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Correlates on Adoption Behaviour of Mustard Technology by Small Farmers in Manipur State

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1. Introduction

In terms of area and production of rape seed–mustard is the major oilseed crop in the state during *rabi* season. Its cultivation has increased from 1700 hectares in 1990-91 to 3600 hectares in 1992-93. But the productivity (500 kg/ha) is much below the National (851 kg/ha) and regional average (795.33 kg/ha) (Chopra, 1996). However, the potentiality of varieties are much higher. According to Kumar *et. al.* (1997) the replacement of old varieties alone could increase yield up to 15-20. The results of demonstration conducted by Oilseed Development Project, Manipur revealed the average yield of mustard (Var. Pusa bold) to be 1500 kg/ha. (Anon, 1992). Similarly, in another trial conducted at ICAR Res. Complex Farm, Manipur, mustard varieties SKM-1, SKM-2, SKM-3 and M-27 performed well and yielded 1022 kg, 1279 kg, 1300 kg and 955 kg per has respectively (Singh, 1991). Considering this, it was felt essential to find out important reasons which govern the differences in productivity and potentialities of land and varieties in respect of mustard cultivation. Hence, the present study was planned with following objectives:

- To study the socio- economic, psychological and communicational characteristics of the small farmers.
- To study the extent of adoption of improved mustard technology by farmers.
- To study the relationship of certain independent variables related to socio-economic, psychological and communicational characteristics of the farmers with the adoption level of improved mustard technology.

2. Methodology

Two major mustard growing districts of Manipur viz., Imphal West and Thoubal were selected covering two blocks from each district. From each block, two villages were sampled randomly. Thus, in all a total of eight villages were considered for the study covering both the districts. All the farm families from each village were listed in ascending order of land holding size. Thus, the total sample size were 120. Information relevant to the present investigation was collected from different categories of farmers through well constructed, pre-tested interview schedule. The data obtained pertaining to 15 small categories of mustard growing farmers from each village was analyzed and discussed for their adoption behaviour of mustard technology .

All the 18 socio-economic, psychological and communicational independent variables and six adoption aspects of mustard technology as dependent variables were measured with the help of various scales as developed by Trivedi (1963) for education, land holding, social participation and primary occupation, by Cantril and Free (1962) for level of aspiration and by Supe (1969) for risk taking willingness and economic motivation. Age was measured according to chronological age of the respondents, size of family as total male and female members in the respondents family and family workers in farming as total family members engaged in farming. Annual income (in rupees) was measured considering annual income of respondents from agriculture as well as subsidiary occupation. Farming experience

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was operationalised with the number of years a farmer engaged in farming and yield as mustard produced by the farmers in per unit area in one season. Democratic progressive outlook, material possession, extension contact and mass media exposure were measured with the help of structured schedule specially developed for the present study. For measuring the level of knowledge of the technology and different aspects of adoption level for land preparation and sowing, improved varieties, fertilizer application, irrigation pattern and plant protection measures (PPM). A teacher made type scale was developed as per the recommendation of ICAR and others (Anon, 1991) and score was allotted. Adoption index for these variables was calculated for each farmers and correlation analysis was done.

Correlation analysis was done to determine the association between socio-economic, psychological and communicational variables of respondents and their different aspects of adoption level of mustard technology viz., land preparation and sowing, improved varieties, fertilizer application, irrigation pattern, plant protection measures and overall adoption.

3. Results and Discussion

3.1. General information of the respondents

More than 75 respondents were either young or middle age group. About 40 farmers were illiterate and only 17.50 per cent were graduate. Only 30 farmers were having up to 7 members and remaining 70 had more than 7 members in their family. More than 24 respondents had up to 3 family workers and about 76 had more than 3 family workers in farming. More than 75 respondents had their annual income up to Rs. 25,000, more than 20 had Rs. 25,001 to 50,000 and only 4 had their annual income more than Rs. 50,000. About 55 respondents were getting mustard yield up to 500 kg per ha. 89.17 per cent respondents had their farm size up to 1.5 ha and only 10.83 per cent had more than 1.5 ha. 64.17 per cent respondents had agriculture as primary occupation, 15 per cent as pisciculture and about 21 per cent as agricultural labour, animal husbandry and service. More than 76 per cent farmers had farming experience of more 6 years. 96 per cent respondents had medium and large level of material possession. 46.66 per cent respondents had low level of economic motivation. More than 93 per cent respondents had medium and high level of aspiration. 53.33 per cent farmers had medium and high level of aspiration. 53.33 per cent farmers had low level of knowledge of mustard technology. More than 54 per cent respondents had low level of mass media exposure. 69.17 per cent respondent had low level of contact with extension agencies and 85.83 per cent respondents had low

