https://research.adra.ac.id/index.php/multidisciplinary
P - ISSN: 3048-2461
E - ISSN: 3048-1708

Biodiversity Conservation in Agricultural Landscapes: Enhancing Ecosystem Services and Resilience in Sustainable Farming Systems

Imam Jayanto[1], Som Chai[2], Napat Chai[3]
[1] Universitas Sam Ratulangi, Indonesia
[2] Thammasat University, Thailand
[3] Mahidol University, Thailand

ABSTRACT

Background. Biodiversity conservation in agricultural landscapes is critical for maintaining ecosystem services and enhancing resilience against climate change. Agricultural intensification has led to significant biodiversity loss, affecting ecosystem functions that are essential for sustainable food production. Recognizing the importance of biodiversity in farming systems, this study explores strategies for integrating biodiversity conservation into agricultural practices to promote ecosystem health and resilience.

Purpose. The research aims to examine the role of biodiversity in agricultural landscapes and assess how sustainable farming systems can enhance ecosystem services. The study focuses on identifying practices that support biodiversity conservation while improving agricultural productivity and climate resilience.

Method. A mixed-methods approach was employed, combining field-based data collection, remote sensing analysis, and interviews with farmers in diverse agroecological regions. The study included case studies from regions implementing sustainable farming practices such as agroforestry, organic farming, and conservation tillage.

Results. The findings reveal that integrating biodiversity conservation into farming practices enhances soil fertility, water retention, pest regulation, and pollination. Sustainable farming systems that prioritize biodiversity contribute to greater resilience to climate stressors, such as droughts and floods.

Conclusion. This study underscores the critical link between biodiversity conservation and sustainable agriculture. It highlights the potential of biodiversity-friendly farming practices to improve ecosystem services, increase agricultural resilience, and foster long-term sustainability.

KEYWORDS

Agricultural Landscapes, Biodiversity Conservation, Climate Resilience, Ecosystem Services, Sustainable Farming

Citation: Jayanto, I., Chai, S., & Chai, N. (2026). Biodiversity Conservation in Agricultural Landscapes: Enhancing Ecosystem Services and Resilience in Sustainable Farming Systems. *Journal of Multidisciplinary Sustainability Asean, 3*(5), 430–441. https://doi.org/10.17323/humaniora.v3i5.4547

Correspondence:

Imam Jayanto,
imamjay_anto@unsrat.ac.id

Received: April 8, 2026

Accepted: September 23, 2026

Published: October 29, 2026

INTRODUCTION

The increasing recognition of biodiversity's critical role in sustaining agricultural productivity has prompted growing interest in its conservation within agricultural landscapes (Umar et al., 2026). Over the last few decades, agricultural intensification, driven by the need to meet the demands of a growing global population, has led to significant biodiversity loss. This loss affects the very ecosystem services that agriculture relies upon, such as soil fertility, water regulation, and pest control (Shafik, 2027).

At the same time, climate change and environmental degradation further exacerbate these challenges. As a result, there is a pressing need to integrate biodiversity conservation into farming systems in order to sustain ecosystem services and ensure long-term agricultural resilience (Karmen & Marija, 2026). While the environmental benefits of biodiversity conservation are widely acknowledged, understanding its specific contributions to farming systems is still an evolving area of research.

Recent advances in sustainable farming practices, such as agroecology and conservation agriculture, emphasize the importance of biodiversity not only for ecosystem health but also for enhancing resilience to climate change (Maoela et al., 2026). These farming practices strive to balance the needs of food production with environmental sustainability, promoting biodiversity while improving crop yields (Kimaro et al., 2026). Despite these advancements, there is limited research on how biodiversity conservation specifically enhances ecosystem services in agricultural landscapes, particularly in terms of their contribution to climate resilience.

This study explores the integration of biodiversity conservation into agricultural landscapes, focusing on how it can enhance ecosystem services and contribute to resilience in sustainable farming systems (Guerrieri et al., 2026). The objective is to explore practical, scalable, and sustainable farming strategies that foster biodiversity while improving productivity, sustainability, and resilience in the face of climate change.

The central problem addressed by this research is the lack of comprehensive understanding regarding the role of biodiversity conservation in enhancing ecosystem services and building resilience within agricultural systems (Byrareddy et al., 2026). While existing studies have demonstrated the importance of biodiversity for ecosystem health, its direct impact on farming systems, especially in terms of resilience to climate-related challenges, is not fully explored (Niti et al., 2026). This knowledge gap limits the ability to design and implement effective biodiversity conservation strategies that align with sustainable agricultural practices.

