Review Form 3

Journal Name:	Journal of Advances in Biology & Biotechnology
Manuscript Number:	Ms_JABB_127085
Title of the Manuscript:	Azotobacter as a possible bio-fertilizer for managing soil and plant health: A review
Type of the Article	Review Article

General guidelines for the 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 guidelines for the Peer Review process, reviewers are requested to visit this link:

https://r1.reviewerhub.org/general-editorial-policy/

Important Policies Regarding Peer Review

Peer review Comments Approval Policy: https://r1.reviewerhub.org/peer-review-comments-approval-policy/ Benefits for Reviewers: https://r1.reviewerhub.org/benefits-for-reviewers

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
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 review emphasizes Azotobacter's role in nitrogen fixation, which is crucial for enhancing soil fertility and crop productivity.	
Is the title of the article suitable? (If not please suggest an alternative title)	YES	
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.	SUGGESTIONS GIVEN IN COMMENTS	
Are subsections and structure of the manuscript appropriate?	REVISIONS REQUIRED	
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.	SUGGESTIONS GIVEN IN COMMENTS	
Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form. -	NO	
Minor REVISION comments Is the language/English quality of the article suitable for scholarly communications?	NEEDS REVISION AND GRAMMER CHECK.	

Review Form 3

Optional/General comments	General Comments: 1. Word azotobacter in the whole MS should be written in one format. 2. Check the formatting of the MS critically (Font type, Font size). 3. Adjust the image size and improve the quality of Figure 1. 4. Spacing in the whole MS should be rectified. 5. The scientific names of the species should be written in italics. 6. Based on previous studies, more tables and studies should be added to the MS. 7. Figure 2 is taken from already published work, and the image quality is poor. Authors can draw this mechanism. 8. Discuss about the relevance and importance of the topic with practical implications and challenges. Also, discuss the future aspects of the study. 9. Include some recent studies (within the past 3-4 years) to reflect the current state of research. 10. A few minor grammatical and typographical errors throughout the manuscript should be addressed for clarity. 11. Revise the referencing style and citations properly as per journal format. Technical comments: The authors must discuss about the following areas in their manuscript with the latest references: 1. Role in Soil Fertility: The review emphasizes Azotobacter's role in nitrogen fixation, which is crucial for enhancing soil fertility and crop productivity. It would be beneficial to detail the biochemical processes involved in nitrogen fixation by Azotobacter, as well as the environmental conditions that optimize its efficacy. 2. Application Methods: Mentioning the use of Azotobacter through soil application or seed treatment is helpful, but additional insights on the specific concentrations, timing, and methods for effective application could make the article more practical for agricultural use. It may also be useful to compare efficacy rates between different methods of application. 3. Comparison with Chemical Fertilizers: While the environmental advantages of Azotobacter over chemical fertilizers are noted, the review article could strengthen its case by presenting quantitative comparisons, such as yield improvements or reduction in chemical inputs, and discussing the long-term effects on soil health. 4. Mechanisms of Plant Growth Promotion: The review briefly mentions that Azotobacter aids in plant growth by making nutrients more available, but an expansion on the production of growth-promoting substances like indole-3-acetic acid (IAA) and other phytohormones would add depth. Explaining how Azotobacter contributes to the biosynthesis of these compounds can provide a clearer understanding of its role in plant physiology. 5. Synergistic Use with Other Fertilizers: It's noted that Azotobacter can be used alone or in combination with other fertilizers and pesticides, which can yield positive results. Expanding on the compatibility and synergistic effects of Azotobacter with other bio- fertilizers or specific chemical inputs (e.g., nitrogen, phosphorous fertilizers) would make this more practical for integrated nutrient management. 6. Crop-Specific Benefits: The review article mentions that Azotobacter increases yields in some crops but doesn't specify which. Including references to studies on crop- specific yield improvements, such as for cereals, vegetables, or legumes, could provide a clearer picture of where Azotobacter is most beneficial. 7. Sustainability and Environmental Impact: The review could benefit from a deeper discussion on how Azotobacter's application can contribute to sustainable agriculture, reduce soil degradation, and lower greenhouse gas emissions. Comparisons with the environmental impacts of synthetic nitrogen fertilizers could further highlight Azotobacter's eco-friendly benefits. 8. Knowledge Gaps and Future Research: Lastly, identifying any knowledge gaps, such as Azotobacter's performance in various soil types, climate conditions, or with genetically diverse crops, and recommending areas for further research would strengthen the review's technical depth. Incorporating these suggestions would enhance the technical comprehensiveness of the review article and make it more useful for researchers and practitioners in sustainable agriculture	

Review Form 3

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)*	

Reviewer Details:

Name:	**Aditya**
Department, University & Country	**National Institute of Food Technology Entrepreneurship and Management, Kundli-131028 (NIFTEM-K), India**