

SPATIAL ANALYSIS OF AGRITOURISM CENTERS IN SATARA DISTRICT

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Article Info	ABSTRACT
Article History: Received: 15th Dec 2025 Accepted: 19th Dec 2025 Published: 20th Dec 2025 Keywords: <i>Agritourism, Satara District, Spatial Analysis, Regional Disparity, Rural Development, GIS Mapping</i>	Satara District in Maharashtra has significant potential for agritourism due to its strong agricultural base and natural beauty. This study examines the spatial distribution and density of agritourism centers across 11 talukas to identify regional imbalances. Using GPS coordinates and secondary data from government records, the research calculates center density per 1,000 sq. km and maps these using QGIS software. The analysis reveals that out of 202 total centers, more than half are concentrated in the western talukas of Mahabaleshwar and Jaoli. Mahabaleshwar leads with 53 centers, benefiting from a cool climate, high rainfall, and established tourist traffic. In sharp contrast, the eastern talukas like Man and Khatav show negligible development. Most notably, Man taluka—the largest in the district—has zero centers due to severe water scarcity and drought conditions. Central talukas like Wai and Satara show moderate growth due to better road connectivity and cultural heritage. The study concludes that geographical area alone does not drive agritourism; rather, physical climate and infrastructure are the primary factors. To achieve balanced regional growth, the government should provide water conservation support (like farm ponds) and hospitality training for farmers in underdeveloped eastern regions. Linking these farms to existing tourism circuits is essential for sustainable rural development.

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Introduction

Agritourism represents a specialized niche within the broader tourism industry, functioning as a hybrid model that effectively combines agricultural activities with tourism services to offer visitors a comprehensive experience of rural life, traditional local culture, and diverse agricultural practices. This emerging sector has become a vital component of rural development strategies, as it facilitates robust economic growth, encourages meaningful cultural exchange, and promotes the conservation of the local environment. Within the state of Maharashtra, Satara District is recognized as a region with high developmental potential due to its dual strength: a deeply rooted agricultural base and a significant collection of natural and historical tourist attractions. The district's unique East-West gradient results in three parallel physiographic-cum-climatic zones, a geographical variation that is fundamental in determining land use patterns, local climates, and the specific types of farming and tourism experiences possible within the region.

Despite these inherent advantages, the growth of agritourism requires a sophisticated understanding of how these centers are organized across the landscape. The rich agricultural heritage and scenic beauty of Satara provide an immense platform for expansion, yet the current development must be scrutinized through a spatial lens to ensure sustainability. By analyzing the spatial distribution of these centers, researchers can identify specific clusters of high concentration and distinguish them from areas that remain underserved despite their latent potential. Such an analysis is essential for identifying the underlying geographical and infrastructural factors that influence where agritourism flourishes. Consequently, this study seeks to provide a detailed examination of the distribution patterns within Satara District, aiming to highlight areas of significant development and pinpoint regions where future planning can unlock new opportunities for rural progress.

Objectives

The present study has been undertaken to analyze the taluka-wise spatial distribution and density of agritourism centers in Satara District to identify regional disparities and potential areas for future development.

Study area

The Satara district is strategically positioned in the western part of Maharashtra, India, spanning a vast geographical area of 10,480 sq. km. Geographically situated between 17° 05' and 18° 11' north latitude, the district is administratively organized into 11 distinct tahsils. A defining characteristic of this region is its pronounced East-West gradient, which serves as the fundamental basis for categorizing the district into three parallel physiographic-cum-climatic zones. This environmental variation is the most critical factor for the spatial analysis of agritourism, as it directly dictates land-use patterns, local climatic conditions, and the specific types of farming and tourism feasible in each area.

The western zone, characterized by high rainfall and forest cover, contrasts sharply with the eastern drought-prone regions, creating a diverse landscape for agricultural potential. These variations determine whether a taluka supports high-density tourism, such as the strawberry cultivation in Mahabaleshwar, or faces constraints like the water scarcity observed in Man taluka. Understanding this physical framework is essential for identifying regional disparities, as geographical area alone does not determine agritourism development. Ultimately, this geographical diversity forms the foundation for site-

specific planning and the sustainable growth of rural tourism across the district.

Methodology

The methodology for this research is structured around a quantitative and spatial analytical framework, primarily utilizing secondary data sources to evaluate the agritourism landscape in Satara District. Data regarding the precise locations of agritourism centers were meticulously extracted from Google Earth, while the administrative and geographical area statistics for the eleven talukas were sourced from official district statistical handbooks and census records. Once collected, the data were systematically tabulated to calculate critical metrics, including the absolute percentage share of centers and the center density per 1,000 sq. km using the standard formula: $(\text{Number of Centers} / \text{Total Area}) \times 1,000$.

