

RESEARCH ARTICLE

# Preference and Perception of Farmers on Organic Fertilizers and Manures in the Pollachi Region

Sudesh Visvanathan<sup>1\*</sup>, S. Nila<sup>2</sup> and S. Priyadharshini<sup>2</sup>

<sup>1</sup>BSc (Hons) Agriculture; MSc Business and Management Vanavarayar Institute of Agriculture, Pollachi, India, University of Strathclyde, Glasgow, UK

<sup>2</sup>BSc (Hons) Agriculture, Vanavarayar Institute of Agriculture Management, Pollachi, India

## ABSTRACT

This study investigates farmers' perceptions, preferences, and constraints regarding organic fertilizers and manures in the Pollachi region of Tamil Nadu, India. A survey of 60 randomly selected farmers was conducted during a Farmer-Producer Organization meeting in May 2023. Data on socio-economic characteristics, farm details, fertilizer usage, and perceived benefits and challenges of organic inputs were collected through structured interviews. Analysis revealed that the majority of respondents were older farmers (50 years and above) with moderate family sizes and middle-income levels. Most farmers were literate, engaged exclusively in farming, and cultivated marginal holdings, primarily garden and wet lands. While inorganic fertilizers were widely used, all respondents expressed a preference for organic fertilizers, with a strong inclination toward bulky manures. Farmers identified multiple benefits of organic inputs, including soil fertility enhancement, avoidance of chemicals, support for soil microbes, and cost-effectiveness. However, significant challenges were reported, particularly the non-availability of organic manures, the need for large quantities, dependence on off-farm resources, and initial yield losses. The study highlights the need for region-specific interventions, such as improving supply chains, promoting awareness programs, and providing technical support, to enhance the adoption of organic fertilizers and support sustainable farming practices in Pollachi.

Received: 19 Aug 2025

Revised: 27 Aug 2025

Accepted: 16 Sep 2025

**Keywords:** Organic Fertilizers, Farmer Perception, Sustainable Agriculture, Pollachi, Manure Adoption

## INTRODUCTION

Indian agriculture faces the dual challenge of meeting rising food demand while maintaining soil health and ecological balance. While chemical fertilizers have increased crop productivity, their excessive use has led to declining soil fertility, lower nutrient efficiency, and environmental degradation (Shukla et al., 2022). Organic fertilizers and manures are promoted as sustainable alternatives, enhancing

soil quality, reducing chemical dependence, and supporting long-term farm resilience (Abebe & Debebe, 2019; Dahlin et al., 2016).

Adoption of organic inputs is influenced not only by agronomic benefits but also by farmers' perceptions, socio-economic conditions, awareness, availability of inputs, and extension support (Shehu et al., 2016; Utami et al., 2018). In Tamil Nadu's Pollachi region,

\*Corresponding author mail: [harishsudesh734@gmail.com](mailto:harishsudesh734@gmail.com)



Copyright: © The Author(s), 2025. Published by Madras Agricultural Students' Union in Madras Agricultural Journal (MAJ). This is an Open Access article, distributed under the terms of the Creative Commons Attribution 4.0 License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution and reproduction in any medium, provided the original work is properly cited by the user.

dominated by coconut-based and mixed farming systems, evidence on current organic fertilizer use is limited. This study examines farmers' perceptions, preferences, socio-economic determinants, and constraints to inform strategies for promoting sustainable fertilizer adoption locally.

### Objectives:

1. Understand farmers' perceptions and preferences for organic fertilizers and manures in the Pollachi region.
2. Identify constraints hindering the adoption of organic fertilizers in the Pollachi region.
3. Explore opportunities to promote organic fertilizer use among Pollachi farmers.
4. Analyze socio-economic and farm-related factors influencing organic fertilizer adoption in the Pollachi region.
5. Provide region-specific recommendations to enhance organic fertilizer use and support sustainable farming in Pollachi.

### Literature Review

Research on the adoption of organic fertilizers has gained significant attention globally, reflecting the growing emphasis on sustainable agriculture. *Shehu et al. (2016)* analyzed perceptions of organic manure among arable crop farmers in Jalingo Local Government, Nigeria, using structured questionnaires administered to 114 proportionately and randomly selected respondents. Descriptive statistics and a logit regression model revealed that most farmers were male, married, educated, and experienced smallholders. They held favorable perceptions of organic manure, with larger farm sizes, higher education levels, and greater extension contact positively influencing adoption. The study recommended government support for large-scale farming and intensified extension services on organic manure utilization.