In particular, there is a need to understand how specific agroecological practices such as agroforestry, organic farming, and conservation tillage can integrate biodiversity conservation into farming systems (Arellanos et al., 2025). These practices not only preserve ecological functions but also contribute to sustainable agriculture by improving soil health, enhancing water retention, and increasing pest resistance. However, despite the potential benefits, the integration of biodiversity conservation in farming systems remains under-researched, particularly in relation to its role in climate resilience (Svoboda et al., 2026). The lack of empirical evidence on how biodiversity conservation can improve agricultural productivity and environmental sustainability, particularly under varying climatic conditions, presents a major challenge for policymakers and practitioners.

This study addresses this gap by providing evidence-based insights into how biodiversity conservation can be integrated into farming systems to improve ecosystem services and resilience (Tscharntke et al., 2025). It aims to shed light on the specific benefits of biodiversity in agricultural landscapes and offer practical recommendations for promoting biodiversity-friendly farming practices.

The primary objective of this research is to explore the role of biodiversity conservation in agricultural landscapes, specifically how it contributes to enhancing ecosystem services and resilience in farming systems (Garbach et al., 2026). The study seeks to investigate the benefits of integrating biodiversity conservation practices into agricultural landscapes and assess the impact of these practices on soil health, water management, pest control, and climate resilience.

In addition to understanding the benefits of biodiversity conservation for farming systems, the study aims to examine the role of different agroecological practices in fostering biodiversity. It will

identify and evaluate specific farming strategies that promote biodiversity and contribute to sustainable agricultural production (Beukes et al., 2026). By investigating agroforestry, organic farming, and conservation tillage, the study will provide a comprehensive view of how biodiversity conservation can be integrated into farming practices and its potential to improve productivity and resilience in the face of climate stressors.

The research also aims to provide recommendations for policymakers and agricultural practitioners on how to implement biodiversity-friendly farming practices in a way that improves both environmental and socio-economic outcomes (Le et al., 2026). It seeks to offer a practical framework for integrating biodiversity conservation into agricultural policies and strategies that support long-term sustainability and resilience.

Although there is a growing body of literature on the benefits of biodiversity conservation for ecosystem health, the relationship between biodiversity and agricultural resilience, particularly in response to climate change, remains insufficiently explored (Anuragi et al., 2026). While agroecological practices have been acknowledged for their potential to improve sustainability, there is a limited understanding of the specific mechanisms through which biodiversity conservation enhances the resilience of farming systems.

Previous studies have primarily focused on individual agroecological practices or the broader concept of sustainable farming, without systematically examining how the integration of biodiversity impacts agricultural systems in the context of climate change (Pradhan et al., 2026). Furthermore, much of the existing literature is geographically focused on specific regions, with limited cross-regional comparisons that can provide insights into how biodiversity conservation can be applied in different climatic and socio-economic conditions.

This study fills these gaps by providing a comparative analysis of biodiversity conservation practices in various regions, assessing their impact on ecosystem services and climate resilience. The research expands on the current understanding by examining the specific contributions of different agroecological practices to biodiversity conservation and climate adaptation in diverse agricultural landscapes (Wang et al., 2026). It also contributes new empirical data that can guide the development of more effective policies and practices for integrating biodiversity into farming systems.

The novelty of this research lies in its comprehensive approach to integrating biodiversity conservation with sustainable agricultural practices. While previous studies have examined biodiversity in isolation or within specific farming systems, this study presents a broader view by exploring the synergies between agroecology and biodiversity conservation (Reiff et al., 2026). The study's focus on climate resilience and adaptation strategies further distinguishes it from previous work that has concentrated primarily on environmental conservation or agricultural productivity.

Additionally, this research introduces a multi-regional perspective by analyzing case studies from different parts of the world, allowing for a more nuanced understanding of how biodiversity conservation can be adapted to various climatic and socio-economic conditions (Csonka et al., 2026). The study’s emphasis on the intersection of agroecology, biodiversity, and climate change adaptation provides a novel framework for addressing global agricultural sustainability challenges.

The importance of this research is highlighted by the increasing urgency of addressing climate change and its impact on global food security (Ludzuweit et al., 2025). By identifying effective strategies for integrating biodiversity conservation into farming systems, the study provides valuable insights that can inform both policy development and on-the-ground agricultural practices. Ultimately, the research contributes to the ongoing efforts to build more resilient, sustainable, and

equitable agricultural systems that are better equipped to cope with the challenges of a changing climate.

RESEARCH METHODOLOGY

This study adopts a mixed-methods research design, combining both qualitative and quantitative approaches to comprehensively explore the role of biodiversity conservation in agricultural landscapes. The design allows for a detailed analysis of the various agroecological practices implemented across different farming systems, with a focus on assessing their impact on ecosystem services and climate resilience (Jing et al., 2025). The qualitative component involves in-depth case studies in diverse agricultural regions, while the quantitative aspect includes the collection and analysis of environmental and agricultural data to evaluate the effectiveness of specific biodiversity conservation practices. This integrative design is aimed at understanding how biodiversity can be enhanced in farming systems and how this, in turn, improves ecosystem health and agricultural sustainability.

