Review Form 3

Journal Name:	**International Journal of Plant & Soil Science**
Manuscript Number:	**Ms_IJPSS_123724**
Title of the Manuscript:	**Effect of Foliar Application of Nano-fertilizers on Growth and Flowering of Okra (Abelmoschus esculentus)**
Type of the 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.	This manuscript provides valuable insights into the effects of nano-fertilizers on okra growth and flowering, using a reliable factorial randomized block design. It effectively explores various nutrient treatments, enhancing our understanding of nano-fertilizers' potential in boosting crop productivity. However, a more detailed examination of their long-term impact on soil health would further strengthen the study's conclusions.	
Is the title of the article suitable? **(If not please suggest an alternative title)**	The current title is clear but could be more specific to highlight the key findings and attract a broader audience. Possible alternative title might be: **"Efficacy of Nano-Fertilizer Applications on Growth Parameters and Flowering Dynamics in Okra (*Abelmoschus esculentus*)"** This title emphasizes both the growth parameters and flowering aspects while specifying the focus on foliar applications of nano-fertilizers.	
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.	Yes, the abstract should be revised to ensure it comprehensively covers key findings and implications. **Suggested revisions**: The present study aimed to evaluate the effect of foliar nano-fertilizers on the growth and flowering of okra (Abelmoschus esculentus) during the Zaid seasons of 2022-23 and 2023-24 at the Vegetable Research Farm, Chandra Shekhar Azad University of Agriculture and Technology, Kanpur. A Factorial Randomized Block Design with 15 treatment combinations and three replications was employed, utilizing five major nutrients and three levels of micronutrients. The combination of 75% recommended soil applied NPK with foliar nano NPK (4 ml/L) and nano Zn and Fe (1g/4L) showed maximum improvements in growth parameters, including plant height (120.35 cm), number of leaves (55.38), and flowering traits such as earlier first flowering (39.88 days) and increased flower production (22.60 flowers/plant). These findings suggest the potential of nano-fertilizers to enhance okra productivity while optimizing nutrient use. This revision maintains the essence of the original abstract while improving structure and comprehensiveness.	
Are subsections and structure of the manuscript appropriate?	Manuscript's structure is quite comprehensive and covers the necessary elements for a scientific paper. However, there are a few areas where you could enhance clarity and consistency. Here's a breakdown of your current structure with some suggestions: **Abstract** **Current Structure**: Provides a summary of the study, including objectives, methodology, and key results. **Suggestions**: Ensure the abstract succinctly covers the main objective, methodology, results, and conclusion. It might help to emphasize the implications of your findings briefly. Double-check for consistency in formatting (e.g., spacing, units).	

	Keywords **Current Structure**: Lists relevant keywords. **Suggestions**: Ensure keywords are consistent with those commonly used in your field. Consider adding a few more if they are relevant to your study. **Introduction** **Current Structure**: Provides background information on okra, its importance, and the role of nanotechnology in agriculture. **Suggestions**: The introduction is detailed and well-rounded. Ensure it logically leads to your research question or hypothesis. Consider breaking it into subsections if it becomes too lengthy, such as “Background on Okra,” “Importance of Nutrients,” and “Role of Nanotechnology.” **Materials and Methods** **Current Structure**: Describes the experimental setup, location, design, and procedures. **Suggestions**: This section is clear but ensure that all relevant details are included for reproducibility. Ensure consistency in terminology and units. **General Tips** **Formatting**: Maintain consistent formatting for headings, subheadings, and text throughout the manuscript. **Clarity and Precision**: Ensure all sections are clear and concise. Avoid jargon where possible or define it when first used. **References**: Make sure all citations and references are accurate and follow the required style guide.	
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.	This manuscript is scientifically correct because it follows a well-established experimental design (FRBD) that ensures accurate replication and reduces variability, improving the reliability of the results. The study is technically sound as it assesses both macro and micronutrients, providing a comprehensive analysis of their impact on okra growth and flowering parameters. Furthermore, the use of precise measurements and statistical validation enhances the credibility and applicability of the findings in agricultural practices.	
Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.	To enhance the recency and relevance of your manuscript's references, I suggest adding a few more recent studies that focus on nano-fertilizers and their effects on crop growth and yield. These papers would ensure that your manuscript reflects the latest advancements in the field.	

