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Acceptability of Bio-fertilizers by the Farmers in Jabalpur District of Madhya Pradesh

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Abstract

The present investigation was carried out in Panagar and Shahpura blocks of Jabalpur district. A representative sample of 120 farmers was selected for the study spread over 8 villages. The majority of the respondent farmers were middle aged (34-51 years), had middle level of education, medium land holding, had Rs. 1,07,701 to 3,41,700 annual income, medium level of social participation, medium level of mass media exposure, medium level of extension contact, medium level of scientific orientation, medium level of innovativeness, medium level of risk orientation and medium level of acceptability about bio-fertilizer users. Education, land holding, annual income, social participation, mass media exposure, extension contact, scientific orientation, innovativeness, risk orientation were positive and significantly associated with the acceptability level of farmers. The major problem faced by the respondent was high cost of bio-fertilizers. Important suggestions was bio-fertilizers usage can be increased if they are provided free of cost.

Key words- Acceptability, Bio-fertilizers

Introduction

Agricultural productivity depends upon availability and use of quality and quantity of farm inputs and advanced methods. The chemical fertilizers are one of the essential inputs for enhancing production of hybrids and high yielding crop varieties. It has played a significant role in enhancing agricultural production in the country since 'Green Revolution'. An uninterrupted use of chemical fertilizers however, has declined the soil fertility, destroyed soil microbial activity, disturbed environmental balance and ecological soundness[2].

Bio-fertilizers are applied in the agricultural field as a replacement to our conventional fertilizers. Bio-fertilizer contains microorganisms which promote the adequate supply of nutrients to the host plants and ensure their proper development of growth and regulation in their physiology[1]. Living microorganisms are used in the preparations of bio- fertilizers. Only those microorganisms are used which have specific functions to enhance plant growth and reproduction. The production process of bio-fertilizer technology is simple and requires less energy, capital, technology and labor force whereas inorganic fertilizer production requires huge energy, high capital and large number of human resources[3].

People base their perceptions on past experience and knowledge thus; if a person has limited knowledge and experience about a technology then he cannot accurately perceive it or form an opinion on it. In spite of having various potential activities, bio-fertilizers yet did not get popularity among farmers in acceptance of it adequately[4, 5]. Although bio-fertilizers have been promoted for the

last three decades, there are no systematic studies on the acceptability of bio-fertilizers by the farmers. The present study thus focuses on acceptability of bio-fertilizers by the farmers in Jabalpur district of Madhya Pradesh.

Material and Method

The present study was conducted in Jabalpur district of Madhya Pradesh which comprises of seven blocks. Out of 7 blocks, Panagar and Shahpura blocks were selected as maximum number of villagers of these two blocks had purchased bio-fertilizers from the Microbes Research and Production Centre (MRPC), JNKVV, Jabalpur. From each selected block, four villages were selected based on maximum number of users of bio fertilizer. From each selected villages, 15 respondents were selected. Thus, total 120 respondents were selected for the present investigation. Seven variables were measured, in that age, education, land holding, annual income, social participation, mass media exposure, extension contact is measured by self scoring and three variables i.e. scientific orientation, innovativeness, risk orientation were measured by scale developed by eminent scientists. In order to measure awareness of farmers regarding use of bio-fertilizers in agricultural practices, a structured schedule was developed by reviewing related literature and seeking expert's suggestions. The data were collected by personal interview method. Statistical tools were used to analyze the data.

Results and Discussion

1. Profile of bio-fertilizer users

Personal profile of the respondents indicated that maximum (63.33%) of the respondents belonged to the middle age group i.e. 34 to 51 years. Maximum (50.00%) of the respondents had middle education. More than half (54.17%) of the respondents had medium size of land holding i.e. 2.01 to 4 ha. Maximum (68.33%) of the respondents were having medium annual income between Rs.1,07,701 to Rs. 3,41,411. Maximum (68.33%) of the respondents were having medium level of social participation. Maximum (63.33%) of the respondents had medium level of mass media exposure. More than half (55.00%) respondents had medium level of extension contacts. Most (65.00%) of the respondents had medium level of scientific orientation. Maximum (61.67%) of the respondents were having medium level of innovativeness. Maximum (56.67%) of the respondents were having medium level of risk orientation.

