

OBSTRUCTIONS TO TAMIL NADU FARMERS WHEN USING BIO-FERTILIZERS AND THEIR SUGGESTIONS FOR MITIGATION

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Abstract

Tamil Nadu is the leader among States in the use of bio-fertilizers, an organic substitute for chemical fertilizers. Farmers use the bio-inoculants on almost all crops that are cultivated in the State. The Agriculture Department encourages the use in three ways – treating seeds before plantation, administering those on roots and using on soil.

An innovation to become popular among farmers, initially it has to face a lot of difficulties in terms of farmer's understanding the concepts, developing a favourable attitude, getting the required inputs and ensuring a good extension service. Unless the obstructions are identified and appropriate actions taken, the adoption level will be less. Hence, the obstructions analysis is an important objective of any social study. The obstructions experienced by the respondents in adopting the recommended bio-fertilizer practices were studied. The study was taken up in the rice predominant district of Thiruvavur in Tamil Nadu State (India) with a sample size of three hundred growers selected based on the random sampling method.

Non-availability of labour, lack of interest, lack of confidence towards various bio-fertilizer practices, lack of technical guidance, lack of training programme, non-availability of viable culture at Government depots, high cost of labour, lack of proper communication system, complexity of new practices and lack of awareness were the major obstructions experienced by the respondents in adoption of recommended bio-fertilizer practices. The major suggestions offered by the respondents to overcome the constraints in the adoption of recommended bio-fertilizer practices were stopping the NREGA scheme in peak cropping season, increasing quantity of bio-fertilizer per packet, road side trials, field demonstrations, frequently training programmes and equipped sales points.

Key words: Bio-fertilizers, rice growers, obstructions, suggestions.

Introduction

Fertilizer is the natural or artificial substance containing the chemical elements that improve growth and productiveness of plants. The green revolution in India owes much of its

success to inorganic fertilizers. Today, fertilizer has become an indispensable input for intensive agriculture.

The excessive use of inorganic fertilizers though increases crop production results in polluting environment and causes deterioration of soil health. The chemical residues in food products are also hazardous to both human beings as well as livestock. The inorganic fertilizers are costly and import of fertilizers to meet the growing demand imposes heavy foreign exchange burden on the nation. Bio-fertilizers are supposed to be a safe alternative to chemical fertilizers to minimize the ecological disturbance. Bio-fertilizers are complex product of live microbial inoculants which are able to fix atmospheric nitrogen, solubilize soil phosphorus, decompose organic material or oxidize sulphur in the soil. Bio-fertilizers are artificially multiplied cultures of beneficial soil microorganisms that can improve soil fertility and crop productivity. They add nutrients through the natural processes of nitrogen fixation, solubilizing phosphorus and stimulating plant growth through the synthesis of growth-promoting substances. They are made from biological wastes and do not contain any chemicals. Bio-fertilizers offer a new eco-friendly technology which would overcome shortcomings of the conventional chemical based farming. Biofertilizers showed positive influence on both soil sustainability and plant growth. They gradually improve soil fertility by fixing atmospheric nitrogen. They increase the phosphorous content of the soil by solubilizing and releasing unavailable phosphorous. They help in restoring depleted nutrients of the soil. Growth promoting substances released by biofertilizers improve plant root proliferation. They also guard the plant against some soil-borne diseases.

The need for the use of bio-fertilizers has arisen, primarily for two reasons. First, because increase in the use of fertilizers leads to increased crop productivity, second, because increased usage of chemical fertilizers leads to damage in soil texture and raises other environmental problems. Therefore, the use of bio-fertilizers is both economical and environmental friendly. The pragmatic approach will be to develop the integrated nutrient supply system involving a combination of the use of chemical fertilizers and bio-fertilizers. The use of bio-fertilizers has still not spread uniformly although there has been a steady rise in their use by certain group of farmers. Increasing the use of bio-fertilizers is possible only by adopting the recommended practices in timely.

