Perception about effectiveness of Sawaj brand bio-fertilizers under field conditions perceived by its end users in Surendranagar district of Gujarat

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ABSTRACT

A bio-fertilizer is a substance that contains living microorganisms which when applied to seeds, plant surfaces or soil, colonize the rhizosphere or the interior of the plant and promote growth by increasing the supply or availability of primary nutrients to the host plant. Bio-fertilizers are known to play a number of vital roles in soil fertility, crop productivity and production in agriculture as they are eco-friendly and cannot at any cost replace chemical fertilizers that are indispensable for getting maximum crop yields. Junagadh Agricultural University (JAU) has been engaged in production of bio-fertilizers in the brand name of Sawaj bio-fertilizers (*Azotobacter*, *Rhizobium* and PSM each in the packing of 500 ml bottles) and making it available to the farming community since 2005-06. It was worth knowing the perception about the use of Sawaj bio-fertilizers among its end users, the farmers. The present study was carried out in Surendranagar district of Gujarat. It was found that majority of the respondents (61%) belonged to middle age group and were educated up to primary level (37%), had medium size of landholding (53%), most of them had social participation and had been actively participating in extension programmes. Majority of the respondents (41%) had their annual income ranging from Rs 1,00,000 to 1,50,000. They preferred to adopt the innovation after seeing its successful adoption by others. Majority of respondents had partially adopted the Sawaj brand bio-fertilizers and had positive perception about them. Most of them opined that application of these was environment-friendly and their use was safer and cheaper than chemical fertilizers. Majority of respondents (54%) said that they would continue the use of these bio-fertilizers.

Keywords: Sawaj Bio-fertilizers; perception; socio-economic profile

INTRODUCTION

Bio-fertilizers are necessarily living organisms which are first seed-dressed then sown, and then applied to the soil. They promote the advantages by colonizing the rhizosphere of the plant which they carry out by increasing the supply of nutrients to the plant (Jabasingh 2018). Bio-fertilizers are known to play a number of vital roles in soil fertility, crop productivity and production in agriculture as they are eco-friendly and cannot at any cost replace chemical fertilizers that are indispensable for getting maximum crop yields. Junagadh Agricultural University (JAU) has been engaged in production of bio-fertilizers in the brand name of Sawaj bio-fertilizers (*Azotobacter*, *Rhizobium* and PSM each in the packing of 500 ml bottles) and making them available to the farming community since 2005-06. JAU sold 1,981, 11,698 and 1,987 bottles in 2014-15; 2,857, 2,520 and 4,552 bottles in 2015-16 and 2,716, 2,994 and 4,520 bottles of *Azotobacter*, *Rhizobium* and PSM respectively in 2016-17 (www.jau.in/coa/index.php/department/plant-pathology). It shows the static adoption of bio-fertilizers by the farmers which needs to be enhanced.

The market for bio-fertilizers is still not well developed and the bio-fertilizer industry has not anticipated the growth (Pal et al 2015). The scope for a particular bio-fertilizer is often perceived to be limited. Biofertilizers are often perceived to be more expensive than the chemical fertilizers. This is more so since the farmers and small holders receive fertilizers heavily subsided by the government enabling a few

farmers who appreciate the benefits of use of certain bio-fertilizers. There is difference of opinion on the effectiveness of microbial inoculants available in the market. Some feel that the performance of these products is often disappointing, unreliable and not as claimed by the manufacturer. Some products however do give good results. All these perceptions contribute to influencing the user on the use of microbial inoculants and bio-fertilizers.

METHODOLOGY

Present study was carried out in Surendranagar district of Gujarat. Surendranagar district has 10 Talukas out of which 5 Talukas were randomly selected. From each Taluka 20 respondents thus total 100 respondents using Sawaj bio-fertilizers were selected for the study (Table 1). The data were collected through a structured interview schedule. For analysis and interpretation of data appropriate statistical methods and measures were used.

Table 1. Details of Talukas and villages selected for the study (n= 100)

Taluka	Village	Respondents
Chotila	Maghrikheda	10
	Lakhchokiya	10
Sayala	Sapar	10
	Doliya	10
Chuda	Karmad	10
	Ramdevgadh	10
Vadhwan	Vadod	10
	Rampar	10
Than	Kanpar	10
	Navagam	10

RESULTS and DISCUSSION

Profile of the respondents

The data pertaining to the selected background information of farmers (Table 2) indicate that majority of the respondents (61%) were in the middle age group of 36-50 years and most of them (37%) were educated up to primary level followed by secondary level (34%). Most of them were in the medium scale (2.0 to 4.0 ha) of landholding (53%). About three-forth of them (68%) participated or had membership of different social institutions whereas 32 per cent did not participate or were not members. Majority of the respondents (41%) had annual income of Rs 1,00,001 to 1,50,000 and 82 per cent participated in extension activities. Most of them (63%) were innovative and adopted an innovation when others successfully adopted it.

