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Attributes of tribal paddy growers using eco-friendly practices in Mandla district, Madhya Pradesh

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Abstract
Modern agriculture has been successful in meeting the increased needs of population, but the problems associated with it are high cost of external inputs, destruction of natural eco- systems and stagnated yield levels. Hence the current thrust is on eco-friendly farm technologies, whose objective is to minimize the use of external inputs to prevent degradation of eco-system. The study was undertaken to know the attributes of the tribal paddy growers using eco-friendly practices. Total three blocks from tribal dominated Mandla district were selected for the study. A sample of 300 respondents was prepared for the investigation. The study revealed that out of the total, maximum tribal farmers found under middle age group, educated up to middle school, belonged to joint family, possessed small land holding, had farming experience up to 20 years, low social participation, had farming as occupation, medium material possession low annual income and farm power. The communicational and psychological attributes i.e. extension participation, scientific orientation, mass media exposure, risk orientation were observed low, while utilization of information source, decision making ability, innovativeness were found medium. More than forty percent tribal paddy farmers had favorable attitude and high knowledge of eco-friendly practices of paddy crop.

Keywords: Attributes, tribal, paddy growers, eco-friendly practices

Introduction
Paddy is world's second most important crop and it contributes an important part in national economy of India. Around 65 per cent of total Indian population eats rice, so the practices which are adopted for paddy crop production make a greater impact in our nature and lives. Paddy is one of the major crop of Madhya Pradesh with area, production, and productivity of 1882.6 thousand ha, 2775 thousand tones and 1474kg/ha respectively (International Plant Nutrition Institute 2013-14) [5].

There are 46 recognized schedule tribes (ST) in Madhya Pradesh. The population of ST is 21.1 per cent of the state population (15.31 million out of 72.62 million) according to census 2011. Tribal community which is due to their poor economic and awareness status adopt low cost farming practices and tribal's natural dependency is a natural phenomenon.

Eco-friendly and environmentally friendly are synonyms used to refer the goods and services considered to inflict minimum or no harm on the environment. The important eco-friendly technologies are organic farming, natural farming, traditional farming, sustainable farming, bio-dynamic etc., which may be all together considered as eco-friendly farming. Promotion of eco-friendly agriculture does not mean total replacement of the use of chemicals in fact; bio-fertilizers and organic manures should be used to supplement chemical fertilizer in increasing crop production for maintaining the health of soil. It works in harmony with nature rather than against it. This involves using techniques to achieve good crop yields without harming the natural environment or the people who live and work in it. Eco-agriculture applies an integrated ecosystem approach to agricultural landscape to address all three pillars–conserving biodiversity, enhancing agricultural production and improving livelihood-driving the divers' elements of production and conservation management systems. Meeting the goals of eco-agriculture usually requires collaboration or coordination between diverse stakeholders who are collectively responsible for managing key components of a landscape. (Mishra Mandavi 2014) [14].

Eco-friendly technologies promise a great hope for minimizing the chemical hazards and restoration of ecological balance. Hence the present study is carried out with the following specific objective: To assess the Personal, Socio-economic, Psychological and Communication attributes of the tribal paddy growers using eco-friendly practices.

Methodology

The study was carried out in tribal dominated Mandla district of Madhya Pradesh. The district comprises nine blocks, out of which three blocks viz. Nainpur, Bichhiya and Mandla were selected randomly. A sample of 300 tribal paddy growers from five villages of selected blocks was constituted by random sampling. The data were collected by using structured, pre-tested questionnaire by personal interview method. The attributes of the tribal farmers were studied and the socio-personal and economic, communicational, psychological characteristics selected for analysis were age, education, family type, size of land holding, farming experience, social participation, occupation, annual income material possession and farm power, Extension participation, mass media exposure, utilization of information sources, scientific orientation, risk orientation, decision making, innovativeness, attitude and knowledge about eco-friendly practices of paddy crop.

Results and Discussion

Table 1 revealed socio personal characteristics of the tribal paddy growers, it shows that 48.00 per cent of the selected paddy growers were under middle age group followed by 32.00 and 20.00 per cent were old and young age respectively. Nearly one third farmers (30.33%) had Middle school education while 20.67 per cent farmers had primary school education followed by 16.67 per cent had high school education, 13.00 per cent farmers were illiterate, 09.33 per cent of farmers were graduate and 08.33 and 01.67 per cent farmers had higher secondary school education and post graduate respectively. The data of the table reveals that, out of the total farmers, 50.66 per cent of the farmers belong to joint family and rest (49.34%) of the farmers belongs to the nuclear family. Out of total, higher percentage (44.66%) had small area followed by semi-medium area (32.00%), marginal area (25.34%) medium area (13.00%) and large area (5.00%) respectively.

