Correlates of Adoption of Groundnut Cultivation Technology: A Micro Level Study from Odisha

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ABSTRACT

Being a cash crop, groundnut plays a vital role in Indian economy with its total production increased by two folds during 1950-51 to 2018-19. The present study was carried out in Dhenkanal and Angul districts of Odisha with an aim to assess the socio-economic characteristics of the groundnut farmers which may have potential impact on the adoption pattern of the recommended technology. Both purposive and random sampling procedure was adopted in selection of 220 respondents. Data were collected through pre-tested structured interview schedule. Majority (78.63%) of the farmers were found in medium level of adoption category followed by low level (15.91%) and high level (5.46%) of adoption. Variables *viz.,* social participation, extension participation, exposure to mass media, attitude, and knowledge had significant positive association with the level of adoption of the technology. Age was found to be negatively correlated with the level of adoption of groundnut cultivation technology. It is suggested that blanket recommendation of technology has to be substituted with customized technology package suiting to the socio-economic profile of the farming community.

Keywords: Adoption, Correlates, Farmer, Groundnut, Socio-economic

INTRODUCTION

Groundnut is one of the most demanding oilseed crops to have effect on Indian economy. In terms of acreage, production and economic value, these oilseed crops are second only to food grains (Jha *et al.,* 2012). Groundnuts are nutritious and promote value-added industries in low-income countries especially for small-scale farmers. In addition, groundnuts are more important source of protein, particularly for those households that cannot afford animal protein sources (Kassie *et al.*, 2011). Groundnut production in India has almost doubled from 3.48 MMT (1950-51) to 6.69 MMT (2018-19), (GOI, 2019). Of total oilseed production of the country, Odisha state contributes more than two-third production. Groundnut production continues to dominate the oilseed production in the state (Samal *et al.,* 2017). Angul and Dhenkanal districts combined contribute 11.9 per cent of the total groundnut production of Odisha (GoO, 2019).

The commercial importance of the groundnut crop is increasing with the establishment of solvent extraction plants indicating a rise in the production and marketable surplus of the crop in national economy (Gote *et al.,* 2010). The minimum support price (MSP) of groundnut has also increased by 32 per cent i.e. from Rs. 4000 (2013-14) to Rs. 5275 (2020-21) as reported by GOI (2020). India, being an agrarian country is home to 650 million farmers including their families which amount to 50 per cent of country's population. Of these farmers, 85 per cent of them are small and marginal. This fact

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questions about the relevancy of agricultural development in terms of socio-economic and environmental concerns rather than only in terms of increased production (Singh, 2019). Regional variation in agricultural productivity is not only due to the adoption of set of technology but also due to other factors, which are believed to influence the adoption of the technology and can be changed through appropriate policies (Chand, 2008). Hence, improving the socio-economic background of the farmers is of more importance for the overall agricultural development of the country. Farmers are heterogeneous with respect to various characteristics like education, experience in cultivation, farm size, annual income, media participation, extension contact, participation in extension activities, economic motivation, and scientific orientation. Hence, it is important to throw light on the socio-economic factors of the farmers which play a major role in diffusion and adoption process of the technology. Considering the above facts, the study was carried out with the specific objectives (i) to assess the socio-economic profile of groundnut farmers and (ii) to find out the correlates to adoption of groundnut cultivation technology.

METHODOLOGY

The present study was carried out in two districts of Odisha *viz.,* Angul and Dhenkanal which were selected purposively as both the districts have a significant share towards the groundnut production of the state. From each district, three blocks were selected purposively on the basis of large area under groundnut cultivation. From each block, two villages were selected randomly making a total 12 of villages. Subsequently, from each village, 18-20 groundnut growing farmers were selected randomly and thus the sample size comprised of 220 farmers. Primary data were collected through a pre-tested (on 20 farmers in each selected district) structured interview schedule. The socio-economic variables included in the schedule were age, education level, landholding, annual income, social participation, exposure to mass media, extension participation, knowledge and attitude of the respondents. The responses for each of the variable were recorded using the schedule developed for the study. For measuring the adoption level, the farmers were asked

to respond whether they adopt or do not adopt the practices and score of 1 and 0 were assigned to adoption and non-adoption of the technology respectively. The adoption quotient for each of the respondent was calculated by using the formula given by Pareek and Chattopadhyay (1966):

$$\text{Adoption quotient} = \frac{\text{No. of practices adopted}}{\text{No. of practices advocated}} \times 100$$

