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Assessing awareness and use of biofertilizers among farmers of Jhajjar district, Haryana

Priyanka Parmar

Department of Microbiology, Sanskaram University, Jhajjar, Haryana, India

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Corresponding Author: Priyanka Parmar

Abstract

Biofertilizers are natural fertilizers that contain beneficial microorganisms which enhance plant growth by improving nutrient availability. These microbes support plant health primarily through processes such as nitrogen fixation, phosphorus and potassium solubilization. By enriching the soil with organic matter and contributing to the restoration of the natural nutrient cycle, biofertilizers play a key role in sustainable agriculture. They can be categorized into several types: nitrogen-fixing biofertilizers, phosphorus solubilizing and potassium solubilizing biofertilizers, those that assist in micronutrient availability, and plant growth-promoting rhizobacteria (PGPR). The present study, carried out in Jhajjar district, aimed to assess the level of awareness and the extent of adoption of biofertilizers among local farmers. Primary data collected through surveys reveal that while many farmers are aware of biofertilizers and report benefits such as improved soil health and reduced chemical use, challenges like slow effectiveness, lack of knowledge, and cost remain. The study highlights the need for increased awareness, government support, and technical training to enhance biofertilizer adoption.

Keywords: Biofertilizers, farmers' awareness, adoption, sustainable agriculture

Introduction

The techniques introduced during the Green Revolution to boost agricultural production led to a heavy reliance on synthetic inputs. The overuse and unscientific application of agrochemicals primarily containing phosphate, ammonium, nitrate, and potassium salts had detrimental effects on soil health and caused significant environmental harm. This excessive use of chemical fertilizers contributed to soil degradation and groundwater contamination, ultimately reducing the long-term productivity of agricultural land. Awareness of the negative consequences associated with chemical fertilizers has driven interest in biofertilizers and organic farming. Unlike synthetic inputs, biofertilizers enhance soil fertility and improve crop quality in a natural and sustainable manner.

Studies by M. Malarkodi and K. Bharathi (2010) ^[2], as well as Nigade D. D., Kamble V. B., and Dhulgand V. G. (2017), indicated that while many farmers are familiar with biofertilizers, several constraints continue to hinder their widespread use. In response, the government has implemented various initiatives to raise awareness and encourage the use of biofertilizers in farming practices. India's agricultural sector faces the challenge of increasing

productivity sustainably. With environmental concerns growing, biofertilizers offer an eco-friendly and cost-effective alternative to chemical fertilizers. These biological products contain beneficial microorganisms such as Rhizobium, Azotobacter, and Azospirillum that enhance nutrient availability to plants. This study explores the level of awareness and usage patterns of biofertilizers among farmers in Jhajjar district, Haryana.

Objectives of the Study

1. To assess farmers' awareness of biofertilizer use in Jhajjar.
2. To evaluate the perceived benefits and challenges associated with biofertilizer usage.
3. To identify factors that influence the adoption of biofertilizers in the region.

Research Methodology

A structured questionnaire was used to survey 50 farmers across different villages in Jhajjar district. Both qualitative and quantitative data were collected regarding the type of biofertilizer used, sources, duration of use, benefits observed, and challenges faced.

