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Research Article

ECONOMIC PERFORMANCE OF KVK ACTIVITIES ON ADOPTION OF IMPROVED CLIMATE RESILIENT PRACTICES IN BUNDELKHAND REGION OF MADHYA PRADESH

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Abstract: Droughts, heat and cold waves are common across the world due to climate change. Their adverse impact on livelihood of farmers is tremendous. The present study attempt was made to know the Socio-personal and Economic, Psychological, and Communicational aspect of beneficiary farmers of KVK and non-beneficiaries in terms of climate resilient activities conducted by KVKs. The study was conducted in twos; of Datia and Tikamgarh district of Madhya Pradesh. The information about characteristics of farmer was collected through personal interview schedule. This study be revealed that beneficiary respondents found superior than non-beneficiary respondent in case of level of education, occupation, attitudes, market orientation, perception, knowledge, participation and information seeking and sharing behaviour. Cropping pattern is continued to change over different intervention introduced by KVK and worked on introducing drought / temperature tolerant varieties in different crops and economic output of the technologies.

Keywords: Beneficiaries, Non-beneficiaries, Climate Resilient, Cropping pattern, KVK

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Introduction

The world Agricultural Scenario is going through a challenging phase of global warming and climate change. To counter bad effects of climate, change many conservation and mitigation technologies are disseminated to educate the farmers through various agencies [1]. The Krishi Vigyan Kendra is such agencies which have taken responsibility and conducting various programmes to popularize these technologies among farmers. The Bundelkhand Region of Central India is a semi-arid plateau. This subsistence rainfed single crop agriculture, small-scale livestock production seasonal water sources and limited irrigation canals are primary characteristics. Crop productivity is very low in this region compared to rest of the states. Enhancing agricultural productivity, therefore, is critical for ensuring food and nutritional security for all, particularly the resource poor small and marginal farmers who would be affected most from the climate change. It has been realized that in the absence of mitigation and adaptation strategies, the consequences of long-term climate change could be even more severe on the livelihood security of the poor. Many new technologies were developed at university and research stations and tested mainly through on farm trials and demonstrations in the farmer's field before they supposed to disseminate to the farmers for adoption [2]. Thus, the present investigation was undertaken to know about the Socio-personal and Economic, Psychological and communicational profile of participating and non-participating farmers under KVK programmes on climate resilient practices technology.

Objective

To study the Socio-personal and Economic, Psychological and Communicational characteristics of participating and non-participating farmers under KVK programmes on climate resilient practices technology.

Material and Methods

Two blocks have been selected purposively, one each from Datia and Tikamgarh district. A comprehensive list of adopted villages has been prepared with help of selected KVK during previous five years. Beneficiary villages (adopted by KVK) and non-beneficiary villages have been selected randomly for the purpose of present research study. Out of total 490 villages of Tikamgarh block, and total 259 villages of Datia block, a list of villages in which climate resilient activities conducted has been prepared with help of KVK centre. Villages (from Datia block and Tikamgarh block) have been selected for the study on basis of maximum activities conducted by KVK under climate resilient agriculture. From the prepared list 150 farmers were selected randomly who participated in KVK programmes. These farmers were called as beneficiary farmers and other 150 farmers were selected randomly who did not participate in KVK programme. These farmers were called as non-beneficiary farmers. This way a total number of 300 farmers were interviewed for the study. The data were collected through personal interview methods with the help of structured pre-tested schedule. The purpose of the data collection was fully explained to every respondent before they were asked to answer. The collected data were scored, tabulated and subjected to suitable statistical analysis.

Results and Discussion

The profile of the participating and non-participating farmers was studied; this includes Socio-personal and Economic, Psychological and Communicational characteristics of the respondents. Results of the study [Table-1] regarding Socio-personal and Economic, characteristics, revealed that the majority of beneficiaries (46.00 percent) belonged to age group of 35 to 55 years. Regarding level of education was 38.67 percent of the beneficiaries were educated up to middle class, whereas majority of beneficiaries (40.67 percent) had annual income of Rs. 24,000/- to 1 lakh. It was observed that 36.67 percent beneficiaries had medium size (2.01 to 4 ha) land holding. Date revealed that, 40.00 percent of beneficiaries had medium experience in farming, while 50.00 percent of beneficiaries was doing

