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## Constraints faced by respondents in adoption of SAWAJ trichoderma

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### Abstract

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. For the management of soil borne diseases especially stem and pod rot of groundnut, *Trichoderma harzianum* is very effective. Junagadh Agricultural University (JAU) has started the commercial production and selling of bio-agent *Trichoderma harzianum* culture under the brand name of SAWAJ Trichoderma. There are several constraints enumerated by the farmers in adoption of SAWAJ Trichoderma in Amreli districts. Lack of soil moisture when application of SAWAJ Trichoderma needed in standing crop, labour cost increased because it cannot mix with other chemical fertilizers, problem in application through drip irrigation, application of SAWAJ Trichoderma is difficult at the time of sowing and castor cake as carrier agent used with SAWAJ Trichoderma is costly major constraints faced by respondents while adopting the SAWAJ Trichoderma.

**Keywords:** constraint, trichoderma, adoption, technology

### Introduction

Agriculture is an important sector in India. Among the entire crop production technology insects and diseases control practices, are very complex in nature due to they are highly technical in nature which required precision in use. Excessive uses of chemicals in agriculture are hazardous to human being. There are plenty of insecticides and fungicides are used in agriculture which is adversely effects on human being. To solve this problem, there is urgent need for increasing usage of safe insecticides and fungicides for the control of pest and diseases. In rain fed agriculture, these inputs gain added importance in view of their low cost, as most of the farmers are small and marginal and cannot afford to buy expensive insecticides and fungicides. Trichoderma are also ideal input for reducing the cost of cultivation and for practicing organic farming. For the management of soil borne diseases especially stem and pod rot of groundnut, *Trichoderma harzianum* is very effective. Junagadh Agricultural University (JAU) has started the commercial production and selling of bio-agent *Trichoderma harzianum* culture under the brand name of SAWAJ Trichoderma. During this year JAU has produced and distributed 1, 04, 800 kg of SAWAJ Trichoderma to the farmers for the control of stem and pod rot of groundnut. JAU provide facility to buy SAWAJ Trichoderma at university campus and KVKs (Krishi Vigyan Kendra). It is also available at various NGOs (Non-Government Organizations) and co-operative societies of Saurashtra to the farmers. Department of Agriculture, Co-Operation & Farmers Welfare (DAC&FW) emphasizes Integrated Pest Management (IPM) which promotes biological, cultural and mechanical methods of pest and advocates need based, judicious use of pesticides. "Grow Safe food" Campaign has been initiated to create awareness about the safe and judicious use of pesticides among the various stakeholders. In addition to the above, DAC&FW has revised 68 Integrated Pest Management (IPM) Packages of Practices for major crops giving impetus to ecological and cultural techniques of pest management. Government also implemented various schemes for creating awareness and adoption of organic farming, IPM and use of bio pesticides. But there were some constraints faced by farmers adopting these practices. Looking to above facts a study entitled "constraints faced by farmers to adoption of SAWAJ Trichoderma" was undertaken with following objectives:

1. To know the constraints faced by farmers to adoption of SAWAJ Trichoderma

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2. Suggestions from respondents to overcome constraints to increasing level of adoption of SAWAJ Trichoderma

### Materials and Methods

Amreli district of Gujarat state selected for the study. Amreli district consists of 11 taluka likes Amreli, Babra, Dhari, Vadia, Lathia, Lilia, Savar Kundla, Khambha, Rajula, Jafrabad, Bagasara. Among 11 talukas 5 talukas Bagsra, Amreli, Dhari, Rajula and Savarkundla were selected purposively where more number of farmers cultivated groundnut and used SAWAJ Trichoderma. From selected talukas, 20 farmers from each talukas were selected for the study. Thus, total 100 respondents were selected from Amreli district that who have used SAWAJ Trichoderma in 2017-18. Data collected through personal interview with the developed questionnaire.

Ex-post-facto research design was used in the present investigation. The collected data were tabulated and analyzed in the light of objectives. To assess the constraints in use of "SAWAJ" Trichoderma, nine item statements were presented and assessment based on yes and no, percentage of statements were work out and ranked it. For the suggestions to overcome the constraint was kept open-handed and percentage work out and on basis of percentage ranked given.

### Result and Discussion

A study pertaining to constraints faced by the farmers in the adoption of SAWAJ Trichoderma and suggestions from respondents to overcome constraints was conducted using 100 farmers from Amreli districts of Gujarat. The results obtained were presented in Table 1 and Table 2.