Similarly, *Fasina (2013)* examined determinants of perceived effectiveness of organic fertilizers in Oyo State, Nigeria. Findings indicated that awareness, application rate, and method significantly influenced perceptions of effectiveness, emphasizing the importance of extension activities in guiding proper fertilizer use. *Nkeme et al. (2014)* investigated the use of poultry droppings by female vegetable farmers in Anantiga, Nigeria. They found that low awareness,

inadequate access to organic inputs, low output prices, consumer preferences, and poor farmer organization limited adoption. The study recommended awareness campaigns and supportive policies to encourage organic vegetable farming.

In India, *Velayudhan et al. (2021)* investigated the factors influencing farmers' adoption of organic fertilizers in the Indo-Gangetic Plains, identifying socioeconomic conditions, farm size, and policy incentives as key drivers of organic input use. *Dubey (2014)* reviewed fertilizer marketing and underscored the role of fertilizers in maintaining soil fertility and meeting food demand. *Shanthini et al. (2013)* explored brand preferences, reporting that quality, price, availability, and advertising significantly influenced farmers' purchasing decisions. *Nurul Utamia et al. (2018)* studied fertilizer attributes in West Java, Indonesia, emphasizing factors such as nutrient content, packaging, ease of use, price, and promotion as critical determinants of consumer preference.

International research further contributes to understanding adoption behavior and preferences. *Dahlin et al. (2016)* investigated consumer preferences for fertilizer product features in the home gardening market, highlighting socio-demographic differences in price sensitivity and preference for brand status, labeling, and nutrient values. *Zheng et al. (2022)* examined farmers' chemical fertilizer reduction behavior in China, revealing that technology awareness, social capital, and farmer characteristics significantly influenced adoption. *Abebe et al. (2019)* in Ethiopia found that education, access to extension services, availability of composting materials, farmland fertility, and household characteristics affected organic fertilizer use among smallholders. *Prakash et al. (2021)* noted that inappropriate fertilizer use in South Asia contributed to environmental degradation and recommended educational interventions to improve nutrient-use efficiency and reduce negative externalities. *Kusumah et al. (2018)* highlighted the importance of farmers' perceptions of quality and attitudes in shaping purchasing decisions.

Across these studies, socio-economic factors, education, access to extension services, awareness, and farm characteristics consistently influence the adoption and perception of organic fertilizers. Market-related factors such as availability, branding, and

price, as well as environmental awareness and policy incentives, further shape farmers' decision-making. Despite this growing body of research, localized, farmer-centered evidence from Tamil Nadu—particularly in the Pollachi region, known for its unique coconut-based farming systems—remains limited.

### Research Gap and Contribution

While organic fertilizers offer clear environmental and agronomic benefits, their adoption in India remains limited. Most existing studies focus on macro-level analyses of fertilizer trends or national-level policy impacts (Shukla et al., 2022; Aryal et al., 2021; Aggarwal, 2014), providing limited insight into the micro-level, farmer-centered factors that influence adoption. Research examining farmers' perceptions, preferences, and constraints in Tamil Nadu, particularly in the Pollachi region—a central agricultural belt with unique coconut-based and mixed cropping systems—is scarce. Existing work (Habanyathi et al., 2024; Sudhalakshmi et al., 2024) offers some information on broader adoption trends and the use of organic inputs such as farmyard manure and bio-fertilizers, but detailed, localized evidence on socio-economic, cultural, and market-related factors shaping farmers' adoption behavior is lacking.

This study addresses these gaps by:

- *Providing farmer-centered evidence:* Surveys of 60 Pollachi farmers capture localized perceptions and preferences.
- *Focusing on a region-specific context:* The study is limited to the Pollachi region of Tamil Nadu and provides insights into what farmers in this area specifically need for adopting organic fertilizers
- *Analyzing perceptions and constraints:* Identifies motivations, benefits, and barriers such as availability, cost, and initial yield reductions.
- *Offering practical implications:* Highlights region-specific challenges and opportunities to guide interventions, supply chains, and awareness programs for sustainable farming.

