Agritourism Development: Designing an Effective Model for Sustainable Growth

Eddy S. Yusuf1, and Suci Wulandari1

1National Research and Innovation Agency, Indonesia

Abstract. The emergence of agritourism has been accelerated by the COVID-19 pandemic. However, agritourism development faces various obstacles, most notably the absence of standard frameworks and models to guide their development. In addition, agritourism will be related to product characteristics and agricultural production systems that have a high risk, so it requires a specific model. This research introduces a systematic approach to agritourism development by constructing an effective model that aims to achieve sustainable growth in rural areas. To achieve this, the PRISMA method for literature study was used. It is an evidence-based minimum set of items for reporting in systematic reviews. There are several issues in agritourism development, including agribusiness management, impact management, institutional and support facilities, as well as risk mitigation, are also encountered. This study emphasizes the importance of model design in agritourism development, taking into account: dimensions of sustainability, involved actors, and support system. Strategies for sustainable agritourism development involve value addition through product and service diversification, sustainable marketing development, network and partnership development, environmental conservation, and empowerment of the local community. The findings of this study make a valuable contribution to the existing literature on agro-tourism development by offering a systematic approach and an effective model for promoting sustainable growth.

1 Introduction

Agritourism has become an increasingly important sector in the tourism industry, even in the midst of the ongoing pandemic [1]. The integration of agriculture, tourism, and rural life has created an appealing combination. From a macro perspective, agritourism is promoted by most of the countries in the world aiming at sustainable rural development [2]. Agritourism can deliver many economic and non-economic benefits to farmers, household, and community [3]. Agritourism has potential to reduce farm uncertainty by supplementing an additional income and creating a job opportunity in the rural sector [4].

However, starting and managing agritourism business can be a challenging and risky for farmers and agricultural entrepreneurs in the absence of a professional skills set [5]. The agritourism model should incorporate clear goals, objectives, and performance indicators,
while considering potential challenges and risks such as seasonality, infrastructure limitations, and supportive regulations. Agritourism development models can vary depending on factors such as the region, local resources, community goals, and tourism trends. While there is not a universally fixed agritourism development model, several approaches and frameworks have been used to guide the establishment and growth of agritourism destinations. To ensure the effectiveness of the agritourism development model, a systematic approach is crucial, as agritourism is associated with various issues at both the micro and macro levels [6]. Designing an effective model for agritourism development is essential to ensure sustainable growth in terms of economic, social, and environmental aspects [7]. Existing agritourism models have often lacked a comprehensive support system to address challenges and limitations.

This paper proposes a systemic agritourism development model, aiming for sustainable growth by integrating stakeholders and support systems. By adopting a systematic approach, stakeholders can ensure long-term sustainability and positive impacts of agritourism, which benefit the local community, environment, and overall economy.

Extrusion technique has been widely used in food industry production due to some advantages. The advantages of this technique are high productivity, various product shapes, and very economical process technology for producing a new product ([4], [5], and [6]). Non-wheat noodles have characteristics that differ from wheat noodles, so they must be treated differently during production. Several types of research have been conducted to make noodles from non-wheat material. Other researcher [7] reported the methods to make corn noodles such as calendaring, extrusion, and calendaring-extrusion combination. In another work, [8] utilized a small capacity plastic extruder of Scientific Laboratory Single Screw Extruder type LE25-30/C from Labtech Engineering Co. Ltd. Thailand with the capacity of 3 kg/h for producing corn noodles. In the other work [9], they used extrusion-cooking process to produce corn-broad bean spaghetti-type pasta. One of the drawbacks of the extrusion process is the high demand for energy. The energy is used to operate the motor drive, cooling system, heater, and electronic components. The highest energy consumption is used to run the motor drive [10]. It might be due to a combination of a process such as mixing, kneading, heating, etc., occurred inside the screw-barrel component.

This paper aimed to investigate two designed non-wheat noodles extruders. The first design had a wider screw-barrel clearance and lacked a cooling fan. The second extruder design had narrower screw-barrel clearance and had equipped with a cooling fan. The second design was an improvement of the first design. The first design had drawbacks, namely the occurrence of backflow of dough and temperature spiked during the process. Experimental studies observed the effect of different screw-barrel clearances on extruder performance in throughput and energy consumption at screw rotational speeds set at 30 and 40 rpm and the effect of the addition of a cooling fan on the stability of the operating temperature.

