



International Journal of Agriculture Extension and Social Development

ISSN Print: 2618-0723
ISSN Online: 2618-0731
NAAS Rating (2026): 5.04
IJAESD 2026; 9(9): 846-848
www.extensionjournal.com
Received: 18-06-2026
Accepted: 12-08-2026
Published: 24-09-2026

Rajveer Singh

MBA (Agribusiness) Scholar,
Department of Agricultural
Economics, Naini Agriculture
Institute, Sam Higginbottom
University of Agriculture,
Technology and Sciences
(SHUATS), Prayagraj - 211007,
U.P, India

Sanjay Kumar

Associate Professor,
Department of Agricultural
Economics, Naini Agriculture
Institute, SHUATS, Prayagraj,
Uttar Pradesh, India

Amareesh Kumar Yadav

PhD Research Scholar,
Department of Agricultural
Economics, Naini Agriculture
Institute, Sam Higginbottom
University of Agriculture,
Technology and Sciences
(SHUATS), Prayagraj - 211007,
U.P, India

Awareness, knowledge and marketing constraints of bio-fertilizers among rural farmers: A study of Suitha Kala block, Jaunpur district, Uttar Pradesh

Rajveer Singh¹, Sanjay Kumar², Amareesh Kumar Yadav³

DOI: <https://www.doi.org/10.33545/26180723.2026.v9.i9k.4285>

ABSTRACT

Excessive use of chemical fertilizers in Indian agriculture has led to soil degradation, declining fertility and environmental pollution, making bio-fertilizers an important sustainable alternative. However, their adoption among rural farmers continues to remain low despite growing promotion. The present paper, drawn from a larger study on buying behaviour of rural consumers towards bio-fertilizers, focuses specifically on two of its objectives: (i) examining the level of awareness and knowledge of rural farmers about bio-fertilizers, and (ii) identifying the constraints faced by marketers in marketing bio-fertilizers and suggesting suitable measures. The study was conducted in Suitha Kala block of Jaunpur district, Uttar Pradesh, using a multistage stratified random sampling technique on 120 respondents. Percentage analysis and Garrett's ranking technique were used to analyse the primary data collected through a structured schedule. The results show that only 25.00 per cent of farmers had a high level of awareness, while 43.33 per cent had medium and 31.67 per cent had low awareness, and a wide adoption gap of 45.00 per cent existed between awareness and actual regular usage. Among marketing constraints, lack of awareness among farmers (Garrett score 72.40) and preference for chemical fertilizers (70.15) emerged as the most serious bottlenecks, followed by weak marketing channels, limited rural availability and inadequate promotion. The paper concludes with suggestions for strengthening extension services, distribution networks, quality assurance and promotional efforts to bridge the awareness-adoption gap.

Keywords: Bio-fertilizers, Awareness, Adoption Gap, Marketing Constraints, Garrett Ranking, Rural Farmers, Jaunpur

1. Introduction

Agriculture in Uttar Pradesh, particularly in Jaunpur district, is facing serious challenges on account of soil degradation, declining fertility and environmental pollution caused by the excessive and continuous use of chemical fertilizers. Bio-fertilizers, being an eco-friendly and cost-effective source of plant nutrients, offer a sustainable alternative that can improve soil health, enhance crop productivity and reduce dependence on chemical inputs. Despite these benefits, adoption of bio-fertilizers among rural farmers remains limited, largely because of inadequate awareness, insufficient technical knowledge and weak marketing and distribution systems in rural areas. Farmers' decisions to purchase and regularly use bio-fertilizers are shaped not only by what they know about the product but also by how effectively it reaches them through local markets, dealers and extension functionaries. It is therefore important to separately examine how much farmers actually know about bio-fertilizers, and what specific problems restrict marketers from making these products available and acceptable to farmers. This paper addresses precisely these two dimensions.

2. Objectives of the study

The parent study on buying behaviour of rural consumers towards bio-fertilizers in Jaunpur district was guided by four objectives. This paper is confined to the third and fourth objectives, namely:
Objective 3: To examine the level of awareness and knowledge of rural farmers about bio-fertilizers.
Objective 4: To identify the constraints faced by the marketers in marketing of bio-fertilizers and to suggest suitable measures.