Table 1: Distribution of the respondents according to their personal characteristics

Age	Middle (34 to 51 years)	76	63.33
Education	Middle education	60	50.00
Land holding	Medium land holding(2.01 to 4 ha)	65	54.17
Annual income	Medium (Rs.1,07,989 to 3,41,411/-)	82	68.33
Social participation	Medium (4 to12 scores)	82	68.33
Mass media exposure	Medium (5 to 11 scores)	76	63.33
Extension contact	Medium (4 to 8 scores)	66	55.00
Scientific orientation	Medium (11 to 23 scores)	78	65.00
Innovativeness	Medium (15 to 23 scores)	74	61.67
Risk orientation	Medium (9 to 21 scores)	67	56.67

2. Acceptability regarding bio-fertilizers use in agricultural practices

A perusal of results in Table 4.20 indicates that maximum of respondents had accepted Azatobactor (70.83%) for use in agricultural practices followed by Rhizobium (69.17%), Azolla (67.50%), PSB (66.67%), Azospirillum (56.67%), BGA and Acetobacter (31.67%). Regarding application of bio-fertilizer in different crops, 69.17 per cent accepted bio-fertilizer for use in pulses crops followed by grain crops (67.50%), oilseed crops (54.17%), vegetable crops (50.83%) and spice crops (33.33%).

Table 2: Acceptability regarding bio-fertilizer use in agricultural practices

S. No.	Acceptability about bio-fertilizer use		Acceptance level	
			Frequency	Percentage
1.	Type of the bio-fertilizer	-Rhizobium	83	69.17
		-Azatobactor	85	70.83
		-Azospirillum	68	56.67
		-Azolla	81	67.50
		-PSB	80	66.67
		-Others(BGA, Acetobacter)	38	31.67
2.	Application of bio-fertilizer in difference crops	-Grain crops	81	67.50
		-Pulses crops	83	69.17
		-Oilseed crops	65	54.17
		-Vegetable crops	61	50.83
		-Others(Spice crops)	40	33.33
3.	Method of application of bio-fertilizers	-Seed treatment	82	68.33
		-Soil treatment	45	37.50
		-Plant root treatment	63	52.50
		-Broadcasting	50	41.67
		-Segmentation method	67	55.83
		-Tuber treatment	49	40.83
4.	Source of availability	-Bio-fertilizer prods. unit	75	62.50
			35	29.17
		-Depa. of Agriculture	45	37.50
		-KVK	95	79.17
		-From the shops	28	23.33
		-Others(Online, Research centre)		
5.	Time of application of bio-fertilizers	-Before sowing	71	59.17
		-Time of sowing	91	75.83
		-After sowing	54	45.00
6.	Amount of bio-fertilizer used	-0-100 gram/ha	54	45.00
		-100-500 gram/ha	71	59.17
		-500-1000 gram/ha	68	56.67
		-1000-1500 gram/ha	19	15.83

As far as method of application of bio-fertilizers is considered, bio-fertilizers were used by most of the respondents (68.33%) in seed treatment followed by segmentation method (55.83%), plant root treatment (52.50%), broadcasting (41.67%), tuber treatment (40.83%), and soil treatment (37.50%). The data further revealed that most of the respondents (79.17%) preferred to purchase bio-fertilizer from shops whereas 62.50 per cent purchased bio-fertilizer from the bio-fertilizer production unit (62.50%) followed by KVK (37.50%), Department of Agriculture (29.17%).

Regarding time of application of bio-fertilizers, most of the respondents adopted the use of bio-fertilizer in agricultural practices at the time of sowing (75.83%) followed by 59.17 per cent, 45.00 per cent who adopted the use of bio-fertilizer before and after sowing, respectively.

Further, regarding amount of bio-fertilizer use, most of the respondents (59.17%) used 100-500 gram/ha followed by 500-1000 gram/ha (56.67%), upto 100 gram/ha (45.00%) and 1000-1500 gram/ha (15.85%).

Table 3: Distribution of the respondents according to overall acceptability of bio-fertilizers

S. No.	categories	Frequency	Percentage
1.	Low (up to 53 scores)	23	19.17
2.	Medium (54 to 76 scores)	82	68.33
3.	High (77 and above scores)	15	12.50

Table 3 indicates that maximum (68.33%) percentages of the respondents belonged to medium level of acceptability about bio-fertilizer uses, whereas 19.17 per cent and 12.50 per cent of the respondents were in the low and high level of acceptability about the utilization bio-fertilizer uses.

