

Integration of Customary Law and Ethnoecological Concepts in Supporting Sustainable Agricultural Practices

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ABSTRACT

This study aims to describe the role of customary law and the concept of ethnoecology in supporting sustainable agricultural practices, while analyzing their integration as a model of agriculture based on local wisdom. The study used a qualitative approach with field study and literature study methods. Primary data were obtained through in-depth interviews, participatory observation, and focus group discussions with customary leaders and farmers, while secondary data were obtained from customary documents and related literature. Data analysis was conducted using the interactive model of Miles & Huberman through data reduction, data presentation, and drawing conclusions through source triangulation. The results show that customary law plays a role as a local regulation in agricultural management, while ethnoecology exists as a technical practice that maintains ecosystem balance. The integration of the two forms a sustainable agricultural system, not only increasing productivity but also maintaining environmental sustainability and strengthening social solidarity. This study confirms that customary law not only has social value but is also an ecological instrument relevant to modern sustainable agriculture.

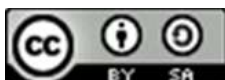
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INTRODUCTION

Sustainable agriculture has become an increasingly pressing global issue as environmental degradation, climate change, and declining soil fertility threaten global food security. Unsustainable agricultural practices, such as excessive use of pesticides and chemical fertilizers, massive land clearing, and the exploitation of natural resources without regard for their carrying capacity, have accelerated ecosystem degradation (Farooq et al., 2019).

On the other hand, climate change presents new challenges in the form of unpredictable weather patterns, droughts, floods, and increased pest infestations, which directly impact agricultural productivity. The decline in soil fertility is also increasingly evident due to erosion, organic degradation, and minimal conservation practices. Therefore, sustainable agriculture presents a solution that not only emphasizes productivity but also maintains ecological balance, improves farmer welfare, and ensures food security for future generations (Adhiyatma & Pandjaitan, 2024).

Indigenous communities have customary laws that regulate land management, distribution of profits, and wise use of natural resources, which are deeply rooted in cultural values, local wisdom, and the principle of balance with nature (Fatristya & Sarjan, 2024). These rules serve not only as social guidelines but also as ecological mechanisms that maintain environmental sustainability and ensure the continuity of resources for future generations. In practice, customary law regulates cropping



patterns, land rotation, forest use, and the equitable distribution of harvests, thus creating harmony between economic, social, and ecological needs.

The existence of customary law also strengthens community solidarity, reduces conflict, and instills a sense of collective responsibility for environmental sustainability. Thus, customary law is not merely a traditional legacy but also a relevant local knowledge system to support the concept of sustainable development in the modern era (Sarbaitinil et al., 2023).

The concept of ethnoecology describes a harmonious relationship between society and nature that is built through traditional knowledge passed down across generations (Turner et al., 2022). Ethnoecology views nature not only as an economic resource but also as an integral part of a community's social, cultural, and spiritual life. Through local knowledge, communities are able to understand ecosystem patterns, natural cycles, plant and animal species, and environmental management procedures in harmony with their carrying capacity. These practices are then embodied in traditional agricultural systems, customary rituals, and local wisdom that emphasize the principles of balance and sustainability.

Thus, ethnoecology demonstrates that traditional knowledge contributes significantly to environmental sustainability and supports community well-being. In a modern context, this concept is relevant as a reference in formulating sustainable development strategies that are not solely technology-oriented but also value local knowledge as social and ecological capital (Verawati & Wardani, 2025).

The integration of customary law and ethnoecology is believed to be an alternative model for sustainable agriculture because both are based on local wisdom that emphasizes balance between humans and nature. Customary law provides normative rules governing land management, profit-sharing systems, and the fair and wise use of natural resources, thereby minimizing conflict and maintaining community solidarity (Putri et al., 2025).

Meanwhile, ethnoecology provides a foundation of ecological knowledge proven by long-standing community experience in environmental management, such as cropping patterns, land rotation, soil fertility maintenance, and forest protection. By combining these two concepts, agricultural practices not only pursue productivity but also maintain ecosystem sustainability, reduce environmental degradation, and strengthen local food security. This integrative model can be an innovative solution to address global challenges such as climate change and the food crisis, while simultaneously encouraging the empowerment of indigenous communities as key actors in sustainable development (Hariram et al., 2023).

