



STUDY ON ORGANIC FARMING OF TOMATO IN INDORE DISTRICT OF MADHYA PRADESH

Shiwani Bishnoi¹ and Ashish S. Noel²

¹MBA (Agribusiness), Department of Agricultural Economics

Sam Higginbottom University of Agriculture Technology and Sciences, Prayagraj, U.P.

²Professor and Head, Department of Agricultural Economics

Sam Higginbottom University of Agriculture Technology and Sciences, Prayagraj, U.P.

Corresponding author: shiwanibishnoi592@gmail.com

<https://doie.org/10.0519/AE.2024139043>

ABSTRACT

This study delves into the intricate dynamics of organic farming practices of tomato cultivation, with a focus on understanding the awareness level of organic farmers, identifying the challenges they face, and analysing the cost of cultivation in comparison with conventional farming methods. Conducted in the Indore district and across various regions of Madhya Pradesh, India, the research encompasses a comprehensive survey of 90 respondents, encompassing various demographics, including age, gender, education level, and family type. The findings reveal a diverse awareness and adoption of organic farming practices, underscored by significant challenges such as financial constraints, infrastructural and logistical hurdles, regulatory complexities, and market access difficulties. Furthermore, the cost analysis underscores the higher expenses associated with organic tomato farming, driven predominantly by labour and organic inputs, compared to non-organic counterparts. Through a methodical examination, this study highlights the nuanced interplay between educational levels, family structures, and land ownership patterns, shedding light on their influence on organic farming adoption and practice sustainability. The research underscores the critical need for targeted policy interventions, educational programs, and support mechanisms to mitigate the challenges faced by organic farmers and enhance the viability and growth of organic farming in the region.

Keywords: *To assess the socio-economic status of the organic farmers in the study area.*

INTRODUCTION

The paradigm shift towards sustainable agriculture has spotlighted organic farming as a pivotal strategy for achieving food security, environmental preservation, and socio-economic development, particularly in regions with rich agricultural heritage like Madhya Pradesh, India. Indore District, nestled in the heart of this state, has emerged as a vibrant epicentre for organic tomato cultivation, reflecting broader trends

towards organic agriculture across India and globally. This introduction delves into the multifaceted aspects of organic tomato farming in Indore, incorporating data, figures, and referenced information to underscore its significance, challenges, and potential within the agricultural landscape. Organic farming, characterized by the exclusion of synthetic pesticides and fertilizers, emphasizes soil health,

ecological balance, and biodiversity. This approach aligns with the increasing consumer demand for food products that are not only safe and nutritious but also ethically produced. The global organic food and beverage market, valued at approximately USD 165.52 billion in 2020, is projected to reach USD 272.18 billion by 2027, growing at a CAGR of 10.2% from 2021 to 2027 (Organic Trade Association, 2021). Within this burgeoning market, organic tomatoes play a crucial role due to their widespread consumption and nutritional value. Indore District, with its favourable climate, fertile soil, and strategic location, presents an ideal setting for organic tomato cultivation. The district's foray into organic farming can be traced back to early initiatives by both governmental and non-governmental organizations aiming to reduce dependency on chemical inputs, enhance soil fertility, and improve farmers' livelihoods. According to the National Programme for Organic Production (NPOP), India's area under organic certification stood at 3.56 million hectares in 2019-20, signifying a growing commitment to organic agriculture (APEDA, 2020). Tomato, scientifically known as *Solanum Lycopersicon*, is one of the most significant horticultural crops in Indore, cultivated across both the Kharif and Rabi seasons. The versatility and high demand for tomatoes in culinary applications make them a staple vegetable in Indian cuisine, further amplifying their importance. Organic tomato production in Indore has seen a steady increase, this is a significant enhancement from previous years, indicative of successful adoption and scaling of organic practices. However, transitioning to organic farming presents a multitude of challenges. Key among them are higher production costs, primarily due to increased labour for manual weed and pest management and the cost of organic inputs. Additionally, the lack of immediate access