Table-1 *Socio-personal and Economic characteristics of beneficiaries and non-beneficiaries' respondents' farmers, (N=300)*

SN	Characteristic variable	Beneficiaries (n=150)	Non Beneficiaries (n=150)	Total
1.	Age			
1.1	Young (up to 35 years)	46 (30.67)	52 (34.67)	98 (32.67)
1.2	Middle (35 to 55 years)	69 (46.00)	61(40.67)	130 (43.33)
1.3	Old (above 55 years)	35 (23.33)	37 (24.67)	72 (24.00)
2.	Education level			
2.1	Illiterate	8 (5.33)	17 (11.33)	25 (8.33)
2.2	Can read and write only	1 (0.67)	3 (2.00)	4 (1.34)
2.3	Primary passed	8 (5.33)	39 (26.00)	47 (15.67)
2.4	Middle passed	58 (38.67)	47 (31.33)	105 (35.00)
2.5	High school /higher secondary passed	46 (30.67)	24 (16.00)	82 (27.33)
2.6	Graduates	29 (19.33)	20 (13.33)	49 (16.33)
3.	Annual Income			
3.1	Below poverty Line (Below Rs. 24000/-)	8 (5.33)	13 (8.67)	23 (7.00)
3.2	Low Income (Rs. 24000-100000)	61 (40.67)	59 (39.33)	120 (40.00)
3.3	Medium Income (Rs. 100001-176000)	55 (36.67)	57 (38.00)	112 (37.33)
3.4	High Income (Rs. 176001-250000)	26 (17.33)	21 (14.00)	47 (15.67)
4.	Size of Land holding			
4.1	Marginal (up to 1 ha)	26 (17.33)	38 (25.33)	64 (21.33)
4.2	Small (1.01 to 2 ha)	44 (29.33)	32 (21.33)	76 (25.33)
4.3	Medium (2.01 to 4 ha)	55 (36.67)	60 (40.00)	115 (38.33)
4.4	Large (4 ha & above)	25 (16.67)	20 (13.33)	45 (15.00)
5.	Farming experiences			
5.1	Low experience (5 – 16 yrs)	51 (34.00)	59 (39.33)	110 (36.67)
5.2	Medium experience (17-27 yrs)	60 (40.00)	53 (35.33)	113 (37.67)
5.3	High experience (28-38 yrs and above)	39 (36.67)	48 (32.00)	87 (38.33)
6.	Occupation			
6.1	Cultivation	35 (23.33)	41(27.33)	76 (25.33)
6.2	Cultivation and labour	14 (9.33)	65 (43.33)	79 (26.33)
6.3	Cultivations and caste business	75 (50.00)	18 (12.00)	93 (31.00)
6.4	Cultivation and self business	7 (4.67)	5 (3.33)	12 (4.00)
6.5	Cultivation and private services	13 (8.67)	18 (12.00)	31(10.33)
6.6	Cultivation and Govt. service	6 (4.00)	3 (2.00)	9 (3.00)

(Figure in parentheses indicate in percentage)

Table-2 *Psychological characteristics of beneficiaries and non-beneficiaries' respondents' farmers*