However, agricultural modernization and top-down policies often ignore the role of customary law and local knowledge which have been proven to maintain a balance between human needs and environmental sustainability (Pakidi & Tambaip, 2025). Modernization programs tend to emphasize technical aspects and short-term productivity through the use of superior seeds, chemical fertilizers, and mechanization, without paying attention to ecological sustainability or the socio-cultural values of indigenous communities.

As a result, traditional practices based on customary law and ethnoecology are marginalized, even considered outdated, even though these systems hold great potential for creating environmentally friendly, climate-resilient, and socially just agriculture. This top-down approach also often results in uniform policies that are not contextualized to local conditions, resulting in a mismatch between government programs and the real needs of the community (Mulder, 2023). Thus, there is an urgency to reintegrate customary law and local knowledge into the formulation of

sustainable agricultural policies to create an inclusive, adaptive, and locally wisdom-based development model.

This research is crucial for re-examining the role of customary law and ethnoecology in supporting sustainable agriculture and strengthening food security, given that both are proven forms of local wisdom that maintain harmony between humans and nature. Customary law provides a normative foundation for land management, distribution of produce, and equitable utilization of natural resources, while ethnoecology provides traditional ecological knowledge that can maintain soil fertility, preserve biodiversity, and adapt agricultural practices to environmental dynamics (Faculty of Law, Padjadjaran University et al., 2020).

In the context of the global food crisis, environmental degradation, and increasingly complex climate change, reexamining the roles of both is relevant to offer alternative agricultural models that are not only productive but also sustainable. Thus, this research is expected to make a real contribution to strengthening food security, preserving the environment, and empowering indigenous communities as key actors in sustainable agricultural development (Ngga'a & Haryanto, 2025).

Most research on sustainable agriculture is still dominated by a modern technological perspective, neglecting local perspectives steeped in traditional wisdom. Research on customary law generally focuses solely on social or legal-formal aspects, without directly linking them to sustainable agricultural practices. Meanwhile, ethnoecological studies are more descriptive of traditional knowledge, but have not yet integrated it into a customary legal framework as a comprehensive management system.

This situation demonstrates the lack of comprehensive studies integrating customary law and ethnoecology into sustainable agricultural practices. Thus, there is a crucial research gap that needs to be filled to develop agricultural models that are not only productive and environmentally friendly but also rooted in the cultural values and local knowledge of indigenous communities.

The novelty of this research lies in its interdisciplinary approach, combining customary law and ethnoecology as a foundation for realizing sustainable agriculture. This research not only offers a conceptual model based on local wisdom but also serves as a strategic reference in formulating environmentally friendly agricultural development policies.

Customary law is positioned not merely as a social regulation, but also as an ecological instrument that functions to maintain the balance of nature through land management, distribution of produce, and wise use of resources. By exploring local practices that have proven sustainable, this research presents alternative solutions to the increasingly pressing environmental and food crises, while strengthening the role of indigenous communities in the development of inclusive and equitable modern agriculture.

The purpose of this study is to describe the role of customary law in the management of local community agriculture, analyze ethnoecological values that support sustainable agricultural practices, and examine the integration between customary law and ethnoecological concepts as a model for sustainable agriculture. Furthermore, this study also aims to provide recommendations based on local wisdom that can be used as a basis for formulating sustainable agricultural policies, thereby addressing the challenges of environmental degradation, climate change, and the food crisis while maintaining ecological balance and strengthening the role of indigenous communities as key actors in sustainable agricultural development.

METHODS

This research method uses a qualitative approach with an interpretative paradigm that focuses on understanding the meaning, values, and practices of society related to customary law and ethnoecology (Lobja et al., 2025). The research type includes field research to explore the direct practices of indigenous communities and library research to strengthen theoretical analysis. The research location was determined in indigenous communities or areas that still apply customary law in agricultural management. Data sources consist of primary data in the form of in-depth interviews, participatory observation, and focus group discussions (FGDs), as well as secondary data in the form of customary law documents, historical records, academic literature, and regulations related to sustainable agriculture.