Table 1: Distribution of tribal farmers according to their socio-personal and economic attributes

Attributes	Categories	Frequency	Percentage
Socio-personal & economical attributes			
Age	Young age group (up to 35 Year)	61	20.00
	Middle age group (36-55 year)	143	48.00
	Old age group (above 55 year)	96	32.00
Education	Illiterate	39	13.00
	Primary school	57	20.67
	Middle school	91	30.33
	High school	48	16.67
	Higher secondary school	25	08.33
	Graduate	29	09.33
	Post graduate	11	01.67
Family type	Nuclear family	148	49.34
	Joint family	152	50.66
Size of land holding	Marginal farmers (below 1 ha)	76	25.34
	Small farmers (1.01-2.00 ha)	74	24.66
	Semi-medium farmers (2.01-4.00 ha)	96	32.00
	Medium farmers (4.01-10 ha)	39	13.00
	Large farmers (above 10.01 ha)	15	05.00
Farming experiences	Low (up to 10 years)	96	32.34
	Medium (11 to 20 years)	171	57.66
	High (above 20 years)	33	10.00
Social participation	No	77	25.66
	Low	80	26.66
	Medium	119	39.66
	High	24	08.02
Occupation	Farming	200	66.66
	Farming +labour	74	24.66
	Farming +caste occupation	11	03.66
	Farming +Business	8	02.66
	Farming +shop	4	01.34
	Framing +service	3	01.00
Annual income	Low (up to Rs. 1,10,000)	117	39.00
	Medium (Rs. 1,10,000 to 2,20,000)	159	53.00
	High (Rs. 2,20,000 to 3,50,000)	24	08.00
Material possession	Low	65	21.66
	Medium	201	67.00
	High	34	11.34
Farm power	No	101	33.66
	Low	140	46.66
	Medium	35	11.66
	High	24	08.02

More than half (57.66%) of tribal paddy growers had medium farming experience (up to 20 years) followed by 32.34 per cent and 10.00 per cent had low and high farming experience respectively. Out of total tribal paddy growers, 39.66 per cent had low social participation followed by 26.66 per cent had medium. 25.66 per cent had no and 8.02 per cent had high

social participation. The result found that 66.66 per cent farmers had farming as their main occupation followed by farming +labour (24.66) as occupation. More than half of the farmers (53.00%) had medium annual income followed by 39.00 and 08.00 per cent had low and high annual income respectively. Medium material possession was found by 67.00 per cent followed by 21.66 and 11.34 per cent had low and high material possession respectively. In case of farm power, 46.66 per cent had low farm power followed by no farm power, medium and high farm power (33.66%, 11.66% and 8.02%) respectively.

This study is supported by Hari Krishna (2016) [4], Markam (2018) [8], Maheshwari (2014) [9], Mishra (2014) [14] and Kumar and Sharnaya (2019) [6].

Table 2: Distribution of tribal farmers according to their communicational and psychological attributes

Attributes	Categories	Frequency	Percentage
Extension participation	Low	112	37.34
	Medium	111	37.00
	High	84	25.66
Mass media exposure	No	73	24.34
	Low	108	36.00
	Medium	98	32.66
	High	21	07.00
Utilization of information sources	Low	92	30.66
	Medium	157	52.34
	High	51	17.00
Scientific orientation	Low	147	49.00
	Medium	103	34.34
	High	50	16.66
Risk orientation	Low	128	42.66
	Medium	111	37.00
	High	61	20.34
Decision Making	Low	81	27.00
	Medium	145	48.34
	High	74	24.66
Innovativeness	Low	60	20.00
	Medium	151	50.34
	High	95	31.66
Attitude toward eco-friendly practices	Less favorable	86	28.66
	Favorable	121	40.34
	Highly favorable	93	31.00
Knowledge of eco-friendly practices	Low	74	24.66
	Medium	103	34.34
	High	123	41.00

The data of table no. 2 showed communicational and psychological traits of the tribal paddy growers. It is clear from the data that approximately same percentage (37.34% and 37.00%) had low and medium extension participation followed by 25.66 per cent had high extension participation respectively. The data reveals that, 36.00 per cent paddy growers had low mass media exposure followed by 32.66 per cent had medium, 24.34 per cent had no and 7.00 per cent had high mass media exposure respectively. More than half of the sample farmers (52.34%) had medium utilization of information sources followed by 30.66 and 17.00 per cent had low and high utilization respectively.

In case of the psychological characteristics, 49.00 per cent tribal paddy growers had low scientific orientation followed by 34.34 and 16.66 per cent had medium and high scientific orientation respectively. With respect to risk orientation, 42.66 per cent had low followed by 37.00 and 20.34 per cent had medium and high risk orientation respectively. The data showed that 48.34 per cent of the farmers had medium decision making ability followed by27.00 and 24.66 per cent had low and high ability of decision making respectively. Approximately half of the tribal farmers (50.34%) had medium innovativeness followed by 31.66 and 20.00 per cent had high and low innovativeness respectively. Moderately favorable attitude was observed by 40.34 per cent farmers, while 31.00 per cent had highly favourable and 28.66 per cent had less favorable attitude towards eco-friendly practices. With regard to the knowledge of eco-friendly practices, table 2 revealed that, paddy growers in same percentage (34.34%) had medium and high knowledge of eco-friendly practices followed by 24.66 per cent had low knowledge.

The finding is in line with the findings reported by by Pawar *et al*. (2012) [13], Markam *et al*. (2018) [8], Verma *et al*. (2009) [10], Bisen and Sharma (2013) [15], Singh *et al*. (2013) [11].

Conclusion

It is concluded that out of the total, maximum tribal farmers found under middle age group, educated up to middle school, belonged to joint family, possessed small land holding, had medium farming experience (up to 20 years), low social participation, had farming as occupation, medium material possession low annual income and farm power. The communicational and psychological attributes i.e. extension participation, scientific orientation, mass media exposure, risk orientation were observed low, while utilization of information source, decision making ability, innovativeness were found medium. More than forty percent tribal paddy farmers had favorable attitude and high knowledge of eco-friendly practices of paddy crop. The application of eco-friendly practices can provide opportunities to increase yield, improving product quality, retention of soil fertility. Hence, there should be an integration of research, awareness and application of the eco-friendly practices in order to strive towards attaining sustainable development in the agricultural sector.

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