

RESEARCH ARTICLE :

Adoption level of SAWAJ Trichoderma among farmers of Surendranagar district in Gujarat state

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SUMMARY : *Trichoderma harzianum* is a saprophytic fungus which is used as a biological control agent against a wide range of economically important aerial and soil borne plant pathogens. *Trichoderma harzianum* is used for foliar application, seed treatment and soil treatment for suppression of various disease causing fungal pathogens. Junagadh Agricultural University has been engaged in production of *Trichoderma harzianum* in the brand name “SAWAJ Trichoderma” and made it available to farming community since year 2005-06. Since then its production and selling increased manyfold. So becomes essential to know the respondent’s level of adoption of SAWAJ Trichoderma among its end users *i.e.* farmers. Total 100 respondents were selected for the study purpose from five talukas of district who have used SAWAJ brand Trichoderma. Keeping this in mind, this study was carried out with the following objectives. To study the socio-economic profile of respondents. To determine the level of adoption of SAWAJ Trichoderma. Findings of this study show that majority of respondents belonged to middle age group (55%) and educated upto primary education (34%), had medium size of land holding (49%) and most of them had social participation (61%) and had actively participated in extension programmes (94%). Majority of respondents (39%) had their annual income ranging from Rs. 100000 to 150000. 68 per cent respondents preferred adopt innovation after seeing it successful adoption by others. Majority of respondents had used it in crops like groundnut and cumin crop. Majority of respondents had partially adopted the SAWAJ Trichoderma and had positive perception about the use of SAWAJ Trichoderma. Most of them opined that application of Trichoderma is benefitted where a fungal disease appears every year and SAWAJ Trichoderma can be mix with FYM. Majority of respondents (69%) were using Trichoderma since last one year. 63 per cent respondents opined that they will continue the use of SAWAJ Trichoderma for their farm field.

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BACKGROUND AND OBJECTIVES

Trichoderma harzianum is a saprophytic fungus which is used as a biological control agent against a wide range of economically

important aerial and soil borne plant pathogens. *Trichoderma harzianum* is used for foliar application, seed treatment and soil treatment for suppression of various disease

causing fungal pathogens (Role of the *Trichoderma harzianum*, *Endochitinase Gene, ech42*, in *Mycoparasitism*, <http://aem.asm.org>).

Junagadh Agricultural University is engaged in production of *Trichoderma harzianum* in the brand name "SAWAJ Trichoderma" and made it available to farming community since year 2005-06. From year 2010-11 its adoption pace up when university could able to sell 16000 kg of SAWAJ Brand Trichoderma. It was of fivefold sell as compared to previous year (In the year 2009-10 it was 3131 kg sold to farmers). In the year 2013-14, JAU sold 53236 kg which slightly decreased in the year 2014-15, 37216 kg SAWAJ Trichoderma sold to the farmers. In the year, 2015-16, 58262 kg SAWAJ Trichoderma sold which was increased two fold and it was 104800 kg sold in the year 2016-17. Increasing trend of purchase of SAWAJ Trichoderma by farmers showing its utility and importance to them. As far as KVK, JAU, Surendranagar is concern, it has sold 1862 kg SAWAJ Trichoderma in the year 2015-16 and 6288 kg SAWAJ Trichoderma in the year 2016-17. Whereas in the year 2017-18, KVK, Surendranagar has been sold 13890 kg SAWAJ Trichoderma to farmers of district. So this is showing that farmers of district is showing their interest and confidence in SAWAJ Trichoderma and purchasing it from KVK, JAU, Surendranagar. At least two fold increase of selling of Trichoderma occurred, therefore, it become essential to know farmers feedback and their views about the use of SAWAJ brand Trichoderma.