Data collection techniques were conducted through interviews, observation, documentation, and FGDs. Informants were selected through purposive sampling (traditional figures, farmers, community leaders, NGOs, academics) and snowball sampling. Data analysis used the Miles & Huberman interactive model, which includes data reduction, data presentation, and drawing/verifying conclusions through triangulation of sources, methods, and theories (Ikhsandi & Ramadan, 2021). Data validity is maintained through triangulation, member checks, and audit trails, while research ethics emphasize respect for local values and wisdom, maintaining informant confidentiality, and obtaining informed consent.

RESULTS AND DISCUSSION

The research results show that customary law plays an important role in agricultural management by regulating land systems, crop rotation, harvest distribution, prohibiting excessive land clearing and regulating planting/cutting times to maintain ecosystem balance, along with the implementation of customary sanctions for violators who damage the environment. From an ethnoecological perspective, communities utilize local knowledge to determine planting seasons based on natural signs, implement crop diversification, use traditional organic fertilizers, and maintain agroforestry systems and water conservation based on local wisdom.

The integration of customary law and ethnoecology appears to be complementary, with customary law serving as a regulatory umbrella, while ethnoecology serves as a technical practice that maintains the sustainability of natural resources while strengthening the values of togetherness, mutual cooperation, and community adherence to customary rules. Consequently, this agricultural practice can reduce the risk of land degradation, increase local food security through an environmentally friendly approach, and develop a model of agriculture based on local wisdom that has the potential to be replicated in other regions.

Table 1. Miles & Huberman Model Data Analysis

Analysis Stage	Process	Field Data Example	Results/Findings
Data Reduction	Filter and focus important data	Interview with traditional leaders: "We prohibit opening new land without customary permission."	Customary law functions as a controller of land exploitation

	Grouping data according to theme	Observation: farmers use natural signs (wind, rain, stars) to determine the planting season.	Ethnoecological knowledge is still practiced
Data Display (Presentation)	Presenting data in tables, matrices, or narratives	Table of integration of customary law & ethnoecology	Makes it easier to see the relationship between variables
Conclusion Drawing & Verification	Interpreting patterns, relationships, and meaning	Customary law (rules) + Ethnoecology (technical practices) → sustainable agriculture	The integration of the two produces an agricultural model based on local wisdom that supports sustainability.

Source: 2025 Data Processing Results

This table describes the qualitative data analysis process through three stages: data reduction, data presentation, and drawing/verifying conclusions. With this model, field data is processed into more focused, structured, and meaningful findings to support the research argument.

Table 2. Data Triangulation (for validity)

Data source	Method	Findings	Confirmation
Traditional Figures	Interview	Customary law regulates crop rotation and prohibits clearing land.	Strengthened by customary law documents
Local Farmers	Observation	Still applying organic fertilizer & intercropping pattern	Same as interview results
Customary Documents/Archives	Documentation	Customary notes on sanctions for environmental violations	In accordance with field practice

Source: 2025 Data Processing Results

This table demonstrates how to maintain data validity through comparisons between sources (traditional leaders, farmers, traditional documents) and between methods (interviews, observations, documentation). Triangulation ensures that the data obtained is consistent and scientifically accountable.

Customary Law as an Ecological Instrument

Customary law in indigenous communities not only functions as a social tool that regulates relations between individuals and communities, but also has an important ecological role in maintaining the balance of nature (Pertiwi et al., 2025). Customary laws regarding land management, planting patterns, and natural resource utilization are established not only to create social order but also to ensure environmental sustainability. Prohibitions on excessive land clearing, obligations to maintain soil fertility, and regulations on planting and harvesting times are concrete examples of how customary law contributes to ecosystem preservation. Thus, customary law can be viewed as an ecological instrument inherent in community life and serves to maintain harmony between humans and nature.

Community compliance with customary law creates more effective social control than formal regulations, because customary rules arise from mutual agreement and are deeply rooted in cultural values and local wisdom (Fadli, 2024). The customary sanctions applied are not merely punitive but also contain moral and spiritual dimensions that foster greater community compliance. This makes customary law easier to accept and implement than top-down policies that are often incompatible with local conditions. In the context of sustainable agriculture, adherence to customary law not only strengthens social solidarity but also reinforces collective responsibility for maintaining environmental sustainability and food security.

Ethnoecology as Local Ecological Knowledge

These findings demonstrate that traditional practices passed down through generations can support the principles of modern sustainable agriculture, particularly because the values of local wisdom they embody emphasize a balance between productivity and environmental sustainability. The crop rotation system, the use of natural organic fertilizers, and the implementation of agroforestry practiced by indigenous communities align with the concept of environmentally friendly agriculture, which is now a global trend. In other words, traditional practices are not only relevant but also have great potential to be developed as alternative models that support the sustainable agriculture agenda in a more contextual way. (Kamakaula & Uria, 2025).

Furthermore, traditional knowledge has proven to be more adaptive to climate change because it is based on communities' long experience in reading natural signs. This wisdom enables local farmers to adapt planting patterns to weather dynamics, anticipate the risk of crop failure, and maintain food security at the community level. This local knowledge-based adaptation offers an important perspective that agricultural development should not rely solely on modern technology but rather should integrate traditional experiences that have proven resilient to environmental changes over time (Sakapaji (Ph.D.), 2021).

Synergy of Customary Law and Ethnoecology

The integration of customary law and ethnoecology creates an agricultural system that is not only productivity-oriented but also emphasizes sustainability and environmental preservation. Customary law serves as a normative foundation that regulates land management, distribution of produce, and community behavior in utilizing natural resources, thus creating strong social control and ensuring community compliance (Febrianto & Meta, 2025). Meanwhile, ethnoecology presents technical knowledge gained from communities' long experience in wisely managing ecosystems, such as determining planting seasons based on natural signs, using organic fertilizers, crop diversification, and water and forest conservation.

By combining the two, agricultural practices become more adaptive to climate change while maintaining ecological balance without sacrificing yields. Customary law ensures that rules are universally adhered to, while ethnoecology provides technical guidelines that can be directly applied in daily farming activities. This synergy produces an agricultural model based on local wisdom that is environmentally friendly, strengthens food security, and has the potential to be replicated in other regions as an alternative solution to the challenges of the global food crisis and environmental degradation (Luthfi et al., 2025).

Theoretical and Practical Implications

Theoretically, this research strengthens the interdisciplinary study of law, anthropology, and ecology by demonstrating that customary law and ethnoecology are inseparable in understanding sustainable agricultural practices. The integration of the two broadens the academic perspective that customary rules are not only social norms but also ecological instruments that function to maintain the balance of nature, while ethnoecology provides empirical evidence of how local knowledge can adapt to environmental dynamics. Thus, this research contributes to the development of theory on the relationship between society, law, and ecosystems within the framework of sustainable development (Gerri Parto et al., 2024).

Practically, this research provides a foundation for formulating sustainable agricultural development policies based on local wisdom. Findings regarding the role of customary law in regulating land management, as well as ethnoecological practices in maintaining soil fertility and conserving resources, can serve as references in developing more inclusive, adaptive, and contextual agricultural strategies. This not only strengthens local food security but also encourages the government and stakeholders to involve indigenous communities as key actors in environmentally friendly and socially just agricultural development.

CONCLUSIONS

The conclusion of this study confirms that customary law plays a crucial role in regulating agricultural management, encompassing land use, planting and harvesting times, and the imposition of sanctions on violators proven to maintain ecosystem balance while creating social order. On the other hand, the concept of ethnoecology is still practiced by communities through determining planting seasons based on natural signs, the use of organic fertilizers, crop diversification, and water and forest conservation, which significantly support environmentally friendly agriculture. The integration of the two forms a sustainable agricultural system, where customary law serves as an umbrella for regulation and social control, while ethnoecology serves as the technical basis for cultivation practices, resulting in agriculture that is not only economically productive but also capable of preserving the environment and strengthening social solidarity. This study also demonstrates the novelty that customary law functions not only socially but also as an ecological instrument, while ethnoecology serves as local knowledge relevant to sustainable agricultural issues. The implication of these findings is the need for recognition and support for customary law and local knowledge in national agricultural policies so that local wisdom can serve as the basis for sustainable agricultural development.

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