

Strategies for promoting bio-fertilizers among the farmers for sustainable agriculture

M. MALARKODI AND K. BHARATHI

See end of the article for authors' affiliations

Correspondence to :

M. MALARKODI
Department of
Agricultural
Economics,, Tamil
Nadu Agricultural
University,
COIMBATORE (T.N.)
INDIA

ABSTRACT

Bio-fertilizers are fertilizers containing living microorganisms, which increase microbial activity in the soil. This study was conducted at randomly selected five villages of Erode district of Tamil Nadu. 100 per cent awareness of bio-fertilizers was found in that area but awareness on crop specific usage of bio-fertilizers was only 19 per cent. The main source of information about bio-fertilizers was the shop owners (46 per cent) and Agriculture Officers (29 per cent). Usage level of bio fertilizers was 60 per cent and the main reason for using bio fertilizers were to restore the soil fertility (34 per cent) and increase crop yield (32 per cent). Reason for not using these bio fertilizers was unaware of usage method of bio fertilizers (80 per cent). So, a step has to be taken to educate the farmers about bio-fertilizers.

INTRODUCTION

With the introduction of green revolution technologies, the modern agriculture is getting more and more dependent upon the steady supply of synthetic inputs (mainly fertilizers), which are products of fossil fuel (coal + petroleum). Land under agriculture is not increasing with the rate to keep up with the pace of the demand for food across the world (Gupta, 2007). Excessive and inappropriate use of agrochemicals has undeniably resulted in negative and sometimes irreparable effects on the environment (Ho-Kyum, 2008). In an effort to increase crop yield, the fertile soils have become acidic due to heavy chemical fertilizer application. Degraded soils and groundwater pollution caused by chemical leaching have resulted in lands becoming unproductive in the long run. In the same way, reliance on chemical pesticides to manage pest problems has aggravated environmental ruins. While chemical inputs have raised the agriculture's productivity levels, the benefits however, are short-lived. As such, farmers and consumers are now in search for alternatives to agrochemicals that would provide them safe and substantial amount of food without harm to the environment— alternatives that are safe, secure and sustainable. This situation has lead to identifying harmless inputs like bio fertilizers.

Use of such natural products like bio-fertilizers in crop cultivation will help in safeguarding the soil health and also the quality of crop products. Bio-fertilizers are ready to use live formulates of such beneficial micro organisms which on application seed, root or soil mobilize the availability of nutrients by their biological activity in particular, and help build up the micro flora and in turn the soil health in general (Rathod, 2009). High nitrogen fixing, phosphate solubilizing, phytohormones producing isolates of *Azotobacter*, *Azospirillum*, *Acetobacter* and *Pseudomonas* were used as inoculants for most of crops (Rai, 2006). The importance of Cyanobacteria was recognized and a considerable amount of research has been carried out to evolve methods and means to effectively utilize these organisms as a biofertilizer (Vaishampayan *et al.*, 2001). It is proved that replacing chemical fertilizers with bio-fertilizer has far reaching consequences such as reducing environmental pollution, more cost benefits, increased yields and high quality produce.

METHODOLOGY

This study was conducted in 2008 at Erode district of Tamil Nadu. Five villages were selected and twenty farmers were selected from each village randomly. Thus, total sample size was 100 farmers. Data was collected by

Key words :
Strategies, Bio-fertilizer,
Sustainable agriculture

Accepted :
September, 2009

personally interviewing the farmers with the pretested interview schedules.

Tools of analysis:

Percentage analysis:

Percentages were calculated for making simple comparisons.

Garett's ranking technique:

Garett's ranking technique was used to rank the different factors influencing the use of biofertilizers by farmers. The farmers were asked to rank the different attributes. The orders of merits were converted into ranks by using the following formula:

$$\text{Per cent} = \frac{100(R_{ij} - 0.5)}{N_j}$$

where, R_{ij} rank given for i^{th} factor by j^{th} individual

N_j number of factors ranked by j^{th} individual

By referring the Garett's scores table, the per cent position estimated were converted into scores. Then for each factor, the scores of various respondents were added and the mean was calculated. The mean values were arranged in descending order. The variables with the highest mean score was considered to be the most important one.