**Table 1:** Constraints faced by respondents in adoption of SAWAJ Trichoderma (n= 100)

Sr. No.	Constraints	Frequency	Percentage	Rank
1	Lack of knowledge about application of SAWAJ Trichoderma	41	41	IX
2	Application of SAWAJ Trichoderma is difficult at the time of sowing	65	65	IV
3	Lack of soil moisture when application of SAWAJ Trichoderma needed in standing crop	78	78	I
4	Castor cake as career agent used with SAWAJ Trichoderma is costly	62	62	V
5	Timely unavailability of SAWAJ Trichoderma	56	56	VII
6	Labour cost increased because it cannot mix with other chemical fertilizers	73	73	II
7	Unavailability of SAWAJ Trichoderma at Taluka level	57	57	VI
8	Packing of SAWAJ Trichoderma is not attractive and reliable	32	32	X
9	Problem in application through drip irrigation	71	71	III
10	Application of Sawaj Trichoderma not gave good result once groundnut crop get infested with fungal disease	51	51	VIII

Table 1 clearly indicated that the constraints faced by respondents in adoption of SAWAJ Trichoderma are lack of soil moisture when application of SAWAJ Trichoderma needed in standing crop (78.00 per cent) ranked first, labour cost increased because it cannot mix with other chemical fertilizers (73.00 per cent) ranked second, problem in application through drip irrigation (71.00 per cent) ranked third, application of SAWAJ Trichoderma is difficult at the time of sowing (65.00 per cent) ranked fourth, castor cake as career agent used with SAWAJ Trichoderma is costly (62.00 per cent) ranked fifth, unavailability of SAWAJ Trichoderma

at Taluka level (57.00 per cent) ranked sixth, Timely unavailability of SAWAJ Trichoderma (56.00 per cent) ranked seventh, Application of SAWAJ Trichoderma not gave good result once groundnut crop get infested with fungal disease (51.00 per cent) ranked eighth, lack of knowledge about application of SAWAJ Trichoderma (41 per cent) ranked ninth and packing of SAWAJ Trichoderma is not attractive and reliable (32.00 per cent) ranked tenth. This finding are supported with Rama Rao *et al.* (2007) <sup>[6]</sup>, Bhalekar *et al.* (2013) <sup>[1]</sup>, Karade *et al.* (2014) <sup>[2]</sup> and Shehrawat *et al.* (2016) <sup>[3]</sup>.

**Table 2:** Suggestions from respondents to overcome constraints to increasing level of adoption of SAWAJ Trichoderma (n= 100)

Sr. No.	Suggestions	Frequency	Percentage	Rank
1.	SAWAJ Trichoderma provide at village level	88	88	I
2.	Timely available	81	81	II
3.	Organized training programme on method of application	79	79	III
4.	SAWAJ Trichoderma provide at subsidized rate	65	65	IV
5.	Increase awareness about use of SAWAJ Trichoderma	56	56	V
6.	SAWAJ Trichoderma should be made in such a way so it can be used in drip irrigation system	49	49	VI

Table 2 revealed that the most important suggestions were: SAWAJ Trichoderma provide at village level (88.00 per cent) ranked first, timely available the Trichoderma (81.00 per cent) ranked second, organized training programmes on method of application of Trichoderma (79.00 per cent) ranked third, SAWAJ Trichoderma provide at subsidized rate (65.00 per cent) ranked fourth, Increase awareness about use of SAWAJ Trichoderma (56.00 per cent) ranked fifth and SAWAJ Trichoderma should be made in such a way so it can be used in drip irrigation system (49.00 per cent) ranked sixth. These finding are supported with Kerketta *et al.* (2015) <sup>[4]</sup> and Sundaravardarajan *et al.* (2006) <sup>[5]</sup>.

### Conclusion

Adoption of SAWAJ Trichoderma good practice to control soil borne diseases in groundnut and cotton in Saurashtra region of Gujarat. It is cheap price product also ecofriendly and safe for our food chain. Keeping these potentials in mind, farmers starts practicing SAWAJ Trichoderma but at the same time they are facing several constraints like lack of soil moisture when application, labour cost increased because it cannot mix with other chemical fertilizers, difficult at the time of sowing castor cake as career agent is costly and unavailability at Taluka level. So the efforts from the various players like policy makers, researcher, extension workers,

farmers' representative, inputs suppliers, marketing personnel and consumers are needed to promote SAWAJ Trichoderma in a big way to tackle the present crises. It is hoped that SAWAJ Trichoderma will emerge as an important component of IPM in future.

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