RESOURCES AND METHODS

Present study was carried out in Surendranagar district. It has 10 talukas. Out of 10 talukas, 5 talukas

Sr. No.	Name of taluka	Name of villages	Respondents
1.	Chotila	Sanghani	10
		Lakhchokiya	10
2.	Sayala	Hadala	10
		Doliya	10
3.	Chuda	Karmad	10
		Ramdevgadh	10
4.	Muli	Jasapar	10
		Gotamgadh	10
5.	Than	Bijaliya	10
		Than	10
		Total	100

were randomly selected. Then from each taluka, 20 respondents who are using SAWAJ Trichoderma were selected for study purpose. Thus, total 100 respondents were selected from five talukas who have used SAWAJ brand Trichoderma. For study purpose, an interview schedule was prepared and data collected through the structured interview schedule. For analysis and interpretation of data, appropriate statistical methods and measures were used.

OBSERVATIONS AND ANALYSIS

The results obtained from the present study as well as discussions have been summarized under following heads:

Profile of the respondents:

The data pertaining to the selected background information of farmers have been presented in this section *i.e.* age, education, family income, social participation, extension participation, size of land holdings, innovativeness and risk orientation (Table 2).

Age:

In present study, farmers were categorized in the three age groups. Perusal of results of Table 1 show that majority of the respondents (55%) were found in the middle age group followed by 25 per cent upto 35 years. There were only 20 per cent respondents in the old age group.

Education:

Table 1 indicates that majority of respondents (34%) were having primary education followed by 31 per cent who were educated upto secondary schooling. 16 per cent respondents were found educated upto higher secondary. 9 per cent respondents were merely literate and 7 per cent respondents were found illiterate. Only 3 per cent farmers had graduate and above level education.

Size of land holding:

Table 1 shows that majority of respondents (49%) possessed 2 to 4 ha land, followed by 23 per cent who had land holding of 1 to 2 ha and found to be small farmers. Whereas 20 per cent respondents had possessed above 4 ha land. Only 8 per cent had below 1 ha. land and fell in marginal farmers' category.

Social participation:

Table 1 shows that majority of respondents (61 %) were participated or had membership in different social institute while 39 per cent respondents had not participated in any social institutes.

Income of respondents:

Majority of respondents (39%) had income upto Rs. 100001 to 150000 followed by respondents (26 %) who had income upto Rs. 150001 to 200000 whereas 16 per

cent respondents had fallen in Rs. 50001 to 100000 income group. 13 per cent respondents had income above Rs. 200001.

Extension participation:

Table 1 shows that most of the respondents (94 %) were participated in extension activities.

Innovativeness:

Table 1 reveals that 68 per cent respondents had

Table 1: Distribution of respondents according to their personal socio-economic characteristics				(n = 100)	
Sr. No.		Categories	Frequency (f)	Percentage (%)	
1.	Age	Young age (upto 35 years)	25	25	
		Middle age (36 to 50 years)	55	55	
		Old age (above 50 years)	20	20	
		Total	100	100	
2.	Education	Illiterate	7	7	
		Literate	9	9	
		Primary education	34	34	
		Secondary School education	31	31	
		Higher Secondary education	16	16	
		Graduate and above	3	3	
		Total	100	100	
3.	Size of land holdings	Marginal farmers (upto 1.0 ha)	8	8	
		Small farmers (Above one1.0 ha to 2.0 ha)	23	23	
		Medium farmer (Above 2.0 ha to 4.0 ha)	49	49	
		Big farmer (Above 4.0 ha)	20	20	
		Total	100	100	
4.	Social Participation	Participation/membership in different social institutes	61	61	
		No participation/membership	39	39	
		Total	100	100	
5.	Income of respondents	Rs. Upto to 50000	6	6	
		Rs. 50001 to 100000	16	16	
		Rs. 100001 to 150000	39	39	
		Rs. 150001 to 200000	26	26	
		Rs. 200001 to above	13	13	
		Total	100	100	
6.	Extension Participation	Participate in extension activities	94	94	
		Not participation	06	06	
		Total	100	100	
7.	Innovativeness	Immediately adoption	13	13	
		Follows when others successful adopted	68	68	
		Take time as per own adaptability	19	19	
		Total	100	100	

attitude of adopting technology after when other successfully adopted the same. While 19 per cent of respondents had responded that they take their own time according to adaptability. Only 13 per cent respondents said that they always ready for immediate adoption.