3. Research methodology

The study was conducted in Jaunpur district of Uttar Pradesh, an important agricultural district of the state. Suitha Kala block was purposively selected due to its agricultural importance and the increasing use of bio-fertilizers in the area. A multistage stratified random sampling technique was followed: the district and block were selected purposively, while villages and respondent farmers were selected randomly; input dealers and market functionaries were selected purposively for information relating to marketing constraints. A total

Corresponding Author:

Rajveer Singh

MBA (Agribusiness)
Scholar, Department of
Agricultural Economics,
Naini Agriculture Institute,
Sam Higginbottom
University of Agriculture,
Technology and Sciences
(SHUATS), Prayagraj -
211007, U.P, India

sample of 120 farmer-respondents was drawn for the study. Primary data were collected through personal interviews using a well-structured and pre-tested schedule, while secondary data were obtained from government reports, journals and departmental records. To fulfil objective 3, awareness and knowledge levels were assessed using percentage analysis and a three-point classification (low, medium and high awareness), and usage pattern was similarly analysed. For objective 4, Garrett's ranking technique, based on the formula $\text{Per cent position} = 100(R_{ij} - 0.5)/N_j$ (where R_{ij} is the rank given to the i th factor by the j th respondent and N_j is the number of factors

ranked), was employed to convert the ranks assigned by respondents to marketing constraints into per cent positions and mean scores, which were then arranged in descending order to identify the most pressing constraints.

4. Results and discussion

4.1 Level of awareness and knowledge about bio-fertilizers

Table 1 presents the distribution of respondents according to their level of awareness and knowledge about bio-fertilizers.

S. No.	Awareness Level	No. of Respondents	Percentage (%)
1	Low Awareness	38	31.67
2	Medium Awareness	52	43.33
3	High Awareness	30	25.00
	Total	120	100.00

Table 1 reveals that the majority of respondents (43.33%) had a medium level of awareness about bio-fertilizers, while 31.67 per cent had low awareness and only 25.00 per cent had high awareness. This indicates that although farmers are somewhat familiar with bio-fertil-

izers, considerable scope remains for improving their knowledge through training and extension services.

4.2 Usage pattern of bio-fertilizers

Table 2 shows the usage pattern of bio-fertilizers among the sample respondents.

S. No.	Usage Category	No. of Respondents	Percentage (%)
1	Regular Users	28	23.33
2	Occasional Users	46	38.33
3	Non-Users	46	38.33
	Total	120	100.00

Only 23.33 per cent of respondents were regular users of bio-fertilizers, while 38.33 per cent used them occasionally and an equal proportion (38.33%) did not use them at all. This clearly indicates that adoption of bio-fertilizers remains limited in the study area, largely on account of inadequate awareness, poor availability and low confidence in product effectiveness.

4.3 Awareness-usage (adoption) gap

Table 3 compares the overall awareness level with actual regular usage to estimate the adoption gap.

Particulars	Value (%)
Awareness (High + Medium)	68.33
Actual Usage (Regular Users)	23.33
Adoption Gap	45.00

Although 68.33 per cent of respondents possessed medium to high awareness, only 23.33 per cent were regular users, indicating a substantial adoption gap of 45.00 per cent. This finding is significant, as it establishes that awareness alone does not translate into adoption; other factors such as availability, trust and technical knowledge also govern actual usage behaviour.

4.4 Constraints faced by marketers in marketing of bio-fertilizers

Table 4 presents the constraints faced in marketing of bio-fertilizers as ranked using Garrett's ranking technique.

S. No.	Constraints	Garrett Mean Score	Garrett Rank
1	Lack of awareness among farmers	72.40	I
2	Low demand due to preference for chemical fertilizers	70.15	II
3	Lack of proper marketing channels	67.30	III
4	Limited availability in rural areas	65.25	IV
5	Inadequate promotional activities	62.10	V
6	High cost compared to perception of benefits	59.45	VI
7	Lack of technical knowledge among dealers	55.80	VII
8	Poor distribution network	52.60	VIII
9	Lack of government support at ground level	49.75	IX
10	Short shelf life and storage issues	46.20	X