## MATERIALS AND METHODS

The research design is crucial for ensuring meaningful and logical inferences. This Section outlines the selection of the study area, respondents,

data collection procedures, and analytical tools used to achieve the research objectives.

### Selection of the Study Area

The study was conducted in the Pollachi region of western Tamil Nadu, chosen for its accessibility and the widespread use of multiple fertilizers by farmers, which facilitates the study of preferences and perceptions regarding organic fertilizers.

### Selection of Respondents

Farmers were selected using random sampling to ensure representation across small, marginal, and large farmers. A total of 60 farmers were surveyed during a Farmer-Producer Organization (FPO) meet held at Mahalingam College of Engineering and Technology (MCET) in the region. The survey was undertaken during May 2023.

### Data Collection

For the collection of primary data, a separate well-structured interview schedule was prepared for farmers based on our objective. The data required for the study were gathered by personal interviews with the selected respondents (farmers). The data collected from the sample farmers included general particulars like age, address, gender, experience, area of land holding, crops grown, soil type, land type, usage of fertilizers, advantages and disadvantages of using organic fertilizers, perception, and preference.

### Tools for Analysis

Percentage analysis was used to describe and compare the characteristics of respondents and farming practices. This method reduces data to a standard base, allowing meaningful comparisons of variables such as socio-economic characteristics and farming practices.

**Percentage values were calculated as:**

$$\text{Percentage} = \frac{\text{No of Respondents}}{\text{Total Number of Respondents}} \times 100$$

## RESULTS AND DISCUSSION

### Age-wise Distribution of Survey Participants

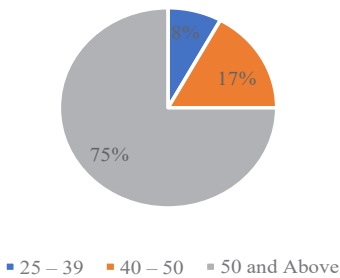
A survey was conducted to assess the socio-economic factors of farmers, with participants categorized according to their age groups. The distribution of participants is presented.



**Table 1. Age Group-wise Participants of the Survey**

Age Group	No. of Participants
25 – 39	5
40 – 50	10
50 and Above	45
Total	60

**Age Group in (%)**



**Figure 1. Percentage Distribution of Participants by Age Group**

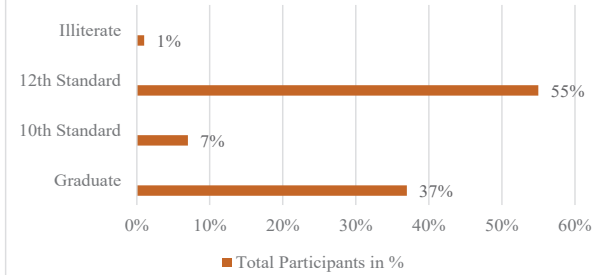
**Discussion**

The results show that older farmers (50 years and above) constitute the majority of participants, indicating their significant involvement in agricultural practices. Younger farmers (25–39 years) are underrepresented, which may suggest limited engagement in certain agricultural activities. These findings are relevant for

**Table 2. Literacy Rate of Respondents**

Education Level	No. of. Participants
Graduate	22
10th Standard	4
12th Standard	33
Illiterate	1
Total	60

**Literacy Rate in (%)**



**Figure 2. Literacy Rate of Respondents (Percentage Distribution)**

designing targeted interventions to engage farmers across all age groups.

**Literacy Rate of Respondents**

The educational status of the surveyed farmers was recorded to assess literacy levels. The distribution of respondents according to their education is presented.

**Discussion:**

The data indicate that the majority of farmers in the surveyed population are literate, with higher secondary education (12th standard) being the most common. The relatively small proportion of illiterate farmers suggests that literacy could support better adoption of modern agricultural practices and access to information.

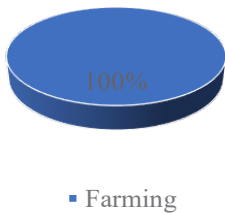
**Occupation of Respondents**

A survey of 60 respondents was conducted to understand their occupation, particularly in relation to the use and perception of organic fertilizers and manures.