Data Analysis and Interpretation

Usage of Biofertilizers

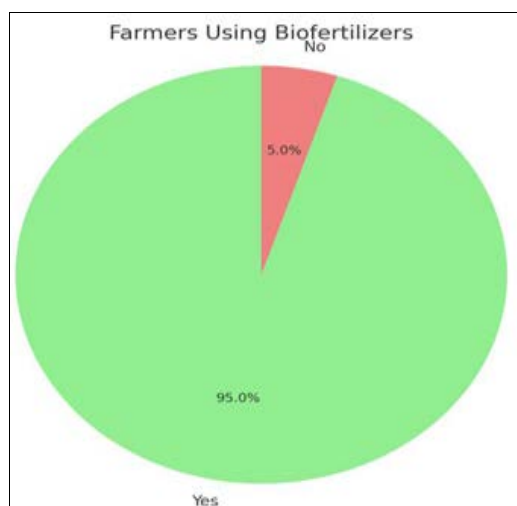


Fig 1: Usage of Biofertilizers

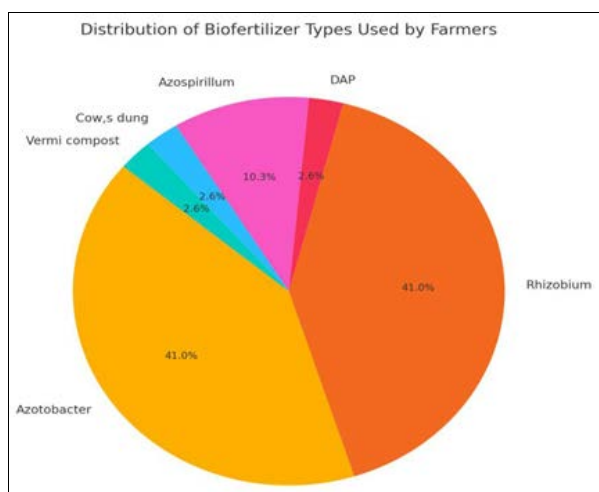


Fig 2: Distribution of Biofertilizer Types Usedby Farmers

Source of Biofertilizer Supply

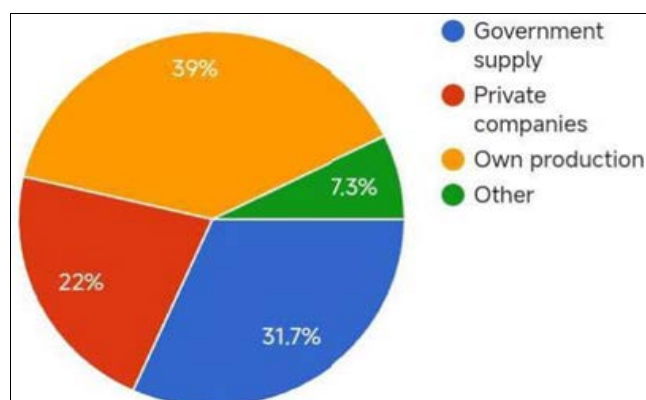


Fig 3: own production is the main source (39%), while other sources contribute less

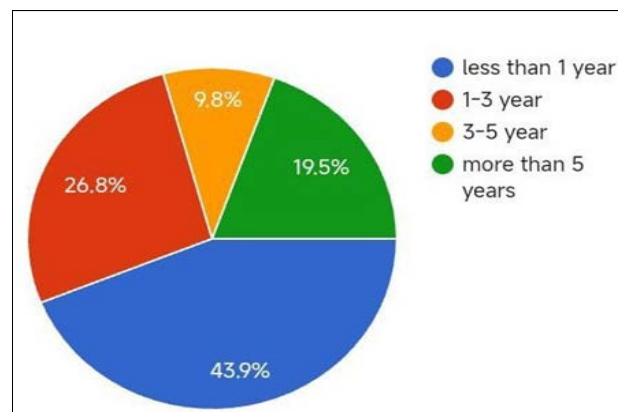


Fig 4: Most respondents have less than 1 year of experience (43.9%), while only 9.8% have 3-5 years

Frequency of biofertilizer application

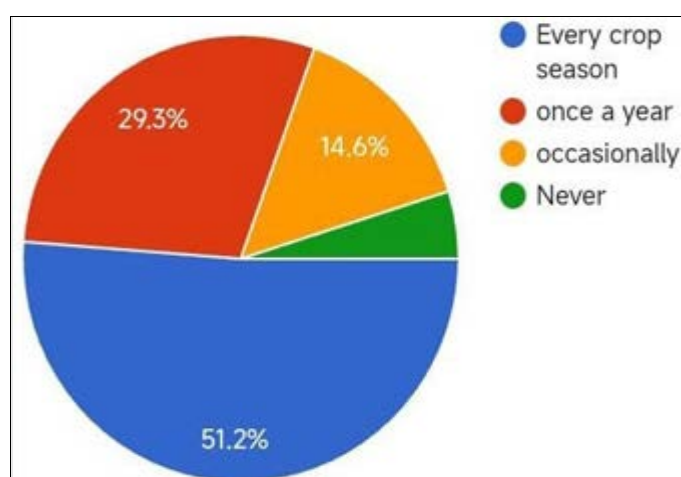


Fig 5: Most respondents apply the practice every crop season (51.2%), while 29.3% do so once a year

