

Constraints in adoption of Sawaj Trichoderma under field condition by the farmers of Surendranagar district in Gujarat state

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ABSTRACT

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 is 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 manifold. 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 objective. To know the constraints and suggestions from respondents for increasing adoption. Findings of this study shows that in case of constraints faced by respondents, most important constraints was lack of moisture in soil at the time of application in standing crop and labour cost increased due to its non mixing condition with chemical fertilizer. Most of the respondents (66%) suggested that packing should be good and free from dusting and viable and made Sawaj Trichoderma available at local level (63%).

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INTRODUCTION

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/content/65/3/929.full>, 1998).

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 compare 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 by farmers showing its utility and importance to the farmers. As per as KVK, JAU 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 has been sold 13890 kg Sawaj Trichoderma to farmers of Surendranagar district. So this is showing that farmers of district is showing their interest and confidence in Sawaj Trichoderma and purchasing it from KVK, JAU, Nana Kandhasar. At least two fold increase of selling of *Trichoderma*, therefore, it become essential to know farmers feedback and their views about the use of SAWAJ Brand Trichoderma.

MATERIAL AND METHODS

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

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

RESULTS AND DISCUSSION

The findings of the present study as well as relevant discussion have been presented under the following heads:

Constraints faced by the farmers in adoption of Sawaj Trichoderma and their suggestion for increasing adoption:

Table 1 showing about the constraints faced by

Sr. No.	Constraints	Frequency	Percentage	Rank
1.	Lack of knowledge about application of Sawaj Trichoderma	31	31	VIII
2.	Application of SawajTrichoderma is difficult at the time of sowing	29	29	IX
3.	Lack of soil moisture when application of Sawaj Trichoderma needed in standing crop	64	64	I
4.	Castor cake as filler material used with Sawaj Trichoderma is costly	44	44	IV
5.	Unavailability of Sawaj Trichoderma on time	24	24	X
6.	Labour cost increased because it cannot mix with other chemical fertilizers	48	48	II
7.	Unavailability of Sawaj Trichoderma at Taluka level	38	38	VI
8.	Packing of Sawaj Trichoderma is not attractive and reliable	46	46	III
9.	Problem in application through drip irrigation	41	41	V
10.	Application of Sawaj Trichoderma not gave good result once cumin crop get infested with wilt disease	33	33	VII

respondents in adoption of Sawaj Trichoderma. Most of the respondent (64%) were opined that “Lack of soil moisture when application of Sawaj Trichoderma needed in standing crop” is constraints faced mostly and ranked 1st. While 48 per cent of respondents had constraint pertaining to ‘Labour cost increased because it cannot mix with other chemical fertilizers’ and ranked 2nd. Similarly 46 per cent respondents who at least use Sawaj Trichoderma had opined that packing of material is constraints as some time it tear down during transportation and ranked it 3rd most important constraint. 44 per cent respondents were opined that ‘Castor cake as filler material used with Sawaj Trichoderma is costly’ is constraints and it increases the cost of its application and considered 4th most constraints by them. Problem in application through drip irrigation (41%) and Unavailability of Sawaj Trichoderma at Taluka level (38%) and application of Sawaj Trichoderma not gave good result once cumin crop get infested with wilt disease (33%) were also considered by respondents and ranked 5th, 6th and 7th, respectively. Lack of knowledge about application of Sawaj Trichoderma (31 %) was considered as 3rd least faced among the constraints and ranked 8th. Application of Sawaj Trichoderma is difficult at the time of sowing (29%) and ‘Unavailability of Sawaj Trichoderma on time’ was least faced constraints and ranked 9th and 10th among the constraints faced by respondents.

Suggestions from respondents for increasing adoption of Sawaj Trichoderma:

Table 2 depicted the suggestion to increase the adoption of Sawaj Trichoderma. Respondents gave some suggestion to improvement so that adoption among farming community can be increased. Most of them (66 %) made suggestion regarding improvement in packaging

materials so that its carrying capacity during transportation can be reliable and termed as packing should be powder dust free and should be viable. This was ranked first on the basis of frequency of respondent’s opinion. 63 per cent respondents suggested that “make Sawaj Trichoderma available at local level through co-operatives/NGOs and through dealers to increase adoption and ranked it 2nd most suggestion. 51 per cent respondents suggested that ‘Formulation should be improved or do research so that become easy to use in drip and spray pumps and ranked it 3rd on suggestion list. 48 per cent respondents suggested that there should be provision for subsidy on Sawaj Trichoderma so that cost can be reduced and most of the farmers can get it on cheaper rates and can adopt the same and ranked the same on 4th position in list of suggestion. There should some other alternative of filler material (Castor cake) to reduce cost and easy to use for Sawaj Trichoderma (44%) and ‘Training programmes before season for use of Sawaj Trichoderma for bringing awareness (33%) and these suggestion ranked 5th and 6th, respectively. Some of the respondents opined that packaging of Sawaj Trichoderma in 1kg, 2kg and 5 kg should be made available to purchase according to need of marginal, small and medium farmers and ranked it last among last in suggestion. Similar work related to the present investigation was also carried out by Bhalekar *et al.* (2013); Joshi *et al.* (2018); Khatri and Patel (2018); Patel *et al.* (2017); Punia and Punia (1997); Shehrawat *et al.* (2016) and Sundravardarajan *et al.* (2006).

Conclusion:

Findings of this study shows that in case of constraints faced by respondents, most of the respondent (64%) were opined that “Lack of soil moisture when application of Sawaj Trichoderma needed in standing

Table 2: Suggestions by respondents for increasing adoption of Sawaj Trichoderma

Sr. No.	Suggestions	Frequency	Percentage	Rank
1.	Provide subsidy on Sawaj Trichoderma	48	48	IV
2.	Formulation should be improved or do research so that become easy to use in drip and spray pumps	51	51	III
3.	Packing should be powder dust free and should be viable	66	66	I
4.	Make availability of Sawaj Trichoderma at local level	63	63	II
5.	There should some other alternative of filler material (Castor cake) to reduce cost and easy to use	44	44	V
6.	Training programmes before season for use of Sawaj Trichoderma for bringing awareness	33	33	VI
7.	In 1, 2 and 5 kg packing should be made available to purchase according to need	27	27	VII

crop” is constraints faced mostly and ranked 1st. While 48 per cent of respondents had constraint pertaining to ‘Labour cost increased because it cannot mix with other chemical fertilizers’ and ranked 2nd. Similarly 46 per cent respondents who at least use Sawaj Trichoderma had opined that packing of material is constraints as some time it tear down during transportation and ranked it 3rd most important constraint. Similarly among least faced constraints were ‘Application of Sawaj Trichoderma is difficult at the time of sowing’ (29%) and ‘Unavailability of Sawaj Trichoderma on time’.

Most of the respondents (66%) suggested that ‘Packing should be powder dust free and should be viable’. This was ranked first on the basis of frequency of respondent’s opinion. 63 per cent respondents suggested that “make Sawaj Trichoderma available at local level through co-operatives/NGOs and through dealers to increase adoption and ranked it 2nd most suggestion. Majority of respondents suggested to improvement regarding ‘Formulation should be improved or do research so that become easy to use in drip and spray pumps.

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