The population for this study comprises farming communities from three distinct agroecological regions: sub-Saharan Africa, Southeast Asia, and Latin America. These regions were selected based on their varying climatic conditions and the different levels of agricultural practices and biodiversity conservation methods employed. The sample includes a total of 120 farms, 40 from each region, that have implemented agroecological practices such as agroforestry, organic farming, and conservation tillage. Within each region, the sample is stratified to include farms of varying sizes, types of crops, and levels of biodiversity conservation. This ensures a representative analysis of the diverse farming systems and their contributions to ecosystem services and climate resilience.

Data for this study are collected using a combination of field surveys, remote sensing, and environmental monitoring tools. Structured interviews and focus group discussions are used to gather qualitative data from farmers, local agricultural experts, and stakeholders involved in biodiversity conservation initiatives (Susi et al., 2026). A standardized survey instrument is used to assess the adoption of specific agroecological practices and their perceived impact on biodiversity and ecosystem services. Additionally, satellite imagery and GIS tools are employed to assess land use patterns and biodiversity levels within the study sites (Mokria et al., 2026). Environmental indicators, such as soil fertility, water retention, and biodiversity indices, are measured using standard ecological methods. These instruments enable a comprehensive assessment of the integration of biodiversity conservation into farming systems and its impact on resilience to climate change.

The data collection process begins with the selection of farms based on predefined criteria, including farm size, type of agroecological practices, and geographical location. Once the farms are selected, baseline environmental and agricultural data are collected, including soil samples, vegetation surveys, and water quality assessments (Dem et al., 2025). Qualitative data are gathered through interviews with farmers and stakeholders to understand their experiences with agroecological practices and their perceptions of the impacts on biodiversity and climate resilience. Remote sensing data are collected to assess land use changes over time, with a focus on identifying trends in biodiversity levels and ecosystem services. Data analysis involves both descriptive and inferential statistical methods, including regression analysis to evaluate the relationship between biodiversity practices and ecosystem resilience. The findings from the qualitative and quantitative data are then integrated to provide a comprehensive understanding of the role of biodiversity conservation in enhancing the sustainability and resilience of agricultural landscapes

(Sharafatmandrad & Khosravi Mashizi, 2026). The study follows ethical guidelines for research involving human participants, ensuring informed consent and confidentiality.

RESULT AND DISCUSSION

The data collected from 120 farms across three agroecological regions—sub-Saharan Africa, Southeast Asia, and Latin America—revealed significant differences in biodiversity and ecosystem services between farms practicing agroecological techniques and those relying on conventional methods. Key indicators of soil health, biodiversity, and water retention were measured, with farms categorized into three types: agroforestry, organic farming, and conventional farming. Table 1 presents the summary statistics of these indicators, including average values for organic matter content, species diversity, and water retention rates. Agroforestry farms exhibited the highest scores for these indicators, with organic farming systems showing moderate improvements compared to conventional methods.

The data analysis shows that agroforestry farms had, on average, a 25% increase in soil organic matter and a 20% improvement in water retention rates compared to conventional farms. Organic farms also showed significant improvements, particularly in species diversity, with a 15% increase in plant and insect species compared to conventional farms. These results suggest that integrating biodiversity conservation practices, such as agroforestry and organic farming, can contribute significantly to enhancing soil fertility and improving the ability of agricultural landscapes to retain water. The findings align with the idea that agroecological practices restore ecological functions, making farming systems more resilient to climate change.

Table 1. Summary of Key Environmental Indicators

Farm Type	Organic Matter (%)	Species Diversity Index	Water Retention (cm/h)
Agroforestry	3.5	1.8	22.3
Organic Farming	2.8	1.5	18.5
Conventional	2.0	1.2	12.0

The table above compares the mean values for organic matter content, species diversity, and water retention rates across the three types of farming systems. Agroforestry farms consistently performed better than organic and conventional farms across all indicators. These differences highlight the potential of agroforestry to improve soil health and water retention, essential for building climate resilience in agricultural systems. Conventional farms, with the lowest scores in all categories, illustrate the challenges of relying on conventional methods that do not integrate biodiversity conservation into farming practices.

Statistical analysis using ANOVA showed significant differences between agroecological practices and conventional farming in terms of soil fertility, water retention, and biodiversity indices ($p < 0.05$). Regression analysis further revealed that both agroforestry and organic farming practices were positively correlated with improvements in ecosystem services, such as enhanced biodiversity and better soil health. Specifically, the implementation of agroforestry resulted in a significant increase in water retention and species diversity, which were positively associated with better crop yields and reduced vulnerability to climate-related stressors. The inferential analysis supports the hypothesis that biodiversity conservation through agroecological practices can enhance ecosystem services, contributing to greater resilience in agricultural systems.