Impact on soil health and crop yield

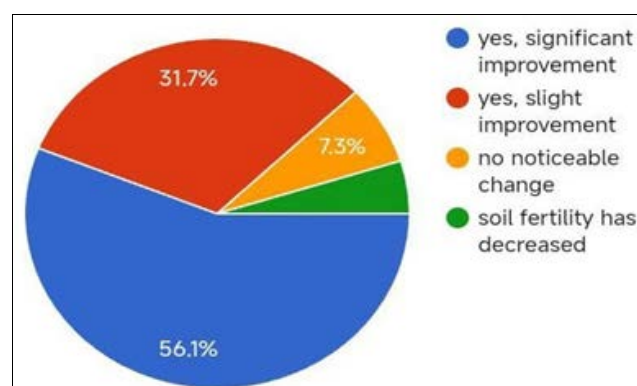


Fig 6: The chart shows that 56.1% reported significant improvement, while 31.7% reported slight improvement in soil fertility

Reduction in chemical fertilizer dependency

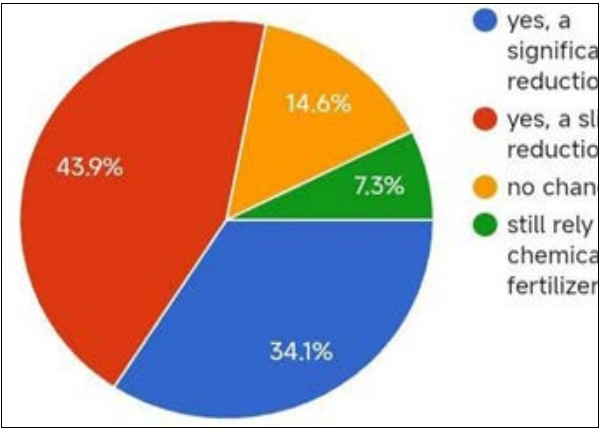


Fig 7: The chart shows a reduction in chemical fertilizer use, mainly a slight reduction (43.9%)

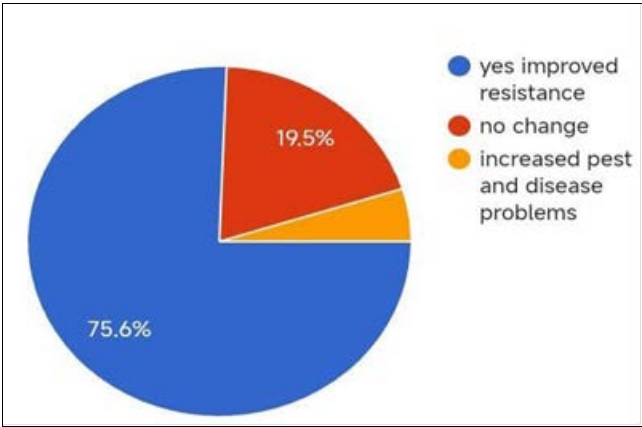


Fig 8: The chart shows that 75.6% reported improved resistance, while 19.5% reported no change

Challenges in using biofertilizers

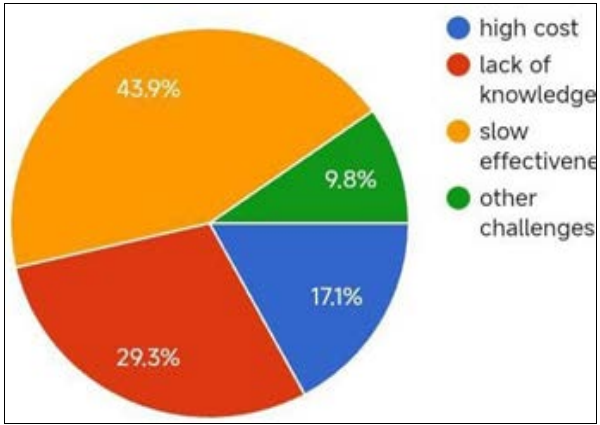


Fig 9: The pie chart shows that slow effectiveness (43.9%) is the biggest challenge, followed by lack of knowledge (29.3%), high cost (17.1%), and other challenges (9.8%)