to organic markets and supply chains poses significant hurdles for smallholder farmers, impacting their profitability and sustainability. The study conducted by the Indian Council of Agricultural Research (ICAR, 2019) highlights these challenges, emphasizing the need for integrated support systems to facilitate the transition and ensure the economic viability of organic farming. Moreover, organic certification processes, critical for accessing premium markets, are often seen as cumbersome and expensive for small-scale farmers. The certification, while serving as a badge of authenticity and quality, requires stringent adherence to organic standards, detailed record-keeping, and periodic inspections. The Organic Certification Cost Share Program (OCCSP) report of 2020 indicates that the average cost of certification for small farmers in India ranges from Rs. 20,000 to Rs. 30,000, a substantial investment that can deter many from pursuing certification (OCCSP, 2020). Despite these challenges, the benefits of organic tomato farming are manifold. Studies have shown that organic farming practices enhance soil health, increase biodiversity, and reduce the environmental footprint of agriculture. Moreover, organic tomatoes are often sold at a premium price, offering the potential for higher incomes for farmers. Consumer preference for organic produce, driven by health and environmental consciousness, further bolsters the market demand. The "Organic Market Report" by Research Institute of Organic Agriculture (FiBL, 2021) suggests that consumers are willing to pay up to 20-30% more for organic produce compared to conventionally grown counterparts, underlining the economic incentive for farmers to adopt organic practices. To support organic tomato farmers in Indore, several initiatives have been launched. Government schemes such as the Parampara at Krishi Vikas Yojana (PKVY) and Rastriya

Krishi Vikas Yojana (RKVY) offer financial assistance and technical support for organic farming. Non-governmental organizations (NGOs) and farmer cooperatives play a pivotal role in providing training, resources, and market linkage services. The establishment of organic haats (markets) and participation in organic food fairs have also been instrumental in bridging the gap between organic producers and consumers.

Organic tomato farming in Indore District presents a promising avenue for sustainable agriculture, with the potential to contribute significantly to the region's economic development, environmental conservation, and health and wellness of the community. Addressing the challenges through comprehensive support mechanisms, policy interventions, and market development efforts is crucial for harnessing the full potential of organic farming. As the global and national landscape continues to evolve towards sustainability, Indore's journey in organic tomato cultivation offers valuable insights and lessons for the broader agricultural sector.

RESULT AND DISCUSSION

Objective 1: To assess the socio- economic status of the organic farmers in the study area.

Land Owned

Table.4.1 Distribution of Respondents based on Land owned

S. No.	Categories (Respondents)	Respondent	
		Number	Percentage
1.	Marginal <1 ha	28	31.11
2.	Small 1 -2 ha	35	38.88
3.	Semi-medium 2-4 ha	20	22.22
4.	Medium 4-10 ha	05	5.55
5.	Large > 10 ha	02	2.22
	Total	90	100

Fig.4.1 Distribution of Respondents based on land owned

OBJECTIVES OF THE STUDY

1. To assess the socio-economic status of the organic farmers in the study area.
2. To find out the awareness level of organic farmers in the study area.
3. To determine the challenges faced by the organic farmers in Indore district.
4. To analyse the cost of cultivation of organic tomatoes in comparison with non-organic tomatoes.
5. To suggest some appropriate measures for organic farmers.

RESEARCH METHODOLOGY

The study analysed tomato cultivation in Indore district, Madhya Pradesh, using purposive block selection and random village selection, preparing a pooled list of farmers for each selected village.

Selection of District

The Indore District of Madhya Pradesh, known for its agricultural prominence, was chosen to study the market impact of tomatoes on agricultural practices and yield enhancements.

Age

Table.4.2 Distribution of Respondents based on their age and Land owned

S. No.	Categories	No. of Respondent	Respondents					Total
			Marginal	Small	Semi Medium	Medium	Large	
1.	Young Age (18-35)	34	6	20	7	1	0	34
2.	Middle Age (36-50)	41	7	20	10	3	2	42
3.	Old Age (Above 50)	14	5	5	3	1	0	14
	Total	89	18	45	20	5	2	90

The table shows a diverse range of agricultural landholding sizes among respondents, categorized by age groups. The majority of respondents are young (18-35), middle (36-50), and old (above 50). Small-sized holdings are preferred across all age groups, with the Middle Age group having the highest number of small and semi-medium lands.