An innovation to become popular among farmers, initially it has to face a lot of difficulties in terms of farmer's understanding the concepts, developing a favourable attitude, getting the required inputs and ensuring a good extension service. Unless the obstructions are identified and appropriate actions taken, the adoption level will be less. Hence, the obstructions analysis is an important objective of any social study. Keeping this in view, the present study has been made to know the obstructions experienced by the respondents in adopting the recommended bio-fertilizer practices.

Methodology

The study was conducted in the rice predominant district of Thiruvarur in Tamil Nadu state. Thiruvarur district consist of ten blocks namely Thiruvarur, Nannilam, Kudavasal, Koradacherry, Thiruthuraipoondi, Mannargudi, Kottur, Muthupettai, Needamangalam and Valangaiman. A total number of 300 rice and rice fallow pulses growers were selected following the random sampling method.

Based on the field experience of the researcher, coupled with discussion with rice and rice fallow pulses growers and the outcomes of consultations with scientists and extension personnel, a list of ten obstructions were identified for this study. During the main data collection, the respondents were asked to reveal the constraints experienced by them from the listed items. The frequency of respondents indicating each of the obstructions was found out expressed in percentage.

The suggestions offered by the respondents to over-come the obstructions in the adoption of recommended bio-fertilizer practices were also studied. The respondents were encouraged to offer their suggestions to over-come the obstructions. A percentage analysis was worked out to study the suggestions.

Results and discussion

I. Obstructions experienced by the respondents in adoption of recommended bio-fertilizer practices

The obstructions experienced by the respondents in adoption of recommended bio-fertilizer practices were ranked according to the number of respondents reported and the salient findings are presented in Table 1.

Table 1. Obstructions experienced by the respondents in adoption of recommended bio-fertilizer practices

(n=300)

Sl. No.	Obstructions	Number*	Per cent	Rank
1.	Lack of awareness	77	25.66	X
2.	Lack of interest	240	80.00	II
3.	Lack of confidence towards various bio-fertilizer practices	225	75.00	III
4.	Non-availability of labour	277	92.33	I
5.	High cost of labour	130	43.33	VII
6.	Lack of proper communication system	123	41.00	VIII
7.	Lack of technical guidance	198	66.00	IV
8.	Lack of training programme	182	60.66	V
9.	Non-availability of viable culture at Government depots	140	46.66	VI
10.	Complexity of new practices	114	38.00	IX

*Multiple responses.

Table 1 revealed that majority of the respondents (92.33 per cent) reported “non-availability of labour” as their first and foremost obstruction followed by “lack of interest” as their second obstruction (80.00 per cent). “Lack of confidence towards various bio-fertilizer practices” was the third important obstruction expressed by 75.00 per cent of the respondents. “Lack of technical guidance”, “lack of training programme” and “non-availability of viable culture at Government depots” whereas found to be the fourth, fifth and sixth obstructions expressed by 66.00, 60.66 and 46.66 per cent of the respondents respectively

43.33 per cent of the respondents expressed “High cost of labour” as their seventh obstruction followed by “Lack of proper communication system” (41.00 per cent), “Complexity of new practices” (38.00 per cent) and “Lack of awareness” (25.66 per cent) were their eighth, ninth and tenth obstructions respectively.

1. Non-availability of labour

The first and foremost obstruction expressed by 92.33 per cent of the respondents was “non-availability of labour”. During the peak period of every season all the farmers would start their work at the same time hence they would have been a heavy demand for labours. Further now-a-days the agricultural labourers prefer to work on the NREGA, Ministry of Rural Development scheme. In addition these, absence of adequate number of family labourers due to the nuclear family systems would have also contributed the labour scarcity. Farm labourers are slowly moving to other occupations. Even though the labourers are available, they were not skillfully trained, so they were not sincere in carry out the farm operations in time and wastage the inputs.

The respondents felt that the increased wages for labourers was an important aspect which increases the cost of bio-fertilizers application charges. These may be the reason for the above constraint. This finding is accordance with findings of Santhi (2006).