2 Research method

This study is a literature review conducted using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) method. PRISMA covers key aspects of the research process, including the identification and selection of studies, data extraction and synthesis, and presentation of results [8] [9]. Specifically, it consists of the following steps:
1. Defining the research objective. The objective of this study is to explore agritourism development from the perspective of an effective model for sustainable growth.

2. Identifying relevant sources. The literature used includes journals and proceedings published between 2014 and 2023 from google scholar which most are Scopus indexed.

3. Screening and selection. A literature search was conducted using keywords such as "agritourism development," "agritourism development model," "issues in sustainable agritourism development," and "strategies for sustainable agritourism development." At this stage, title and abstract reviews were conducted to assess their relevance to the research questions. The 42 relevant manuscripts were identified.

4. Extracting key information. Data mining was performed by analyzing the study's objectives, the methodology, the theoretical framework or model used, and the key findings generated. The information obtained is then grouped and analyzed, to then arrange the linkages.

5. Analyzing and synthesizing. An analysis of the extracted information was conducted to identify themes and discussions related to the research objective. The description includes: (1) identification of agritourism development model issues, (2) mapping issues, and (3) models and strategies for sustainable agritourism development.

3 Result and discussion

Agritourism combines elements of tourism and agriculture by offering visitors the opportunity to gain knowledge and direct experience related to farming practices, rural traditions, and the local environment [10]. Agritourism development refers to strategic efforts made to promote and expand agritourism activities in specific regions [11]. It involves planning, implementation, and management to foster the growth and sustainability of agritourism as a viable and beneficial sector. When considering the connection between agritourism and the Sustainable Development Goals (SDGs) [12] [13] [14], the relationship can be described as follows:

- Poverty Alleviation (SDG 1): Agritourism can be an important source of income for local communities, particularly in rural areas. By providing job opportunities, training, and local community participation in agritourism development, the industry can contribute significantly to poverty reduction and improve economic well-being.

- Sustainable Food (SDG 2): Agritourism is directly linked to food production and agriculture. Through sustainable farming practices such as agroecology, organic fertilizer use, and crop diversification, agritourism can help ensure food availability, increase productivity, and enhance food security.

- Health and Well-being (SDG 3): Agritourism can promote healthy lifestyles and well-being through approaches such as the use of organic food, introduction of healthy diets, and recreational activities in natural settings. Agritourism can also contribute to the development of medical tourism, providing access to healthcare and traditional treatments.

- Quality Education (SDG 4): Agritourism can serve as a means of informal education, particularly in introducing knowledge about agriculture, the environment, and sustainability. Through farm tours, educational gardens, or
outdoor learning programs, agritourism offers opportunities to enhance public understanding and awareness of important agricultural and environmental issues.

- Water and Land Resource Management (SDG 6): Sustainable agritourism requires wise management of water and land resources. By implementing sustainable farming practices, conserving water resources, and reducing soil erosion, agritourism can help maintain water quality and availability, as well as overall environmental sustainability.

- Climate Action (SDG 13): Agriculture and agritourism can contribute to climate change mitigation through the use of sustainable farming practices that reduce greenhouse gas emissions, enhance carbon sequestration in the soil, and promote renewable energy. Agritourism can also provide opportunities to raise public awareness about climate change and inspire more sustainable actions.

By recognizing and aligning with these SDGs, agritourism can play a significant role in promoting sustainable development and contributing to various aspects of societal well-being [15].

### 3.1 Identification of issues in developing an effective agritourism model for sustainable growth

In designing an effective agritourism development model for sustainable growth, several issues need to be considered, namely destination management, product quality and marketing, environmental sustainability, and local community involvement [16]. Agritourism destinations often face challenges related to seasonality, where visitor demand may be concentrated during specific periods [17]. Managing visitor flow and capacity during peak seasons while ensuring a sustainable visitor experience can be a challenge. Agritourism destinations need to strike a balance between functioning as a working agricultural operation and serving tourism activities. Maintaining consistent and high-quality agritourism products and services remains a challenge. Standardization in terms of safety protocols, cleanliness, customer service, and product marketing still needs improvement [16].