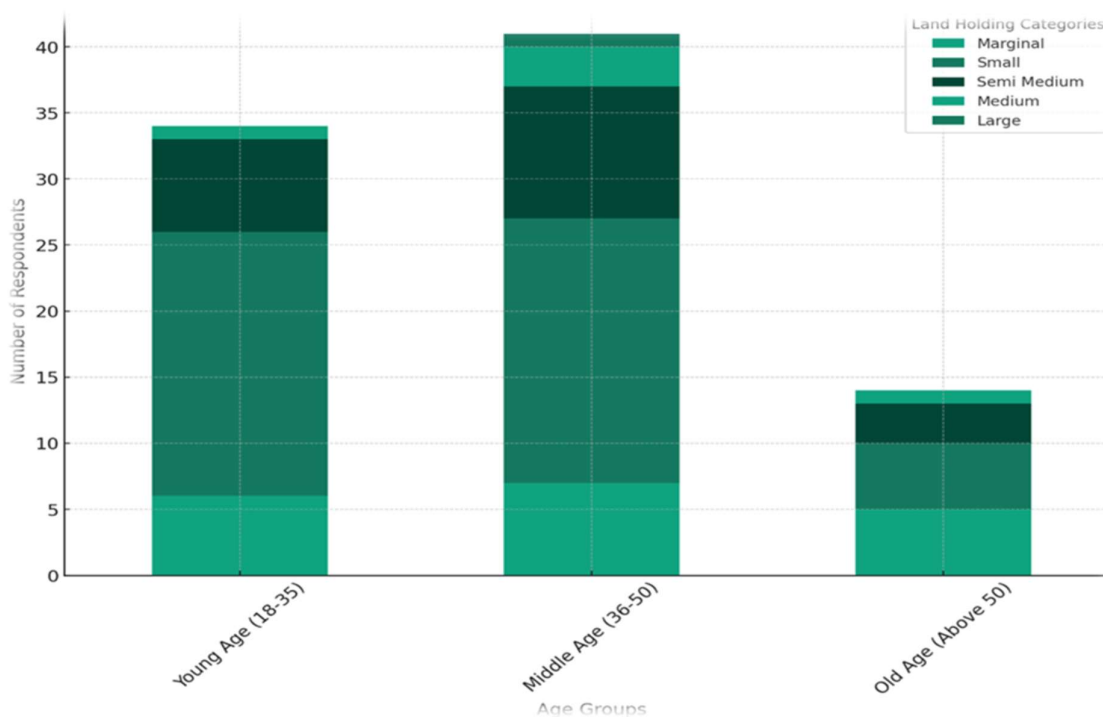


Fig.3.2 Distribution of Respondents based on their age and land owned

Gender

Table.4.3 Distribution of Respondents based on their gender

S. No.	Gender	Marginal	Small	Semi medium	Medium	Large	Total
1.	Male	17	41	18	5	2	83
2.	Female	1	4	2	0	0	7
	Total	18	45	20	5	2	90

The table shows a significant gender disparity in landholding categories among respondents, with 82 males and 7 females. Males dominate all categories, with 17 in Marginal, 41 in Small, 18 in Semi Medium, 5 in Medium, and 2 in Large. Females are minimally represented, especially in larger landholdings. This highlights broader societal and economic patterns influencing land ownership and access, highlighting the need for policies and interventions promoting gender equality in the agricultural sector.