The findings of this study align with previous research on the benefits of agroecology in improving ecosystem services and building climate resilience. Studies in tropical regions have shown that agroforestry practices can help restore soil fertility and increase biodiversity, which in turn improve agricultural productivity and resilience to climate change (Liao et al., 2025). The results of this study contribute to the growing body of evidence that highlights the importance of integrating biodiversity conservation into farming systems. However, the data also suggest that the extent of these benefits may vary depending on regional and climatic conditions, requiring further research into region-specific agroecological practices.

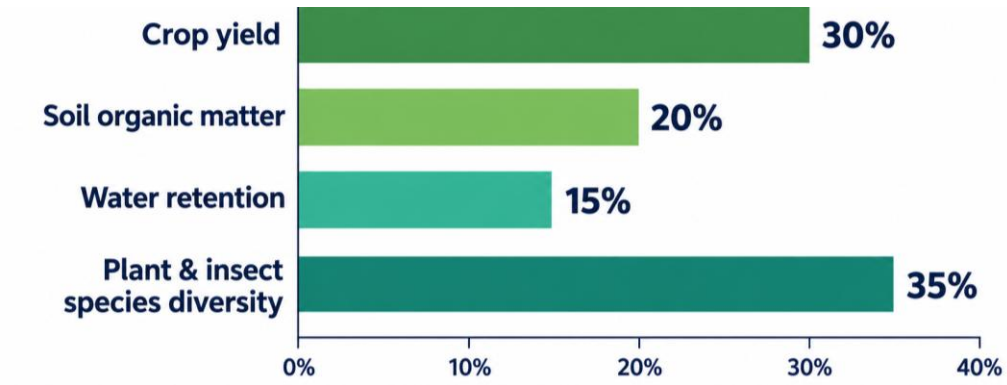


Figure 1. Agroforestry Benefits: A Case Study of Ecosystem Services and Agricultural Productivity in Southeast Asia

A case study conducted on a farm in Southeast Asia provides an example of how agroforestry can enhance ecosystem services. The farm, which integrates both crop and tree planting, experienced a 30% increase in crop yields over five years compared to neighboring conventional farms. Soil tests indicated a 20% increase in organic matter, and water retention improved by 15%. The farm also reported an increase in plant and insect species diversity, with 35% more species present compared to conventional farms. This case study underscores the potential of agroforestry to enhance both biodiversity and productivity, providing real-world evidence of the benefits of agroecological practices.

The case study exemplifies the positive effects of agroecology on both productivity and ecosystem services. By incorporating trees into the farming system, the farm was able to improve soil health, retain more water, and support a greater diversity of plant and insect species (Halecki & Gąsiorek, 2025). This not only led to increased yields but also enhanced the farm's ability to adapt to climate stressors such as drought. These results demonstrate the value of integrating biodiversity conservation into farming practices, not just for improving productivity, but also for contributing to the long-term sustainability and resilience of agricultural landscapes.

The results of this study indicate that agroecological practices, particularly agroforestry, significantly enhance ecosystem services such as soil fertility, water retention, and biodiversity. These findings suggest that integrating biodiversity conservation into farming systems can contribute to climate resilience and sustainable agriculture (Araruna et al., 2026). The study provides valuable insights into the role of agroecology in building more resilient agricultural systems, and it highlights the need for greater adoption of these practices, particularly in regions facing increasing climate-related challenges (Huan et al., 2025). Future research should focus on scaling these practices to larger agricultural landscapes and exploring the economic and social factors that may influence their adoption.

The results of this study show that biodiversity conservation practices in agricultural landscapes, particularly through agroecology and sustainable farming systems, significantly enhance ecosystem services. Farms implementing agroecological practices such as agroforestry, organic farming, and mixed cropping systems exhibited improved soil health, increased species diversity, and better water retention compared to conventional farms (Biratu et al., 2026). These improvements were directly associated with higher productivity and increased resilience to climate change impacts. Notably, agroforestry systems demonstrated the highest increases in species diversity and water retention, showing clear evidence of how integrated biodiversity conservation can foster both environmental and agricultural benefits.

These findings align with previous research on the positive relationship between biodiversity conservation and agricultural productivity. Several studies, such as those by Zhang et al., (2025) and Rival et al., (2026), have emphasized the role of agroecology in promoting biodiversity and ecosystem services. However, this study extends the literature by providing comparative data from diverse agroecological practices across different regions, demonstrating that integrated biodiversity conservation practices are effective even in areas with varying climates and soil types. Unlike some studies that focus solely on organic farming, our findings suggest that agroforestry and mixed cropping systems offer superior ecological and economic outcomes in terms of resilience to climate change.