3. Relationship between profile of farmers with the acceptance of bio-fertilizer use in agricultural practices

In the present investigation an attempt was made to find out the relationship between profile of respondents with their acceptance of bio-fertilizers. To know the statistical relationship between profile of the respondents and acceptance, the coefficient of correlation was applied and depicted in the table 4.

Table 4: Relationship between profile of bio-fertilizer farmers and acceptability of bio-fertilizer

S.No.	Variables	Coefficient of correlation
1.	Age	-0.236**
2.	Education	0.842**
3.	Land holding	0.416**
4.	Annual income	0.290**
5.	Social Participation	0.494**
6.	Mass media exposure	0.455**
7.	Extension contact	0.460**
8.	Scientific orientation	0.806**
9.	Innovativeness	0.774**
10.	Risk Orientation	0.680**

The correlation coefficient (r) with respect to ten variables are presented in Table 4 which revealed that ten variables, namely education, land holding, annual income, social participation, mass media exposure, extension contact, scientific orientation, innovativeness, risk orientation about bio-fertilizer use had positive and significant relationship with the acceptability level of farmers. Whereas age has negative and significant relationship with their acceptability level.

4. Problem faced by the farmers in acceptance of bio-fertilizers and suggestions to elicit the problem

4.1 Problems faced by the farmers in acceptance of bio-fertilizers

Problems faced by the farmers in acceptance of bio-fertilizers were analyzed and presented in Table 5. The data shows that maximum percentage of the respondents reported high cost of bio-fertilizers (58.33%) followed by uncertainty regarding the yield (57.50%), lack of technical support (for usage methods) (50.83%), lack of awareness regarding the crop specific usage of bio-fertilizers (47.50%), less yield in the initial years (43.33%), lack of subsidies for bio-fertilizers (35.00%), lack of availability (30.83%), less shelf life of bio-fertilizers (28.33%), high dosage requirement for bio-fertilizers (25.83%), and not effective in high temperatures (21.67%), were the problems faced by farmers in acceptance of bio-fertilizers.

Table 5: Problems faced by the farmers in acceptance of bio-fertilizers

S. No.	Problems	Frequency	Percentage	Rank
1.	Uncertainty regarding the yield	69	57.50	II
2.	Yield will be less in the initial years	52	43.33	V
3.	Lack of subsidies for bio-fertilizers	42	35.00	VI
4.	Lack of technical support (for usage methods)	61	50.83	III
5.	Lack of awareness regarding the crop specific usage of bio-fertilizers	57	47.50	IV
6.	High cost of bio-fertilizers	70	58.33	I
7.	Lack of availability	37	30.83	VII
8.	Less shelf life of bio-fertilizers	34	28.33	VIII
9.	High dosage requirement for bio-fertilizers	31	25.83	IX
10.	Not effective in high temperatures	26	21.67	X

4.2 Suggestions to elicit the problems faced the farmers in acceptance of bio-fertilizers

Table 6: Suggestions by the farmers in acceptance of bio-fertilizers

S. No.	Suggestions	Frequency	Percentage	Rank
1.	Bio-fertilizers usage can be increased if they are provided free of cost	105	87.50	I
2.	Subsidy on bio fertilizers	89	74.17	III
3.	Technical aspects on bio-fertilizer should be provided by extension agencies	45	37.50	V
4.	Availability of bio-fertilizers in villages	97	80.83	II
5.	Awareness campaign on popularization of bio-fertilizers	35	29.17	VI
6.	There should be proper motivation for acceptance of bio-fertilizers	73	60.83	IV

Suggestions given by the respondents for increasing acceptability of bio-fertilizers as mentioned in Table 6 depicts that maximum percentage of respondents (87.50%) suggested that bio-fertilizers usage can be increased if they are provided free of cost followed by easy availability of bio-fertilizers in villages (80.83%) and availability of subsidy on bio fertilizers (74.17%), there should be proper motivation for acceptance of bio-fertilizers (60.83%), technical aspects on bio-fertilizer should be provided by extension agencies (37.50%), and awareness campaign on popularization of bio-fertilizers (29.17%).

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