Patel et al (2017) conducted a study in Mahesana district of Gujarat on the farmers' perception on use of bio-fertilizers. Majority of the farmers were middle-aged and literate, had membership of one organization and medium level of extension participation, possessed more than 2 ha land and had medium level of income.

Risk orientation

The data depicted in Table 3 reveal that 55 per cent respondents belonged to medium risk orientation whereas 34 per cent respondents had low risk orientation. Only 11 per cent of them showed high risk orientation towards adoption.

Perception about effectiveness of Sawaj brand bio-fertilizers

The data related to the respondents' perception about the effectiveness of Sawaj brand bio-fertilizers (Table 4) show that majority of the respondents were found using Sawaj bio-fertilizers in crops like groundnut (53%) and cotton (14%). Others used them in vegetables (10%), cumin and other pulse crops (8% each) and fruit crops (7%).

Perception of the respondents regarding the utility and effectiveness of Sawaj bio-fertilizers is given in Table 5. The farmers gave first rank to the statement 'bio-fertilizers are environmental friendly' with weightage mean score of 4.16. Whereas 2nd and 3rd ranks were given to the statements 'use of bio-fertilizers is cheaper and safe' and 'bio-fertilizers are useful for all the crops' with weightage mean scores of 4.15 and 4.00 respectively. Least scores of 2.27 and 2.48 were given to the statements 'there is no benefit of application of Sawaj bio-fertilizers' and 'Sawaj bio-fertilizers can be used by mixing with other chemical fertilizers/chemical pesticides' respectively. This shows that farmers gave more importance to the environmental safety, cost, safety and broader usage of the Swaraj bio-fertilizers.

Distribution of respondents according to their willingness to use Sawaj brand bio-fertilizers

Table 6 reveals that most of the respondents (54%) were ready to adopt the Sawaj brand bio-

Table 2. Distribution of respondents according to their personal socio-economic characteristics (n= 100)

Component	Category	Respondents	
		Frequency	Percentage
Age (years)	Young (up to 35)	16	16
	Middle age (36 to 50)	61	61
	Old age (>50)	23	23
Education level	Illiterate	5	5
	Literate	8	8
	Primary	37	37
	Secondary school	34	34
	Higher secondary	14	14
	Graduation and above	2	2
Size of landholding (ha)	Marginal farmers (up to 1.0)	10	10
	Small farmers (1.0 to 2.0)	21	21
	Medium farmers (2.0 to 4.0)	53	53
	Big farmers (>4.0)	16	16
Social participation	Participation/membership of different social institutions	68	68
	No participation/membership of different social institutions	32	32
Income (Rs)	Up to 50,000	9	9
	50,001 to 1,00,000	18	18
	1,00,001 to 1,50,000	41	41
	1,50,001 to 2,00,000	22	22
	2,00,001 and above	10	10
Extension participation	Participating in extension activities	82	82
	No participation in extension activities	18	18
Innovativeness	Immediate adoption	9	9
	Followed when others successfully adopted	63	63
	Took time as per own convenience	28	28

Table 3. Distribution of respondents according to their risk orientation (n= 100)

Risk orientation	Respondents	
	Frequency	Percentage
Low (<33.1)	34	34
Medium (33.2 to 36.3)	55	55
High (>36.3)	11	14

Mean: 34.7, SD: 1.60

Table 4. Distribution of respondents according to usage of Sawaj bio-fertilizers in crops (n= 100)

Crop	Respondents	
	Frequency	Percentage
Groundnut	53	53
Cotton	14	14
Cumin	8	8
Other pulse crops	8	8
Fruit crops	7	7
Vegetable crops	10	10

Table 5. Perception of the respondents about effectiveness of Sawaj brand bio-fertilizers (n= 100)

