium farmers. Thus,it could concluded that marginal category of paddy cultivators were more prominent for change in consumption of agri-inputs.

CONCLUSION

So far, it was previously observed Conditional Cash Transfer (C.C.T.) Schemes that were implemented in different Latin American countries (Fiszbein and Schady, 2009); PM-KISAN is found to be different in terms that it focus on the needs of farmers in the society. It is clearly evident that a sharp increase in consumption of agri-inputs was seen in the farmers who were the beneficiaries of PM-KISAN Scheme and were also paddy cultivators in the sampled area. While on the other hand, relatively less growth in terms of percentage was seen in the farmers who were non-beneficiaries. This was found to be parallel to study conducted by Ujjwala B. (2020) for Rythu Bandhu Scheme in Telengana. Thus, it was expected that there was a positive impact which was seen in the farmers after infusion of funds through PM-KISAN. But as observed from the study of Haushofer and Shapiro (2016) that CCTs had much more impact when implemented for a longer run (as it improves the tendency to increase farmer's consumption and enhance his risk-taking ability). This had boosted the consumption expenditure of especially in marginal and small farmers.

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