2. Lack of interest

Among all the identified problems, “lack of interest” was the second major problem faced by the bio-fertilizer farmers (80.00 per cent), because majority of the respondents reported that they were not to change their usual culture operations followed traditionally. In the total sample, majority of the respondents were middle and old aged with low economic status, which leads to lesser interest towards application of recommended bio-fertilizers in rice and rice fallow pulses cultivation. Moreover they felt that rice crop does not require any specific technology for its yield contribution and also they give more importance to plant protection aspects only. And they depend much on inorganic fertilizer for higher yield; hence they were not much interested in this unfamiliar technology. This may be the probable reasons for the constraint. This finding is in line with findings of Prithviraj (2009).

3. Lack of confidence towards bio-fertilizer practices

“Lack of confidence towards bio-fertilizer practices” was reported by three-fourth of the respondents. It is having demerit of lack of visual impact and hence it would not serve the principle of seeing is believes. These conditions might have tempted the respondents to express the obstruction. Moreover inadequate information on bio-fertilizer practices like applications of Blue Green Algae, applications of Azolla, in turn would have lead to lack of confidence. Sathasivam (1997) also reported that lack of confidence in the new bio-fertilizer technology was one of the most important obstructions for adopting the bio-fertilizer practices.

4. Lack of technical guidance

From the Table 30, it could be seen, that almost two-third of the respondents (66.00 per cent) expressed “lack of technical guidance” as the serious obstructions. This may be due to extension officials of State Department of Agriculture take intensive efforts to disseminate the bio-fertilizer practices, they did not provide the complete technical guidance on bio-fertilizers like the application methods, advantages of applying the specific bio-fertilizers, place of availability, its complementary nature, etc. Furthermore they did not teach the farmers in time. The above said facts were reported by the respondents during the data collection hence this may be attributed reason for the adoption of bio-fertilizer. This finding is supported by the findings of Prithiviraj (2009).

5. Lack of training programme

“Lack of training programme” was experienced as the fifth obstruction by 60.66 per cent of the respondents. Even though the State Department of Agriculture organized various training programme for the farmers, but the number of trainings conducted on bio-fertilizers were meager as reported by the respondents. In the total sample, more than ninety per cent of the respondents have not attended any training programme on bio-fertilizers. This may be the reason for above obstruction. Similar finding was also reported by Jeyalakshmi (2008).

6. Non availability of viable culture at Government depots

“Non availability of viable culture at Government depots” was felt as obstruction by 46.66 per cent of the respondents. Most of the respondents reported that they could get only the out dated packets of bio-fertilizer from the agricultural sales points. This might have prompted the

respondents to report this obstruction. This finding is in agreement with earlier findings reported by Prithiviraj (2009).

7. High cost of labour

“High cost of labour” was the seventh important economic obstruction reported by more than two-fifth (43.33 per cent) of the respondents. The respondents felt that the increased wages for labourers was an important aspect which increases the cost of production. The agricultural labourers demand higher wages irrespective nature of work. This might be due to the guaranteed and high wages employment in industry and other sectors. Farm labourers are slowly migrating to cities results in the non-availability of labourers for the agricultural operations. Hence, higher wages are demanded. This finding is accordance with findings of Rajivgandhi (2010).

8. Lack of proper communication system

“Lack of proper communication system” was reported by 41.00 per cent of the respondents. Though the State Department of Agriculture is taking intensive efforts in popularizing bio-fertilizer practices among farmers due to medium usage of radio, television and printed publications, coupled with limited coverage of bio-fertilizer practices in the media, the respondents would have expressed lack of proper communication system as a obstruction. The finding is in line with the findings of Mukesh (2007).

9. Complexity of new practices

“Complexity of new practices” was felt as obstruction by 38.00 per cent of the respondents. The adoption of new practices might require special knowledge and specialized skills in applications of Azolla and Blue Green Algae. Further it might require more skilled labourers. Due to the above reasons, part of the respondents believed that some of the recommended bio-fertilizer practices were complicated in nature. Similar findings were also reported by Rajivgandhi (2010).