Agritourism is often associated with the agricultural sector, which can have negative environmental impacts such as deforestation, water quality decline, and biodiversity loss [18]. Ideally, agritourism should involve the local community as key stakeholders. However, local communities often do not receive fair benefits from agritourism development, both economically and socially [19].

### 3.2 Mapping issues in sustainable agritourism development

The issues in sustainable agritourism development will impact the long-term viability, balance, and positive impact of agritourism. These issues are related to: (1) agribusiness management, (2) impact management, (3) institutions and support facilities [20], and (4) risk mitigation [21].

**Agribusiness management**

- Density and Carrying Capacity. Popular agritourism destinations may face challenges related to density, especially during peak seasons. Inadequate infrastructure and visitor management strategies can lead to congestion, degradation of natural resources, and a decline in visitor experience.
• Seasonality and Economic Sustainability. Agritourism often exhibits seasonality, with peak and low visitor demand throughout the year. Over-reliance on specific seasons or events can lead to economic instability for agritourism operators and the local community. Diversifying product offerings, developing year-round attractions, and creating strategies beyond peak seasons are still not optimally implemented.

Impact management
• Economic Impacts. Economic leakage occurs when a significant portion of the income generated by agritourism activities leaves the local economy, benefiting suppliers or external companies instead. This happens due to the suboptimal use of local resources, local business development, and the lack of community-based tourism models.
• Environmental Impacts. Agritourism activities can have both positive and negative environmental impacts. Potential issues include soil erosion, water pollution, habitat destruction, excessive resource use, and disruption of wildlife.
• Socio-cultural Impacts. Agritourism can bring both positive and negative socio-cultural impacts to the local community. Positive impacts include cultural preservation, community pride, and economic opportunities. However, negative impacts such as increased commercialization, changes in local traditions and lifestyles, and conflicts between visitors and residents can arise.

Institutions and support facilities
• Regulation and Planning. Inadequate or inconsistent regulations, lack of planning frameworks, and limited law enforcement mechanisms can hinder the development of sustainable agritourism. Clear guidelines, zoning regulations, licensing procedures, and quality standards are needed to ensure responsible and sustainable practices.
• Education and Awareness. Lack of awareness and understanding of sustainable agritourism practices among farmers, agritourism operators, visitors, and policymakers can be significant barriers. Education and capacity-building programs are needed to promote sustainable farming methods, responsible tourism behavior, and the long-term benefits of sustainability.
• Technology and Innovation. The utilization of technology and innovation in agritourism can provide competitive advantages, but it is not yet fully optimized. The use of technology in agriculture, such as smart irrigation, soil sensors, or hydroponics, is still limited. Meanwhile, the use of information and communication technology (ICT) can enhance promotion, marketing, and visitor experiences but has only been implemented in specific regions.
• Infrastructure and Accessibility. Adequate infrastructure availability, such as roads, transportation, accommodations, and other supporting facilities, is not evenly distributed.

Risk mitigation
• Market Risks. Agritourism is dependent on fluctuating market demand. Changing tourist trends, economic recessions, travel policy changes, or global crises can impact the number of visitors and agritourism revenue. Limitations in conducting proper market research, product diversification and marketing, and establishing
partnerships with travel agents and tour operators have resulted in high market risks.

- Financial Risks. Agritourism development requires significant initial investments, such as infrastructure development, equipment purchases, or marketing promotions. Financial risks include unexpected expenses, reliance on external funding, or fluctuations in production costs.

### 3.3 Model and strategies for sustainable agritourism development

The dominant condition currently faced by agritourism is not yet optimal governance which has an impact on its sustainability, therefore a systematic framework in the form of a model is needed to guide the planning, implementation and management of agritourism. This helps ensure that all important aspects are considered and dealt with in a coordinated manner. Due to the various challenges and constraints faced by agritourism as well as limited capabilities and capacities, a strategy is needed that will encourage increased agritourism performance based on an integrative model approach.

#### 3.3.1 Sustainable agritourism development model

A model provides a systematic framework to guide the planning, implementation, and management of agritourism initiatives. It helps ensure that all essential aspects are considered and addressed in a coordinated manner. A model refers to a simplified representation or description of a system that helps understand and analyze its behavior, interactions, and dynamics. In systems thinking, a model is a tool used to gain insights into complex systems and explore the relationships and feedback loops among various elements within the system. The model of agritourism development refers to a conceptual framework or approach that outlines the key elements and processes involved in establishing and growing agritourism activities within a specific context from sustainable, support system, and actor perspective (Figure 2). Designing a development model for agritourism requires a systematic approach or agritourism-specific plan [22] as a strategic step to enhance its performance [23].