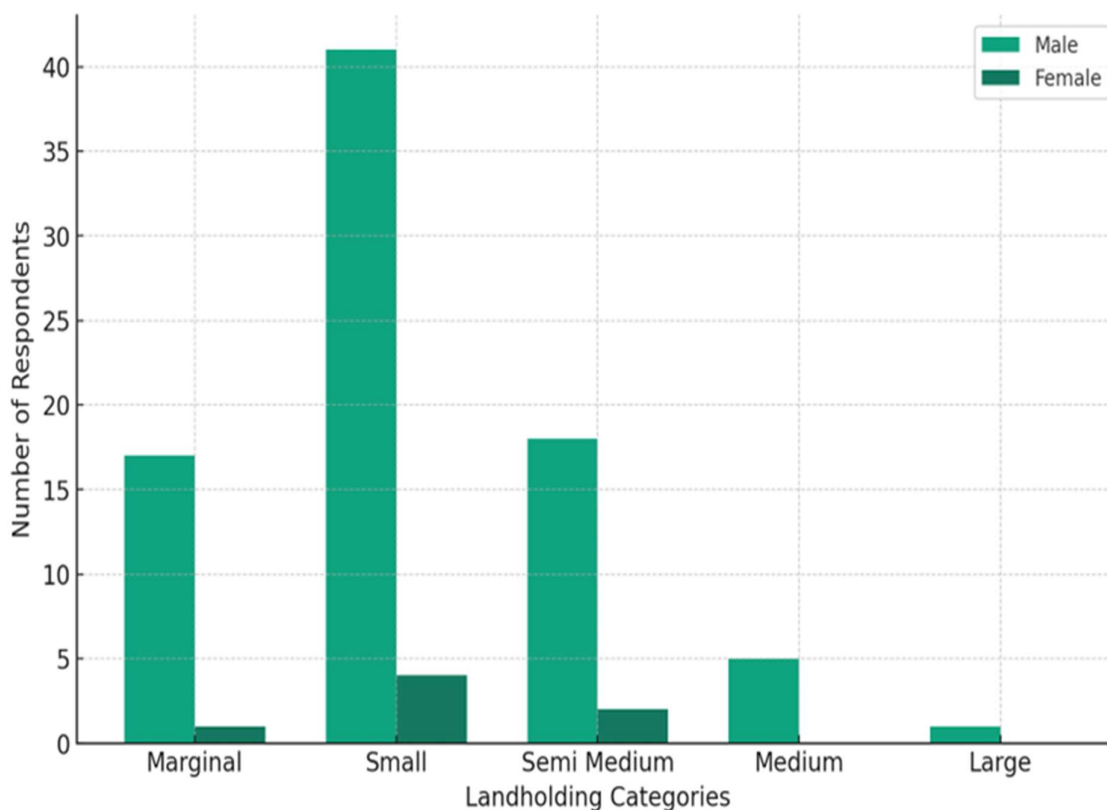


Fig.3.3 Distribution of Respondents based on their gender

Education

Table.4.4 Distribution of Respondents based on their education level

S. No.	Education Level	Marginal	Small	Semi medium	Medium	Large	Total
1.	Primary School	4	8	3	1	0	16
2.	Junior High School	4	10	5	1	0	18
3.	High School	2	12	6	2	0	22
4.	Intermediate	2	7	4	1	0	14
5.	Graduation	4	5	2	1	2	14
6.	Higher Education	1	1	0	0	0	4
7.	Illiterate	1	1	0	0	0	2
	Total	18	45	20	5	2	90

A study of 90 respondents surveyed found a complex relationship between education and landholding size. Primary school students primarily occupy smaller landholdings, while junior high school graduates tend to own larger plots. Intermediate and graduation level individuals are distributed across small to medium landholdings, while higher education respondents are primarily in smaller landholdings. Illiterate respondents are found in the smallest landholdings, highlighting challenges in accessing land and opportunities for expansion. The study suggests that higher education levels can correlate with larger landholdings due to better access to resources, knowledge, and technologies.

