

Review Form 1.7

Journal Name:	International Journal of Environment and Climate Change
Manuscript Number:	Ms_IJECC_117353
Title of the Manuscript:	FERTILIZER OPTIMIZATION THROUGH MACHINE LEARNING-DRIVEN MODELS: AN EMPIRICAL INVESTIGATION ON SMART FARMING OF AMARANTH
Type of the 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:

(<https://www.journalijecc.com/index.php/IJECC/editorial-policy>)

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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)
<p>Compulsory REVISION comments</p> <ol style="list-style-type: none"> Is the manuscript important for scientific community? (Please write few sentences on this manuscript) Is the title of the article suitable? (If not please suggest an alternative title) Is the abstract of the article comprehensive? Are subsections and structure of the manuscript appropriate? Do you think the manuscript is scientifically correct? Are the references sufficient and recent? If you have suggestion of additional references, please mention in the review form. <p><u>(Apart from above mentioned 6 points, reviewers are free to provide additional suggestions/comments)</u></p>	<p>Novelty: The study investigates the effect of excessive inorganic fertilizer usage on the growth and yield of amaranth, which is an important yet understudied crop. The use of machine learning models to automatically phenotype and classify plants based on fertilizer treatments is a novel approach that could aid in optimizing fertilizer application rates.</p> <p>Importance for Scientific Community: Overuse of chemical fertilizers is a significant environmental concern, and this study provides insights into the impacts on an important food crop. The findings highlighting the need for judicious fertilizer usage are valuable for promoting sustainable agricultural practices. Additionally, the integration of machine learning techniques for automated phenotyping is an emerging field that could advance precision agriculture.</p> <p>Title: The title "FERTILIZER OPTIMIZATION THROUGH MACHINE LEARNING-DRIVEN MODELS: AN EMPIRICAL INVESTIGATION ON SMART FARMING OF AMARANTH" accurately reflects the study's focus on optimizing fertilizer application using machine learning approaches in the context of amaranth cultivation.</p> <p>Abstract: The abstract provides a comprehensive overview of the study, including the background, objectives, methodology, key findings, and implications. It effectively summarizes the essential elements of the research.</p> <p>Subsections and Structure: The manuscript is well-structured, with appropriate subsections that logically organize the content. The introduction provides a thorough background and justification for the study, followed by a detailed description of the materials and methods. The results and discussion sections are clearly presented, and the conclusions summarize the key findings and implications.</p> <p>Scientific Correctness: Based on the information provided, the methodology and analysis appear scientifically sound. The experimental design, statistical analyses, and machine learning approaches are described in detail, lending credibility to the findings. However, a more in-depth review by subject matter experts would be necessary to validate the scientific correctness thoroughly.</p> <p>References: The manuscript cites a sufficient number of recent and relevant references, demonstrating an understanding of the current literature in the field. The citations cover various aspects of the study, including fertilizer effects, machine learning techniques, and amaranth cultivation.</p>	
<p>Minor REVISION comments</p> <ol style="list-style-type: none"> Is language/English quality of the article suitable for scholarly communications? 	<p>Overall, the manuscript appears well-written, scientifically rigorous, and potentially valuable for the scientific community. The novelty lies in the integration of machine learning approaches for optimizing fertilizer usage in amaranth cultivation, and the findings could contribute to sustainable agricultural practices.</p>	

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<p>Optional/General comments</p>	<p>1. Overall Quality: The manuscript is well-written, well-structured, and provides a comprehensive investigation of the research topic. The combination of empirical plant experiments and the application of machine learning techniques for automated phenotyping is a strength of this study.</p> <p>2. Clarity and Presentation: The authors have presented the information clearly and logically. The use of figures, tables, and statistical analyses effectively supports the findings and aids in understanding the results.</p> <p>3. Methodology: The methodology section is detailed and well-described, allowing for reproducibility of the experiments. The experimental design, including the different fertilizer treatment levels, data collection methods, and statistical analyses, appears appropriate and robust.</p> <p>4. Novelty and Significance: The study's novelty lies in its focus on the underexplored crop amaranth and the integration of machine learning techniques for optimizing fertilizer application rates. The findings related to the negative impacts of excessive inorganic fertilizer usage and the potential of machine learning models for automated phenotyping are significant contributions to the field of sustainable agriculture and precision farming.</p> <p>5. Discussion and Interpretation: The discussion section provides an in-depth analysis and interpretation of the results, drawing meaningful conclusions about the effects of different fertilizer treatments on amaranth growth and yield. The authors effectively link their findings to existing literature and highlight the practical implications for fertilizer management and sustainable farming practices.</p> <p>6. Limitations and Future Directions: While the authors have provided a comprehensive study, it would be beneficial to acknowledge any potential limitations or challenges faced during the research. Additionally, suggesting future research directions or applications of the findings would further enhance the manuscript's impact.</p> <p>7. References: The references cited are relevant, recent, and cover a good range of sources, including peer-reviewed journal articles and other authoritative sources. This demonstrates a thorough review of the existing literature in the field.</p> <p>Overall, the manuscript appears to be a well-executed and valuable contribution to the scientific community, particularly in the areas of sustainable agriculture, crop nutrition, and the application of machine learning techniques in agriculture. With its novelty, rigorous methodology, and practical implications, this study has the potential to contribute to the ongoing efforts towards optimizing fertilizer use and promoting sustainable farming practices.</p>	
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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)
<p>Are there ethical issues in this manuscript?</p>	<p><i>(If yes, Kindly please write down the ethical issues here in details)</i></p>	

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