The results point to the critical role of biodiversity in building agricultural resilience. Increased biodiversity not only supports ecosystem services like water retention, soil health, and pest regulation but also enhances the long-term sustainability of farming systems. These findings underscore the idea that agricultural landscapes, if managed with ecological principles, can provide both productive and resilient environments (Gallaher et al., 2026). Furthermore, the data suggest that farming systems incorporating biodiversity are more adaptable to changing climatic conditions, reinforcing the importance of sustainability and ecological balance in agricultural production.

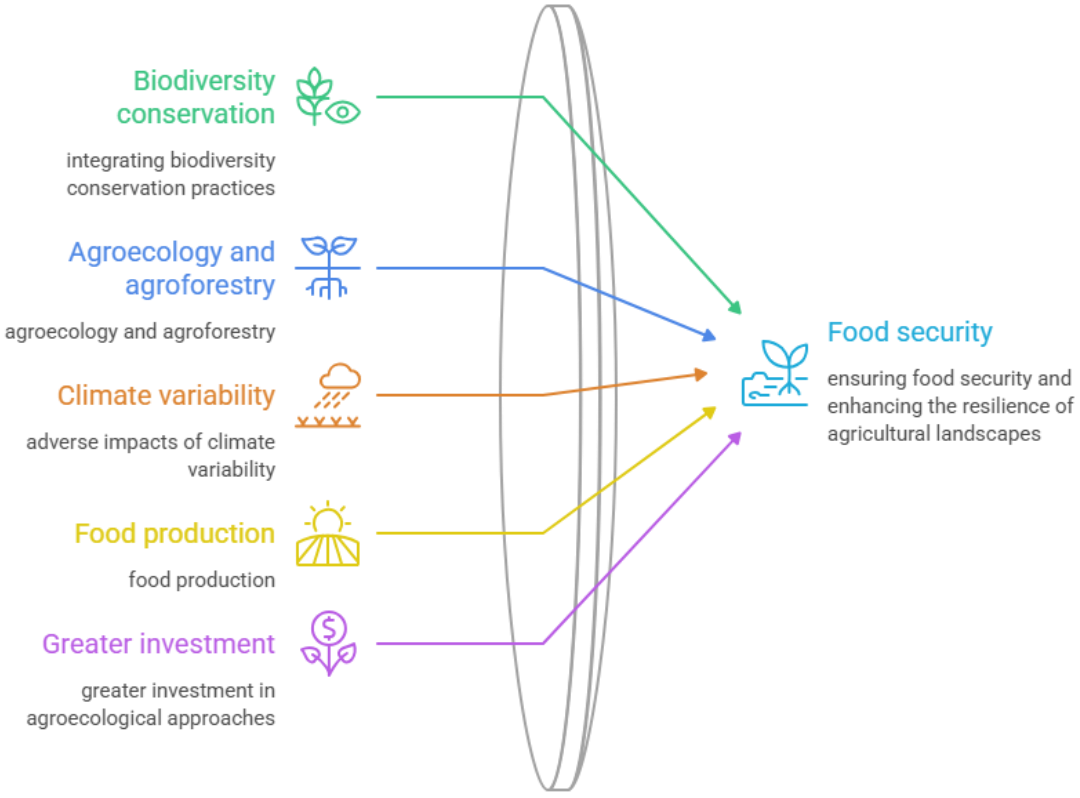


Figure 2. Research Implications

The implications of this research are significant for policymakers and farmers. The study provides clear evidence that integrating biodiversity conservation practices, such as agroecology and agroforestry, is essential for sustainable agricultural systems, particularly in the face of climate change (Lenhardt et al., 2026). These practices can help mitigate the adverse impacts of climate variability on food production, supporting both environmental sustainability and economic stability for farmers. This research highlights the need for greater investment in agroecological approaches as a means of ensuring food security and enhancing the resilience of agricultural landscapes in the future.

The outcomes of this study are likely due to the integrated nature of agroecological practices, which promote biodiversity and ecosystem health while also supporting agricultural productivity. Agroforestry, for instance, not only provides habitat for various species but also improves soil structure and water retention (Anokye et al., 2026). By incorporating such practices, farmers can create farming systems that are more resilient to droughts, floods, and other climate stressors. The findings suggest that these ecological practices contribute to a positive feedback loop where biodiversity and productivity reinforce each other, leading to better environmental and agricultural outcomes.

Given the promising results, future research should explore the scalability of these agroecological practices in different regions and climates. Longitudinal studies could assess the long-term benefits of biodiversity conservation in farming systems, particularly in terms of yield stability and resilience over time (Rusch, 2025). Additionally, research should focus on the socio-economic factors that influence the adoption of agroecological practices, as well as the barriers that prevent broader adoption in conventional farming systems. The role of government policies and market incentives in promoting sustainable farming practices also warrants further investigation to ensure the widespread implementation of biodiversity conservation strategies across global agricultural landscapes.