After working out the adoption quotient, the respondents were categorized into 3 categories by computing the mean and standard deviation for the adoption quotient. The three groups are- low (< Mean - SD), medium (Between Mean ± SD) and high (> Mean + SD). The tabulated data were analysed using suitable statistical tools *viz.,* frequency, percentage and correlation coefficient.

RESULTS AND DISCUSSION

Distribution of respondents based on selected socio-economic characteristics (Independent variables) and adoption level (Dependent variable) and dependent variable is presented in Table 1. From Table 1, it is depicted that majority (63.63%) of the respondents were in middle age group followed by 29.09 per cent of them were in old age group. Age is a significant factor which determines the extent of knowledge gained, involvement in different enterprises and adoption of improved practices. The studies conducted by Kasinath *et al.* (2018); Rahangdale *et al.* (2018) and Jha and Das (2019) also revealed that age has got bearing on knowledge gain. Near to half (45.91%) of respondents was having middle level of education and only one-third (29.09%) had education up to high school. Negligible proportion (5.00%) of the farmers was having an education up to college level. The size of holding is an important factor for determining the economic status of a person as well as level of involvement in farming. Majority (46.37%) of the farmers had land holding size of 1-2 ha. followed by < 1 ha (32.72%). The annual income was found between Rs. 1.2 lakh to Rs. 2.4 lakh for majority (83.64%) of the respondents. Around 44 per cent of the farmers had a medium level of participation in various social organizations. About two-

Table 1: Distribution of respondents according to their selected socio-economic characteristics (n=220)

(A) Independent Variables	Category	Frequency	Percentage
Age	Young (Up to 35 yrs.)	16	7.28
	Middle aged (36-55 yrs.)	140	63.63
	Old (Above 55 yrs.)	64	29.09
Education level	Illiterate	8	3.63
	Primary	36	16.37
	Middle	101	45.91
	High School	64	29.09
	College and Above	11	5.00
Landholding size	Landless	14	6.37
	Marginal (<1 ha)	72	32.72
	Small (1-2 ha.)	102	46.37
	Medium (2-4 ha)	24	10.90
	Large (>4 ha)	8	3.64
Annual income	Low (up to 1.2 lakh)	12	5.46
	Medium (1.2 lakh-2.4 lakh)	184	83.64
	High (Above 2.4 lakh)	24	10.90
Social participation	Low (< 7.33)	33	15.00
	Medium (7.33-10.19)	97	44.09
	High (>10.19)	90	40.91
Exposure to mass media	Low (<17.27)	40	18.19
	Medium (17.27-23.25)	146	66.36
	High (>23.25)	34	15.45
Extension participation	Low (<8.5)	60	27.27
	Medium (8.5-11.58)	89	40.46
	High (>11.58)	71	32.27
Knowledge on groundnut cultivation	Low (37.96)	42	19.09
	Medium (37.96-57.19)	117	53.19
	High (>57.79)	61	27.72
Attitude towards groundnut cultivation	Less favourable (<57.79)	32	14.54
	Favourable (57.79-62.43)	113	51.37
	Highly favourable (>62.43)	75	34.09
(B) Dependent variable			
Adoption of recommended groundnut cultivation practices	Low (<37.43)	35	15.91
	Medium (37.43-60.06)	173	78.63
	High (>60.06)	12	5.46

third of the respondents were found in the category of medium level of exposure towards mass media (66%) followed by low level (18.19%). A greater proportion of the farmers (40.46%) were found in medium level of extension participation followed by high level of exposure (32.27%). For more than half of the respondents (53.19 and 51.37%) had a favourable attitude and medium knowledge towards groundnut cultivation technology respectively. With regard to dependent variable adoption of the recommended

technology, more than three-fourth (78.63%) of farmers belonged to medium level of adoption category. Similar level of adoption was reported in earlier studies by Roy and Bhagat (2012); Melkeri and Mazhar (2018) and Chigadolli *et al.* (2019).