10. Lack of awareness

“Lack of awareness” was reported by one-fourth of the respondents (25.00 per cent). This may be due to the fact that majority of the respondents had medium level of extension agency contact and also due to the frequency of visits made by extension officials of State Department of Agriculture was poor. This is in agreement with the findings of Jeyalakshmi (2008).

II. Suggestions offered by the respondents to overcome the obstructions in adoption of recommended bio-fertilizer practices

Suggestions offered by the respondents to overcome the obstructions experienced by them in the adoption of recommended bio-fertilizer practices are presented in Table 2.

Table 2. Suggestions offered by the respondents to adopting overcome the obstructions in adoption of recommended bio fertilizer practices

(n=300)

Sl. No.	Suggestions offered to overcome the obstructions	Number *	Per cent
1.	Stopping the NREGA scheme in peak cropping season	247	82.33
2.	Increasing quantity of bio-fertilizer per packet	217	72.33
3.	Road side trials	203	67.66
4.	Field demonstrations	174	58.00
5.	Frequent training programmes	162	54.00
6.	Equipped sales points	153	51.00

*Multiple responses.

It could be seen from the Table 2 that the respondents offered six major suggestions in accordance with the obstructions expressed by them.

To overcome the obstructions like 'non availability of labour' and 'high cost of labour', majority of the respondents (82.33 per cent) suggested 'stopping the NREGA scheme in peak cropping season'. If the Government officials to stop the scheme during the peak crop season, it will highly helpful to farming community.

'Increasing quantity of bio-fertilizer per packet' was the second major suggestion made by the farmers (72.33 per cent). If they have increased the quantity of fertilizer per packet, it will reduce the insufficient and inadequate supply of bio-fertilizer during the peak season. So the State Department of Agriculture has to take necessary action to increase their quantity of fertilizer per packet.

The respondents faced 'lack of confidence towards various bio-fertilizer practices' as a foremost obstruction and for that majority of the respondents (67.66 per cent) wanted 'Road side

trials'. Whenever the subject matter specialist and scientist to conduct a trial plot, it will near by the road side, it was more visualized than other area and also to create awareness and it will build the confidants, than only the farmers go for applying the bio-fertilizer in adequate and timely.

More than half of the proportion of respondents (58.00 per cent) wanted 'Field demonstrations' was one of the suggestion made by the farmers. The field demonstrations may stimulate the respondents to try out innovations themselves and also can show the causes of bio-fertilizer and their possible solutions without complicated technical details. A great advantage of demonstration is seeing how a bio-fertilizer works in practice.

'Frequently training programmes' was suggested by more than half of the respondents (54.00 per cent). Since majority of them was needed frequent training programme that may incur heavy losses due to lack of knowledge and skill in respective field. Hence, the field extension functionaries should make an intensive effort to provide technical guidance through proper training for farmer to manage their farm effectively.

More than two-fifth respondents who expressed the obstruction 'non-availability of viable culture at Government depots' suggested 'equipped sales points' (51.00 per cent). The farmers have to procure viable culture from the nearest town or head quarters. So that, the respondents suggested if Government made arrangement, it could enable them to procure the viable culture at right time and right price with right place.

Conclusion

According to the results of the study, farmers using bio-fertilizer reported the following obstructions and they have also provided solutions. Non-availability of labour, lack of interest, lack of confidence towards various bio-fertilizer practices, lack of technical guidance, lack of training programme, non-availability of viable culture at Government depots, high cost of labour, lack of proper communication system, complexity of new practices and lack of awareness were the major obstructions experienced by the respondents in adoption of recommended bio-fertilizer practices.

The major suggestions offered by the respondents to overcome the obstructions in the adoption of recommended bio-fertilizer practices were stopping the NREGA scheme in peak cropping season, increasing quantity of bio-fertilizer per packet, road side trials, field demonstrations, frequently training programmes and equipped sales points.

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