International Journal of Science and Research (IJSR)
ISSN: 2319-7064
SJIF (2023): 6.902

Case Study on Knowledge Level, Awareness and Perspective of Farmers Towards Biofertilizer Application in Saidabad Block, Prayagraj District, UP

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Abstract: ***Biofertilizers are the microorganisms or natural products that enhance soil fertility, nutrient availability and productivity of crop plants, along with minimizing environmental deterioration. With growing concerns over the harmful effect of chemical fertilizers on soil quality, water contamination, and biodiversity loss, biofertilizers have gained attention as a sustainable and environmental friendly solution to modern agricultural challenges. However, despite the advantages, the widespread adoption of biofertilizers among farmers has faced several constraints. This paper provides a comprehensive study on knowledge level, awareness and perspective of farmers of Saidabad block towards biofertilizer acceptance and application. The present methodology followed ex-post-facto research design. Data were collected with the help of interview schedule and the collected data were analyzed with the help of statistical measures. The study revealed that majority of the farmers (72.5 %) has median knowledge index, followed by low (15%) and high (12.5%). They have positive but cautious perspective. They are aware of biofertilizer benefits but technical knowledge and lack of cognizance regarding crop specific usages of bio-fertilizers still requires attention.***

Keywords: Biofertilizers, Knowledge index, awareness, perspective

1. Introduction

In recent decades, the agricultural sector has increasingly prioritized sustainable farming methods with biofertilizers as a viable alternative to chemical fertilizers. Biofertilizers, consisting of beneficial living microorganisms, play a vital role in enhancing crop quality, improving soil fertility, and supporting plant development by facilitating atmospheric nitrogen fixation, decomposing organic matter, and synthesizing essential nutrients (Yengkokpam *et al*., 2022). Despite their environmental and agronomic advantages, the adoption of biofertilizers remains relatively low among farmers, particularly in developing countries such as India. This is due to significant knowledge gap highlighting a pressing need for targeted awareness initiatives. This limited uptake is largely attributed to a lack of awareness and knowledge, underscoring the urgent need for targeted educational and outreach efforts. In addition, several other barriers hinder adoption, including the delayed visible impact compared to chemical fertilizers, absence of structured training programs, high labor costs, limited technical support, lack of confidence in biofertilizer practices, inadequate production and distribution infrastructure, short shelf life, storage difficulties, limited local availability, and concerns over product quality and consistency (Patel et al., 2017; Jayasankar et al., 2018; Bavarva & Panigrahy, 2023). This study aims to assess the level of knowledge, awareness, and perception of farmers in the Saidabad block regarding the application of biofertilizers.

2. Materials and Methods

The present study was conducted during 2023-2024 in Saidabad block of Prayagraj district (Uttar Pradesh) with a specific objective to enquire the knowledge level, awareness and perception of farmers in adoption of biofertilizer. Saidabad block is selected as it is the area with agriculture and animal husbandry as the main occupation of inhabitants. In the investigation, ex-post facto research design was followed. The interview schedule was developed based on the objectives of the study. Twelve farmers from ten villages of Saidabad block of Prayagraj district of Uttar Pradesh were selected to collect the information by personal interview method. The final sample thus drawn was consisted of 120 farmers. To measure the knowledge and perspective of farmers about biofertilizers, an objective test was developed using conference method (Magarvadiya and Patel, 2014). A score of one was given for each correct answer. The correct answers were then added to evaluate the knowledge level of respondents. The knowledge index was then derived by dividing the total number of correct answers with total number of questions multiplied by 100.

$$\text{K-} = \frac{X1 + X2 + \cdots Xn}{N} \text{ X } 100$$

where,
K = Knowledge Index
X1+X2+X3…+ Xn = Total number of correct answers
N= Total number of questions in the test

For analyzing the perspective of farmers towards use of biofertilizer, five attitude based statements (both positive and negative) were prepared-

1) Biofertilizers are good for soil health. (Positive)
2) Biofertilizers increase crop yield. (Positive)

3) Using biofertilizers is risky (Negative)
4) I am willing to try biofertilizer in my field (Positive)
5) Bofertilizers are too complicated to use. (Negative)

Similarly for analyzing the awareness of farmers towards use of biofertilizer, five awareness statements (both positive and negative) were created-

1) I have heard about biofertilizers.
2) I know the benefits of using biofertilizers.
3) I can name at least one type of biofertilizer.
4) I know the method of biofertilizer application to my crops.
5) I know the place where to buy biofertilizer in my area.