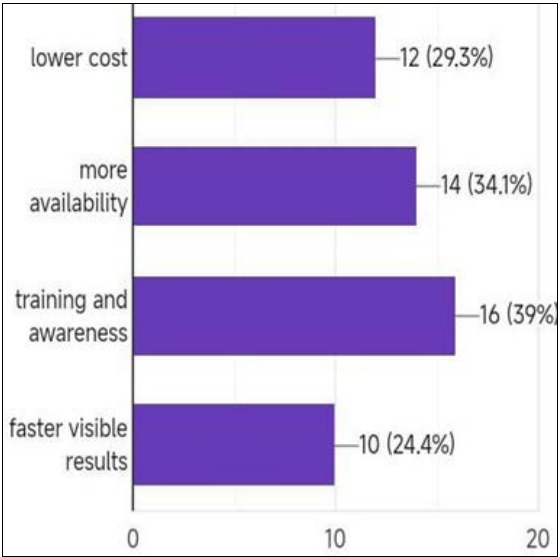


Fig 10: The chart shows training and awareness (39%) as the top priority, followed by availability (34.1%) and lower cost (29.3%)

Awareness channels

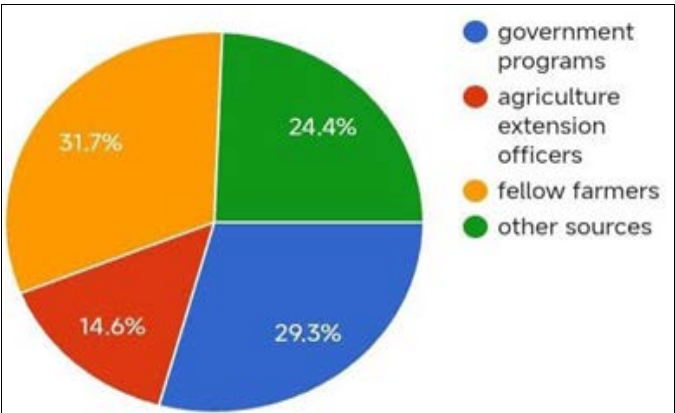


Fig 11: Fellow farmers (31.7%) are the main information source, followed by government programs (29.3%)

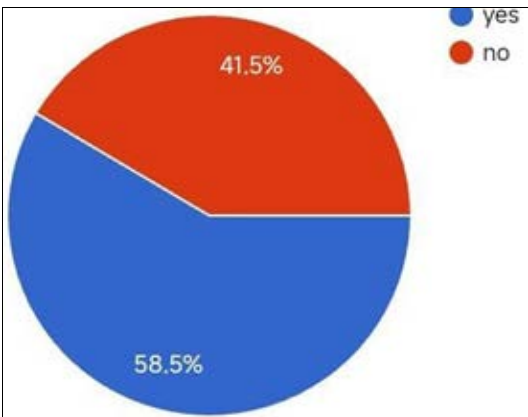


Fig 12: The pie chart shows that 58.5% of respondents answered "Yes," while 41.5% answered "No"

Financial Support or Subsidies Received

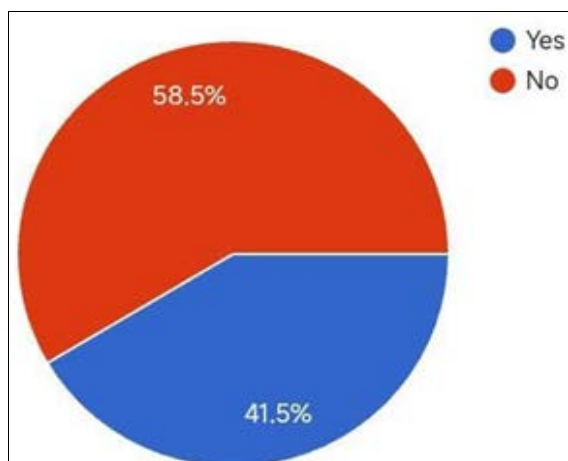


Fig 13: The pie chart shows that 58.5% of respondents answered “No,” while 41.5% answered “Yes.”