**Table 3 - Occupation of Respondents**

Occupation	No. of. Participants
Farming	60
Total	60

**Occupation in (%)**



**Figure 3. Occupational Distribution of Respondents**

**Discussion:**

The survey indicates that farming is the exclusive occupation among the respondents, ensuring that the findings on perceptions and preferences regarding organic fertilizers and manures are fully representative of the farming community.

**Family Size of Respondents**

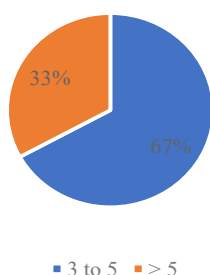
The family size of surveyed farmers was recorded to understand household

composition and labour availability. The distribution of respondents according to family size is presented.

**Table 4 . Family Members of Respondents**

Family Size	No. of. Participants
3 to 5	40
> 5	20
Total	60

**Family Size in (%)**



**Figure 4. Family Size Distribution of Respondents**

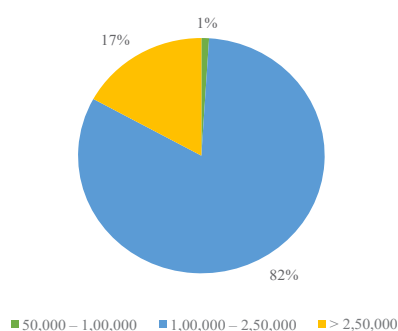
#### Discussion:

The data indicate that most respondents come from moderately sized families (3–5 members), which may influence household labour dynamics and decision-making in farm activities. Families with more than 5 members are less common among the surveyed population.

**Table 5. Income of Respondents**

Annual Income (₹)	No. of Participants
< 50,000	0
50,000 – 1,00,000	1
1,00,000 – 2,50,000	49
> 2,50,000	10
Total	60

**Annual Income in (%)**



**Figure 5. Percentage Distribution of Respondents by Annual Income**

## Annual Income of Respondents

The annual income of the surveyed farmers was recorded to understand their economic status. The distribution of respondents according to income levels is presented.

#### Discussion:

The data indicate that most respondents belong to the middle-income category (₹1,00,000–2,50,000), reflecting a moderate economic status among the surveyed farming community. The distribution also highlights the presence of low-income farmers (₹50,000 - ₹1,00,000) and high-income farmers (>₹2,50,000), suggesting a range of economic diversity within the population

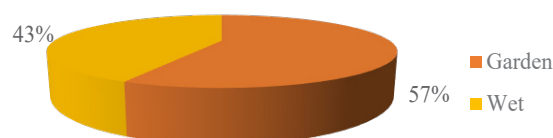
## Type of Land Owned by Respondents

The survey also recorded the types of land owned by the respondents to understand land use patterns. The distribution of land types is presented.

**Table 6. Type of Land Owned by Respondents**

Land Type	No. of Participants
Garden	34
Wet	26
Total	60

**Land types in (%)**



**Figure 6. Percentage Distribution of Land Type**

#### Discussion:

The data indicate that respondents cultivate either garden or wet land, with garden land being slightly more prevalent. This distribution reflects the focus of agricultural practices on more productive land types, which may influence crop choices and yield potential.

## Land Area of Respondents

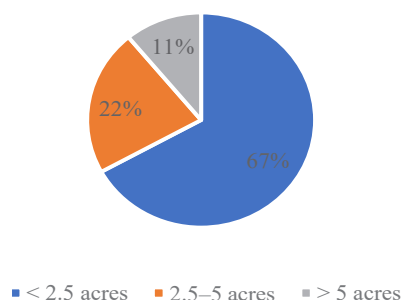
The surveyed respondents were categorised based on their landholding size into marginal, small, and large farmers. The distribution of respondents according to land area is presented.



**Table 7. Land Area of Respondents**

Land Area	Total No. of Respondents
< 2.5 acres	40
2.5–5 acres	13
> 5 acres	7
Total	60

**Respondents % by Land Area**



**Figure 7. Percentage Distribution of Respondents' Land Area**

**Discussion:**

The data show that the majority of respondents (40 out of 60, or 67%) are marginal farmers with less than 2.5 acres of land. Small farmers, owning 2.5–5 acres, account for 13 respondents (22%), while only 7 respondents (11) are large farmers with more than 5 acres. This distribution highlights the dominance of small-scale farming in the surveyed population. The prevalence of marginal and small farmers may influence farm productivity, access to resources, and the adoption of modern agricultural practices, as limited land often constrains mechanization, input usage, and investment in soil fertility management strategies.