	Here are some recent studies you might consider adding: 1. **El-Saadony, M. T., et al. (2023).** "Application of nanotechnology in agriculture: a review on benefits, challenges, and future perspectives." *Environmental Technology & Innovation*, 31, 102040. This paper provides insights into recent developments in nanotechnology applications in agriculture, focusing on nano-fertilizers' role in improving plant growth and productivity. 2. **Ali, S., Rizwan, M., et al. (2022).** "Nanotechnology and its implications in sustainable agriculture." *Frontiers in Plant Science*, 13, 845369. Discusses the future prospects of nano-fertilizers in enhancing nutrient use efficiency and the sustainable use of resources in agriculture. 3. **Hussain, A., Rizwan, M., et al. (2021).** "Potential and challenges of nano-fertilizers in improving crop productivity and mitigating environmental risks." *Chemosphere*, 272, 129830. This article explores how nano-fertilizers improve crop productivity and address challenges related to their environmental impact. 4. **Yadav, A. N., et al. (2021).** "Nanotechnology and nano-biofertilizers: New avenues in sustainable agriculture." *Indian Journal of Microbiology*, 61(3), 259-271. A review of nano-biofertilizers, discussing their potential to boost yield and improve soil health. Here are a few more general comments and suggestions for improving your references section: • **Qureshi et al. (2018)** could be supplemented with more recent studies on nano-fertilizers. • The anonymous sources (e.g., 2022 Knoema, 2021 NHB) should be minimized or replaced with more concrete studies or official reports when possible. Make sure all references are formatted consistently according to your journal's guidelines, especially regarding the inclusion of DOIs and accurate citations for online resources.	

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Minor REVISION comments **Is the language/English quality of the article suitable for scholarly communications?**	The language quality of this article is mostly suitable for scholarly communication, but there are several areas that could be improved to enhance clarity and readability. Here are some suggestions: **General Improvements:** **Sentence Structure**: Some sentences are long and complex, which may reduce clarity. Breaking these into shorter sentences can improve comprehension. Example: "The experiment was laid out in Factorial Randomized Block Design (FRBD) with 15 treatment combinations and three replications." could be shortened to "The experiment followed a Factorial Randomized Block Design (FRBD) with 15 treatment combinations and three replications." **Tense Consistency**: There is a mixture of past and present tense, particularly in the introduction. It would be better to maintain consistency, typically using past tense for reporting research. **Word Choice**: Some technical terms could be more concise. Example: "It is commonly used for its tender pods" could be revised to "It is valued for its tender pods." **Abstract:** The abstract is mostly clear, but "On the basis of results of present investigation" could be more succinct. Consider revising to "Based on the results of this investigation." "were recorded maximum on growth characters" could be revised to "resulted in maximum growth parameters." **Introduction:** In the sentence "Okra required adequate nutrients for better growth and flowering," "required" should be "requires" for grammatical correctness. "Likewise called lady's finger in England" should be revised for smoother flow, such as "It is also known as lady's finger in England." **Grammar and Sentence Structure**: Some sentences are long and complex, which may affect readability. Consider breaking them down for clarity. For example: "The data was recorded in Table-2, indicate that there were significant change in major nutrients..." can be revised to "The data in Table 2 indicate significant changes in major nutrients..." "The experiment was carried out during two consecutive zaid seasons of, 2022-23 and 2023-24..." could be "The experiment was conducted over two consecutive Zaid seasons, 2022-23 and 2023-24..." **Tense Consistency**: Ensure consistent use of past tense when referring to the experiment (e.g., "was" rather than "were" in some cases). For instance, "The data were analysis in Factorial Randomized Block Design" should be "The data were analyzed using Factorial Randomized Block Design." **Punctuation and Spacing**: In section 2.2, the product names could benefit from commas and proper spacing (e.g., "Nano NPK:	