Willingness to recommend biofertilizers

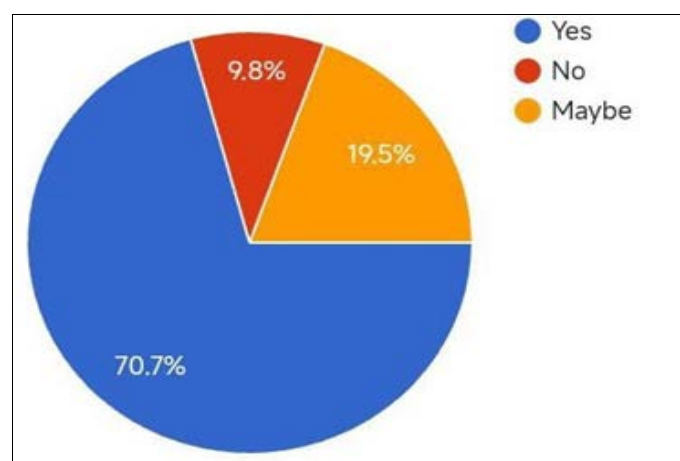


Fig 16: The pie chart shows that 70.7% of people said “Yes,” 19.5% said “Maybe,” and 9.8% said “No.” Overall, the majority responded positively

Comparison of yield: biofertilizers vs. chemical fertilizers

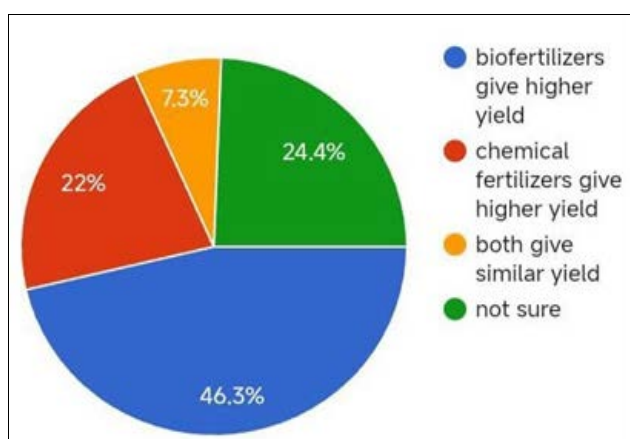


Fig 14: The chart shows that 46.3% prefer biofertilizers, while 22% prefer chemical fertilizers

Willingness to increase biofertilizer usage

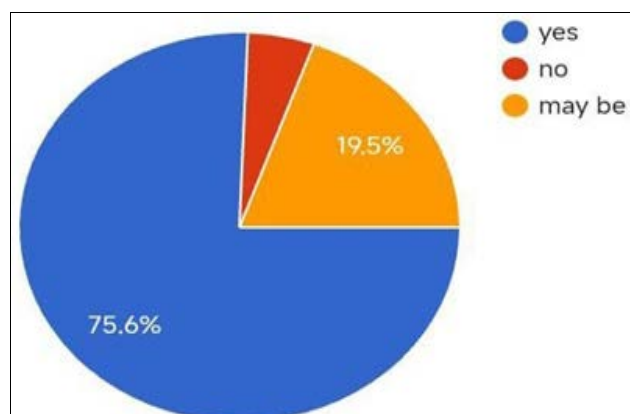


Fig 15: The pie chart shows that 75.6% of people said “Yes,” 19.5% said “Maybe,” and 4.9% said “No.” Overall, the majority of people responded positively

Farmers Comments

The farmers comments reflect a broadly positive perception of biofertilizers, with a significant number expressing exclusive preference for their use over chemical alternatives. Many recognize their benefits in increasing crop yield, promoting plant growth, and improving soil fertility and texture, particularly through nitrogen fixation and humus development. Environmental and health benefits are also frequently noted, with several comments highlighting biofertilizers as a safer, eco-friendly option compared to chemical fertilizers. However, concerns were raised about cost and the need for wider awareness, training, and accessibility. A few comments suggest cautious usage or express mixed views, indicating that while biofertilizers are seen as less harmful, some perceive them as less effective. Overall, the responses suggest a favorable attitude towards biofertilizers but emphasize the importance of education, affordability, and support for broader adoption.

