## Review Form 1.7

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| Journal Name: | **Asian Journal of Research in Agriculture and Forestry** |
| Manuscript Number: | **Ms_AJRAF_102594** |
| Title of the Manuscript: | **Modeling Height-Diameter of Trees in Mixed Forest Plantation Using Artificial Neural Network, Support Vector Regression and Empirical Nonlinear Models** |
| Type of the Article | **Original Research Article** |

**General guideline for Peer Review process:**

This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty'**, provided the manuscript is scientifically robust and technically sound.
To know the complete guideline for Peer Review process, reviewers are requested to visit this link:

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## Review Form 1.7

**PART 1: Review Comments**

| | **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)* |
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| **Compulsory** REVISION comments<br><br>**1. Is the manuscript important for scientific community?**<br>(Please write few sentences on this manuscript)<br><br>**2. Is the title of the article suitable?**<br>(If not please suggest an alternative title)<br><br>**3. Is the abstract of the article comprehensive?**<br><br>**4. Are subsections and structure of the manuscript appropriate?**<br><br>**5. Do you think the manuscript is scientifically correct?**<br><br>**6. Are the references sufficient and recent? If you have suggestion of additional references, please mention in the review form.**<br><br>**(Apart from above mentioned 6 points, reviewers are free to provide additional suggestions/comments)** | 1. Yes, the manuscript is important for the scientific community as it addresses a significant issue in forest inventory and management. The accurate estimation of tree heights is crucial for biomass estimation and sustainable forest management. By developing and evaluating different models for estimating tree heights using easily measured variables like tree diameter, this manuscript provides valuable insights and tools for forest researchers and practitioners. The findings contribute to the advancement of forestry science and have practical implications for optimizing forest inventory and management practices, particularly in forest plantations.<br>2. The title "Modeling Height-Diameter of Trees in Mixed Forest Plantation Using Artificial Neural Network, Support Vector Regression, and Empirical Nonlinear Models" is suitable as it accurately reflects the content and scope of the study. It clearly states the objective of the research, which is to model the relationship between tree height and diameter in a mixed forest plantation using different modeling techniques. The inclusion of specific modeling approaches such as Artificial Neural Network, Support Vector Regression, and Empirical Nonlinear Models helps provide clarity on the methods employed in the study. Overall, the title effectively conveys the subject matter and methods used in the research. But there can be an alternative "Estimating Tree Heights in Mixed Forest Plantation: A Comparative Study of Modeling Approaches Including Artificial Neural Network, Support Vector Regression, and Empirical Nonlinear Models" if author wants which not compulsory.<br>3. The abstract provides a comprehensive overview of the study conducted. It outlines the importance of measuring tree diameters and heights for forest inventory and sustainable management. It also highlights the need for developing models to estimate tree heights using easily measured variables such as tree diameter. The abstract describes the methodology used, including the systematic sampling method and the collection of tree height and diameter data. It further mentions the models tested, such as artificial neural network (ANN) model, support vector regression (SVR) model, and four empirical nonlinear models. The evaluation criteria used to assess the models are also mentioned. Finally, the abstract concludes that the SVR model was found to be the most accurate for predicting tree heights in the study area. Overall, the abstract provides a comprehensive summary of the study's objectives, methods, and findings.In addition to the existing content, the abstract could be enhanced by including the following information:<br>• Briefly mention the significance or implications of accurate tree height estimation for biomass estimation and sustainable forest management practices<br>• Provide a concise statement about the overall goal or purpose of developing accurate tree height estimation models in the context of forest plantations<br>• Highlight the specific characteristics or attributes of the study area in North-central, Nigeria that make it relevant for investigating tree height estimation<br>• Mention the sample size or number of trees included in the study to provide an idea of the data scope and representativeness<br>• Summarize the main findings or performance metrics (such as R-squared, RMSE, and AIC) that support the superiority of the SVR model over other models<br>• Emphasize the practical implications of the study's findings, such as the potential for utilizing SVR models to improve height prediction accuracy and efficiency in forest management decision-making processes<br>4. Yes<br>5. Overall, the manuscript appears to be scientifically correct, as it presents a logical and well-supported discussion of the research findings and their implications in the field of tree height prediction for forest managementThe study addresses the importance of accurate tree height prediction for forest management, yield models, management decisions, and carbon budgeting, aligning with established research in the field.<br>6.<br>a. The study compares different models for tree height prediction and evaluates their | |

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| | performance. The SVR model is found to outperform all other models, including empirical nonlinear models, which is supported by previous studies cited.<br>b. The use of machine learning models, such as SVR and ANN, is advocated as a potential alternative to empirical models in tree height-diameter modeling, based on their superior performance in this study and supporting evidence from other research.<br>c. The discussion acknowledges the advantages and disadvantages of different modeling techniques, highlighting the limitations of conventional regression models and the potential benefits of adopting artificial intelligence models.<br>d. The conclusion summarizes the main findings of the study, emphasizing the superior performance of the SVR model in estimating tree height and suggesting the potential for machine learning techniques to replace empirical models in projects related to forest conditions estimation.<br>e. The conclusion also acknowledges the potential influence of site factors on the diameter-height relationship, indicating an understanding of the contextual limitations and the need for further consideration in specific settings. | |
| **Minor** REVISION comments<br><br>**1. Is language/English quality of the article suitable for scholarly communications?** | Yes | |
| **Optional/General** comments | | |

**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)* |
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| **Are there ethical issues in this manuscript?** | *(If yes, Kindly please write down the ethical issues here in details)* | |

**Reviewer Details:**

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