RESULTS AND DISCUSSION

The level of awareness was 98 per cent and only two per cent of them were unaware about the bio-fertilizers. Awareness on crop specific usage of bio-fertilizers was only 19 per cent and 81 per cent of them were unaware about the crop specific usage level of fertilizers. The main source of information about bio-fertilizers was the shop owners (45 per cent), Agriculture Officers (29 per cent), advertisements (17 per cent) and meagre by neighbour farmer, friends and relatives. The farmers really used bio fertilizers in their field was 60 per cent and the 40 per cent not used bio fertilizers in their fields. The main reason for using bio fertilizers were restoring the soil fertility (34 per cent), increase crop yield (32 per cent), reduce the amount of chemical fertilizers usage (20 per cent), and cost effective (14 per cent). It is concluded from Table 1, the reasons for not using the bio fertilizers, 80 per cent of them were unaware of usage method of bio fertilizers, 16 per cent of them felt it made extra cost and 4 per cent of them said there was no yield difference.

Table 1 : Bio fertilizer awareness and usage level

Particulars	No. of farmers responded	Percentage (%)
Level of awareness about the bio- fertilizers		
Aware	98	98
Unaware	2	2
Awareness on crop specific usage of bio fertilizers		
Aware	19	19
Unaware	81	81
Source of information		
Retail shop owners	45	46
Agriculture officers	28	29
Advertisement	17	17
Neighbour farmers	5	5
Friends and relatives	3	3
Total	98	100
Farmers used level of bio fertilizers		
Used	59	60
Not used	39	40
Total	98	100
Reason for using bio fertilizers		
Restoring the soil fertility	20	34
Increase crop yield	19	32
Reduce the amount of chemical fertilizers usage	12	20
Cost effectiveness	8	14
Total	59	100
Reason for not using these bio fertilizers		
Unaware the correct using method of bio-fertilizers	31	80
Extra cost	6	16
No difference in yield	2	4
Total	39	100

Suggestions to improve the usage level of bio fertilizers:

The farmers were requested to rank the following attributes.

Table 2 : Suggestions made by farmer and their respective ranks

Particulars	Score	Rank
Educating the farmers through awareness campaign	74.83	I
Frequent demonstration of usage methods of bio-fertilizers	68.17	II
Advertisements through TV, radio, free leaflets etc.	50.27	III
Arranging training programmes to the farmers	45.12	IV
Field trials	32.06	V

Farmers ranked the following suggestions to improve the usage level of bio fertilizers (Table 2). They ranked first to educate the farmers through awareness campaign, second was the frequent demonstration of usage methods of bio-fertilizers, third to advertisements through TV, radio, free leaflets etc., fourth for arranging training programmes to the farmers and finally to field trials

Conclusion:

Encourage the shop owners and agriculture officers to educate the farmers about bio fertilizers, because the main source of information was retail shop owners and agriculture officers. Main reason for using the bio fertilizers was restoring soil fertility and increase the yield. Reasons for not using the bio fertilizers were unaware of correct usage method of bio fertilizers and their extra cost. Farmers were ranked the following suggestion to improve the usage level of bio fertilizers, first was to educate the farmers through awareness campaign, second to the frequent demonstration of usage methods of bio-fertilizers, third the advertisements through TV, radio, free leaflets etc., conducting frequent field demonstration specifically about the usage methods of bio fertilizers, conducting awareness campaign to educate the farmers about the benefits of bio-fertilizers and giving more advertisement programmes to make aware of the bio fertilizer products through TV, radio, free leaflets etc., so that farmers can

buy the products and use it in their fields.

The above recommendation may help the farmers to make aware bio fertilizers so as to increase the usage level of bio-fertilizers to create the sustainable agriculture.

Authors' affiliations

K. BHARATHI, Department of Entomology, Tamil Nadu Agriculture University, COIMBATORE (T.N.) INDIA

REFERENCES

- Gupta, M.K.** (2007). *Handbook Of Organic Farming And Bio-fertilizers*. Jaipur, ABD Pub., Jaipur.
- Ho-Kyum, Lee** (2008). Appropriate use of bio-fertilizers and bio-pesticides for small-scale farmers in Asia Food & Fertilizer Technology Center Newsletter.
- Rai, M.K.** (2006). *Handbook Of Microbial Bio-fertilizers*. Food Products Pr.
- Rathod, Jitendra** (2009). Sustainable agriculture using biofertilizers. http://microbiology.suite101.com/article.cfm/sustainableagriculture_using_biofertilizers#ixzz0JuDaEOS0&D
- Vaishampayan, A. et al.** (2001). Cyanobacterial biofertilizers in rice Agriculture, Botanical Review.

