

Review of: "Assessment of Quality, Bacterial Population and Diversity of Irrigation Water in Selected Areas of Minna, Niger State, Nigeria"

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Potential competing interests: No potential competing interests to declare.

The article titled "**Evaluation of Irrigation Water Quality, Bacterial Population, and Diversity in Chosen Areas of Minna, Niger State, Nigeria**", authored by **Anthony Uzomasurere, Maryam Abubakar Abdallah, and Tajudeen Muhammad Salaudeen**, published on **Qeios**, addresses a crucial concern in agricultural practice: ensuring the safety and standard of irrigation water. This study investigates the bacterial population, diversity, and quality of irrigation water in particular regions of Minna, Niger state, carrying significant implications for both agricultural productivity and environmental health.

Abstract Evaluation: The abstract provides a concise summary of the study's objectives, methods, and key findings. It adeptly underscores the significance of evaluating the quality of irrigation water in farming regions, particularly concerning bacterial population and diversity.

Introduction Analysis: The introduction effectively contextualizes the study within the broader significance of water utilization in agriculture, especially amidst rising global water demands and population expansion. It provides pertinent background details on irrigation practices and the challenges associated with wastewater usage in agricultural environments. **However, it could be strengthened by integrating more recent references to support the discussion.**

Methods Assessment: The methods section offers a comprehensive description of the study design, sampling techniques, and laboratory analyses conducted. **Yet, it could improve with elucidations concerning precise assay protocols and quality control measures employed during microbial analysis.**

Results and Discussion Critique: The results and discussion section presents the study findings in a logical sequence, establishing connections between bacterial population data and the physicochemical characteristics of irrigation water across various locations. Incorporating statistical analyses and correlation matrices strengthens the credibility of the interpretation. **However, the discussion could be further developed to explore the underlying mechanisms driving the observed patterns in bacterial diversity and water quality parameters. Additionally, a more extensive comparison with existing literature on similar studies would offer a greater context for the findings.**

Conclusion Evaluation: The conclusion succinctly summarizes the principal findings and implications for future research and agricultural practices. It appropriately emphasizes the importance of further investigations into the bioremediation potential of specific bacterial strains, such as *Bacillus subtilis*, and highlights the necessity for sustainable water management approaches in rural farming areas. **Nonetheless, it could be expanded to discuss potential limitations of the study and address any remaining research gaps.**

Overall Assessment: The study offers significant contributions to understanding irrigation water quality and bacterial dynamics in agricultural environments, specifically in Minna, Niger State. The methodology is robust, and the results are presented clearly, though **the discussion could be more extensive. Rectifying minor shortcomings** in the **introduction** and **conclusion** would enhance the overall impact and readability of the article. Additionally, **incorporating recent literature to support the discussion** would strengthen the study's relevance and importance.