



PADDY CULTIVATION IN IMPHAL, WEST MANIPUR: STATUS OF INFORMATION SOURCES UTILISATION

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Abstract

Paddy holds a key component for sustainable food production and economy in India. The state of Manipur located in the North-Eastern part of India is unique in producing varieties of paddy. Agriculture being the backbone of the state economy and paddy is the dominant crop grown by farmers in Manipur. Imphal West district is classified under high productivity of paddy in the state of Manipur. This district enjoys comfortable temperature throughout the year. The whole district is under the influence of the monsoons characterized by hot and humid rainy seasons during the summer, and cool and dry seasons during the winter. Use of information sources is vital for improving productivity of paddy and attaining food security among the farmers. Therefore the present study was undertaken in the Imphal West district to *investigate the status and factors influencing various information sources for enhancing the productivity of paddy*. Further two blocks viz., Imphal West I and Imphal West II blocks were selected and two villages among the leading paddy producing villages in each of these blocks were selected randomly. 20 farmers were randomly selected from each of the four selected villages to obtain a sample size of 80 respondents. The findings of the study revealed that majority of the respondents belonged to middle age group, were educated, had marginal land holding size with low level of social participation and training exposure, possessing medium knowledge level of improved paddy cultivation, medium level of market orientation and scientific orientation. Major information sources utilised by the paddy growers included television, newspaper and radio and friends. Correlation analysis revealed that the variables education, land holding under paddy, annual income, training exposure, social participation, attitude and market orientation had positive and significant association with the information sources utilization by the paddy growers. The regression model which included annual income and social participation were highly significant at 1% level of probability and accounted for explaining the information sources utilization for enhanced paddy production among the farmers. The study concluded that education, appropriate land under paddy, assured annual income, relevant training in improved paddy farming, social participation, marketing orientation and favourable attitude influenced the farmers to utilize different information sources for improved paddy cultivation. The study recommended to motivate farmers for sparing more land under paddy cultivation, frequent use of mass media of information sources and impart need based training in improved paddy cultivation technology so as to enhance productivity and attain food security among the paddy farmers.

Key words : Paddy, information sources, influencing factors, Imphal West, Manipur.

Introduction

Rice is one of the most important food crops among the Asian countries of the world. Maximum rice production and consumption exists in Asian countries. More than 3.5 billion people of the world consume rice as their staple food which accounts nearly half of the world population. Nearly a fourth of the Asian population is still poor and has considerable unmet demand for rice (Cago, 2017). India ranks first in the world in terms of

area under cultivated rice with 43.789 million ha followed by China having an area of 30.747 million ha and Indonesia with an area of 15.788 million ha. China ranks first among all rice producing country in the world both in rice production (212.67 MT) as well as productivity (6.91 MT/ha). India ranks second in rice production with 168.5 MT but having a productivity of 3.84 MT/ha. Indonesia has a total rice production of 81.382 MT but relatively higher productivity of 5.15 MT/ha (FAO, 2017). Rice grows in a wide range of geographical area under the different climatic conditions from the wettest areas to the driest

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deserts area of the world. Paddy is a chief agricultural crop in India. It holds the key component for sustainable food production and economy in the country. Rice is also an important food crop in North-Eastern region of India covering 3.51 million hectares that accounts for more than 80% of the total cultivated area and 7.8 per cent of total rice area of the country. The total rice production of North-Eastern region is estimated to be around 5.50 million tons and its share in national rice production is barely 5.9 per cent (Mohanty *et al.*, 2014).

Manipur is one of the North-Eastern states of India, covering an area of 22,327 Sq Km which nearly accounts for 0.7 per cent of the total land surface of India. Rice is the most cultivated crop in 9 districts of Manipur. Out of these, 4 districts are categorized as plain region which comes under high productivity category and the others 5 districts are categorized as hilly region which comes under low productivity category. Imphal West district falls under the high productivity paddy zone of Manipur having the highest area of 43.74 thousands hectares under paddy crop with an average production of 144.35 thousand MT having an average productivity of 3.30 MT/ha (Anonymous, 2018). Since paddy is the leading *khari* crop in Imphal west district, adoption of recommended paddy cultivation technology is dependent on the information sources utilized by the paddy farmers. Nowadays, with the advancement of communication technology in agricultural sector, it is necessary to know the current information sources utilization pattern by the paddy farmers of Imphal West district. Therefore, the present study was undertaken in Imphal west district with an objective to analyse the information sources utilization pattern and influencing factors so that the paddy farmers could take the maximum benefit of the improved cultivation technology and maximise their productivity and profitability.