The spatial analysis was further refined by employing statistical and cartographic techniques to classify the district into high, moderate, and low concentration zones. This classification allowed for a comparative analysis between the western high-rainfall regions and the eastern drought-prone talukas, highlighting the influence of physical geography on tourism development. For spatial visualization, Geographic Information System (GIS) software, specifically QGIS, was utilized to generate choropleth maps. These maps provide a clear visual representation of the distribution patterns and density variations across the district, ensuring a robust spatial interpretation of the findings.

Review of Additional Studies on Agritourism

The following studies provide further context on the growth and challenges of agritourism at national and state levels:

1. **Socio-Economic Impacts in Pune:** Research shows that agritourism provides a reliable secondary source of income for farmers, particularly when traditional crop yields are threatened by climate variability (VidyaBharati, 2025).
2. **Marketing and Awareness Challenges:** Many farmers remain unaware of the full potential of agritourism due to a lack of formal training in hospitality and digital marketing (MANAGE, 2024).
3. **Urban-Rural Connectivity:** Studies on the Nashik district indicate that agritourism centers flourish when located near urban hubs, as city dwellers seek authentic "rural life" experiences like traditional food and farming activities (Gawali & Nile, 2025).
4. **Rural Development Pathways:** Agritourism acts as a tool for poverty alleviation by creating local employment opportunities for women and youth within their own villages (Sarkar, 2010).
5. **Sustainable Resource Management:** Large-scale tourism growth in high-density areas requires careful regulation to prevent the overuse of local natural resources and environmental degradation (Global Journal, 2023).

Scope of the Study

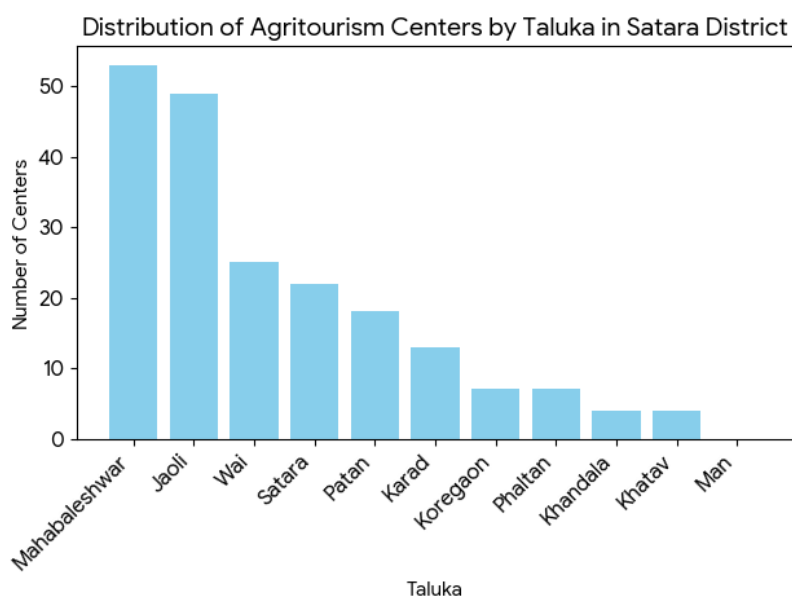
The study is confined to **Satara District of Maharashtra**. Present analysis is conducted at the **taluka level** for the reference year of available data.

Distribution of Agritourism Centers by Taluka:

This bar chart ranks each taluka by the absolute count of centers. It visually confirms the dominance of Mahabaleshwar) and Jaoli, which collectively account for \$102\$ of the \$202\$ total centers in the district.

Table 1: Agro Tourism Centers Satara District

Sr. No.	Talukas	Total Geographical Area (km ²)	Agro Tourism Centre (as per google map)	Density (sq.km)	Percentage (%)
1	Jaoli	596	49	0.082	24.257
2	Karad	1039	13	0.013	6.436
3	Khandala	523	04	0.008	1.980
4	Khatav	1364	4	0.003	1.980
5	Koregaon	912	7	0.008	3.465
6	Mahabaleshwar	470	53	0.113	26.238
7	Man	1483	00	0.000	0.000
8	Patan	1386	18	0.013	8.911
9	Phaltan	1172	7	0.006	3.465
10	Satara	911	22	0.024	10.891
11	Wai	624	25	0.040	12.376
Total		10480	202		100



1. Western Concentration and Climate- The spatial analysis reveals that the western part of Satara District, specifically Mahabaleshwar and Jaoli, dominates the agritourism sector. Together, these two talukas host 102 centers, which is more than 50% of the district's total 202 centers. Mahabaleshwar leads with 53 centers (26.24%) and a peak density of 0.113 centers per sq. km, while Jaoli follows with 49 centers (24.26%) and a density of 0.082. This clustering is primarily driven by the "cool climate, high rainfall, and forest cover" of the Sahyadri ranges, providing ideal conditions for strawberry farming and attracting high tourist inflows.

2. Eastern Decline and Water Scarcity- In contrast, the eastern talukas—Man, Khatav, Phaltan, and

Khandala—show very low development. Most notably, Man taluka, despite being the largest in the district at 1,483 sq. km, has zero centers. Similarly, Khatav (1,364 sq. km) has only 4 centers with a negligible density of 0.003, and Phaltan (1,172 sq. km) has just 7 centers. These areas suffer from "severe drought conditions and water scarcity," proving that geographical size alone does not determine agritourism success; rather, the harsh semi-arid climate acts as a significant barrier.

