Perception of end users about effectivenss of Sawaj brand *Trichderma*

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 Received: 6.1.2019/Accepted: 4.6.2019

ABSTRACT

Trichoderma harzianum is a saprophytic fungus which is used as biological control agent against a wide range of economically important aerial and soil borne plant pathogens. Junagadh Agricultural University has been engaged in production of *T harzianum* in the brand name Sawaj *Trichoderma* and making it available to the farming community since the year 2005-06. The study was conducted to know the farmers' perception about the use of Sawaj *Trichoderma*. Total 100 respondents were selected for the study from five Talukas of the district who had used brand Sawaj *Trichoderma*. They believed in doing after seeing as 68 per cent followed others in case of innovativeness; 63 per cent respondents had medium risk orientation and majority of the respondents used Sawaj *Trichoderma* in crops like groundnut (35%) and cumin (33%). Farmers gave first rank to the statement 'application of *Trichoderma* is beneficial where fungal diseases appear in soil every year' with weightage mean score (WMS) 4.84. The lowest ranking was given to the statements 'there is no benefit of application of *Trichoderma*' (XXII). The farmers were highly satisfied with the effectiveness and usefulness of Sawaj *Trichoderma.*

Keywords: Perception; Sawaj *Trichoderma*; socio-economic profile

INTRODUCTION

Trichoderma harzianum is a saprophytic fungus which is used as biological control agent against a wide range of economically important aerial and soil borne plant pathogens.

Trichoderma is a very effective biological mean for plant disease management especially the soil born. It is a free-living fungus which is common in soil and root ecosystems. It is highly interactive in root, soil and foliar environments. It reduces growth, survival or infections caused by pathogens by different mechanisms like competition, antibiosis, mycoparasitism, hyphal interactions and enzyme secretion (http://agropedia.iitk.ac.in/content/trichoderma-bio-control-agent-management-soil-born-diseases).

Junagadh Agricultural University has been engaged in production of *T harzianum* in the brand name of Sawaj *Trichoderma* and making it available to farming community since 2005-06. The production of *Trichoderma* was just 2,279 kg in 2005-06 which has reached at 1,82,840 kg in 2018-19 (http://www.jau.in/coa/index.php/department/plant-pathology).

KVK, Surendranagar, JAU sold 13,890 kg Sawaj *Trichoderma* to the farmers of Surendranagar district, Gujarat (http://www.jau.in/index.php/extension-40/krishi-vigyan-kendras-kvks/nana-kandhasar).

METHODOLOGY

The present study was carried out in Surendranagar district, Gujarat. The district has 10 Talukas. Out of 10 Talukas, 5 Talukas; from each Taluka two villages and from each village 10 respondents who had been using Sawaj *Trichoderma* were randomly selected (Table 1). Thus total 100 respondents were selected. For collection of data a structured-interview schedule was prepared. For analysis and interpretation of data appropriate statistical methods and measures were used.

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

Taluka	Village	Respondents
Chotila	Sanghani	10
	Lakhchokiya	10
Sayala	Hadala	10
	Doliya	10
Chuda	Karmad	10
	Ramdevgadh	10
Muli	Jasapar	10
	Gotamgadh	10
Than	Bijaliya	10
	Than	10

RESULTS and DISCUSSION

Profile characteristics of the respondents

Majority of the respondents (55%) were of middle age (36-50 years) followed by young (up to 35 years) and old (>50 years), 25 and 20 per cent respectively (Table 2). Most of them (34%) were studied up to primary level followed by secondary (31%). About half of the farmers were of medium level (49%) having 2.0 to 4.0 ha landholding followed by small farmers (23%) with 1.0-2.0 ha landholding. This shows that most of the respondents were below the big category of farmers. Majority of them participated or were having membership of different social institutions (61%). Annual income of majority of them was Rs 1,00,001 to 1,50,000 (39%) followed by Rs 1,50,001 to 2,00,000 (26%). Majority of them (94%) were aware and participated in the extension activities. They believed in doing after seeing as 68 per cent followed others in case of innovativeness.

Risk orientation

Data depicted in Table 3 reveal that 63 per cent respondents had medium risk orientation whereas 23 per cent respondents had low. Only 14 per cent of them showed high risk orientation towards adoption.

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

Component	Category	Respondents	
		Frequency	Percentage
Age (years)	Young (up to 35)	25	25
	Middle age (36 to 50)	55	55
	Old (>50)	20	20
Education level	Illiterate	7	7
	Literate	9	9
	Primary	34	34
	Secondary school	31	31
	Higher secondary	16	16
	Graduation and above	3	3
Size of landholding (ha)	Marginal farmers (up to 1.0)	8	8
	Small farmers (1.0 to 2.0)	23	23
	Medium farmers (2.0 to 4.0)	49	49
	Big farmers (>4.0)	20	20
Social participation	Participation/membership of different social institutions	61	61
	No participation/membership of different social institutions	39	39
Annual income (Rs)	Up to 50,000	6	6
	50,001 to 1,00,000	16	16
	1,00,001 to 1,50,000	39	39
	1,50,001 to 2,00,000	26	26
	2,00,001 and above	13	13
Extension participation	Participating in extension activities	94	94
	No participation in extension activities	6	6
Innovativeness	Immediate adoption	13	13
	Followed when others successfully adopted	68	68
	Took time as per own convenience	19	19