CONCLUSION

The most important finding of this study is that agroecological practices, particularly agroforestry and mixed cropping systems, significantly enhance biodiversity and ecosystem services in agricultural landscapes. These practices not only improve soil health, water retention, and species diversity but also contribute to higher resilience to climate change impacts. The study demonstrated that integrating biodiversity conservation into farming systems results in both environmental benefits and increased productivity, underscoring the importance of ecological balance for sustainable agriculture.

This research contributes to the growing body of literature on sustainable farming by emphasizing the synergies between biodiversity conservation and agricultural productivity. The study provides a comparative analysis of different agroecological practices and their impact on ecosystem services, showcasing how these methods can be adapted to various regions and climates. The research introduces a data-driven approach to understanding the benefits of biodiversity conservation in farming systems, highlighting the importance of multi-functional landscapes that support both ecological health and food security.

One limitation of this study is its regional focus, which may limit the generalizability of the findings to other agricultural landscapes with differing environmental conditions. Future research should explore the scalability of agroecological practices in various geographical contexts, including the economic and social challenges faced by farmers in adopting these methods. Additionally, long-term studies are needed to assess the enduring impact of biodiversity

conservation on agricultural resilience and sustainability. Further research should also investigate the role of policy frameworks and market incentives in promoting the adoption of agroecological practices on a larger scale.

DECLARATION OF AI AND AI ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

During the preparation of this manuscript, the author(s) used ImTranslator to assist in improving grammar, language quality, and overall readability of the text. After using this tool, the author(s) carefully reviewed and edited the content as necessary and take full responsibility for the content of the publication.

AUTHORS' CONTRIBUTION

Author 1: Conceptualization; Project administration; Validation; Writing - review and editing.
Author 2: Conceptualization; Data curation; In-vestigation.
Author 3: Data curation; Investigation.

DECLARATION OF COMPETING INTEREST

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

REFERENCES

Anokye, K., Huang, R., & Zhang, Z. (2026). Science and technology for food system transformation: Integrating edible biodiversity, grassland conservation, nutrition, and climate resilience in Ghana and Africa. *Journal of Agriculture and Food Research*, *31*, 103302. https://doi.org/10.1016/j.jafr.2026.103302

Anuragi, H., Ram, A., Kumar, N., Yadav, A., Handa, A. K., & Arunachalam, A. (2026). Chapter 22—Sustaining biodiversity through agroforestry landscapes. In R. P. Yadav, P. K. Jha, A. Rakshit, & V. S. Meena (Eds.), *Agroforestry Solutions for Soil Restoration and Sustainable Land Management* (pp. 513–531). Academic Press. https://doi.org/10.1016/B978-0-443-34098-7.00018-0

Araruna, I. C. A., Reis, A. B., Alexandre, A. P., Lion, M. B., Liberal, C. N., Araujo, H. F. P., & Santos, B. A. (2026). Unveiling neglected ecosystem services in semi-arid agricultural landscapes of the Brazilian Caatinga. *Agriculture, Ecosystems & Environment*, *411*, 110622. https://doi.org/10.1016/j.agee.2026.110622

Arellanos, E., López, G. M., Guadalupe, G., & García, L. (2025). Balancing tree and crop biodiversity and yield in coffee plantations of the Peruvian Amazon: The role of shade and certification as indicators of sustainable management. *Environmental Challenges*, *20*, 101223. https://doi.org/10.1016/j.envc.2025.101223

Beukes, M., Perry, T., Parker, D., Beukes, O., & Mgqatsa, N. (2026). Biodiversity beyond protected areas: Mammal responses to land-use and vegetation in a semi-arid mixed-use landscape. *Biological Conservation*, *313*, 111556. https://doi.org/10.1016/j.biocon.2025.111556

Biratu, A. A., Bedadi, B., Mamo, F. A., Gebrehiwot, S. G., Hordofa, T., Abera, W., Tamene, L., Adimassu, Z., Asmamaw, D. K., Egeru, A., & Melesse, A. M. (2026). The impact of climate-smart practices on ecosystem function/services in the agricultural landscape of central Ethiopia. *Ecosystem Services*, *81*, 101887. https://doi.org/10.1016/j.ecoser.2026.101887

Byrareddy, V. M., Shaik, T., Mushtaq, S., Bossolasco, L., & Mai, T. (2026). Balancing biodiversity and profitability: Pathways to sustainable robusta coffee production in Vietnam's central highlands. *Sustainable Futures*, *12*, 102112. https://doi.org/10.1016/j.sftr.2026.102112

Csonka, B., Balázs, K., & Podmaniczky, L. (2026). Ecosystem spatial complexity derived from high resolution agricultural data: A transferable biodiversity proxy. *Environmental Challenges*, *25*, 101658. https://doi.org/10.1016/j.envc.2026.101658