3. Transition Hubs and Awareness Gaps- Central talukas such as Wai (25 centers), Satara (22 centers), and Patan (18 centers) show moderate development levels. Wai benefits from a density of 0.040 due to its "fertile land and cultural heritage," while Satara's density of 0.024 is supported by "better road connectivity". However, growth in these and eastern regions is often limited by an "awareness gap," where farmers lack formal training in hospitality and digital marketing. This emphasizes that beyond natural climate, accessibility and professional knowledge are key drivers of spatial distribution.

4. Policy Needs for Balanced Growth- To resolve these regional disparities, the study suggests "region-specific planning and policy intervention". For the underdeveloped eastern belt, solutions must include water conservation projects like drip irrigation and farm ponds to make agritourism feasible. Additionally, providing financial subsidies and training programs in marketing and hospitality can help farmers in low-density areas like Koregaon (7 centers) and Karad (13 centers) diversify their livelihoods. Linking these areas to existing tourism circuits is essential for achieving "balanced regional development".

Suggestions for Agritourism Development

1. Focus on Underdeveloped Areas- Talukas like Man, Khatav, Khandala, Phaltan, and Koregaon have very few or no agritourism centers. The government should launch special programs specifically for these areas to help farmers understand how agritourism can provide an extra source of income beyond traditional farming.

2. Solve Water and Irrigation Problems- Eastern parts of the district, especially Man and Khatav, often face droughts. To make agritourism possible here, we need better water conservation, such as building farm ponds, using drip irrigation to save water, and improving local watershed management. This will keep farms green and attractive for tourists even in dry seasons.

3. Build Better Infrastructure- Many rural areas struggle with bad roads and a lack of basic facilities like clean toilets, electricity, and the internet. Improving rural roads and transport makes it easier for tourists to reach these farms, while providing good sanitation and internet makes their stay comfortable.

4. Educate and Train Farmers- Many farmers simply do not know how to start a tourism business. We should organize workshops, training sessions, and visits to successful farms. Farmers need to learn about hospitality (how to treat guests), basic management, and how to use the internet to reach customers.

5. Offer Different and Unique Experiences Instead of everyone doing the same thing, farms in low-density areas should show off what makes their specific region special. This could include traditional cooking, local folk music, rural festivals, or unique ways of raising livestock. This gives tourists a reason to visit new places.

6. Provide Money and Loans Starting an agritourism center costs money for building rooms and facilities. Banks and the government should offer low-interest loans, grants, or subsidies to help

farmers—especially those in poorer or dryer areas—get started without taking on too much debt.

7. Protect Nature in Busy Areas - Places like Mahabaleshwar and Jaoli are already very crowded with tourism centers. We must regulate growth in these spots so that the beautiful forests and natural resources are not destroyed by too many visitors or over-construction.

8. Use Better Marketing and Branding- The district should create a single "Satara Agritourism Brand" to promote all its farms. Using social media, websites, and working with travel agents can help put lesser-known talukas on the map so tourists know they exist.

9. Link Farms to Famous Landmarks- We should connect agritourism farms to existing tourist spots like famous temples, forts, or waterfalls. If a farm is on the way to a popular destination, more people are likely to stop by and spend time there.

10. Create Specific Local Policies- Since every part of Satara is different, we cannot have one rule for everyone. Each taluka needs its own plan that looks at its specific weather, types of crops, and local needs to ensure tourism grows fairly across the whole district.

Conclusion

The research shows a massive difference in how agritourism is spread across Satara District. Out of 202 centers in the whole region, more than half are found in just two places: Mahabaleshwar and Jaoli. Even though these areas are not the largest, they have the highest density of tourism because they offer exactly what visitors want: a cool climate, heavy rainfall, and beautiful green forests in the Sahyadri mountains. These natural advantages, combined with famous attractions like strawberry farms, make the western part of the district the main hub for rural tourism.

In contrast, the eastern side of the district, including talukas like Man, Khatav, Phaltan, and Khandala, has very few or even zero agritourism centers. The data reveals that being a large area does not guarantee success; for example, Man taluka is the biggest in the district but does not have a single center. These eastern regions struggle because they often face severe droughts and water shortages, which makes it hard to keep farms attractive for visitors. Meanwhile, central areas like Wai and Satara show a medium level of success because they have better roads and a mix of fertile land and historic sites.

To fix this imbalance, the study suggests that the government must create special plans for different parts of the district. For the dry eastern areas, the focus should be on saving water through farm ponds and modern irrigation so that farms can stay green year-round. Farmers also need training in how to use the internet for marketing and how to provide good hospitality to guests. By offering loans and building better rural roads, the district can help farmers in every taluka earn extra income, making sure that economic growth is shared fairly by everyone in the region.

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