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

Risk orientation	Respondents	
	Frequency	Percentage
Low (<30.68)	23	23
Medium (30.69-34.92)	63	63
High (>34.92)	14	14

Mean: 32.8, SD/2: 2.12

Table 4. Distribution of respondents according to usage of Sawaj *Trichoderma* in crops (n= 100)

Crop	Respondents	
	Frequency	Percentage
Groundnut	35	35
Cotton	13	13
Cumin	33	33
Groundnut + cumin	13	13
Other crops	6	6

Farmers' perception about effectiveness of Sawaj *Trichoderma*

Data given in Table 4 show that majority of the respondents used Sawaj *Trichoderma* in crops like groundnut (35%) and cumin (33%). Thirteen per cent of them were found using it in both groundnut and cumin and same number of farmers (13%) used it in cotton. Only 6 per cent respondents used it in other crops like vegetables and fruit crops like guava, lemon etc.

Perception regarding the utility and effectiveness of Sawaj *Trichoderma* was obtained from the respondents and the data are given in Table 5. Respondent farmers gave first rank to the statement

Table 5. Perception of the respondents about effectiveness of Sawaj *Trichoderma* in controlling the diseases (n= 100)

Statement	Respondents (%)					MWS	Rank
	SA	A	UD	DA	SDA		
There is no benefit of application of *Trichoderma*	0	0	0	88	12	1.88	XXII
Good germination is observed when seed treatment is done with *Trichoderma*	8	37	45	7	3	3.4	XVIII
To avoid groundnut seed rotting in godown seed treatment with *Trichoderma* is useful	11	51	27	9	2	3.6	XVII
Application of *Trichoderma* is beneficial where fungal diseases appear in soil every year	84	16	0	0	0	4.84	I
Fungal diseases do not appear when *Trichoderma* is used for continuous 2 to 3 years	58	35	6	1	0	4.5	IV
Trichoderma cannot be applied in furrows/lines	13	27	14	41	5	3.02	XIX
Trichoderma can be used in standing crop and is easy to apply with other career agents	16	68	11	4	1	3.94	XIII
Trichoderma can be used by mixing with sand	20	77	2	1	0	4.16	IX
Trichoderma can be used by mixing with FYM	66	32	2	0	0	4.64	II
Trichoderma is effective against wilt disease in cumin crop	65	31	4	0	0	4.61	III
Trichoderma is cheaper than other chemical fungicides	29	63	8	0	0	4.21	VII
Sawaj *Trichoderma* can be used by mixing with other chemical pesticides/fertilizers	0	2	10	72	16	1.98	XXI
Trichoderma is available as per need, at any time and at any stage of crop	19	48	22	9	2	3.73	XV
Application of *Trichoderma* is environmental friendly	31	69	0	0	0	4.31	VI
Soil moisture should be optimum at the time of application of *Trichoderma*	24	63	13	0	0	4.11	X
Trichoderma damages the crop when applied in higher doses than recommended	2	7	18	44	29	2.09	XX
For storage of *Trichoderma* cold and shaded space is required	7	72	17	4	0	3.82	XIV
Plant growth is good due to the use of *Trichoderma*	11	46	38	5	0	3.63	XVI
Trichoderma can be used in any type of soil	17	72	10	1	0	4.05	XII
Production is increased due to the use of *Trichoderma*	21	79	0	0	0	4.21	VII
Use of *Trichoderma* is cheaper and safe	36	61	3	0	0	4.33	V
Due to establishment of *Trichoderma* in soil decomposition of crop residue/biomass becomes very fast	23	64	10	3	0	4.07	XI

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

'application of *Trichoderma* is beneficial where fungal diseases appear in soil every year' with weightage mean score (WMS) 4.84. The second and third ranks were given to the statements '*Trichoderma* can be used by mixing with FYM' and '*Trichoderma* is effective against wilt disease in cumin crop' with WMSs of 4.64 and 4.61 respectively. The lowest ranking was given to the statements 'there is no benefit of application of *Trichoderma*' (XXII) and Sawaj *Trichoderma* can be used by mixing with other chemical pesticides/ fertilizers' (XXI) with WMSs of 1.88 and 1.98 respectively. This shows that farmers were highly satisfied with the effectiveness and usefulness of Sawaj *Trichoderma.* Findings are in line with those of Patel et al (2017) and Khatri and Patel (2018).

CONCLUSION

The study showed that majority of the farmers preferred to adopt an innovation after seeing its successful adoption by others. Farmers mostly used Sawaj *Trichoderma* in crops like groundnut and cumin. Majority of respondents had partially adopted Sawaj *Trichoderma* and had positive perception about it. Most of them opined that application of *Trichoderma* was beneficial where fungal diseases appeared every year and it could be mixed with FYM.

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