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Knowledge of Aromatic Black Rice Growers Regarding Benefits Provided under Mission Organic Value Chain Development Scheme

Meghajit Sharma Shijagurumayum[1*], M. T. Lakshminarayan[2] and B. Krishnamurthy[1]

[1]Department of Agricultural Extension, University of Agricultural Sciences, Bengaluru, India.
[2]University Examination Centre, University of Agricultural Sciences, Bengaluru, India.

Authors' contributions

The research work was carried out in collaboration among all. All authors have read and approved the final manuscript

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ABSTRACT

The present study was carried out during 2020-21 in Thoubal and Bishnupur districts of Manipur state to assess the knowledge of aromatic black rice growers regarding the benefits provided under the Mission Organic Value Chain Development Scheme (MOVCDS). One hundred eighty aromatic black rice growers were interviewed for the study using a pre-tested interview schedule. The results revealed that a vast majority of over 85.00 per cent of the aromatic black rice growers had correct knowledge regarding the various benefits provided under MOVCDS. Education, organic farming experience, livestock possession, crop productivity, achievement motivation, aspiration, management orientation, economic motivation, risk orientation, innovative proneness, mass media exposure, training on organic farming, extension agency contact, and extension participation of aromatic black rice growers have significantly contributed in increasing the knowledge level of aromatic black rice growers regarding the benefits provided under MOVCDS. Further, extension agency contact, extension participation, and training on organic farming of aromatic black rice growers were found to be having the direct effect, indirect effect, and largest indirect effect in

**Corresponding author: E-mail: meghajit59@gmail.com;*

increasing the knowledge regarding the benefits provided under MOVCDS. The research finding validates the importance of training, extension participation, and extension agency contact in any social intervention to enhance the knowledge of the beneficiaries regarding the scheme or intervention.

Keywords: Knowledge; MOVCDS; Black rice; training; extension participation.

1. INTRODUCTION

The Mission for Organic Value Chain Development for North-East Region (MOVCD-NER) is a Central Sector Scheme, a sub-mission under the National Mission for Sustainable Agriculture (NMSA), launched by the Ministry of Agriculture and Farmers Welfare for implementation in the states of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, and Tripura, during the 12th plan period. The scheme aims for the development of certified organic production in a value chain mode to link growers with consumers and to support the development of the entire value chain starting from inputs, seeds, certification, to the creation of facilities for collection, aggregation, processing, marketing, and brand-building initiative. The Mission Organic Value Chain Development Scheme (MOVCDS) is implemented by Manipur Organic Mission Agency (MOMA) in Manipur aiming at promotion and production of certified organic commodities focussing on export-oriented crops viz., Black Aromatic Rice, Ginger, Tamenglong Orange, King Chilli, Kachai Lemon, and Pineapple. The MOMA is conducting various production and extension activities, such as providing training on organic cultivation and identification of farmer cluster groups through which the organic practices, the information, and technical know-how is expected to be tickled down.

The black aromatic black rice is native to the north-eastern region of India. The black colour of the grain which gives the crop a distinct feature is primarily due to its anthocyanin content. The crop is usually grown in the Kharif season during May and June and harvested in September and October. Moreover, the duration of the crop is 120 days meaning that its duration is a fortnight longer than the normal white rice. Various studies have reported that the aromatic black rice has superior nutritional values such as higher contents of minerals, proteins, high antioxidants, and perceived to have various health benefits. It is important to study the knowledge of the beneficiaries as the success of any programme/scheme depends upon the beneficiaries' knowledge of the mechanism benefits/incentives and other various aspects of the programme/scheme. Additionally, studies on the knowledge of benefits provided under a scheme have been indeed conducted for other schemes. For instance, Kalamkar and Swain [1] and Singh et al. [2] in their respective works on RKVY and ATMA reported 63.75 per cent and 49.00 per cent of the beneficiaries had good knowledge regarding the benefits provided under the respective schemes. Looking into the prior studies conducted to identify the extent of contribution of profile characteristics to the knowledge of the beneficiaries Suman [3] in her study found that education and farming experience were contributing to the knowledge of the beneficiaries. On the other hand, Triveni et al. [4] in their study reported that a significant contribution of variables such as income, innovativeness, decision-making ability, risk-bearing ability, economic orientation, scientific orientation, information-seeking behaviour towards the knowledge of beneficiary farmers about the benefits provided under dairy development programmes. Though it is important to note that no prior studies have been conducted on either aromatic black rice or the MOVCDS from a behavioural perspective, therefore, it was sought imperative to conduct a study on it. Therefore, in this backdrop, the present study has been undertaken with the specific following objectives:

1. To assess the knowledge of aromatic black rice growers regarding the benefits provided under MOVCDS
2. To know the extent of contribution of profile characteristics of aromatic black rice growers on the knowledge regarding the benefits provided under MOVCDS
3. To find out the direct, indirect, and largest indirect effects of profile characteristics of aromatic black rice growers on the knowledge regarding the benefits provided under MOVCDS

2. METHODOLOGY

The present research study was conducted in Thoubal and Bishnupur districts of Manipur, where the first phase of MOVCDS was implemented from 2017-2018 to 2019-20. Thoubal (500 beneficiaries) and Bishnupur (493 beneficiaries) districts had a larger number of aromatic black rice growers availing the benefits under MOVCDS during phase I, hence these two districts of Manipur state was purposively selected from among the four districts that were covered under MOVCDS. The same beneficiaries will derive benefits under MOVCDS for all three years in phase I. The first phase of MOVCDS was implemented in all the taluks of Thoubal and Bishnupur districts, hence all the three taluks (Lilong, Thoubal, and Kakching) from Thoubal districts and all the three taluks (Nambol, Bishnupur, and Moirang) from Bishnupur district were selected for the research study.

Three villages from each of the sampled six taluks were randomly selected for the study. From each of the selected 18 villages, ten beneficiary aromatic black rice growers (who were practicing the transplanting method of rice cultivation) were randomly selected for the study. Thus, the total number of beneficiary aromatic black rice growers sampled for the research study was 180. More than 90 per cent of the beneficiary aromatic black rice growers of MOVCDS were practicing the transplanting method of rice cultivation. Hence, the beneficiary aromatic black rice growers who were practicing the transplanting method of rice cultivation were purposively selected for the study

Knowledge is operationalized in the present research study '*as the extent to which the benefits provided under MOVCDS are known to the aromatic black rice growers'*. Thirteen benefits that were provided under MOVCDS [5] were considered for the study and the response of the aromatic black rice growers was expressed in terms of frequency and percentage. Knowledge regarding the benefits provided under MOVCDS was considered as the dependent variable for the study. Information regarding 20 profile characteristics (independent variables) of aromatic black rice growers was collected using a structured schedule with a standardized scale and procedure. The collected data were analyzed using multiple regression analysis and path analysis. The independent variables which were significantly contributing to the knowledge level were considered for path analysis.

3. RESULTS AND DISCUSSION

3.1 Knowledge of Aromatic Black Rice Growers Regarding the Specific Benefits Provided under MOVCDS

The findings in Table 1 revealed that a vast majority of aromatic black rice growers were possessing correct knowledge on the knowledge items such as farmers are given quality seed/ planting material as assistance for the first two years of establishment (99.45%), the scheme enables the beneficiaries to sale their produces under the brand name "Organic Manipur" (99.45%), an assistance of Rs. 3750 per ha could be availed for the establishment of an on-farm input production unit (95.55%), assistance for quality seed/ planting material through the MOVCDS is limited to 50.00 per cent of actual seed/ planting material cost (limited to Rs17500/ha) (95.00%), collection of products is endured by service providers for the sale of the produce (93.88%), one-time assistance of Rs. 3750 per ha area could be procured by the farmers in the first year for procurement of off-farm inputs such as biofertilizers, biopesticides, and neem cake (93.33%), resource sharing is facilitated among registered black rice growers in farmers interest groups (93.33%), storage chambers for storing crop harvest have been established at each district (92.77%), a three-year organic scope certification is being carried out under MOVCDS to help certify the produces (89.44%), timely logistic support in terms of aggregation and transportation of organic black rice is provided under MOVCDS (88.88%), effective integrated packhouse is established as subsidiary component of the collection, aggregation and grading units and integrated processing units (88.88%), marketing infrastructure are established within the radius of 25 km from farmers clusters to increase access to market (88.88%) and agri-machinery custom hiring centers are established to cater the needs of black rice growers (88.33%). Similar findings were reported by Alawa [6].

Regular participation of aromatic black rice growers in extension activities of MOVCDS, frequent contact with agricultural extension functionaries and propaganda about MOVCDS activities through mass media and display of

information regarding the benefits of MOVCDS in Agricultural and Horticultural departments of Manipur are the major reasons for a vast majority of aromatic black rice growers in having correct knowledge regarding the benefits provided under MOVCDS.