From a sustainability perspective, designing a model for agritourism development needs to consider the balanced dimensions of economics, social, and environmental aspects. Sustainable agritourism development encompasses economic, social, and environmental dimensions. The following factors emerge from each of these dimensions:

**Economic Dimension**

- Economic Growth. Agritourism can contribute to the local economy by generating income and employment opportunities for farmers, local businesses, and service providers. It can diversify the rural economy and reduce dependence on traditional agricultural activities [24].
- Entrepreneurship and Business Development. Agritourism encourages entrepreneurship and new business development [25]. Farmers can create additional income streams by offering farming experiences, accommodation on agricultural land, or value-added products. This promotes innovation and fosters rural entrepreneurship.
- Value Chain Development. Agritourism often involves collaboration along the value chain, connecting farmers with other actors such as food processors,
restaurants, and retailers. This promotes local sourcing and supports the growth of food-related businesses [26].

**Social Dimension**

- Community Engagement. Agritourism can strengthen community bonds by involving local residents in the development and operation of agritourism initiatives. It encourages interactions between visitors and local residents, promoting cultural exchange and understanding [27].
- Cultural Preservation. Agritourism helps preserve local traditions, cultural heritage, and traditional farming practices. It provides opportunities to showcase local art, crafts, music, and cuisine, fostering pride and cultural identity within the community [28].
- Education and Awareness. Agritourism offers educational experiences for visitors, enhancing their understanding of agriculture, food production, and rural lifestyles. It increases awareness of sustainability, environmental conservation, and the importance [29].

**Environmental Dimension**

- Sustainable Land Use. Agritourism promotes responsible land use practices, encouraging the preservation of rural landscapes, open spaces, and biodiversity. It can help protect agricultural land from urbanization pressures and contribute to the conservation of natural resources [30].
- Environmental Management. Agritourism provides opportunities for farmers to adopt sustainable agricultural practices such as organic farming, agroforestry, or conservation farming. This promotes environmental management and the use of environmentally friendly practices to minimize environmental impacts [31].
- Conservation and Ecotourism. Agritourism can integrate with conservation efforts, such as wildlife habitat restoration, sustainable forestry, or wetland conservation. It can facilitate ecotourism activities that enhance awareness and support environmental conservation initiatives [32].

From a support system perspective, agritourism development is influenced by the availability of various forms of support [33] including knowledge sharing platforms [34], information and communication technology (ICT) [35], financial support [36], and infrastructure [37]. These support mechanisms facilitate the exchange of knowledge and best practices among stakeholders, enable effective communication and marketing strategies through ICT tools, provide funding opportunities for agritourism initiatives, and ensure the presence of necessary infrastructure such as transportation, accommodation, and facilities for a seamless visitor experience.

From an actor perspective, an effective agritourism development model should involve active participation from various stakeholders [37] [38] [39]. The key actors in agritourism include:

1. Farmers. Farmers provide the foundation for agritourism by opening their farms and agricultural lands to visitors.
2. Agro-processors. Agroindustry provide attractive agricultural products, services, and experiences for visitors.
3. SMEs. SMEs in agritourism contribute to local and regional economic growth by generating income and employment opportunities. They create direct and indirect jobs in various sectors, such as agriculture, hospitality, transportation, food
3.3.2 Strategies for sustainable agritourism development

Agritourism development model has become an important issue, but its application is still limited due to the capacity and ability of agritourism actors. Therefore a comprehensive strategy is needed based on the model previously described. In agritourism development, a strategy refers to a deliberate and planned approach to achieve the goals and objectives of developing and promoting agritourism activities within a specific destination. It involves making informed decisions about resource allocation, target markets, product development, marketing, and other key aspects of the development process. Strategies for sustainable agritourism development are:

- **Value Addition**: A strategy for sustainable agritourism development involves increasing value addition through product and service diversification [40]. Developing unique agritourism products such as organic products, local cuisine, handicrafts, or educational experiences can enhance the attractiveness to tourists and provide greater economic benefits to the local community.