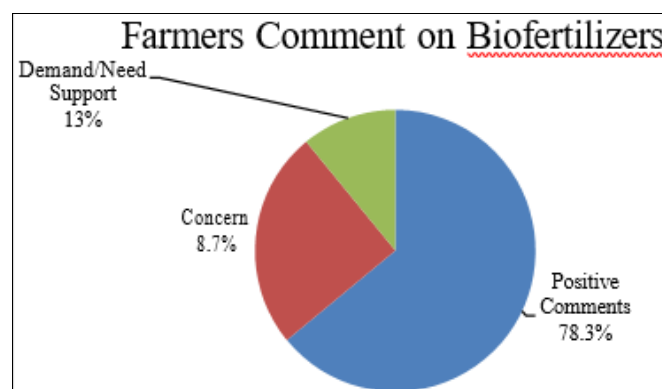


Fig 17: The chart shows 78.3% positive comments, 13% demand/support, and 8.7% concerns about biofertilizers.

Conclusion & Suggestions

Biofertilizers play a crucial role in integrated nutrient management. They are not only economical and environmentally sustainable but also serve as renewable sources of essential plant nutrients, enhancing soil health and long-term productivity while safeguarding the

environment. The adoption of biofertilizers in Jhajjar is growing, with farmers recognizing their environmental and agronomic benefits. Yet, awareness gaps, cost concerns, and slow visible results hinder wider acceptance. Addressing these barriers through government schemes, farmer education, and improved access can accelerate the transition toward sustainable farming. Similar finding observed by Parvathi Shankar P. (2023) ^[3], analysed constraints and suggestions and it is observed that lack of required knowledge on biofertilizer technologies ranked first among constraints followed by non-availability of biofertilizers locally at times when needed, slow results of biofertilizer technologies on different growth stages of crop or on standing crop, lack of technical guidance about biofertilizer technologies and lack of financial support from government. The above results are also in line with the findings of Raghuwanshi (2018) ^[5] on adoption of organic farming practices in soybean crop in Guna district of Madhya Pradesh. Pathak and Christopher (2019) ^[4] also reported the same findings in their study on socio-economic condition and constraints faced by the farmers in adoption of biofertilizer in Bhadohi district (Uttar Pradesh).

Based on the findings of the study, several key suggestions have emerged to enhance the adoption of biofertilizers among farmers. Firstly, there is a strong need to conduct regular training programs to educate farmers on the proper use and benefits of biofertilizers. These trainings can bridge knowledge gaps and build confidence in bio-based agricultural practices. Secondly, efforts should be made to strengthen the supply chain to ensure timely and affordable access to biofertilizers at the village level. In addition, raising awareness about existing government subsidy schemes can motivate more farmers to adopt biofertilizers. Lastly, encouraging farmer-led demonstrations and success stories can serve as practical evidence of the effectiveness of biofertilizers, fostering greater trust and interest among the farming community. According to Parvathi Shankar P. (2023) ^[3], Sidram (2015) ^[6] and Nigade et. al., (2017) ^[1], similar suggestions stated by the farmers for improving adoption of biofertilizer technologies. Therefore, collaborative efforts involving the State Department of Agriculture, NGOs, farmer organizations, input suppliers, and Agricultural Universities are essential to effectively address these challenges. Ensuring the timely availability of biofertilizers at the village level, along with organizing training programs and practical demonstrations, will empower farmers to adopt this technology more confidently. A balanced and consistent application of biofertilizers alongside chemical fertilizers can fulfill the nutrient requirements of crops while simultaneously preserving soil health and promoting environmental sustainability.

References

1. Nigade DD, Kamble VB, Dhulgand VG. Knowledge and adoption of bio-fertilizers by the sugarcane growers. *Contemporary Research in India*. 2017;7(1):45-49.
2. Malarkodi M, Bharathi K. Strategies for promoting biofertilizers among farmers for sustainable agriculture. *Agriculture Update*. 2010;5(1):29-31.
3. Parvathi, Sankar P. Constraints perceived by farmers in adoption of biofertilizer technologies. *International*

Journal of Agriculture Extension and Social Development. 2023;6(1):87-90.

4. Pathak AK, Christopher K. Study of socio-economic condition and constraints faced by the farmers in adoption of biofertilizer in Bhadohi District (Uttar Pradesh). *Journal of Pharmacognosy and Phytochemistry*. 2019;8(2):1916-1917.
5. Raghuwanshi V. Study on adoption of organic farming practices in soybean crop in Guna District of Madhya Pradesh. *Indian Research Journal of Extension Education*. 2018;18(4):18-22.
6. Sidram. Knowledge, perception and utilization pattern of organic inputs by the farmers [PhD thesis]. Dharwad: University of Agricultural Sciences; 2015.