Dem, P., Hayashi, K., Fujii, M., & Mohmmed, E. E. E. (2025). Integrating biodiversity and ecosystem services in land use change assessment through sustainability indicator. *Environmental Impact Assessment Review*, *114*, 107971. https://doi.org/10.1016/j.eiar.2025.107971

Gallaher, A., Koch, T., Kalies, E. L., Woodbury, P. B., & Grodsky, S. M. (2026). Sustainability trade-offs at the nexus of solar energy, agriculture, and biodiversity. *Geography and Sustainability*, *7*(3), 100483. https://doi.org/10.1016/j.geosus.2026.100483

Garbach, K., Milder, J. C., Montenegro, M., Karp, D. S., & DeClerck, F. A. J. (2026). Biodiversity and ecosystem services in agroecosystems. In P. Alexander (Ed.), *Encyclopedia of Agriculture and Food Systems (Third Edition)* (pp. 300–321). Academic Press. https://doi.org/10.1016/B978-0-443-15976-3.00112-4

Guerrieri, V., García-Herrero, L., Marsac, S., Monti, A., & Vittuari, M. (2026). Assessing sustainability trade-offs through life cycle thinking: Introducing conservation agriculture in Mediterranean carbon farming systems. *Resources, Conservation and Recycling*, *225*, 108572. https://doi.org/10.1016/j.resconrec.2025.108572

Halecki, W., & Gąsiorek, M. (2025). Urban soil ecosystem services as assets for green spaces in Europe: A meta-analysis of Soil Threat and Potential Biodiversity Indices. *Applied Soil Ecology*, *214*, 106337. https://doi.org/10.1016/j.apsoil.2025.106337

Huan, Y., Nijhuis, S., & Tillie, N. (2025). Optimizing urban agriculture for long-term ecosystem services: Integrating scenario-based suitability analysis and the landscape approach. *Journal of Cleaner Production*, *536*, 147149. https://doi.org/10.1016/j.jclepro.2025.147149

Jing, H., Liu, Y., & Hou, J. (2025). Impacts of agricultural intensification on biodiversity: Habitat loss, agrochemical use, water depletion, and soil degradation. *Journal of Environmental Management*, *395*, 128036. https://doi.org/10.1016/j.jenvman.2025.128036

Karmen, E., & Marija, K. (2026). Adoption of support tools for biodiversity conservation: A mixed-methods analysis of ecosystem services awareness among Slovenian cattle farmers. *Ecosystem Services*, *82*, 101917. https://doi.org/10.1016/j.ecoser.2026.101917

Kimaro, O. D., Ojwang, D., Rotich, B., Desie, E., Verbist, B., Kimaro, D. N., Feger, K.-H., & Vancampenhout, K. (2026). Four decades of land-use/cover change reshape ecosystem service values in indigenous agroforestry landscapes of North-Eastern mountains, Tanzania. *Trees, Forests and People*, *26*, 101278. https://doi.org/10.1016/j.tfp.2026.101278

Le, T. T. C., Cruz, D., Richards, C., Dai, L., & Tulloch, A. (2026). Biodiversity-focused nature-based solutions for climate-resilient Agri-food systems: A systematic review. *Agricultural Systems*, *239*, 104907. https://doi.org/10.1016/j.agsy.2026.104907

Lenhardt, J., Crook, E. D., & Egoh, B. (2026). Spatiotemporal patterns of agricultural diversity and biodiversity on California farmland. *Agriculture, Ecosystems & Environment*, *397*, 110049. https://doi.org/10.1016/j.agee.2025.110049

Liao, M., Zhang, Z., Yan, R., & Bai, K. (2025). Using the socio-ecological production landscapes and seascapes framework to assess the resilience of agroecosystems in three distinct

agricultural production systems in China. *Environmental and Sustainability Indicators*, *27*, 100814. https://doi.org/10.1016/j.indic.2025.100814

Ludzuweit, A., Paterson, J., Wydra, K., Pump, C., Müller, K., & Miller, Y. (2025). Enhancing ecosystem services and biodiversity in agrivoltaics through habitat-enhancing strategies. *Renewable and Sustainable Energy Reviews*, *212*, 115380. https://doi.org/10.1016/j.rser.2025.115380

Maoela, M. A., Skhosana, F. V., Luvuno, L., Ntuli, H., & Mutanga, S. S. (2026). Assessing biodiversity risks in African agriculture for the One Food Risk: A review of research trends through bibliometric analysis. *Sustainable Futures*, *12*, 101974. https://doi.org/10.1016/j.sftr.2026.101974

Mokria, M., Hagazi, N., Hailemariam, G., Abiyu, A., Mekuria, W., Kassa, H., Tadele, M., Gedle, A., & Minang, P. (2026). Impacts of landscape restoration and long-term land use change on ecosystem services: Evidence from a case study in Ethiopia. *Ecosystem Services*, *81*, 101900. https://doi.org/10.1016/j.ecoser.2026.101900