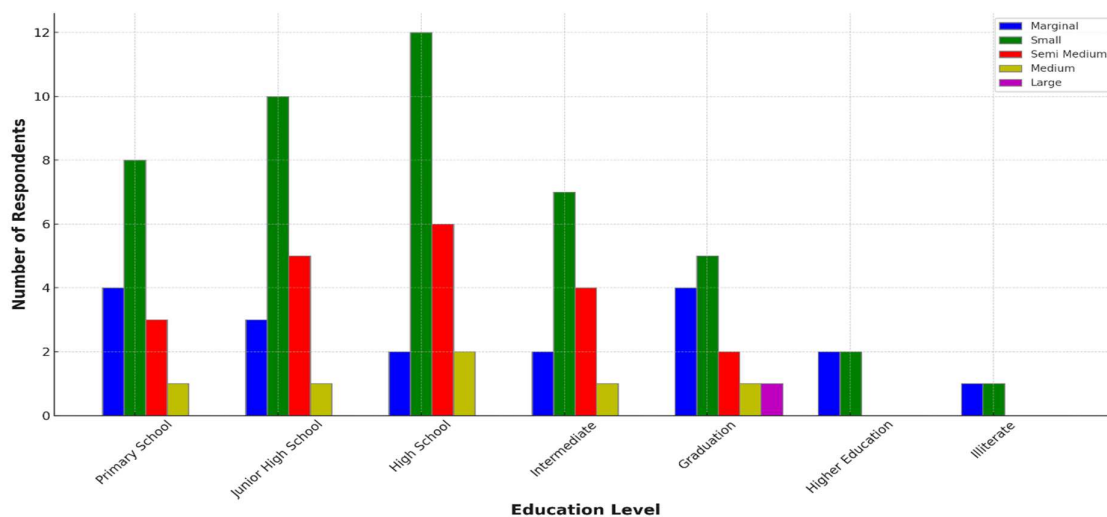


Fig.3.4 Distribution of Respondents based on their education level

Family Type

Table.4.5 Distribution of Respondents based on their family type

S. No.	Family Type	Marginal	Small	Semi-Medium	Medium	Large	Total
1.	Joint	4	15	10	3	2	34
2.	Nuclear	14	30	10	2	0	56
	Total	18	45	20	5	2	90

The table shows landholding distribution among agricultural families, categorized into Joint and Nuclear family types. Joint families, consisting of multiple generations, have a broader distribution across all landholding categories, including the large one. Nuclear families, consisting of parents and children living independently, dominate the survey, particularly in Marginal and Small landholdings. This distribution highlights the evolving dynamics of family structures and their impact on agricultural land management. Joint families maintain a presence across various land sizes, while nuclear families are more concentrated in smaller to semi-medium plots.

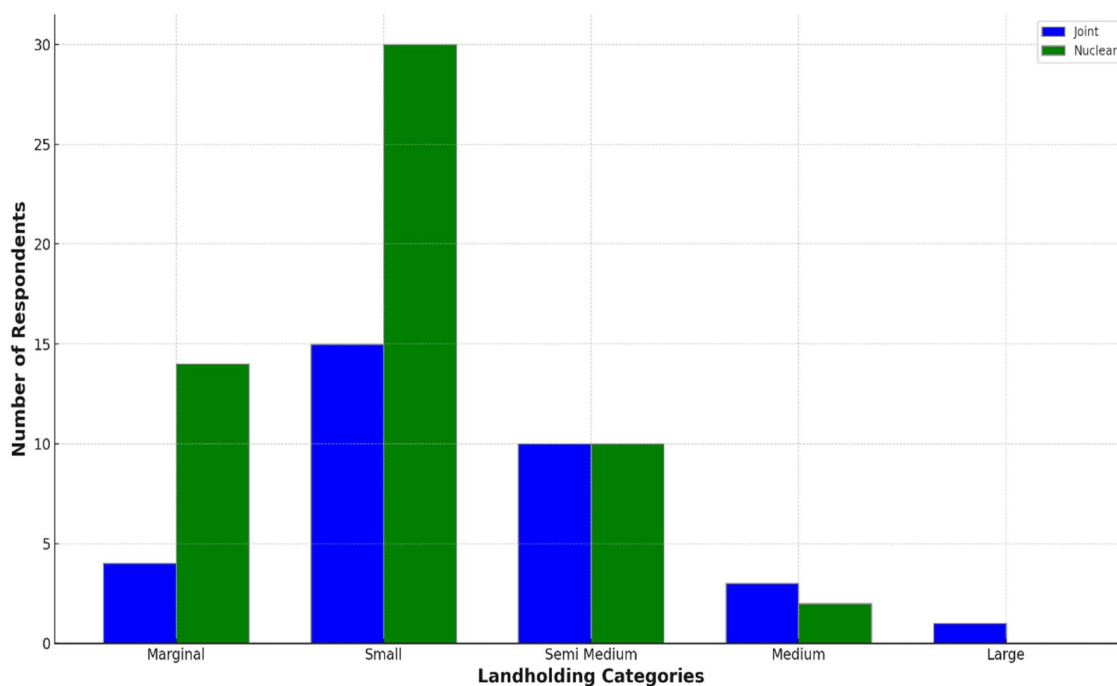


Fig.3.5 Distribution of Respondents based on their family type

Source of data – Table.4.6

- 1) For organic tomatoes data were collected through survey method. List of farmers data.
- 2) For inorganic tomatoes data were collected for sources like books, journal and through Wikipedia.