Table 1 Extent of Adoption of Mustard Technology by the Small Farmers

Practices	Low		Medium		High	
	No.	% ge	No.	% ge	No.	% ge
Land preparation and sowing	34	28.33	54	45.00	32	26.67
Improved variables	24	20.00	64	53.33	32	26.67
Fertilizer application	65	54.17	25	20.83	30	25.00
Irrigation pattern	63	52.50	40	33.33	17	14.17
Plant protection measures	68	56.67	44	36.67	8	6.66

As regards to the adoption level of land preparation and sowing 28.33, 45 and 26.67 per cent respondent had low, medium and high level of adoption, respectively. Only 20 per cent respondents had low, 53.33 per cent medium and 26.67 high level of adoption of improved varieties of mustard. In case of fertilizer application, 54.17 per cent respondents had low, 20.83 per cent medium and 25.00 per cent level of adoption. As regards to irrigation pattern, 52.50 per cent respondents exhibited low and 47.50 per cent medium and high level of adoption. For plant protection aspects, only about 7 per cent respondents showed high level of adoption, while more than 56 per cent and 36.67 per cent respondents were of low and medium level of adoption respectively. Regarding overall adoption level of mustard technology, 44.17 per cent respondents had low, 20 per cent medium and 35.83 per cent high level of adoption (Table 1).

3.2. Association Between Independent and Dependent Variables

Results of correlation analysis between independent and dependent variables are presented in Table 2.

Age: A significant negative correlation existed between age and all the six adoption variables of mustard technology that lower the age, higher would be the adoption. It may be explained that younger farmers probably were daring to adopt mustard technology. Similarly, Jha and Shaktawat (1972), Sarkar and Bandyopadhyay (1996) and Veeraiah, *et. al.* (1997) also found significant negative relationship between age and adoption.

Education: Educational status of respondents was positively and significantly correlated with all the adoption variables except irrigation pattern. This may be due to the fact that majority of farmers take mustard as rainfed crop in this area. Therefore, they do not give much importance towards irrigation. Almost similar results were also reported by Jha and Sektawat (1972) and Waghdhare and Dupare (1997) wherein they found positive and significant relationship between education and adoption of different agricultural technologies.

Size of family: It had no significant relationship with any of the adoption variables. This is because the maximum parents were very much concerned about the education of their children. Therefore, the size of family did not play much role for adoption of mustard technology which is more or less in accordance with the finding of Pathak and Samal (1992).

Annual income: It was positively and significantly correlated with all the adoption variables of mustard technology. This was also true because of the fact that those farmers who possess higher income had more and more adoption than their counterparts. Mohammed *et. al.* (1997) also made similar reports.

Yield of mustard : With increase in yield, a significant increase in all the adoption variables of mustard technology were noted which was evident from significant 'r' values.

Size of land holding: It was positively and significantly correlated with adoption of improved varieties and overall adoption. This indicated that more is the farm size the better would be the use of improved varieties of mustard. This is in line with the findings of Pathak and Mazumdar (1978) and Sarkar and Bandyopadhyay (1996).

Primary occupation: It was positively and significantly correlated only with adoption of land preparation whereas, it was negatively and significantly correlated with adoption of improved varieties.

Farming experience: It showed a significant positive correlation with all the adoption variables. This envisages that well experienced farmers adopt mustard technology to a greater extent. Similarly, Sarkar and Bandyapadhyay (1996) also found positive and significant relationship between farming experience and adoption of scientific farm innovations.

Materials possession: There was no significant relationship with any of the adoption variables indicating that material possession did not play significant role in adoption of mustard technology.