Materials and Methods

The present study was conducted in Imphal West district of Manipur which is located in the North -Eastern part of India. From this district both the blocks *viz.*, Imphal West I and Imphal West II block were selected and two villages among the leading paddy producing villages in each of these blocks (Lairenjam and Patsoi villages from Imphal West I block and Phayeng and Langthabal villages from Imphal West II block) were selected randomly. Further 20 farmers were randomly selected from each of the four selected villages to obtain a sample size of 80 respondents. Primary data were collected from the selected respondents with the help of a pre-tested structured schedule by conducting personal interview. The

utilization pattern of information sources by the paddy growers was studied under the various information sources such as Mass media sources *viz.*, - Radio, Television, Newspaper, Exhibition, Print media, Mobile phone, videoconferencing; Informal information sources *viz.*, Friends, Relatives, Neighbours, progressive farmers and formal information sources *viz.*, VLW, AO/SDAO/DAO, KVKs, ATMA and NGOs. Data analysis was done using SAS software. Data were classified and tabulated by calculating frequency, percentage, mean, standard deviation, correlation and regression analysis.

Results and Discussion

Socio-economic, personal and psychological characteristics of the paddy farmers

The result presented in Table 1 revealed that majority (67.50%) of the respondents belonged to the middle age group (in line with the findings of Krishnamurthy *et al.*, 2018), 81.75 per cent of them were male, 75.00 per cent had medium family size, 61.25 per cent of them had nuclear family (in line with the findings of Singh *et al.*, 2014) and 23.75 per cent of the respondents were educated up to higher secondary. The above result showed that paddy farmers who belonged to the middle age group were more actively participating in paddy cultivation. It was also found that male farmers who were educated were more involved actively in improved paddy cultivation than female farmers. Respondents also realized the importance of medium size of family which sustain considerable impact on their family income and the awareness about family planning programmes for controlling population might have influenced them to prefer nuclear family.

Majority (73.75%) of the respondents had marginal size of total land holding, 85.00 per cent of them had marginal size of land holding under paddy crop, 25.00 per cent of them had annual income above Rs. 160000 whereas 62.50 per cent of them had total income below Rs. 40000 from paddy crop. The above results indicated that marginal land holding size of total land and under paddy cultivation was characterized by most of the respondents. It may be due to the fact that majority of the respondents were found more interested in utilising their land for other income generating activities rather than paddy crop. Thus it is a matter of great concern about adoption of improved paddy cultivation technology as low area under paddy crop possessed by majority of farmers can be a great hindrance to increase the overall production and productivity of paddy.

Majority (57.50%) of the respondents did not attend training, 48.13 per cent of them had medium level of social

Table 1: Socio-economic, personal and psychological characteristics of paddy growers. n=80