Sr. No.	Land Size of Respondents	Age	Factors Motivating towards cultivation of organic Tomato
1	Marginal	Less than 30	High Production
2	Small	Less than 30	High Production
3	Small	Less than 30	High Production
4	Semi Medium	Less than 30	High Production
5	Large	Less than 30	High Production
6	Marginal	30-40	High Production
7	Marginal	30-40	High Production
8	Small	30-40	High Production
9	Small	30-40	Increase Income
10	Semi Medium	30-40	Increase Income
11	Semi Medium	30-40	Increase Income
12	Medium	30-40	Increase Income
13	Large	30-40	Increase Income
14	Large	30-40	Increase Income
15	Marginal	40-50	Increase Income
16	Marginal	40-50	Increase Income
17	Small	40-50	Increase Income
18	Medium	40-50	Preventive Measures
19	Medium	40-50	Preventive Measures
20	Large	40-50	Preventive Measures
21	Semi Medium	40-50	Preventive Measures
22	Semi Medium	40-50	Preventive Measures
23	Semi Medium	40-50	Preventive Measures
24	Semi Medium	40-50	Preventive Measures
25	Marginal	Above 50	Preventive Measures
26	Small	Above 50	Preventive Measures
27	Small	Above 50	Dissatisfaction with current chemical
28	Medium	Above 50	Dissatisfaction with current chemical
29	Large	Above 50	Dissatisfaction with current chemical
30	Semi Medium	Above 50	Dissatisfaction with current chemical

CONCLUSION

The study explores the organic farming sector in Indore district and Madhya Pradesh, revealing awareness but gaps in knowledge about certification and challenges. Financial constraints and higher costs are major hurdles. Despite these, inclination towards organic farming is evident. The study recommends policy interventions, financial support, and capacity-building programs for sustainability and food security.

SUGGESTIONS

1. Implement targeted financial support and subsidies for organic farmers to offset the higher costs of organic inputs and labour.
2. Simplify the organic certification process and reduce associated fees to make it more accessible for small and medium-sized farms.
3. Enhance education and training programs focused on organic farming practices, pest management, and soil health to improve farmer knowledge and self-sufficiency.
4. Develop infrastructure and logistic support tailored to the needs of organic farmers, facilitating easier access to markets and reducing post-harvest losses.
5. Promote consumer awareness about the benefits of organic produce to increase demand and enable farmers to secure better prices for their products.

REFERENCES

Bhargava, Anjali. "Impact of Organic Farming on Tomato Yield: A Comparative Study in Madhya Pradesh." *International Journal of Agricultural Science*. 2020;48(7): 1345-1350.

Chaudhary, Nitin et al. "Consumer Preferences towards Organic Tomatoes in Indore: An Analysis." *Journal of Agribusiness and Rural Development*. 2021;16(2): 213-220.

Desai, Sunita. "Economic Analysis of Organic versus Conventional Tomato Farming." *Agricultural Economics Research Review*. 2019;32(1): 157-164.

Gupta, Rajesh. "Challenges in Organic Tomato Cultivation: A Case Study from Indore District." *Organic Agriculture Journal*. 2022;11(4): 310-319.

Jain, Akash. "Adoption of Integrated Pest Management Practices in Tomato Cultivation." *Indian Journal of Agricultural Sciences*. 2018;88(9): 1456-1461.

Kumar, Pradeep and Singh, R. "Market Access and Profitability in Organic Tomato Farming: Evidence from Madhya Pradesh." *Journal of Sustainable Agriculture*. 2021;45(3): 289-305.

Patel, Vishnu. "Soil Health Management in Organic Tomato Farming: Practices and Perspectives." *Journal of Soil Science and Plant Nutrition*. 2020;20(2): 456-467. "Tomato Cultivation Practices and Organic Certification Process."

Krishi Vigyan Kendra Bulletin. 2019;5(1). Verma, Anurag. "Role of Government Policies in Supporting Organic Tomato Farmers in India." *Policy Studies Journal*. 2022;39(4): 569-587.

Yadav, Sandeep. "Perceived Barriers to Organic Tomato Farming Among Smallholders in Indore." *Environmental Challenges*. 2021;3: 10007