SN	Characteristic variable	Beneficiaries (n=150)	Non Beneficiaries (n=150)	Total
1.	Attitude			
7.1	Less favourable (10-23)	27 (18.00)	61(40.67)	88 (29.33)
7.2	Favourable (24-36)	39 (26.00)	46 (30.67)	85 (28.33)
7.3	More favourable (37-50)	84 (56.00)	43 (28.66)	127 (42.33)
2.	Market orientation			
8.1	Low market orientation (0-3)	41 (27.33)	63(42.00)	104 (34.67)
8.2	Medium market orientation (4-6)	49 (32.67)	50 (33.33)	99 (33.00)
8.3	High market orientation (7-10)	60 (40.00)	37 (24.67)	97 (32.33)
3.	Scientific orientation			
9.1	Low scientific orientation (6 to 18)	30 (20.00)	50(33.33)	80 (26.67)
9.2	Medium scientific orientation (19 to 30)	43 (28.67)	71 (47.33)	114 (38.00)
9.3	High scientific orientation (31 to 42)	77(51.33)	29 (19.33)	106(35.33)
4.	Perception			
10.1	Low (7-21)	19 (12.67)	32(21.33)	51 (17.00)
10.2	Medium (22-35)	45 (30.00)	81 (54.00)	126 (42.00)
10.3	High (36-49)	76(50.67)	37 (24.67)	113 (37.67)
5.	Knowledge			
11.1	Low knowledge (up to 8)	35 (23.33)	4 9(32.67)	84 (28.00)
11.2	Medium knowledge (9-17)	40 (26.67)	73 (48.67)	113 (37.67)
11.3	High knowledge (18-25)	75(50.00)	28 (18.67)	103 (34.33)
6.	Participation			
12.1	Low Participation (up to 4)	15 (10.00)	86 (57.33)	101 (33.67)
12.2	Medium Participation (5 - 9)	70 (46.67)	40 (26.67)	110 (36.67)
12.3	High Participation (10 - 14)	65 (43.33)	24 (16.00)	89 (29.67)

(Figure in parentheses indicate in percentage)

agriculture and cost business for their lively hood of the family. While in case of non-beneficiaries, study revealed that the majority of respondents had 40.67 percent belonged to middle age group, their level of education was middle passed and about 31.33 percent. In case of annual income most of the respondent's 39.33 percent was under low category. 40.00 percent had medium size (2.01 to 4 ha) land holding. In case of farming experience majority of non-beneficiary's 39.33 percent had low experience, while in case of occupation most of the non-beneficiary's 43.33 percent were doing Cultivation and labour for their lively hood of the family. Similar age and education pattern were observed in the both beneficiary and non-beneficiary farmers. This shows that two different types of farmer's categories were similar in age and education. This might be due to the fact that farmers of this group attempt to try new technologies & have more

Table-3 *Communicational characteristics of beneficiaries and non-beneficiaries' respondents' farmers*

SN	Characteristic variable	Beneficiaries (n=150)	Non Beneficiaries (n=150)	Total
1. Information seeking behavior				
12.1	Low (0 to 6)	25 (16.67)	71 (47.33)	96 (64.00)
12.2	Medium (7-13)	96 (64.00)	32 (21.33)	128 (85.33)
12.3	High (14-20)	29 (19.33)	47 (31.33)	76 (50.67)
2. Information sharing behavior				
13.1	Low (0 to 6)	33 (22.00)	65 (43.33)	98 (32.67)
13.2	Medium (7-13)	79 (52.67)	51 (34.00)	130 (43.33)
13.3	High (14-20)	38 (25.33)	34 (22.67)	72 (24.00)

(Figure in parentheses indicate in percentage)

