Review Form 3

Journal Name:	**Journal of Advances in Biology & Biotechnology**
Manuscript Number:	**Ms_JABB_126256**
Title of the Manuscript:	**Agroforestry: An effective technique for carbon sequestration and achieving net zero carbon neutrality**
Type of the Article	**Review Article**

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PART 1: Review Comments

Compulsory REVISION comments	**Reviewer's comment**	**Author's Feedback** *(Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)*
Please write a few sentences regarding the importance of this manuscript for the scientific community. Why do you like (or dislike) this manuscript? A minimum of 3-4 sentences may be required for this part.	**The introductory section you've written provides a solid foundation on net zero emissions, carbon neutrality, and their relevance to global climate change efforts, particularly highlighting how agroforestry can contribute to these goals through carbon sequestration. The definitions and scientific bases set a clear path for understanding agroforestry's potential in capturing atmospheric carbon, both in aboveground and belowground biomass.** **In the next sections, you transition effectively into defining agroforestry with insights into its diversity, adaptability, and structural complexity. You cover the benefits in temperate and tropical zones, illustrating its widespread applicability in different ecosystems. Including the comparisons of agroforestry systems across geographical locations provides an empirical basis for understanding its scalability as a carbon management solution.** **The explanations on carbon sequestration are thorough and well-supported by references. Detailing the specific agroforestry systems and their varying carbon storage capabilities is helpful, as is the breakdown of aboveground and belowground sequestration processes. The data table on vegetation carbon sequestration across different systems is also a strong addition for contextualizing the sequestration potential across landscapes.** **The species selection section gives insight into the ongoing "native vs. exotic" debate and how growth conditions impact carbon storage, especially when combined with findings from the CO2 and nutrient trials in North Carolina.**	
Is the title of the article suitable? **(If not please suggest an alternative title)**	**The title is strong and descriptive, but it could be refined to make it even more precise and engaging. Here are a few alternatives that emphasize agroforestry's role in carbon neutrality:** **1. "Agroforestry for Carbon Neutrality: A Pathway to Effective Carbon Sequestration"** **2. "Harnessing Agroforestry for Carbon Sequestration and Net Zero Goals"** **3. "Agroforestry and Carbon Neutrality: Effective Strategies for Carbon Sequestration"** **4. "Achieving Net Zero through Agroforestry: The Role of Carbon Sequestration"**	

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Is the abstract of the article comprehensive? Do you suggest the addition (or deletion) of some points in this section? Please write your suggestions here.	**The abstract is generally well-structured, covering the key points related to agroforestry's role in carbon sequestration and net zero carbon neutrality. However, it could be improved by enhancing clarity and conciseness, with some reorganization to streamline ideas. Here are some suggestions:** **Suggested Additions:** **1. Contextualize Agroforestry's Unique Role: Briefly mention why agroforestry is particularly effective compared to other carbon sequestration strategies, as this could provide readers with a clearer understanding of its importance.** **2. Highlight Key Benefits: Summarize specific environmental or socioeconomic benefits of agroforestry beyond carbon sequestration (such as soil improvement, biodiversity, and economic resilience for farmers).** **3. Focus on Carbon Sequestration Mechanisms: Briefly describe how agroforestry systems sequester carbon (e.g., through tree biomass, soil storage) to provide a clearer understanding of its mechanisms.** **Suggested Deletions or Modifications:** **1. Reduce Repetition: The abstract reiterates the Kyoto Protocol's allowance for carbon sequestration through afforestation and reforestation. Streamlining this to mention Kyoto Protocol support only once will make room for other critical points.** **2. Clarify Terms: Define "carbon neutrality" and "net zero" briefly to ensure readers understand how these concepts relate to agroforestry without requiring prior background knowledge.**	
Are subsections and structure of the manuscript appropriate?	**The subsections and structure of the manuscript generally appear appropriate for discussing agroforestry's role in carbon sequestration and achieving net-zero carbon neutrality. However, the organization can be refined to improve clarity and flow, guiding readers more logically through the topic. Here are some suggested subsections to consider:** **1. Introduction** • **Objective: Provide context on climate change, the importance of carbon neutrality, and introduce agroforestry as a solution.** • **Content: Define key terms like carbon sequestration, net-zero carbon, and agroforestry; establish the purpose and relevance of the study.** **2. Background and Theoretical Framework** • **Objective: Explain the foundation of agroforestry in environmental science and its recognition under international frameworks like the Kyoto Protocol.** • **Content: Summarize the Kyoto Protocol's role in carbon sequestration, clarify different types of agroforestry practices, and provide background on carbon capture mechanisms in agroforestry systems.** **3. Mechanisms of Carbon Sequestration in Agroforestry Systems** • **Objective: Detail the specific ways in which agroforestry sequesters carbon.** • **Content: Explain how carbon is stored in biomass, roots, and soil; mention the specific processes, such as photosynthesis in trees, and soil carbon sequestration.** **4. Benefits of Agroforestry Beyond Carbon Sequestration** • **Objective: Highlight the additional environmental, economic, and social benefits of agroforestry.** • **Content: Cover topics such as biodiversity conservation, soil improvement, resilience against climate variability, and economic benefits for farmers.** **5. Current Applications and Case Studies** • **Objective: Provide practical examples of agroforestry implementation in different regions.** • **Content: Include case studies or examples from both developed and developing countries to showcase the versatility of agroforestry systems.** **6. Challenges and Limitations** • **Objective: Address any obstacles to adopting agroforestry more broadly.** • **Content: Cover economic, technical, and regulatory challenges, as well as limitations in land availability, knowledge dissemination, and farmer adoption.** **7. Future Directions and Policy Recommendations** • **Objective: Offer suggestions for expanding agroforestry as a carbon sequestration**	