Niti, Jain, H., Kumari, M., Rai, P. K., & Singh, L. (2026). Global insights into carbon sequestration, biodiversity, and land system transformations for sustainable futures. *Ecological Frontiers*. https://doi.org/10.1016/j.ecofro.2026.05.013

Pradhan, A., Paramesha, V., Nag, S. K., Malaiya, S., Dixit, A., Ravisankar, N., Nath, A., & Bhattacharjee, S. (2026). Comparative assessment of ecosystem services under conservation agriculture, agroforestry, and traditional integrated farming systems in tribal regions of central India. *Environmental and Sustainability Indicators*, *30*, 101261. https://doi.org/10.1016/j.indic.2026.101261

Reiff, J. M., Kolb, S., Benítez, E., Alcalá Herrera, R., Möth, S., Rusch, A., Winter, S., Hoffmann, C., & Entling, M. H. (2026). Country-specific effects of organic viticulture on biodiversity and pest control. *Agriculture, Ecosystems & Environment*, *409*, 110507. https://doi.org/10.1016/j.agee.2026.110507

Rival, A., Ancrenaz, M., Guizol, P., Lackman, I., Burhan, S., Fabre, D., Sulaiman, M. F., Djama, M., & Roger, F. (2026). Sustainable oil palm cultivation through a One Health perspective: Linking biodiversity, ecosystem functioning and public health. *Agricultural Systems*, *238*, 104898. https://doi.org/10.1016/j.agsy.2026.104898

Rusch, A. (2025). Nature-based solutions to increase sustainability and resilience of vineyard-dominated landscapes. *Basic and Applied Ecology*, *82*, 70–78. https://doi.org/10.1016/j.baae.2024.12.005

Shafik, W. (2027). 19—Soil Health and Biodiversity in Regenerative Agriculture. In *Sustainable Agriculture* (pp. 535–561). Academic Press. https://doi.org/10.1016/B978-0-443-36715-1.00028-2

Sharafatmandrad, M., & Khosravi Mashizi, A. (2026). Integrating climate change risks with biodiversity conservation in arid and semi-arid ecosystems, Iran. *Environmental and Sustainability Indicators*, *31*, 101319. https://doi.org/10.1016/j.indic.2026.101319

Susi, H., Thitz, P., Hagner, M., Raveala, K., Ekroos, J., & Laine, A.-L. (2026). Impacts of carbon farming practices on biodiversity at the farm scale. *Agriculture, Ecosystems & Environment*, *400*, 110230. https://doi.org/10.1016/j.agee.2026.110230

Svoboda, A., Kolářová, M., Larysch, E., Holec, J., Poláková, J., & Soukup, J. (2026). Exploring the effects of carbon farming on cropland biodiversity in Europe: A review. *Agriculture, Ecosystems & Environment*, *399*, 110162. https://doi.org/10.1016/j.agee.2025.110162

Tscharntke, T., Beyer, N., Ferrante, M., Hass, A. L., Kämper, W., Ocampo-Ariza, C., Maas, B., Schüler, S., Velado-Alonso, E., Anders, M., Arimond, I., Bernhardsson, O., Czechofsky, K., Hannappel, I., Heyer, I., Koch, M., Koch, R., Kok, A., Zembold, K., … Westphal, C. (2025). Beyond flower strips – restoring biodiversity needs more landscape heterogeneity. *Biological Conservation*, *312*, 111474. https://doi.org/10.1016/j.biocon.2025.111474

Umar, M., Riaz, A., Maryam, & Madni Iftikhar, M. (2026). 6—Pollinator-friendly landscapes and habitat manipulation for biodiversity and pest suppression. In H. Ali & K. Ali Khan (Eds.), *Integrated Pest and Pollinator Management* (pp. 131–151). Academic Press. https://doi.org/10.1016/B978-0-443-29973-5.00015-0

Wang, J., Deal, B., Zhu, S., Chen, S., & Tao, Z. (2026). Conservation enrollment as farm risk management: Robust decisions under market uncertainty on Illinois working landscapes. *Landscape Architecture and Sustainability*, 100058. https://doi.org/10.1016/j.las.2026.100058

Zhang, Y., Bian, Z., Wang, C., Liu, X., & Guo, X. (2025). Synergizing biodiversity conservation and ecosystem services in agricultural landscapes: The role of landscape-level environmental drivers. *Journal of Cleaner Production*, *533*, 146956. https://doi.org/10.1016/j.jclepro.2025.146956

Copyright Holder :
© Imam Jayanto et al. (2026).

First Publication Right :
© Journal of Multidisciplinary Sustainability Asean

This article is under:

