

## Adoption and Attitude of farmers towards Biofertilizers

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### ABSTRACT

*Biofertilizers are defined as preparations containing living cells or latent cells of efficient strains of microorganisms that help crop plants' uptake of nutrients by their interactions in the rhizosphere when applied through seed or soil. They accelerate certain microbial processes in the soil which augment the extent of availability of nutrients in a form easily assimilated by plants. The farmers are required to possess information about various biofertilizers and their associated practices to adopt them for inoculation to different crops. In such situation biofertilizers are the cheap source to maintain fertility as well as soil moisture. Keeping this in view, present study was conducted in to measure the knowledge level and to know the attitude of farmers regarding biofertilizers. The study was conducted in Katol Panchayat Samiti 10 villages were selected by simple random sampling method. Out of 600 farmers of this Panchayat Samiti which was supplied with the biofertilizers, only 100 farmers were selected by proportionate random sampling from selected 10 villages. These selected 100 farmers were considered for the study as respondents. While majority of the farmers had high medium level of adoption and attitude. Majority of them had highly favorable view towards attributes of biofertilizers and were medium in use of biofertilizers.*

*Keywords: Adoption level, Attitude*

### INTRODUCTION

In India, the use of biofertilizers was started during 1954. The present national consumption of biofertilizers is nearly 7000-8000 tonnes/year, Bhattacharya and Mishra (1995) observed that, India should need 627180 biofertilizers every year, estimated on the basis of requirement to total area under crop.

Agriculture production depends upon availability and use of quality and quantity of farm inputs. The chemical fertilizers are supposed to be essential inputs for boosting up of production of hybrids and high yielding crop varieties. Green revolution in India has witnessed a jump in agricultural production with the introduction of high yielding varieties (HYVs) of various crops and by following intensive cultivation practices with the use of fertilizers, pesticides and other inputs. The cropping intensity has also increased during green revolution period wherever water is available a second crop was introduced. Consumption of chemical fertilizers increased tremendously over the years. Nitrogen, phosphorus and potassium are the primary fertilizer nutrients which were widely used.

Other trace elements are used in specific crops otherwise most of the farmers are not using the micro nutrients. Economic status of the people in country like India mostly depends upon the agricultural production.

Indian economy basically depends on agriculture and nearly two third populations is sustained by it. Agriculture conditions are predominantly influenced by strong inclination of farmer towards use of traditional methods of cultivation. The speedy adoption of improved agriculture techniques is most important for enhancing agriculture production. The government of Maharashtra is one step ahead to popularize biofertilizers. To promote the use of this new technology provision is made by the government to distribute the packets of biofertilizers among farmers on 50 percent subsidy basis.

In the present study, emphasis was given on the measurement of adoption level, attitude level and its relationship with selected personal, socio-economic, communication, psychological and situational characteristic of respondents. The present study was therefore planned with the

objectives of 1) To study the extent of adoption of biofertilizers by the farmers. 2) To study the attitude of farmers towards biofertilizers. 3) To find out relationship of selected characteristics of farmer with their adoption and attitudes towards biofertilizers. 4) Constraints faced by farmers in use of biofertilizers.

### METHODOLOGY

The present study was carried out in Katol Panchayat Samiti of Nagpur District of Vidarbha region of Maharashtra state. Katol Panchayat Samiti consist of 187 villages among these 10 villages were selected by simple random sampling method. A list of these farmers were supplied with the biofertilizers was procured from Agriculture Officer. Out of 600 farmers of Katol Panchayat Samiti 100 farmers were selected by proportionate random sampling method from selected 10 villages of this Panchayat Samiti. These farmers were considered as respondents for the present study. The present study exploratory design of social research was used. The data were collected by personal interview method with the help of structured interview schedule. The data collected were tabulated, analyzed and interpreted. To measure the attitude of farmers the teacher made scale was used. This scale has 12 Statements. For knowing the attitude of respondents the scores obtained on all 12 statements were summed up and used in working at the attitude index as given below. Categorization of attitude on the basis of mean and standard

deviation.

$$\text{Attitude Index} = \frac{\text{Obtained Attitude score}}{\text{Obtainable Attitude score}} \times 100$$

For studying adoption ,12 practices related with biofertilizers were identified in consultation with the experts in this field. These practices were related to actual use of nitrogen fixing biofertilizers. The actual use of a particular practice was ascertained in terms of adoption as per recommendation, adoption not as per recommendation and no adoption with a score of 2,1 and 0, respectively. The scores of all practices were added together to work out adoption score of an individual farmer. These scores were then converted into an index with the help of following formula. The farmers were then grouped into the following four levels on the basis of mean and standard deviation.

$$\text{Adoption Index} = \frac{\text{Maximum Obtained Score}}{\text{Maximum Obtainable Score}} \times 100$$

The data were collected with the help of structural and pre-tested interview schedule. The collected data were than analysis, tabulated and interpreted in the light of objectives for arriving at meaningful interpretation and findings.

### RESULTS AND DISCUSSION

Attitude level of the respondents regarding biofertilizers

Table 1  
Distribution of the respondents according to their level of attitude

Sr.No	Category	Frequency	Percentage
1	Unfavourable	10	10.00
2	Neutral	40	40.00
3	Favourable	50	50.00

N=100

It is observed from the Table 1 that majority of the respondents (50.00%) were found to possess favourable attitude towards utilization of biofertilizers. This was followed by about (40.00%) of the respondents indicate their neutral attitude.

The respondents in majority there fore had favourable feeling about biofertilizers. The reason for favourable feeling may be the lack of detail knowledge about biofertilizers. The need is to modify the attitude of respondents through

guidance and conducting demonstration of biofertilizers on farmers field show their effectiveness. The findings are collaborated with observation of Bhople and Borkar (2002) that

majority of farmers attitude had neutral level.

Adoption level of the respondents regarding biofertilizers

*Table 2*  
*Distribution of the respondents according to their level of adoption*

N=100

Sr.No	Adoption Level	Frequency	Percentage
1	Low	16	16.00
2	Medium	54	54.00
3	High	30	30.00

The distribution of the respondents according to their level of adoption of biofertilizers presented in Table-2 The farmers belonging to medium categories of adoption were found (54.00%), whereas only (30.00 %) of the farmers had high level of adoption of biofertilizers. Similar findings were reported by Marathe (2004).

It could thus be made out that the farmers were low in adoption of biofertilizers. Thus there exists a gap in adoption of biofertilizers practices by the farmers.

The findings, therefore pointed out that inadequate and sporadic efforts were made in popularizing the low cost technology to the door step of the farmer concerted efforts on the part of extension agency to popularize this technology through various means particularly through various means particularly through mass campaign therefore seems to be appropriate in this direction. The adoption of various biofertilizers by the farmers was ascertained and reported in Table-3

*Table 3*  
*Distribution of the respondents according to their adoption of various biofertilizers*

N=100

Sr.No	Biofertilizers	Frequency	Percentage
1	Rhizobium	91	91.00
2	Azotobactor	35	35.00
3	Azospirillum	03	03.00
4	Phosphate solubalising bacteria	09	09.00

It could be seen from Table-3 that a great majority of the respondents 91.00 per cent used the Rhizobium for inoculation to different pulse crops. A sizeable percentage of the farmers 35.00 per cent were found to be using Azotobactor cereal crops. Near about 17.00 per cent of the farmers had used

composting biofertilizers. Thus, efforts should be made by the extension agencies that along with the Rhizobium and Azotobactor, farmers should also be motivated to use biofertilizer. It is necessary to make a propaganda about these biofertilizers, as they are low cost, local, ecofriendly and sustainable.

Table 4  
Distribution of respondents according to practice wise adoption of various biofertilizers

Sr. No	Biofertilizer practices	Adoption		
		As per recommendation	Not as per recommendation	Non adoption
A)	Methods of application of biofertilizers			
1	Recommended quantity of <i>Rhizobium</i> and <i>Azotobacter</i> (250g/10 Kg)	86 (86.00%)	08 (08.00%)	06 (06.00)
2	Recommended quantity of <i>Azospirillum</i> (1 Kg in 40 lit.water for 1 ha.Area)	04 (04.00%)	06 (06.00%)	90 (90.00%)
3	Recommended quantity of PSB (2 Kg in 20 Kg FYM for 1 ha. .Area)	18 (18.00%)	06 (06.00%)	76 (76.00%)
B)	Precaution to be taken while use of biofertilizers			
1	Consideration of expiry date of biofertilizers ( six month)	83 (83.00%)	05 (05.00%)	12 (12.00%)
2	Use of biofertilizers only for specified crops	90 (90.00%)	06 (06.00%)	04 (04.00%)
3	Storage of biofertilizers in cool and dry place	65 (65.00%)	25 (25.00%)	10 (10.00%)
4	Use of jiggery as sticking agent	86 (86.00%)	04 (04.00%)	10 (10.00%)
5	Drying of inoculated seeds under shade	95 (95.00%)	03 (03.00%)	02 (02.00%)
6	Period within which inoculated seeds used for sowing (24 hrs)	65 (65.00%)	30 (30.00%)	05 (05.00%)
7	Incompability of biofertilizers and chemical fertilizers	66 (66.00%)	10 (10.00%)	24 (24.00%)
8	Proportion of use of PSB and <i>Rhizobium</i> (1:1)	11 (11.00%)	19 (19.00%)	70 (70.00%)

The adoption of various practices connected with use of biofertilizers by the respondent was further ascertained and the same have been reported in Table-4. It is evident from the distribution in Table-4, that 90.00 per cent of the respondents used biofertilizers only for the specified crops. Further, it was noted that majority of the respondent had adopted practices like, drying of the inoculated seeds under shade 65.00 per cent.