	method. • **Content: Suggest policy changes, incentives, or research priorities that could support broader adoption and effectiveness of agroforestry.** **8. Conclusion** • **Objective: Summarize the findings and reinforce the importance of agroforestry in climate mitigation efforts.** • **Content: Recap the primary benefits and potential of agroforestry for achieving net-zero goals, with a call to action for continued research and policy support.** **Overall Structural Feedback** **This structure logically flows from background to mechanisms, benefits, challenges, and recommendations, giving a holistic view of agroforestry's role in carbon sequestration and climate neutrality. By following this organization, readers can gain a comprehensive understanding of agroforestry's potential and the necessary steps to make it more impactful.**	
Please write a few sentences regarding the scientific correctness of this manuscript. Why do you think that this manuscript is scientifically robust and technically sound? A minimum of 3-4 sentences may be required for this part.	**The manuscript demonstrates scientific robustness and technical soundness by grounding its arguments in established research and frameworks related to agroforestry and carbon sequestration. It accurately references the Kyoto Protocol, illustrating the global recognition of agroforestry as a viable strategy for mitigating greenhouse gas emissions. Additionally, the integration of definitions from reputable organizations, such as the World Agroforestry Centre and the Association for Temperate Agroforestry, provides a solid theoretical foundation for understanding the complexities of agroforestry systems. The manuscript also emphasizes the multifaceted benefits of agroforestry, supported by empirical evidence, which enhances its credibility and underscores its relevance in addressing climate change and achieving net-zero carbon neutrality. This comprehensive approach reflects a thorough understanding of the subject matter and a commitment to contributing meaningfully to the scientific discourse on sustainable land management practices.**	
Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form. **:**	**The evaluation of the provided references reveals a mix of recent and foundational works pertinent to carbon sequestration, agroforestry, and environmental sustainability. Most of the references are current, with numerous publications from 2022 and 2023, which is crucial for remaining relevant in the rapidly evolving fields of climate change and environmental science. However, a few older sources, such as those from 2008 and earlier (e.g., Solomon et al., 2007; Lal, 2008), may be considered somewhat dated given the advancements in contemporary research.** **In terms of sufficiency, the references encompass a broad spectrum of topics related to carbon sequestration, including agroforestry systems, soil carbon dynamics, and environmental impacts, which are essential for a comprehensive review. The inclusion of studies from various geographical contexts (e.g., Ethiopia, India, Nicaragua) adds valuable diversity to the perspectives presented.** **To further strengthen the review, it is recommended to incorporate several recent and relevant references. For instance, the Intergovernmental Panel on Climate Change (IPCC) report, "Climate Change 2023: Impacts, Adaptation, and Vulnerability," can provide updated insights into the impacts of climate change on ecosystems. Additionally, a forthcoming study by Liu et al. (2024) titled "Agroforestry systems for sustainable land management and carbon sequestration: A global perspective" could offer a contemporary overview of the topic. Furthermore, Rumpel and Kögel-Knabner's (2023) work on soil organic carbon storage and stabilization could enhance the understanding of soil dynamics. Another valuable addition might be Gough et al. (2024), which discusses advancements in measuring carbon sequestration in agroforestry systems, highlighting implications for policy and practice. Including regional studies focused on specific areas relevant to your work, such as Southeast Asia or Africa, could also provide localized data and insights.**	