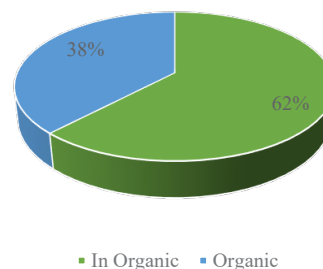
**Farmers' Attitude Towards the Use of Fertilizers**

The survey recorded the preference of farmers for organic and inorganic fertilizers to understand their attitude toward fertilizer use. The results are summarised.

**Table 8. Fertilizer Used by Respondents**

Fertilizer Type	No. of. Respondents
In Organic	37
Organic	23
Total	60

**Fertilizer Used in (%)**



**Figure 8.Fertilizer Usage Among Respondents in %**

**Discussion:**

The results indicate that inorganic fertilizers are more widely used among the respondents, suggesting reliance on chemical inputs for higher productivity. However, a substantial proportion of farmers (39%) use organic fertilizers, reflecting growing awareness and interest in sustainable farming practices.

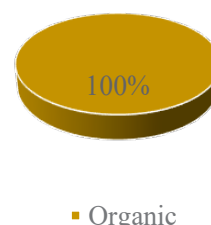
**Fertilizer Preference**

The survey assessed farmers' overall preference between organic and inorganic fertilizers.

**Table 9.Fertilizer Preference by Respondents**

Fertilizer Preference	Total No. of. Respondents
Organic	60
In Organic	0
Total	60

**Preference in (%)**



**Figure 9. Fertilizer Preference Among Respondents in %**

**Discussion:**

The results show a strong and unanimous inclination toward organic fertilizers. None of the

respondents expressed a preference for inorganic fertilizers, indicating a complete shift in attitude toward sustainable and eco-friendly farming practices. This finding highlights the growing acceptance of organic farming methods in the surveyed population.

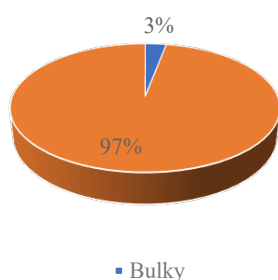
### Manure Type Preference

The survey assessed farmers' preferences between concentrated and bulky organic manures. The results are summarized.

**Table 10. Manure Preference by Respondents**

Manure Preference	Total No. of Respondents
Concentrated	2
Bulky	58

### Preference in (%)



**Figure 10. Manure Preference Among Respondents in %**

### Discussion:

The survey results show a clear preference among farmers for bulky organic manures. Out of 60 respondents, 58 (97%) preferred bulky manure, while only 2 (3%) opted for concentrated manure. This strong preference suggests that farmers favor traditional, locally available, and easy-to-handle organic inputs for soil fertility management. Bulky manures, such as compost and farmyard manure, are often perceived as more cost-effective and environmentally friendly compared to concentrated forms. The overwhelming choice also reflects practical considerations, including ease of application, availability, and suitability for improving soil structure and long-term fertility.

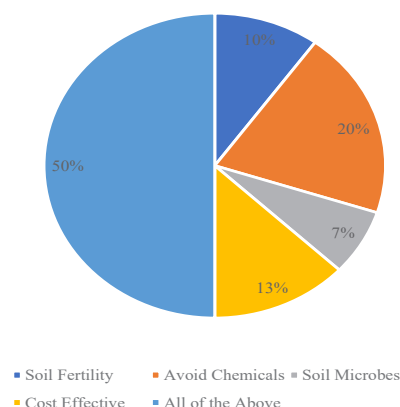
### Benefits of Using Organic Manures and Fertilizers

The survey captured farmers' perceptions of the significant benefits associated with organic manures and fertilizers. The results are presented.

**Table 11. Benefits of Using Organic Manures and Fertilizers by Respondents**

Benefit	Total No. of Respondents
Soil Fertility	6
Avoid Chemicals	12
Soil Microbes	4
Cost Effective	8
All the Above	30
Total	60

### Respondents in %



**Figure 11. Benefits of Using Organic Manures Among Respondents in %**

### Discussion:

The survey shows that farmers recognize multiple benefits of organic manure. Half of the respondents (50%) reported experiencing all benefits, indicating a broad appreciation of organic inputs. Avoiding chemicals (20%) and cost-effectiveness (13%) were particularly emphasized, while improvements in soil fertility (10%) and soil microbial activity (7%) were also noted. Overall, these findings suggest that farmers adopt organic manure to enhance crop productivity, improve soil health, and promote sustainable, eco-friendly, and cost-efficient farming practices.

### Problems Faced in Using Organic Manures and Fertilizers

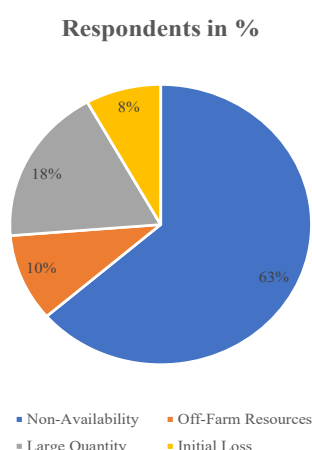
The survey recorded the challenges faced by farmers in adopting organic manure and fertilizers. The results are summarized.

### Discussion:

The findings indicate that the non-availability of

**Table 12. Problems of Using Organic Manures and Fertilizers by Respondents**

Problem	Total No. of. Respondents
Non-Availability	38
Off-Farm Resources	6
Large Quantity	11
Initial Loss	5
All the Above	—
Total	60



**Figure 12. Problems of Using Organic Manures Among Respondents in %**

organic manures is the primary challenge for farmers, affecting 63% of respondents. This suggests supply chain constraints and limited local production of organic inputs, which can hinder timely adoption. The requirement for large quantities (18%) further adds to the difficulty, as transporting and storing bulk materials can be labor-intensive and costly. Dependency on off-farm resources (10%) highlights that some farmers rely on external inputs rather than producing them on-site, which may reduce sustainability. Initial loss (8%) reflects farmers' concerns over potential yield reductions or slower crop growth when transitioning to organic practices.

### Comparative Discussion

The present study confirms that farmers in Pollachi generally prefer organic fertilizers over inorganic ones, but face challenges in adoption due to availability, handling requirements, and yield-related concerns. These findings align with, and in some cases diverge from, earlier studies discussed in the literature review.

### Socio-economic Factors

The predominance of older farmers in this study is

similar to the observations of Shehu *et al.* (2016), who reported that age and experience positively influenced perception of organic manures among Nigerian farmers. The relatively high literacy rate among Pollachi farmers also supports the findings of Abebe and Debebe (2019), who identified education as a significant driver of organic input adoption in Ethiopia. By contrast, the underrepresentation of younger farmers in Pollachi corresponds with Aryal *et al.* (2021), who highlighted that younger rural populations in South Asia often migrate to non-farm occupations, reducing their agricultural involvement.

### Farm Size and Landholding

Most respondents were marginal farmers with less than 2.5 acres. This is consistent with Aryal *et al.* (2021), who reported that smallholder dominance and land fragmentation are widespread constraints to organic input adoption in India and South Asia. Similar conclusions were drawn by Nkeme *et al.* (2015), who found that small farm size limited organic manure use among female vegetable farmers in Nigeria.

### Fertilizer Preferences

Although 61% of respondents continued to apply inorganic fertilizers, all expressed a strong preference for organics, particularly bulky manures. This dual behavior mirrors the findings of Shukla *et al.* (2022), who noted that Indian farmers often rely on chemical fertilizers for productivity assurance while acknowledging the sustainability benefits of organics. Comparable results were presented by Fasina (2013) in Nigeria, who described a mismatch between preference and actual adoption of organics due to perceived effectiveness issues.

### Perceived Benefits

The recognition of multiple benefits—soil fertility enhancement, avoidance of chemicals, cost-effectiveness, and support for soil microbes—is in line with Dahlin *et al.* (2016), who highlighted environmental and health considerations as primary motivators in the use of organic fertilizers. Habanyathi *et al.* (2024) also reported increasing sustainability awareness among Tamil Nadu farmers, which complements the findings of the present study.

### Constraints

Non-availability of organic manures, reported by 63% of respondents, is consistent with supply-



side limitations discussed by Sudhalakshmi *et al.* (2024) in Tamil Nadu and Kormawa *et al.* (2003) in Benin. The difficulty of handling large quantities, mentioned by 18% of respondents, similarly reflects the challenges of bulkiness reported in several African studies (Nkeme *et al.*, 2015). Concerns over initial yield reduction, although cited by only 8% of farmers, parallel the observations of Aryal *et al.* (2021), who noted that fear of yield decline remains a significant deterrent to adoption across South Asia.

### Unique Contribution

Unlike many of the studies reviewed, which found mixed attitudes toward organic inputs (e.g., Fasina, 2013; Nkeme *et al.*, 2015), the Pollachi farmers surveyed in this study showed a unanimous preference for organics. This complete attitudinal alignment suggests a stronger readiness for transition, provided that infrastructural, financial, and institutional barriers are addressed.

### CONCLUSION

The study highlights a growing awareness and preference for organic fertilizers among farmers in the Pollachi region. Despite the widespread use of inorganic fertilizers, all surveyed farmers expressed a strong inclination toward organic inputs, particularly bulky manures, reflecting both environmental and economic motivations. Key benefits identified include improved soil fertility, avoidance of chemical residues, support for soil microbes, and cost-effectiveness.

However, adoption is constrained by several challenges, including the non-availability of organic manures, the large quantities required, dependence on off-farm resources, and concerns over initial yield reductions. Socio-economic factors, including age, literacy, landholding size, and income, were found to influence adoption behavior, indicating the need for targeted interventions.

To enhance organic fertilizer adoption, region-specific strategies are recommended, including strengthening local supply chains, providing extension services and training, promoting awareness programs, and supporting smallholders with technical and financial assistance.

Future research could expand the sample size to include more diverse farming systems, examine long-term impacts of organic fertilizer use on productivity and soil health, and explore innovative approaches for producing and distributing organic inputs locally.

Such studies would provide deeper insights to support sustainable agriculture and environmentally friendly farming practices in the Pollachi region and similar agro-ecological zones.

### Recommendations

1. The non-availability of bulky manures, reported by 63% of respondents, indicates the need for localized composting and bio-fertilizer production units at the FPO or village level. Decentralized input supply is critical for organic adoption (Habanyathi *et al.*, 2024).

2. Many respondents fall within the middle-income bracket (₹1–2.5 lakh), making bulk procurement of organic inputs financially challenging. Subsidies for transportation and government incentives for compost preparation can reduce adoption barriers. Financial incentives have been identified as a key driver of organic adoption across South Asia (Aryal *et al.*, 2021).

3. Despite recognizing the benefits of organic inputs, 8% of farmers expressed concerns about initial yield reduction. Targeted awareness programs, demonstrations, and farmer field schools can help overcome skepticism. Extension contact significantly increases positive perception and adoption of organics (Shehu *et al.*, 2016).

4. A phased approach combining organic and inorganic fertilizers can mitigate risks of yield decline during transition. Integrating both sources helps maintain soil fertility and productivity while reducing chemical dependence (Shukla *et al.*, 2022).

5. Farmers' preference for organic farming can be transformed into economic benefits by linking them with certification agencies and premium markets. Consumer demand for labeled, chemical-free produce drives adoption of organic practices (Dahlin *et al.*, 2016).

6. Dependence on off-farm resources (reported by 10% of respondents) highlights the potential of on-farm recycling of coconut husks, livestock dung, and crop residues. Access to composting materials at the farm level strongly supports organic fertilizer adoption (Abebe & Debebe, 2019).

7. Since 18% of farmers reported difficulties handling large quantities of manure, investments in low-cost storage sheds and community-level transport services can reduce labor and cost constraints.

8. Younger farmers (25–39 years) were underrepresented (only 8%). Programs engaging youth and women in organic farming—such as entrepreneurship in composting and vermiculture units—can ensure continuity, innovation, and sustainable adoption.

9. Collective action through FPOs can facilitate bulk procurement, marketing of organic produce, and training services. Strengthening FPOs directly supports sustainable fertilizer adoption, as evidenced by the survey conducted during an FPO meeting.

10. Region-specific innovations—such as coconut husk composting, bio-slurry utilization, and microbial inoculants—should be promoted through participatory research. Collaboration between agricultural institutes and Pollachi farmers will ensure solutions are locally adapted and cost-effective.

## ACKNOWLEDGEMENT

The authors sincerely acknowledge Dr. K. Kalidas, MBA (ABM), Ph.D., Head of Department (Agricultural Economics), Vanavarayar Institute of Agriculture, for his invaluable guidance, mentorship, and support in completing this project. We also extend our gratitude to the Vanavarayar Institute of Agriculture, Pollachi, for providing the necessary facilities and support throughout the study.

## REFERENCES

- Abebe, G. & Debebe, S. (2019). Factors affecting use of organic fertilizer among smallholder farmers in Sekela district of Amhara region, Northwestern Ethiopia. *Cogent Food & Agriculture*, 5(1), 1669398. <https://doi.org/10.1080/23311932.2019.1669398>
- Aryal, J.P., Sapkota, T.B., Krupnik, T.J., et al. (2021). Factors affecting farmers' use of organic and inorganic fertilizers in South Asia. *Environmental Science and Pollution Research*, 28, pp.51480–51496. <https://doi.org/10.1007/s11356-021-13975-7>
- Chinnappan, S., Vasuki, V., Gopalakrishnan, M. & Rani, S. (2024). Evaluating groundnut yield and resilience under resource constraints in Pollachi Taluk, Coimbatore District, Tamil Nadu, India. *Journal of Experimental Agriculture International*, 46(10), pp.712–720. <https://doi.org/10.9734/jeai/2024/v46i102994>
- Dahlin, J., Halbherr, V., Kurz, P., Herbes, C., et al. (2016). Marketing green fertilizers: Insights into consumer preferences. *Sustainability*, 8(11), 1169. <https://doi.org/10.3390/su8111169>
- Fasina, O. (2013). Determinants of perceived effectiveness of organic fertilizer used by farmers in Oyo State, Nigeria. *Agricultura Tropica et Subtropica*, 46(1), 23–28. <https://doi.org/10.2478/ats-2013-0004>
- Habanyati, E.J., Paramasivam, S., Seethapathy, P. & Manalil, S. (2024). Assessing organic farming adoption in selected districts of Tamil Nadu: Challenges, practices, and pathways for growth. *Agronomy*, 14(11), 2537. <https://doi.org/10.3390/agronomy14112537>
- Kormawa, P., Munyemana, A. & Soulé, B.G. (2003). Fertilizer market reforms and factors influencing fertilizer use by small-scale farmers in Bénin. *Agriculture, Ecosystems & Environment*, 100(2–3), pp.129–136. [https://doi.org/10.1016/S0167-8809\(03\)00181-6](https://doi.org/10.1016/S0167-8809(03)00181-6)
- Nkeme, K.K., Ibok, O.W., Umoh, I.U. & Umoh, O.T. (2015). Factors influencing the use of organic manure by female vegetable farmers in Cross River State, Nigeria. *Asian Journal of Agricultural Extension, Economics & Sociology*, 4(1), pp.21–28. <https://doi.org/10.9734/AJAEES/2015/12602>
- Shehu, I., Abdullahi, A., Qasimu, A.I. & Adamu, T. (2016). Farmers' perception on organic manure usage among arable crop farmers in Jalingo, Taraba State, Nigeria. *Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development*, 16(3), 353–360. [https://managementjournal.usamv.ro/pdf/vol.16\\_3/Art48.pdf](https://managementjournal.usamv.ro/pdf/vol.16_3/Art48.pdf)
- Shukla, A.K., Behera, S.K., Chaudhari, S.K. & Singh, G. (2022). Fertilizer use in Indian agriculture and its impact on human health and environment. *Indian Journal of Fertilisers*, 18(3), 218–237. <https://www.researchgate.net/publication/359279646>
- Utami, H.N., Sadeli, A.H., Perdana, T., Sanjaya, S., et al. (2018). Consumer preference of fertilizer in West Java using multi-dimensional scaling approach. *AIP Conference Proceedings*, 1927(1), 030012. <https://doi.org/10.1063/1.5021205>
- Velayudhan, P.K., Singh, A., Jha, G.K., Kumar, P., Thanaraj, K.I. & Srinivasa, A.K. (2021). What drives the use of organic fertilizers? Evidence from rice farmers in Indo-Gangetic Plains, India. *Sustainability*, 13(17), 9546. <https://doi.org/10.3390/su13179546>