Table 4 reveals that the most serious constraint in marketing bio-fertilizers was lack of awareness among farmers, securing the highest Garrett score of 72.40, followed by low demand due to farmers' continued preference for chemical fertilizers (70.15). Lack of proper marketing channels (67.30), limited availability in rural areas (65.25) and inadequate promotional activities (62.10) were also significant constraints. High perceived cost (59.45) and lack of technical knowledge among dealers (55.80) further affected marketing efficiency, while poor distribution networks (52.60), insufficient government support (49.75) and storage-related issues (46.20) were comparatively less severe, though still relevant, constraints. These results highlight that

marketing bottlenecks in the study area are led by information and demand-side gaps rather than purely logistical ones.

5. Conclusion

The study concludes that although rural farmers in the study area possess a moderate level of awareness regarding bio-fertilizers, their actual knowledge depth and regular usage remain considerably lower, reflected in a wide adoption gap of 45 per cent between awareness and usage. On the marketing side, the persistence of low awareness among farmers themselves, combined with continued preference for chemical fertilizers, weak marketing channels and limited rural availability, constitute the principal constraints faced by marketers of bio-fertilizers. Bridging this awareness-adoption gap and addressing the identified marketing constraints through coordinated efforts among government agencies, extension personnel, input dealers and farmer organizations is essential for enhancing the acceptance and use of bio-fertilizers, thereby contributing to more sustainable agricultural practices and improved rural livelihoods in Jaunpur district.

6. Suggested measures

Based on the findings relating to awareness, knowledge and marketing constraints, the following measures are suggested:

1. Regular training programmes, field demonstrations, farmer field schools and exposure visits should be organised by government agencies, agricultural universities and extension departments to raise awareness and strengthen farmers' knowledge of the benefits and proper use of bio-fertilizers, since existing moderate awareness has not been sufficient to drive adoption.
2. The distribution network needs to be strengthened through local input centres, rural retail outlets and village-level supply chains, with active involvement of cooperative societies, Farmer Producer Organizations (FPOs) and self-help groups, to overcome limited availability and poor distribution.
3. Quality assurance and standardization of bio-fertilizer products, backed by certification and monitoring mechanisms, should be ensured to build farmers' trust and address concerns regarding effectiveness and reliability.

4. Promotional and awareness campaigns using mass media, mobile-based advisory services, farmer fairs and demonstration plots should be intensified to counter the continued preference for chemical fertilizers and encourage a shift toward eco-friendly alternatives.
5. Capacity building of input dealers and extension functionaries through technical training is essential, as these stakeholders directly influence farmers' purchase decisions and can help correct usage practices.
6. Improved storage and handling guidelines should be provided to retailers and farmers to address the short shelf life of bio-fertilizers and associated storage-related constraints.

References

1. AlokSharma, Deepak Yadav. Awareness and Adoption of Bio-Fertilizers in Eastern Uttar Pradesh. *Agricultural Development Review*. 2024;12(1):66-79.
2. Anjali Singh, VikasDubey. Knowledge and Perception of Farmers Towards Bio-Fertilizers. *Journal of Agricultural Extension*. 2020;8(4):112-120.
3. AnoopKumar, Sushma Devi. Impact of Awareness on Adoption of Bio-Fertilizers. *Indian Journal of Agricultural Sciences*. 2022;92(6):755-760.
4. AnkitSrivastava, PriyaTiwari. Role of Extension Services in Promoting Bio-Fertilizers. *Journal of Rural Development Studies*. 2023;14(2):90-102.
5. Deepak Singh, Ravi Shankar. Constraints in Adoption of Bio-Fertilizers in Rural Areas. *Journal of Rural Economics*. 2020;7(2):66-75.
6. GauravSingh, Kavita Mishra. Awareness Level of Farmers Regarding Bio-Fertilizers. *Agricultural Extension Review*. 2021;9(1):22-31.

How to cite this article: Singh R, Kumar S, Yadav AK. Awareness, knowledge and marketing constraints of bio-fertilizers among rural farmers: A study of Suitha Kala block, Jaunpur district, Uttar Pradesh. *International Journal of Agriculture Extension and Social Development*. 2026;9(9):846-848. doi: <https://www.doi.org/10.33545/26180723.2026.v9.i9k.4285>