Farmers were asked to respond using 5-point Likert Scale for the above statements of perspective and awareness as:

- 5 - Strongly agree,
- 4- Agree,
- 3- Neutral,
- 2- Disagree,
- 1- Strongly disagree

3. Results and Discussion

On the basis of knowledge index of 120 farmers, knowledge level was categorized in to low, median and high.

S. No.	Knowledge Level	Number of respondents	Percent
1	Low < (Mean-SD)	18	15%
2	Median (Between Mean+SD and Mean-SD)	87	72.5%
3	High > (Mean+SD)	15	12.5%
TOTAL		N=120	100%

Mean: 34.32 Standard Deviation: 11.53

From the above table it is clear that majority of the respondents have median knowledge index (72.5%), followed by low (15%) and high knowledge index (12.5%). Low percent of respondent farmers with high knowledge index have also been reported by Sahoo *et al*. (2021). This result can be correlated with low education and awareness in the area. A relatively small number of farmers have high education or resources, like, internet access, expert consultations, computer devices and financial support that enable them to reach the high knowledge category. Farmers in remote or undeserved areas where agricultural extension services or training do not reach effectively come under the low knowledge group. Farmers, who were educated and tech-savvy, might have adopted some improved practices but without a comprehensive understanding, were categorized in the medium category.

The interpretation of the scores of 120 farmers for testing their perspectives / awareness regarding use of biofertilizer through 5-point Likert scale was done using criterion:

- 4.1 – 5.0: Very Positive Attitude / Very High Awareness
- 3.1 - 4.0: Positive Attitude / High Awareness
- 2.1 – 3.0: Neutral or Moderate Attitude / Moderate Awareness
- 1.1– 2.0: Negative Attitude / Low awareness
- < 1.0: Very Negative Attitude / Very Low Awareness

Following results were derived from the data interpretation-

Perspective:

- Farmers have a positive to very positive perspective about benefits of biofertilizers.
- They are moderately hesitant due to perceived risk and complexity.
- Overall perspective is positive but cautious.

Awareness:

- Farmers are very aware that biofertilizers exist.
- They have high awareness of benefits.
- Only moderate awareness of type, usage and availability.

The results are consistent with the studies conducted at various places to study the knowledge level, attitude, awareness and adoption status of farmers regarding acceptance for biofertilizer usage (Vanpariya *et al.*, 2020; Kumar and Bose, 2020; Sahoo *et al.*, 2021). Targeted training, demonstrations along with easy and affordable availability of biofertilizers are recommended on priority basis to enhance the acceptance rate.

4. Conclusions

The study revealed that while a significant number of farmers were aware of biofertilizers and recognizes their environmental and soil health benefits, their depth of knowledge and practical understanding remains limited. The perspective of farmers is generally positive towards the concept of biofertilizer, but misconceptions, lack of training, cost and limited access to quality biofertilizer make them hesitant towards acceptance. Moreover, criterion, like, education, training, loan facility and easy access play vital role in promoting willingness to adopt biofertilizers. Bridging the knowledge gap, building trust and government support will be essential in building favourable perspective and enhanced usage of biofertilizers in agricultural sector.

Acknowledgements
I wish to express my appreciation to U.P. Government for providing financial assistance to carry out the work on project entitled ‘Isolation and characterization of BGA from agricultural fields of Saidabad block (Prayagraj district) for production of biofertilizers’ under ‘Research and Development Scheme’. This research is a part of this project. The author is thankful to DDU Government P.G. College Saidabad, Prayagraj for providing the infrastructure and necessary research facilities.

Authors Contribution
Dr Swati Chaurasia has compiled and edited the entire work.

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