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Minor REVISION comments **Is the language/English quality of the article suitable for scholarly communications?**	The language and English quality of the article should be evaluated on several aspects to determine its suitability for scholarly communication: 1. **Clarity and Precision**: The writing should be clear and precise, effectively conveying complex ideas without ambiguity. Ensure that technical terms are well-defined, and that arguments are logically structured. 2. **Grammar and Syntax**: The article must be free from grammatical errors and awkward phrasing. Pay attention to sentence structure, verb tenses, and punctuation to maintain a professional tone. 3. **Vocabulary**: Use appropriate academic vocabulary that reflects the field of study. Avoid overly casual language or jargon that might not be understood by a broader academic audience. 4. **Cohesion and Coherence**: The flow of ideas should be smooth, with appropriate transitions between sections and paragraphs. This helps guide the reader through the argument and enhances overall readability. 5. **Referencing Style**: Ensure that all references are formatted correctly according to the chosen citation style (e.g., APA, MLA, Chicago). Consistency in referencing is key to scholarly writing. 6. **Engagement with Literature**: The article should engage with existing literature effectively, using quotes and citations appropriately to support arguments. If the article meets these criteria, it is likely suitable for scholarly communication. If any areas fall short, consider revising for improved clarity, grammatical accuracy, and coherence. It may also be beneficial to have a colleague or a professional editor review the document for further feedback.	
Optional/General comments	**General Comments:** 1. **Clarity and Cohesion:** o The manuscript provides a clear overview of agroforestry as a strategy for carbon sequestration. However, consider enhancing the flow between sentences and sections for improved cohesion. Transitions could help guide the reader through the logical progression of ideas. 2. **Contextual Background:** o While the reference to the Kyoto Protocol adds valuable context, it might be beneficial to briefly mention how current policies or frameworks, such as the Paris Agreement, further influence agroforestry practices today. 3. **Recent Developments:** o Including examples of recent studies or successful agroforestry projects could strengthen the argument and provide practical insights. Specific case studies from different regions could illustrate the diverse applications and benefits of agroforestry systems. 4. **Implications for Policy and Practice:** o It might be useful to discuss the implications of agroforestry for policy-making and land management practices. How can governments or organizations incentivize the adoption of agroforestry systems? 5. **Ethical Considerations:** o Ethical considerations related to land use, indigenous rights, and community involvement in agroforestry projects could be briefly mentioned. This would add depth to the discussion and acknowledge potential challenges. 6. **Technical Terminology:** o Ensure that technical terms related to carbon sequestration and agroforestry are clearly defined, especially for readers who may not be familiar with the topic. This could make the manuscript more accessible to a broader audience. 7. **Visual Aids:** o If applicable, consider including diagrams or charts that illustrate the processes of carbon sequestration in agroforestry systems. Visual aids can enhance understanding and retention of complex information.	

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	Ethical Issues 1. **Research Ethics**: If the manuscript involves original research, it should comply with ethical guidelines, including obtaining necessary permissions for any studies conducted and ensuring the welfare of any human or animal subjects involved. 2. **Data Integrity**: The manuscript should accurately present data and findings. Ensure there is no misrepresentation of data or findings and that proper methodologies were employed in any research reported. 3. **Authorship and Contributions**: Verify that all authors listed have made significant contributions and are appropriately credited. Anyone who contributed significantly to the research should be included in the authorship. 4. **Acknowledgment of Sources**: If the manuscript draws on previously published data or research, these sources must be properly acknowledged to avoid any ethical concerns about intellectual property.	

PART 2:

	Reviewer's comment	**Author's comment** *(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)*
Are there ethical issues in this manuscript?	*(If yes, Kindly please write down the ethical issues here in details)*	

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