The reason for non adoption of composting biofertilizers, recommended quantity of *Azospirillum* and PSB might be the lack of

awareness about these biofertilizers. The farmers should therefore, should be equipped with detailed knowledge about these biofertilizers. They should need to be convinced about the effectiveness of biofertilizers in crop production through organization of demonstration and meetings.

The above findings are in line with the findings of the Chothe and Borkar (2000) that majority to the farmers had medium level of adoption of biofertilizers. Borkar (2000) also reported that none of the farmers had adopted composting biofertilizers.

Table 5  
Distribution of respondents according to constraints perceived by them in use of biofertilizers

Sr.No	Constraints	Frequency	Percentage
1	Technical Constraints		
A	Lack of Knowledge about biofertilizers	63	63.00
B	Non availability of biofertilizers	35	35.00
C	Lack of guidance from extension personnel	52	52.00
D	Inadequate water availability	15	15.00
2	Financial		
A	Lack of timely finance	18	18.00
B	Lack of subsidy on bioferlizers	52	52.00
3	Others		
A	Lack of Interest	8	8.00
B	Complicated method	15	15.00
C	Lack of Storage facility	90	90.00

It is observed from Table-5 that in case of technical constraints, majority of the respondents (63.00%) reported that lack of knowledge about biofertilizers, followed lack of guidance from extension personnel (52.00 %) and non-availability of biofertilizers (35.00%).The meager per cent respondent(15.00%) faced problem of inadequate water availability.

In case of financial constraints, majority of respondents (52.00%) reported the lack of subsidy on biofertilizers and about one fifth of respondents (18.00%) reported the lack of timely finance as their constraint. In case of other constraints a great majority of respondents (90.00%) reported the lack of storage facility.

Similar to the findings of Borkar (2000),

Zade (1998), Wane(2000), Bodake (2003), Jain and Bhattacharya (2000) and Shinde (2003) reported that majority of the farmers lack of subsidy on biofertilizers as major constraints in use of biofertilizers.

#### CONCLUSION

From the above overall discussion, it can be concluded that majority of the respondents were found to possess mental attitude towards adoption of biofertilizers. The findings of the study have showed that the farmers are not making use of composting biofertilizers. It is therefore essential to equip the farmers with requisite knowledge and skills connected with adoption composting biofertilizers while preparations of compost of from farm waste.

#### REFERENCES

- Bhattacharya and Mishra (1995). A book on biofertilizers for extension workers, National Project on use and Dev. of Biofertilizers., Dept .of Agril. and cooperation. Govt.of India
- Bhople, R. S, and Borker, R. D. (2002). Biofertilizers farmer's attitude and adoption, Agricultural Extn. Review, 15: 18-21
- Borkar, R.D.(2000). Adoption behavior of farmers in respect of biofertilizers. M.Sc. Thesis (Unpub.) Dr PDKV. Akola
- Bodake, H.D.(2003). Awareness and adoption of biofertilizers by the farmers. M.Sc. Thesis (Unpub.) Dr PDKV. Akola
- Chothe and Borkar (2000). Constraints faced by farmers in adoption of Biofertilizers. *Maharashtra J.Extn.Educ.*, 19: 293-294
- Jain and Bhattacharya (2000). Farmers involvement in biofertilizer demonstration and promotion campaign. *Maharashtra J.Extn.Educ.* 19:267
- Marathe (2004). Perception of farmers about biofertilizers. M.Sc. Thesis (Unpub.) Dr.PDKV Akola
- Shinde, S.B. (2003). Adoption of Groundnut production. Technology by the farmers. *Maharashtra J.Extn.Educ.*, 22(I):57-59
- Wane R.B.(2000). Adoption behavior of soybean growers. M.Sc. Thesis (Unpub.) Dr.PDKV Akola
- Zade P.N. (1998). Constraints in adoption of soybean production technology by farmers. M.Sc. Thesis (Unpub.) Dr.PDKV Akola

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