The relationship between selected socio-economic characteristics of groundnut farmers and their level of adoption was worked out by correlation coefficient and the computed 'r' values are presented in Table 2.

It indicates that the variables *viz.*, social participation (X_4), exposure to mass media (X_5), extension participation (X_6), attitude (X_7), knowledge (X_8) have a positive and significant association with the level of adoption of the technology at 0.01 level of significance. Variables namely age, education, social participation, mass media exposure, annual income, family type, land holding and knowledge level correlated significantly with adoption of improved practices (Mishra *et al.,* 2020). Roy and Bhagat (2012) observed that extension agency contact and mass media exposure had positive and significant correlations with the extent of adoption. This might be because of exposure to different mass media sources like television, radio and newspapers and also being exposed to various extension methods. Training and demonstration might have helped the respondents to gain new information, knowledge and skill. Age (X_1)

was found to have significant negative correlation with the level of adoption of groundnut cultivation technology. This indicated that the level of adoption decreases with the increase in age. The young and middle age group of farmers are adopting more than the farmers belonging to old age group. Roy and Bhagat (2012); Mishra *et al.* (2020) also found a negative association of age with the level of adoption. Education level (X_2) and land holding (X_3) were found to have positive and a non-significant relationship with the level of adoption. Farmers with a higher education level had a better comprehension on knowledge on recommended practices than those who don't have. It indicated that their education level might be a factor to adopt and hold on to the recommended agricultural technology but not to a significant level. Roy and Bhagat (2012); Melkeri and Mazhar (2018) in their study observed education level to be positively correlated with the level of adoption. Farmers with a medium or large land holding might have the opportunity to adopt the recommended practices of the technology for a better return and also might be more receptive to new ideas and skills regarding the management factors resulting in a positive association with the adoption level. Mane (2012) and Melkeri and Mazhar (2018) observed positive relationship between size of land holdings and the adoption.

CONCLUSION

From the study, it can be concluded that the socio-economic variables are the underlying factors that influence adoption of a technology. Majority of the farmers are still in the medium level of adoption which is probably governed by poor socio-economic factors. Blanket recommendation of technology has to be substituted with customized technology package suiting to the socio-economic profile of the farming community. Government of India and the State Governments are emphasizing on strengthening judicious mix of the components *viz.,* regular capacity building, interactive methods of information dissemination, innovative use of Information & Communication Technology (ICT) under the umbrella Scheme-Green Revolution-Krishonnati Yoajana from 2017-18. Adopting the recommended

Table 2: Correlation coefficient of selected socio-economic variables with adoption (n= 220)

Variables	Correlation coefficient (r)	Sig
Age (X_1)	-0.453	0.000**
Education level (X_2)	0.114	0.093[NS]
Land holding (X_3)	0.099	0.142[NS]
Social participation (X_4)	0.567	0.000**
Exposure to mass media (X_5)	0.192	0.004**
Extension participation (X_6)	0.786	0.000**
Attitude towards groundnut cultivation (X_7)	0.564	0.000**
Knowledge on groundnut cultivation (X_8)	0.640	0.000**

** Significant at 1% level of significance; NS= Non Significant

technology in a wider scale would enhance the economic, employment and nutritional security. Groundnut as a crop has huge potential in Odisha and an enabling eco-system has to be in place so as to encourage farmers adopt full package of practices.

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