Risk orientation:

Data depicted in Table 2 reveals that 63 per cent respondents belonged to high risk orientation whereas 23 per cent respondents had low risk orientation. Only 14 per cent of them shown high risk orientation towards adoption.

Level of adoption of respondents according to use of SAWAJ Trichoderma:

To find out the adoption level of respondents about use of SAWAJ Trichoderma, in case of time of application of SAWAJ Trichoderma, Table 3 shows that majority of respondents were found partial adoption of time of adoption (71 %) followed by 23 per cent respondents

who adopted timely application of Trichoderma and applied it as per the SAU recommendations. Whereas dose of Trichoderma is concerned, 29 per cent respondent fully followed the recommendations in application of dose of SAWAJ Trichoderma while 71 per cent respondents partially adopted the same. Similar findings were in the case of method of application of SAWAJ Trichoderma, most of the respondents partially adopted the methods while only 19 per cent respondents found to follow the recommendation of SAU and fully adopted the recommended methods of application of SAWAJ Trichoderma.

Table 4 depicts that majority of respondents (69%) adopted SAWAJ Trichoderma since last one year while 26 per cent respondent found to use SAWAJ Trichoderma since last two years. Only 5 per cent respondents were found to use SAWAJ Trichoderma since more than two years.

Table 5 revealed that most of respondents (63%) were ready to adopt the SAWAJ Trichoderma on

Table 2 : Distribution of respondents according to their risk orientation (n = 100)

Sr. No.	Risk orientation	Frequency	Percentage
1.	Low (Below 30.68)	23	23
2.	Medium (Above 30.68 to 34.92)	63	63
3.	High (Above 34.92)	14	14
	Total	100	100

Mean: 32.8, S.D/2: 2.12

Table 3 : Distribution of respondents according to level of adoption (n = 100)

Sr. No.	Particulars	Level of adoption			
		Full adoption		Partial adoption	
		Frequency	Percentage	Frequency	Percentage
1.	Time of adoption	23	23	77	77
2.	Dose of trichoderma/ha	29	29	71	71
3.	Method of application	19	19	81	81
	Total	100	100	100	100

Table 4 : Distribution of respondents on the basis of time duration of adoption (n = 100)

Sr. No.	Adoption of SAWAJ Trichoderma (How many years of application)					
	More than two years		Two years		One year	
	Frequency	%	Frequency	%	Frequency	%
1.	5	5	26	26	69	69

Table 5 : Distribution of respondents according to their willingness to use SAWAJ Trichoderma on continuous basis (n = 100)

Sr. No.	Adoption of SAWAJ Trichoderma (Willingness for continuous use for coming season)			
	Yes willing to use continue basis		No continuous use	
	Frequency	Percentage	Frequency	Percentage
1.	63	63	37	37

continuous basis for the coming years. This shows their trust on SAWAJ Trichoderma and its effectiveness in management of fungal diseases. Only 37 per cent of respondents said that they will decide the use of SAWAJ Trichoderma for the coming years according to the occurrence of disease and level of infestation and decide accordingly. Though they did not completely denied not to use it in coming years. Purushottam *et al.* (2014) also found Trichoderma effective in reduction of root rot in chickpea and lentil. Findings are also in line with findings by Patel *et al.* (2017) and Punia and Punia (1997).

Conclusion:

Findings of this study shows that majority of respondents belonged to middle age group (55%) and educated upto primary education (34%), had medium size of land holding (49%) and most of them had social participation (61%) and had actively participated in extension programmes (94%). Majority of respondents (39%) had their annual income ranging from Rs.100000 to 150000. 68 per cent respondents preferred to adopt innovation after seeing it successful adoption by others. Majority of respondents had partially adopted the SAWAJ Trichoderma and had positive perception about the use of SAWAJ Trichoderma. Majority of respondents (69%)

were using Trichoderma since last one year. 63 per cent respondents opined that they will continue the use of SAWAJ Trichoderma for their farm field.

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