

## REVIEWER'S REPORT

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**Title:** Effet des apports de gadoue sur la croissance, la biomasse et la production de *Prosopis juliflora* dans l'adaptation des conditions climatique de Faranah - Guinée

### Recommendation:

Accept

Rating	Excel.	Good	Fair	Poor
Originality		√		
Techno. Quality			√	
Clarity			√	
Significance			√	

Reviewer Name: Dr Abdul Haseeb Mir

Date: 03/10/2025

### Reviewer's Comment

The article presents a well-structured experimental study that investigates the impact of sewage sludge ("gadoue") on the germination, growth, and biomass of *Prosopis juliflora* under semi-arid conditions in Faranah, Guinea. The research is timely and relevant, as it addresses both soil fertility management and waste valorization. The methodology is rigorous, results are clearly presented, and the discussion effectively situates the findings within existing literature.

### Detailed Review Report

The article offers a carefully structured experimental study that investigates the agronomic and ecological potential of sewage sludge ("gadoue") as an organic amendment. Conducted in the semi-arid environment of Faranah, the research is of considerable relevance, as it attempts to address soil degradation, climate adaptation, and waste valorization simultaneously. By focusing on *Prosopis juliflora*, a drought-tolerant species with both ecological and socio-economic importance, the study successfully situates itself within the broader discourse on sustainable agriculture and land restoration in fragile ecosystems.

The methodology adopted is rigorous and transparent. The use of a randomized complete block design with four levels of gadoue incorporation (0%, 40%, 60%, and 80%) and the choice of multiple parameters—germination rate, plant height, stem diameter, daily growth rate, spine number, and

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vegetative vigor index—provide a holistic assessment of plant response. Statistical analysis through ANOVA and Tukey's test at a high level of significance ( $p < 0.01$ ) ensures reliability of the findings. The careful description of seed provenance, preparation of gadoue, and growth conditions makes the study replicable and scientifically sound.

The results are compelling and leave little doubt as to the beneficial impact of gadoue. Germination rates reached as high as 94.44% with gadoue treatments, compared to 72% in the control. Plant height increased markedly, with the highest treatment reaching 58 cm, while stem diameter and growth rates also showed clear improvements, particularly at 60% gadoue where daily growth speed peaked at 0.89 cm per day. The production of spines, which increased from an average of four in the control to twenty-one in the 80% gadoue treatment, is interpreted not only as a growth response but also as a physiological adaptation that enhances the plant's resilience. These outcomes strongly indicate that gadoue can significantly improve both the vigor and biomass production of *Prosopis juliflora*.

The discussion is well integrated with existing literature and situates the findings within global debates on the use of sewage sludge as fertilizer. The authors rightly highlight the capacity of gadoue to improve soil fertility by increasing organic matter, nitrogen, and phosphorus availability, as shown in previous studies. They also underline the ecological and socio-economic benefits of *Prosopis juliflora* as a multi-purpose species contributing to desertification control, livestock feeding, and bioenergy production. However, the discussion remains somewhat limited in its treatment of environmental risks. While it acknowledges the potential for heavy metal accumulation and pathogen persistence in sludge-amended soils, these concerns are not explored in sufficient depth. Greater attention to long-term soil health and safe application thresholds would strengthen the article, especially given the well-documented ecotoxicological issues associated with sewage sludge.

From a presentation standpoint, the article is coherent, logically organized, and clearly written, although the French could be further refined for conciseness and stylistic polish. Some parts of the results section tend to repeat descriptive data that could be synthesized more effectively. Nevertheless, the clarity of figures, tables, and statistical analysis contributes to a strong overall presentation.

### Recommendation

This article makes a strong contribution to the literature on organic waste valorization and sustainable land management in semi-arid regions. I recommend it for publication.