- **Sustainable Marketing Development**: Sustainable marketing strategies involve environmentally and socially responsible promotion. In order to sustain the growth of agritourism destinations, the presence of effective marketing materials is essential as they serve as fundamental tools [41]. This can include environmentally-friendly online marketing, promoting local products, using social media to raise awareness about sustainability, and collaborating with sustainable travel agencies.

- **Network and Partnership Development**: Building strong networks and partnerships among agritourism stakeholders, including government, local communities, the tourism industry, and educational or research institutions, is an important strategy. Effective collaboration can facilitate knowledge exchange, resource sharing, financial support [41], and the promotion of best practices in sustainable agritourism development.

- **Environmental Conservation**: Integrating sustainability principles into agritourism management is a crucial strategy. This includes protecting and restoring existing processing, and handicrafts. This helps diversify the rural economy and reduce dependency on traditional agricultural activities.

4. **Local Communities**: Local communities provide the necessary infrastructure, support, and services to accommodate visitors.

5. **Tourists and Visitors**: Their interest and demand for agritourism experiences drive the growth of the tourism sector.

6. **Government**: Government entities and policy makers play a vital role in creating an enabling environment for agritourism development. They establish regulations, incentives, and supportive mechanisms that facilitate agritourism growth. The government can also contribute by providing infrastructure development, marketing support, and funding opportunities.

7. **Tourism Organizations and Associations**: Tourism organizations and associations, at the regional, national, or international level, can support agritourism development through marketing opportunities, promotion, and networking. They often provide platforms for collaboration and knowledge-sharing among stakeholders.

8. **Environmental and Cultural Conservation Groups**: Conservation groups play a significant role in agritourism development by advocating for sustainable practices that preserve natural and cultural heritage.
ecosystems, reducing the use of harmful chemicals, implementing sustainable farming practices, and managing waste wisely. Environmental conservation helps preserve biodiversity, maintain soil and water quality, and reduce negative impacts on the environment [42].

- **Empowering Local Communities:** Engaging and empowering local communities is a key strategy in sustainable agritourism development. This involves collaborating with the local community, involving them in decision-making processes, providing training and skills, and sharing economic benefits. By involving the local community, agritourism can have a positive impact on local income, employment, and quality of life [42].

These strategies are aimed at promoting the sustainable development of agritourism, considering economic, social, and environmental aspects. By implementing these strategies, agritourism can contribute to the local economy, preserve cultural and natural heritage, and create a positive experience for tourists while minimizing negative impacts on the environment.

### 4 Conclusions

This study has presented a comprehensive exploration of agritourism development and proposed an effective model to achieve sustainable growth in rural areas. Through a systematic approach, this research highlights the importance of integrating agriculture and tourism to create mutually beneficial relationships that promote economic, social, and environmental sustainability. Some important issues relate to: (1) agribusiness management, (2) impact anticipation, (3) institutional and support facilities, and (4) risk mitigation.

The importance of model design in agritourism development, considering the dimensions of sustainability and involved actors. From a sustainability perspective, designing a model for agritourism development needs to consider the balanced dimensions of: (1) economics, (2) social, and (3) environmental dimension. The following factors emerge from each of these dimensions: economic growth, entrepreneurship and business development, value chain development, community engagement, cultural preservation, education and awareness, sustainable land use, environmental management, also conservation and ecotourism. From support systems, agritourism development is influenced by the availability of support in the form of knowledge sharing platforms, information and communication technology, financial support, and infrastructure. From an actor perspective, an effective agritourism development model should involve active participation from (1) farmers and agro-processors, (2) local communities, (3) tourists and visitors, (4) government and policy makers, (5) tourism organizations and associations, and (6) environmental and cultural conservation groups.

Strategies for sustainable agritourism development involve value addition through product and service diversification, sustainable marketing development, network and partnership development, environmental conservation, and empowerment of the local community. These strategies aim to create a holistic and balanced approach to agritourism development, where economic growth is coupled with environmental stewardship, cultural preservation, and community well-being. Implementing strategies can be tailored to accommodate the unique requirements and contextual nuances inherent to various types and characteristics of agritourism. Detailing is imperative to catalyze the transformation of the conceptual model into tangible actualization, thereby giving rise to a dynamic agritourism landscape distinguished by a harmonious trajectory of economic advancement,
conscientious environmental stewardship, resilient cultural heritage preservation, and robust community well-being.

References