Statement	SA	A	UD	DA	SDA	WMS	Rank
There is no benefit of application of Sawaj bio-fertilizers	1	6	24	57	12	2.27	XXI
Good germination is observed when bio-fertilizers are applied	8	37	45	7	3	3.40	XV
Use of bio-fertilizers every year is beneficial	6	67	14	9	4	3.62	XII
Soil fertility is improved when bio-fertilizers are used continuously for 2 to 3 years	13	74	9	4	0	3.96	IV
Bio-fertilizers can be used through spray pumps	11	52	14	11	2	3.29	XVIII
Bio-fertilizers can be used in standing crops	16	65	13	5	1	3.90	VI
Bio-fertilizers can be used by mixing with other bio-fertilizers	9	55	27	5	4	3.60	XIII
Bio-fertilizers can also be used in crops other than groundnut	18	59	19	4	0	3.91	V
Seed treatment with bio-fertilizers is beneficial	11	67	15	7	0	3.82	VII
Sawaj bio-fertilizers can be used by mixing with other chemical fertilizers/chemical pesticides	2	11	23	61	3	2.48	XX
Bio-fertilizers can be used at any stage of crop	5	49	25	15	6	3.32	XVII
Bio-fertilizers are environmental friendly	26	68	3	2	1	4.16	I
Soil moisture should be optimum at the time of application of bio-fertilizers	16	55	20	6	3	3.75	X
The use of higher dose of bio-fertilizers than the recommended one can damage the crop	4	11	28	50	7	2.55	XIX
Cold and shaded space is required for the storage of bio-fertilizers	9	47	16	26	2	3.35	XVI
There is good plant growth due to the use of bio-fertilizers	13	53	18	11	5	3.58	XIV
Bio-fertilizers can be used in any type of soil	14	56	22	8	0	3.76	IX
Production increases due to the use of bio-fertilizers	11	57	19	11	2	3.64	XI
Use of bio-fertilizers is cheaper and safe	15	85	0	0	0	4.15	II
Due to the establishment of bio-fertilizers in the soil decomposition of crop residue/biomass becomes very fast	7	77	8	5	3	3.80	VIII
Bio-fertilizers are useful for all the crops	19	66	11	4	0	4.00	III

SA: Strongly Agree, A: Agree, UD: Undecided, DA: Disagree; SDA: Strongly disagree, WMS: Weightage mean score

Table 6. Distribution of respondents according to their willingness to use Sawaj brand bio-fertilizers on continuous basis (n= 100)

Respondents	Willingness to use Sawaj brand bio-fertilizers	
	Willing to use on continuous basis	Not willing to use on continuous basis
Number	54	46
Percentage	54	46

fertilizers on continuous basis in the years to come. This shows their trust in Sawaj brand bio-fertilizers and their usefulness. However 46 per cent of the respondents reported that they would decide the use of the bio-fertilizers later.

Mugivhisa et al (2017) assessed 60 subsistence farmers' perceptions of organic farming. Fifty per cent of the respondents showed their willingness to convert to organic farming depending on the availability and access of information and education.

Patidar and Patidar (2015) in their study in Madhya Pradesh found that 67 per cent of the respondents had positive perception towards organic farming. There were significant relationships between respondents' age, educational background, farm size, benefits, social aspects and perception of organic farming.

CONCLUSION

The study revealed that 55 per cent respondents belonged to high risk orientation. Majority of the respondents were found using Sawaj bio-

fertilizers in crops like groundnut (53%). The farmers gave more importance to the environmental safety, cost, safety and broader usage of the Swaraj bio-fertilizers. Most of the respondents (54%) were ready to adopt the Sawaj brand bio-fertilizers on continuous basis that showed their trust in Sawaj brand bio-fertilizers and their usefulness. Thus most of the farmers showed their positivity towards these fertilizers.

REFERENCES

Jabasingh SA 2018. Status of fertilizer application with a unique focus on bio-fertilizer in the land of Ethiopia. Journal of Pesticides and Bio-fertilizers. doi: 05.2018/16.100019.

Mugivhisa LL, Olowoyo JO and Mzimba D 2017. Perceptions on organic farming and selected organic fertilizers by subsistence farmers in Ga-Rankuwa, Pretoria, South Africa. African Journal of Science, Technology, Innovation and Development **9(1):** 85-91.

Pal S, Singh HB, Farooqui A and Rakshit A 2015. Fungal biofertilizers in Indian agriculture: perception, demand and promotion. Journal of Eco-friendly Agriculture **10(2):** 101-113.

Patel DB, Mistry JJ and Patel VM 2017. Farmers' perception on use of bio-fertilizers. Gujarat Journal of Extension Education **28(2):** 357-360.

Patidar S and Patidar HA 2015. Study of perception of farmers towards organic farming. International Journal of Application or Innovation in Engineering and Management **4(3):** 269-277.

www.jau.in/coa/index.php/department/plant-pathology