	Tropical Agro's Tag Nano NPK is an innovative product…"). Some places lack appropriate punctuation, like missing commas or periods (e.g., "Among interactions, the maximum number of leaves/plant (15.45 and 16.55), (45.72 and 46.85) and (54.82 and 55.94) were recorded..."). **Repetition**: Some phrases or findings are repeated unnecessarily, especially in the Results and Discussion sections. Streamlining or summarizing repeated information would enhance readability. **Use of Articles**: The article could benefit from proper use of definite and indefinite articles (e.g., "the foliar application" rather than "foliar application" in many cases). **Technical Terms**: The use of technical terms is appropriate, but the introduction of nano-fertilizers and their benefits might need a bit more clarity for international audiences unfamiliar with specific regional references like IFFCO. **Reference Citations**: The phrase "Similar findings were also noticed by [15], [16], [17] and [18]" is correct, but make sure that all references are listed properly in the reference section. **Verb Tense Consistency**: Ensure that verb tenses are consistent, especially when describing past experiments. For example, instead of "The data was recorded in Table-3, indicate that...," use "The data recorded in Table-3 indicates that..." **Improving Clarity**: Replace "significant change" with "a significant increase" or "a significant effect" where appropriate to clarify the type of change. Use active voice where possible to make the text more direct. For example, instead of "The number of branches/plant were counted," say "We counted the number of branches per plant at 60 and 90 DAS." **Article Use**: There are instances where "the" is missing or unnecessary. For example: "The data recorded in **Table 3** indicates that there was **a** significant change in major and micro-nutrients on the number of branches per plant..." Ensure that "Table-3" is consistently written as "Table 3" (without the hyphen). **Repetitive Phrases**: Avoid repetition of phrases like "Same trend was also found in pooled data." Consider rewording to keep the text engaging, such as: "Similarly, pooled data at 60 and 90 DAS showed an increasing trend." **Citation Style**: Instead of "[24], [25], [26]" etc., consider whether the journal requires author-year citation (e.g., "as confirmed by Zafar et al. (2019)") or a more streamlined numbering system. Make sure all citations are correctly referenced in the bibliography. **Use of Passive Voice**: The text occasionally uses passive voice excessively. Where appropriate, switch to active voice for stronger and clearer communication. For example: Instead of "The number of branches per plant were counted at 60 and 90 DAS," use "We counted the number of branches per plant at 60 and 90 DAS." **Suggested Revision:**	

	Here's a revised version of a section for improved readability and scholarly tone: **Number of Branches per Plant** The number of branches per plant was counted at 60 and 90 days after sowing (DAS). The data presented in Table 3 show that both major and micro-nutrients had a significant effect on the number of branches per plant at all growth stages during both years. At 60 and 90 DAS, treatment M3 recorded the highest number of branches per plant (2.47 and 2.70 at 60 DAS; 4.36 and 4.49 at 90 DAS), followed by M1, with 2.33 and 2.46 branches at 60 DAS, and 4.18 and 4.30 at 90 DAS. The lowest number of branches was observed in M0 (1.45 and 1.53 at 60 DAS; 2.97 and 3.06 at 90 DAS) during both years. Pooled data at 60 and 90 DAS similarly showed significant differences, with treatment M3 leading with 2.59 branches at 60 DAS and 4.43 branches at 90 DAS. For the micro-nutrients, treatment N2 produced the maximum number of branches (2.15 and 2.29 at 60 DAS; 3.97 and 4.08 at 90 DAS), followed by N1, while the lowest branch number was observed in N0. The combined effect of major and micro-nutrients was also significant. The highest number of branches (2.62 and 2.92 at 60 DAS; 4.54 and 4.68 at 90 DAS) was recorded in the M3N2 combination, while the minimum number of branches was found in the M0N0 treatment. These findings align with previous research [24], [25], [26], and [27], which demonstrated that foliar application of nano-fertilizers containing NPK, Fe, and Zn significantly enhances nutrient uptake, photosynthesis, hormonal balance, and stress tolerance, ultimately increasing the number of branches in okra.	

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Optional/General comments	Here are some general comments that can help enhance the quality and readability of your manuscript: **Introduction and Background**: Ensure the introduction clearly outlines the research problem, objectives, and significance of the study. It should provide sufficient background information and context for why the study was conducted and its relevance to existing research. **Methodology**: Clearly describe the experimental design, including how treatments were applied, the controls used, and the methods of measurement and analysis. Ensure reproducibility by providing enough detail for others to replicate the study. **Data Presentation**: Present data in a clear and organized manner. Use tables and figures effectively to summarize and illustrate key findings. Ensure all tables and figures are well-labeled and referenced in the text. **Results Interpretation**: Provide a detailed interpretation of the results, discussing how they align with or differ from previous studies. Highlight the implications of your findings for the field and any potential applications or recommendations. **Discussion and Conclusion**: Discuss the results in the context of the study's objectives and hypotheses. Address any limitations of the study and suggest areas for future research. Ensure the conclusion summarizes the key findings and their significance clearly and concisely. **References**: Ensure all references are current, relevant, and formatted according to the journal's guidelines. Double-check for completeness and accuracy. **Language and Style**: Maintain a formal, academic tone throughout the manuscript. Use precise and concise language, and avoid jargon or overly complex sentences. Proofread for grammatical accuracy and clarity. **Ethical Considerations**: Confirm that the study adheres to ethical standards, including proper citation of sources and acknowledgment of any conflicts of interest. **Supplementary Materials**: If applicable, include supplementary materials such as additional data, methodologies, or detailed calculations that support the main findings but are too lengthy for the main text	

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

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