S.N.	Attributes	Category	f %	
1.	Age (Years)	Young(<35)	16 (20.00)	
	Mean= 49.30	Middle age (35-55)	54 (67.50)	
	SD=11.32	Old(>55)	10 (12.50)	
2.	Sex	Male	65 (81.25)	
		Female	15 (18.75)	
3.	Family size	Small (<4)	08 (10.00)	
		Mean=5.59	Medium (4-7)	60 (75.00)
		SD=2.34	Large (>7)	12 (15.00)
4.	Family types	Joint	31 (38.75)	
		Nuclear	49 (61.25)	
5.	Education level	Illiterate	11 (13.75)	
		Mean=2.78	Primary level	07 (8.75)
		SD=1.53	Middle	16 (20.00)
			Secondary	13 (16.25)
			Higher secondary	19 (23.75)
			Graduate	09 (11.25)
Above graduate	05 (6.25)			
6.	Land holding size (ha)	Marginal (<1ha)	59 (73.75)	
		Mean=1.61	Small (1ha-2ha)	17 (21.25)
		SD=1.49	Semi-medium (2ha-4ha)	03 (3.75)
			Medium (4ha-10ha)	01 (1.25)
			Large (>10ha)	00 (0.00)
7.	Area under paddy (ha)	Marginal (<1ha)	68 (85.00)	
		Mean=1.23	Small (1ha-2ha)	10 (12.50)
		SD=0.99	Semi-medium (2ha-4ha)	02 (2.50)
			Medium (4ha-10ha)	00 (0.00)
8.	Annual income (Rs)	Rs.40000- 80000	19 (23.75)	
		Mean=140887.50	Rs. 80000 - 120000	20 (25.00)
		SD=93008.01	Rs. 120000 - 160000	11 (13.75)
			More than Rs.160000	30 (37.50)
9.	Income from paddy (Rs)	Below Rs. 40000	50 (62.50)	
		Mean=23412.50	Rs. 40000-80000	14 (17.50)
		SD=41897.01	Rs. 80000-120000	10 (12.50)
			Above Rs. 120000	06 (7.50)
10.	Training exposure	Yes / Attended training	34 (42.50)	
		Mean=0.38		
		SD=0.49	No / Not attended training	46 (57.50)
11.	Social participation	Low (<0.16)	19 (23.75)	
		Mean=0.91	Medium (0.16-1.66)	36 (45.00)
		SD=0.75	High (>1.66)	25 (31.25)
12.	Knowledge level	Low (<2.36)	15 (18.75)	
		Mean=3.80	Medium (2.36-5.24)	56 (70.00)
		SD=1.44	High (>5.24)	09 (11.25)

Table 1 contd....

participation and 70.00 per cent of the respondents had medium knowledge level with respect to improved paddy cultivation (in line with the findings of Uddin *et al.*, 2017). The above result might be due to the fact that respondents had lack of information regarding the requisite trainings on paddy cultivation technology or the training programmes were not available for them to attend. Respondents need to have higher social participation in different social and community oriented programmes to receive new information earlier which might help them to adopt improved paddy cultivation technology faster. Most of the respondents possessed medium knowledge level on improved paddy cultivation technology. Thus they need to increase their knowledge for proper cultivation and management of paddy cultivation. Farmers with low knowledge level fail to adopt the correct management practices of paddy which may result in low income and demotivation towards crop cultivation. Therefore it is imperative on the part of State department of agriculture to develop a mechanism to include maximum farmers for relevant training so that latest information on recommended improved paddy cultivation can be delivered successfully for the benefit of farmers.

Majority (68.75%) of the respondents had favourable attitude towards the improved paddy cultivation (in line with the findings of Mohanraj and Karthikeyan., 2014), 90.00 per cent of them had medium level of scientific orientation (in line with the findings of Tengli and Sharma., 2017) and 80.00 per cent of the respondents had medium level market orientations (in line with the findings of Krishnamurthy *et al.*, 2018). The favourable attitude towards the improved paddy cultivation might be due to the higher productivity of paddy obtained by adopting improved paddy cultivation practices rather than following the conventional paddy cultivation practices.

Information sources utilization by paddy farmers

The results presented in table 2 revealed that majority (43.75%) of the

Table 1 contd....

S.N.	Attributes	Category	f %
13.	Attitude	Unfavourable (<25.33)	17 (21.25)
	Mean=31.40	Favourable (25.33-37.47)	55 (68.75)
	SD=6.07	Highly favourable (>37.47)	08 (10.00)
14.	Scientific orientation	Low(<18.23)	06 (7.50)
	Mean=21.31	Medium(18.23-24.39)	72 (90.00)
	SD= 3.08	High(>24.39)	02 (2.50)
15.	Market orientation	Low (<3.96)	07 (8.75)
	Mean=4.98	Medium(3.96-6.27)	64 (80.00)
	SD=1.29	High(>6.27)	09 (11.25)

respondents utilised “Television” most often with mean score 4.18 followed by 37.50 percent of them who utilised “Newspaper” with mean score 4.00 and 31.25 per cent of the respondents utilised “Radio” with mean score 3.62 among all the information sources utilised by the respondents for improved paddy cultivation. It may be due to the fact that these information sources were more focused, having low cost, easily accessible and apt for quick delivery to a large number of target farmers by providing reliable information as per the need of hour. Respondents also expressed that they received information about new varieties, insecticides & pesticides

for seasonal diseases through the advertisement in Television and Radio. Most of the respondents showed more interest in television and it was envisaged as a helpful medium for them. This result was in line with the findings of (Metga, 2012).

Majority (58.75%) of the respondents contacted “Friend” sometimes followed by 42.50 percent of the respondents who utilized “Newspaper” sometimes and 41.25 per cent of them who utilized “Radio” sometimes for getting different sources of useful information

on improved paddy cultivation. Friends were contacted by the respondents due to easy access and reliable source of information for getting the required information on agricultural and other social activities in time. Friends are like family extremely important to human life, help during difficult times, share information and care, guide in managing and participating activities.

Majority (98.75%) of the respondents never utilised “Video conferencing” as information source followed by 87.50 per cent of them who never contacted “NGOs” and 85.50 per cent of them never contacted “KVKs” for getting information on improved paddy cultivation. The

Table 2: Information sources utilized by the paddy growers in Imphal west, Manipur.

n=80

Sl.No.	Information sources	Frequency of contact			Mean score (MS) of information sources	Overall Rank
		Most utilized f %	Sometimes utilized f %	Never utilized f %		
Mass media information sources						
1.	Television	35 (43.75)	32 (40.00)	13 (16.25)	4.18	I
2.	Newspaper	30 (37.50)	34 (42.50)	16 (20.00)	4.00	III
3.	Radio	25 (31.25)	33 (41.25)	22 (27.50)	3.62	IV
4.	Exhibition	10 (12.50)	14 (17.50)	56 (70.00)	1.5	VIII
5.	Printed media	09 (11.25)	12 (15.00)	59 (73.75)	1.32	IX
6.	Mobile phone	06 (7.50)	09 (11.25)	65 (81.25)	0.94	X
7.	Video-conferencing	00 (0.00)	01 (1.25)	79 (98.75)	0.07	XIV
Informal information sources						
8	Friends	18 (22.50)	47 (58.75)	15 (18.75)	4.07	II
9.	Relatives	04 (5.00)	24 (30.00)	52 (65.50)	1.75	VI
10.	Neighbour's	09 (11.25)	27 (33.75)	44 (55.00)	2.25	V
11.	Progressive farmers	11 (13.75)	13 (16.25)	56 (70.00)	1.5	VIII
Formal information sources						
12	VLW	03 (3.75)	11 (13.75)	66 (82.50)	0.88	XI
13	AO/SDAO/DAO	04 (5.50)	10 (12.50)	66 (82.50)	0.88	XI
14.	ATMA	08 (10.00)	17 (21.25)	55 (68.75)	1.57	VII
15	KVKs	03 (3.75)	09 (11.25)	68 (85.50)	0.75	XII
16.	NGOs	02 (2.50)	08 (10.00)	70 (87.50)	0.63	XIII

Table 3: Association of independent variables with utilisation pattern of information sources.

Sl. No.	Variables	Correlation Coefficient
1.	Age	-0.095 ^{NS}
2.	Sex	0.191 ^{NS}
3.	Family size	-0.116 ^{NS}
4.	Family types	-0.048 ^{NS}
5.	Education	0.340*
6.	Total land holding size	0.186 ^{NS}
7.	Size of land holding under paddy	0.236**
8.	Total annual income	0.218**
9.	Annual income from paddy	0.177 ^{NS}
10.	Training exposure	0.616*
11.	Social participation	0.633*
12.	Knowledge level	-0.097 ^{NS}
13.	Attitude	0.238**
14.	Scientific orientation	0.183 ^{NS}
15.	Market orientation	0.299*

** =significant at 1% á =significant level at 5% á, NS =Not significant.

Table 4: Multiple linear regression of predictor variables with utilization pattern of information sources of paddy growers.

S.N.	Particulars	b	SE(b)	t value	Pr > t
1.	Intercept	4.438	2.117	2.100 ^{NS}	0.039
2.	Age	0.028	0.030	0.930 ^{NS}	0.356
3.	Education	0.384	0.251	1.530 ^{NS}	0.130
4.	Annual income	0.000	0.000	4.100**	0.0001
5.	Social participation	1.762	0.309	5.710**	<.0001
6.	Market orientation	0.192	0.278	0.690 ^{NS}	0.492

R²=0.563, F value=24.10**, **= significant level at 1% á, *=significant level at 5% á, NS =Not significant.

above result may be due to the fact that either respondents were not aware about the importance of getting required information from these information sources or were unable to contact them for receiving the required information in time. It might be also due to weak institutional farmers' linkage as a part of required policy, infrastructural support system or lack of technical support due to challenges faced on account of required human resources.

Based on the overall utilization of information sources, "Television" ranked first with mean score of 4.18 followed by "Friends" at II rank with mean score of 4.07 and "Newspaper" at III rank with mean score of 4.00. It is imperative on the part of state depart of agriculture to focus more on dissemination of latest agricultural information by popularising e-extension measures using ICT based methodologies.

Association of independents variables with utilization pattern of information sources by the paddy growers

Table 3 revealed that variables education, training exposure, social participation and market orientation were positive and significantly correlated with the utilization pattern of information sources. It was also observed that the variables land holding size under paddy crop, annual income and attitude towards improved paddy cultivation had positive and highly significant association with the utilization pattern of information sources. Thus it may be inferred that higher level of education, training exposure, social participation and market orientation, land holding size under paddy crop, annual income and attitude may be helpful in utilizing the information sources for adoption of improved paddy cultivation practices. The variables age, family size, family types, total land holding size, knowledge level, scientific orientation, sex and annual income were found were found non-significant. These findings are in line with the findings of (Gunawardana and Sharma, 2007).

Multiple regression analysis of the predictor variables with utilization pattern of information sources of paddy growers

Table 4 depicts the 't' values of the regression coefficients of predictor variables with the response variable information sources utilization pattern. The regression equation included predictor variables viz; age, education, annual income, social participation and market orientation. The regression coefficient of variables annual income and social participation were found positive and highly significant with the utilization pattern of information sources of paddy growers at 1 per cent level of probability (á). The remaining variables age, education and marketing orientation included in the regression equation were found non-significant. The F value (24.10) was also highly significant. All the variables included in the regression model explained to the extent of 56.3 % variations in the utilization pattern of information sources for adopting improved cultivation practices by the paddy growers. It could be inferred that paddy farmers having higher level of annual income and exhibiting greater social participation are expected to have higher rate of utilization of information sources for adopting the improved cultivation and management practices by the paddy farmers.

Conclusion

Information sources are crucial to update the technical know-how of farmers promoting higher level of adoption of improved practices. The study revealed that "Television", "Newspaper", "Friends" and "Radio" were

found as most utilized information sources for adopting improved practices by the paddy farmers in Imphal west district of Manipur. Information sources viz., “video conferencing”, “NGOs” and “KVKs” were never utilised to receive requisite information sources by the respondents with respect to improved paddy cultivation. Other information sources like “Mobile phone”, “VLW”, and “AO/ADAO/SDO” were also low accessed information sources by the respondents.

Thus it may be concluded that apart from utilizing information sources viz., Television, Newspaper, Friends and Radio, state department of agriculture need to popularize e-extension measures using ICT methodologies so that farmers get accurate, reliable and timely information on paddy cultivation including input measures, management practices as well as post harvest and marketing linkages in a faster way. Participation of female farmers were found less so a proper strategy may be developed to bring about economic empowerment of rural women for equal access to the utilization of information sources at par with their male counterpart. Majority of the farmers had low training exposure; therefore steps should be taken by the state department of agriculture to organize periodic trainings for knowledge and skill development of farmers with respect to improved paddy cultivation. While selecting farmers for undergoing relevant training programmes, care should be taken to include more marginal and small farmers to improve their attitude and develop proper scientific and marketing orientations so that they expand their area for paddy cultivation and grow paddy not only for their home consumption but also for meeting the market demand. Thus strategic use of information sources and enforcement of relevant policy measures in this regard shall be helpful for the paddy farmers for deriving maximum benefit in terms of increasing productivity and profitability.

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