3.2 Extent of Contribution of profile Characteristics of Aromatic Black Rice Growers on the Knowledge Regarding the Benefits Provided under MOVCDS

Education, organic farming experience, livestock possession, crop productivity, achievement motivation, aspiration, management orientation, economic motivation, risk orientation, innovative proneness, mass media exposure, training on organic farming, extension participation, and extension agency contact of aromatic black rice growers had significantly contributed in developing high knowledge towards the benefits provided under MOVCDS (Table 2). All these 20 variables selected for the research study together have contributed to 70.68 per cent (R^2= 0.7068) in developing a high level of knowledge regarding the benefits provided under MOVCDS. Other six variables, namely age, family size, landholding, fallow period, annual income, and material possession of aromatic black rice growers had no significant association with the knowledge regarding the benefits provided under MOVCDS. It could be concluded that education, organic farming experience, livestock possession, crop productivity, achievement motivation, aspiration, management orientation, economic motivation, risk orientation, innovative proneness, mass media exposure, training on organic farming, extension participation, and extension agency contact have a synergic effect on one another influencing the aromatic black rice growers in having correct/good knowledge regarding the benefits provided under MOVCDS.

3.3 Direct, Indirect, and Largest Indirect Effects of Profile Characteristics of Aromatic Black Rice Growers on the Knowledge Regarding the Benefits Provided under MOVCDS

Table 3 presents the data on the path co-efficient of profile characteristics of aromatic black rice growers concerning their direct effects, total indirect effects, and largest indirect effects channeled through other independent variables on knowledge regarding the benefits provided under MOVCDS.

Concerning the ranking of variables based on their direct effect on knowledge regarding the benefits provided under MOVCDS, it was found that extension agency contact (X13), extension participation (X14), training on organic farming (X12), and innovative proneness (X4) occupied the first four ranks in the order of importance, whereas risk orientation (X9), economic motivation (X8), livestock possession (X13) and crop productivity (X14) obtained the last four ranks in the order of importance. The ranking of variables on their indirect effect on the knowledge of aromatic black rice growers regarding the benefits provided under MOVCDS revealed that the extension participation (X14), extension agency contact (X13), training on organic farming (X12), and innovative proneness (X4) occupied the first four ranks in the order of magnitude, while independent variables such as mass media exposure (X11), economic motivation (X12), livestock possession (X3) and crop productivity (X14) occupied the last four ranks in the order of magnitude.

The first largest indirect effect channelled through is extension agency contact (X13) in the case of seven variables, closely followed by training on organic farming (X12) was channelled through three variables, and extension participation (X12) was channelled through two variables. The second-largest indirect effect channelled through was extension participation (X14) in the case of five variables, while extension agency contact (X13) was channeled through four variables and innovative proneness (X10) was channeled through two variables. In respect of the third-largest indirect effect channeled through is training on organic farming (X12) in case of five variables, while extension participation (X14) and extension agency contact (X13) was channeled in case of three and two variables, respectively. The total residual effect was 0.2993.

The results of the path analysis revealed that three variables namely, extension agency contact, extension participation, and training on organic farming were having major direct effect, indirect effect, and the largest indirect effect in enhancing the knowledge of aromatic black rice growers regarding the benefits provided under MOVCDS.

Table 1. Knowledge of aromatic black rice growers regarding the benefits provided under MOVCDS

(n=180)

Sl. No.	Particulars	Aromatic black rice growers			
		Correct knowledge		Incorrect knowledge	
		No.	%	No.	%
1	An assistance of Rs. 3750 per ha could be availed for the establishment of on-farm input production unit.	172	95.55	8	4.45
2	One-time assistance of Rs. 3750 per ha area could be procured by the farmers in the first year for procurement of off-farm inputs such as biofertilizers, biopesticides, and neem cake	168	93.33	12	6.67
3	Farmers are provided with the quality seed/ planting material as assistance for the first two years of establishment	179	99.45	1	0.55
4	Assistance for quality seed/ planting material through the MOVCDS is limited to 50% of actual seed/ planting material cost (limited to Rs17500/ha)	171	95.00	9	5.00
5	Resource sharing is facilitated among registered Black rice growers in farmers interest groups	168	93.33	12	6.67
6	Collection of produce is endured by service providers for the sale of the produce	169	93.88	11	6.12
7	Timely logistic support in terms of aggregation and transportation of organic black rice is provided under MOVCDS	160	88.88	20	11.12
8	Agri-machinery custom hiring centers are established to cater to the needs of Black rice growers	159	88.33	21	11.67
9	Storage chambers for storing crop harvest have been established at each district	167	92.77	13	7.23
10	Effective integrated packhouse is established as a subsidiary component of the collection, aggregation, and grading units and integrated processing units	160	88.88	20	11.12
11	A three-year organic scope certification is being carried out under MOVCDS to help certify the produces	161	89.44	19	10.56
12	Marketing infrastructure are established within the radius of 25 km from farmers clusters to increase access to market	160	88.88	20	11.12
13	The scheme enables the beneficiaries to sell their produces under the brand name “Organic Manipur”	179	99.45	1	0.55