Table 2 Relationship Independent Variables with Adoption Level of Mustard Technology

Variables	Computed value of 'r' with level of adoption					
	Land prep. & Sowing	Improved varieties	Fertilizer appli-cation	Irrigation pattern	Plant protection measures	Overall adoption
Age	-0.496**	-0.405**	-0.435**	-0.417**	-0.356**	-0.466**
Education	0.803**	0.632**	0.672**	0.183	0.561**	0.780**
Size of family	0.149	-0.062	-0.058	-0.100	-0.016	-0.108
Family workers in farming	-0.112	-0.104	-0.019	-0.185	-0.081	0.091
Annual income	0.463**	0.499**	0.422**	0.433**	0.339**	0.532**
Yield of mustard	0.678**	0.623**	0.597**	0.643**	0.713**	0.709**
Land holding	0.031	0.223*	0.112	0.084	0.023	0.262*
Primary occupation	0.233*	-0.242*	0.184	-0.152	0.172	-0.123
Experience	0.682**	0.623**	0.423**	0.362**	0.283**	0.428**
Material possession	0.029	0.129	0.116	0.154	0.105	0.111
Knowledge of technology	0.821**	0.676**	-0.627**	0.619**	0.594**	0.756**
Economic motivation	0.709**	0.639**	0.623**	0.635**	0.649**	0.764**
Risk taking ability	0.698**	0.616**	0.044	0.615**	0.068	0.704**
Progressive outlook	0.128	0.156	0.086	0.123	0.085	0.164
Level of aspiration	0.657**	0.582	0.548**	0.572**	0.566**	0.675**
Mass media contact	-0.684**	0.523**	-0.495**	0.561**	0.512**	0.680**
Extn. Agencies contact	0.181	0.359**	0.122	0.158	0.396**	0.168
Social participation	0.011	0.012	0.178	0.132	0.186	0.183

* Significant at 0.05 level of probability.
** Significant at 0,01 level of probablity.

Knowledge of mustard technology: It showed significant positive correlation with all the adoption variables except fertilizer application for which it was negatively and significantly correlated. It may be true because those farmers possess more knowledge of mustard technology, would adopt the technology to a greater extent. Similarly, Pathak and Samal (1992) also found significant positive relationship between knowledge and adoption of jute technology.

Economic motivation: It has significant positive relationship with all the adoption variables of mustard technology indicating that higher the economic motivation, more would be the adoption. This is in conformity with the findings of Singh and Singh (1970) and Juliana *et al* (1991) who reported positive relationship between economic motivation and adoption of farm technologies.

Risk taking ability: It was positively and significantly correlated with adoption of land preparation, improved varieties, irrigation and overall adoption of technology. As it is advocated that mustard cultivation is a game of gambling, if farmer have better risk taking ability, certainly they would adopt more mustard technology. This finding is supported by Singh and Singh (1970) and Sarkar and Bandyopadhyay (1996).

Progressive outlook: Progressive outlook did not show significant relationship with any of the adoption variables of mustard technology.

Level of aspiration : It was positively and significantly correlated with all the adoption variables of mustard technology. Similarly, Ramegowda and Siddaramaiah (1987) and Veeraiah *et al* (1997) found significant positive relationship between aspiration and adoption of sugarcane and groundnut technology.

Mass media exposure: It had significant positive correlation with adoption of improved varieties, irrigation, PPM and overall adoption. Singh (1990), Juliana *et al.* (1991) and Veeraiah *et al.*(1997) also noted significant impact of mass media exposure on the adoption of farm technologies.

Extension contact: It exhibited significant positive relation only with improved varieties and PPM indicating that more the contact with extension agencies, greater would be the adoption. Sarkar and Bandyapadhyay (1996) also found similar results.

Social participation: There was no significant influence of social participation on the adoption of mustard technologies. Similarly, Ramegowda and Siddaramaiah (1987), Kher (1992) and Nikkade *et al.* (1992) found non-significant impact of social participation on adoption of different farm technologies.

4. Conclusion

The findings of the study indicate that, younger, educated, high income group, more experienced, high economic motivation, more risk taking ability, high mass media contact, more extension agencies contact, getting high yield, having more knowledge of mustard technology and with large farm size. respondent should be approached to secure better adoption of mustard technology. Field extension agencies should take enough care and motivate the farmers to ensure that the farmers are made conscious about the importance of package of practices of mustard technology for getting higher yield.

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