contacts with change agencies to get KVKs programmes. are present finding in line of [17,3]. In case of farming experience, it may be concluded that the majority of beneficiaries were medium and non-beneficiaries were having low farming experience category. Other studies have reported similar results [18]. [Table-2] shows the distribution of beneficiaries and non-beneficiaries' farmers according to their Psychological characteristics *i.e.* attitude, market orientation, scientific orientation, perception and knowledge and participation towards climate resilient agriculture. It is observed from table that majority of beneficiaries *i.e.* 56.00 percent had more favourable attitude towards climate resilient agriculture, while in case of non-beneficiaries' farmers 40.67 percent of farmers were less favourable attitude towards climate resilient agriculture. Therefore, it may be concluded that the higher percentage of beneficiaries were more favourable attitude towards climate resilient agriculture. The results of farmer's attitude were in similar with the results of [27]. This might be due to the farmers develop a favourable attitude towards climate resilient agriculture. The result was in agreement with the findings of [28,26]. In case of market orientation characteristics, it is revealed that majority of beneficiaries farmers *i.e.* 40.00 percent had high market orientation. In case of non-beneficiaries, 42.00 percent was found in low market orientation. Therefore, it may be concluded that the higher percentage of beneficiaries had high and non-beneficiaries were low market orientation. Similar findings of [5] is worked on the impact of frontline demonstration on adoption of groundnut production technology by the farmers. Table also exhibits the distribution of beneficiaries and non-beneficiaries' farmers according to their scientific orientation. The data shows that majority of beneficiaries' farmers *i.e.* 51.33 percent were having high scientific orientation. In case of non-beneficiaries farmers 47.33 percent were having medium scientific orientation category. Therefore, it may be concluded that the higher percentage of beneficiaries were having high and non-beneficiaries had medium scientific orientation. Similar findings were reported by [14, 13]. Table depicts that the distribution of beneficiaries and non-beneficiaries according to their perception towards climate resilient practices. It is observed from table that beneficiaries (50.67%) and non-beneficiaries (54%) were having high and medium perception towards climate resilient practices respectively. It means the farmers' perception was generally conventional. This finding gets support to the findings of [15]. Table attempt on the distribution of beneficiaries and non-beneficiaries according to their knowledge about climate resilient activities, table clearly illustrates that the 50.00 percent beneficiaries and 48.67 percent non-beneficiaries were having medium knowledge. The finding is in accordance with the findings of [20, 4] and [16] who also reported that the average knowledge of beneficiary respondents was found to be higher than the non-beneficiary respondents. This might be due to the fact that there were number of other extension education programmes which working on the principle "learning by doing and "seeing is believing" organized by different organizations like KVKs and other extension agency, communication media use by farmers for providing knowledge about different production technology to them, resulting in increase of knowledge not only to beneficiary but non-beneficiary farmers also. The data are presented in above table observed that majority of beneficiaries (46.67 %) and non-beneficiaries (57.33%) were having medium to low participation in climate resilient activities of KVK respectively. The data presented in [Table-3] shows that the majority of beneficiaries had medium (64.00) information seeking behaviour while non-beneficiaries had low (47.33) information seeking behaviour. This might be due to the participating farmers having more contact with information sources can better manage the problems and hence can get more profit resulting in higher adoption. These findings are in conformity with the findings of [17] and [15]. The table exhibits the distribution of beneficiaries and non-beneficiaries' respondents according to their information sharing behaviour. The majority of beneficiaries had medium (52.67) information sharing behaviour while non-beneficiaries had low (43.33) information sharing behaviour. These results are supported by [22] who inferred that neighbour found their place of pride by attracting large number of famers for information sharing.

Economic Performance in Terms of Change in Cropping Pattern

Information on crops grown before and after was obtained based on interaction with the respondents. No major change in crops cultivated was found but changes occurred to the varieties of the crops grown. Before the KVK intervention, both beneficiary and non-beneficiary farmers cultivated the traditional and conventional varieties, which were more prone and susceptible to crop damage. But after the KVK interventions, beneficiary farmers started growing drought tolerant, short duration and high yielding disease resistant varieties like, short duration soybean variety JS-95-60 matures in 80-85 Days under rain fed condition, short duration sesame variety JTS-8 on light soils under rain fed condition matures in 75-78 days, mustard variety Pusa Jai Kisan low water required oilseed crop and highly remunerative crop in light soil under limited irrigation condition, gram (Chick pea) Variety: JG-11 temperature tolerant variety escape to temperature fluctuation during crop growth period, Low water required pulse crop and in medium soil under limited irrigation condition, which was more suited to the region, the farmers shifted to more remunerative but no significant change in varieties was noticed in case of non-beneficiaries. This finding line up with finding of [9,8] and [11].

Conclusion

The study revealed that (1) Majority of beneficiary respondents found superior than non-beneficiary respondent in case of level of education, occupation. (2) Majority of the both categories beneficiaries and non-beneficiaries farmers of KVK's are in middle in age, low income, medium size of land holding and medium farming experience about improved practices of climate resilient agriculture. (3) Majority of beneficiary respondents found superior than non-beneficiary respondent in case of attitudes, market orientation, perception, knowledge and information seeking and sharing behaviour about improved practices of climate resilient agriculture.

Application of research: Study indicates the area under different crops grown is dependent upon the agro climatic condition, availability of technological inputs and extent of investment. Cropping pattern is continued to change over time due to socio economic factors. The change in cropping pattern like crop and their varieties is stirring on recommended technologies by the farmers.

Research Category: Cropping system

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Study area / Sample Collection: Datia and Tikamgarh District

Cultivar / Variety name: Nil

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