Table 2. Extent of contribution of the profile characteristics of aromatic black rice growers on the knowledge regarding the benefits provided under MOVCDS

(n=180)

Sl. No.	Characteristics	Regression coefficient	SE of Regression coefficient	't' value
1	Age	0.87	0.28	0.32^{NS}
2	Education	0.33	0.71	2.11*
3	Family size	0.94	0.22	0.23^{NS}
4	Land holding	0.26	0.11	0.41^{NS}
5	Annual income	0.51	0.20	0.39^{NS}
6	Fallow period	0.90	0.09	0.10^{NS}
7	Organic farming experience	0.29	0.62	2.11*
8	Livestock possession	0.31	0.71	2.23*
9	Material possession	0.16	0.11	0.69^{NS}
10	Crop productivity	0.06	0.13	2.08*
11	Achievement motivation	0.36	0.81	2.23*
12	Aspiration	0.31	0.68	2.18*
13	Management orientation	0.28	0.70	2.50*
14	Economic motivation	0.27	0.69	2.44*
15	Risk orientation	0.28	0.72	2.51*
16	Innovative proneness	0.33	0.68	2.01*
17	Mass media exposure	0.29	0.71	2.48*
18	Training on organic farming	0.37	0.82	2.21*
19	Extension agency contact	0.43	0.91	2.09*
20	Extension participation	0.29	0.88	2.09*

*NS= Non-significant, *=Significant at 5%, **= Significant at 1% , R^2 = 0.7068*

Table 3. Direct, indirect, and largest indirect effects of profile characteristics of aromatic black rice growers on the knowledge regarding the benefits provided under MOVCDS

(n=180)

Sl. No.	Characteristics	Direct effect	Rank	Total Indirect Effect	Rank	Three largest indirect effects channeled through
X_1	Education	0.0211	10	0.0312	9	0.174 X13 0.160 X10 0.090 X14
X2	Organic farming experience	0.0400	6	0.0592	6	0.264 X13 0.250 X14 0.111 X12
X3	Livestock possession	0.0091	13	0.0111	13	0.236 X13 0.211 X14 0.091 X12
X4	Crop productivity	0.0081	14	0.0100	14	0.311 X10 0.291 X13 0.111 X12
X_5	Achievement motivation	0.0391	7	0.0699	5	0.121 X13 0.091 X7 0.009 X12
X_6	Aspiration	0.0311	8	0.0561	7	0.412 X13 0.091 X4 0.081 X14
X_7	Management orientation	0.0299	9	0.0492	8	0.316 X13 0.296 X10 0.199 X14
X_8	Economic motivation	0.0101	12	0.0277	12	0.534 X12 0.128 X14 0.121 X13
X_9	Risk orientation	0.0209	11	0.0292	10	0.388 X14 0.261 X13 0.111 X12
X10	Innovative proneness	0.0522	4	0.0791	4	0.128 X5 0.122 X14 0.098 X13
X11	Mass media exposure	0.0413	5	0.0291	11	0.351 X13 0.291 X14 0.211 X1
X12	Training on organic farming	0.0690	3	0.0801	3	0.111 X12 0.110 X13 0.089 X1
X13	Extension agency contact	0.710	1	0.0899	2	0.429 X14 0.291 X10 0.111 X9
X14	Extension participation	0.699	2	0.0911	1	0.009 X12 0.008 X13 0.001 X10

Residual effect = 0.2993

4. CONCLUSION

Training on organic farming, extension participation, and extension agency contact were having a direct, indirect, and largest indirect effect in increasing the knowledge level of aromatic black rice growers regarding the benefits provided under MOVCDS. Hence, adequate opportunities need to be provided for the aromatic black rice growers to participate in

training programmes and extension activities (discussion meetings, demonstrations, farmer field school, exhibitions, video conference, field days, etc.) and the extension personnel should also be available at the villages, which would help the beneficiary aromatic black rice growers to derive the optimum benefits/incentives of MOVCDS. Furthermore, it can also be stated that the research finding validates the fact that more directed efforts towards training, extension participation, and extension agency contact indeed are imperative in any social intervention to enhance the knowledge of the beneficiaries regarding the scheme or intervention.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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