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REVIEWER'S REPORT

Manuscript No.: IJAR- 57831

Title: Analyse des effets combinÃ©s du biochar et de lÂ'urÃ©e super granulÃ©e sur lÂ'efficience dÂ'utilisation de lÂ'azote et les pertes de nutriments dans les systÃ¨mes rizicoles irriguÃ©s de lÂ'Ouest du Burkina Faso.

Recommendation:
Accept as it is .....
Accept after minor revision.....
Accept after major revision
Do not accept (*Reasons below*)

Rating	Excel.	Good	Fair	Poor
Originality		✓		
Techn. Quality		✓		
Clarity			✓	
Significance			✓	

Reviewer Name: **ANAPANA GOPAL**

Reviewer's Comment for Publication.

General Comments

The manuscript investigates the combined effects of biochar and deep placement of urea super granules (USG) on nitrogen use efficiency and nutrient leaching in irrigated rice systems of Burkina Faso. The topic is highly relevant to sustainable agriculture, nutrient management, and rice production in West Africa. The study addresses an important issue concerning fertilizer efficiency and environmental losses. The manuscript presents useful experimental data; however, several methodological, analytical, and presentation-related issues require substantial improvement before publication.

Content and Originality

Strengths

- The study addresses an important agricultural problem related to nitrogen use efficiency and nutrient losses in irrigated rice systems.
- The evaluation of combined biochar and USG application is relevant and potentially beneficial for sustainable nutrient management.
- The work provides experimental evidence from Burkina Faso, where such studies remain limited.
- The manuscript integrates agronomic efficiency and nutrient leaching dynamics.

Concerns

- The novelty should be highlighted more clearly in comparison with previous studies on biochar and USG.
- The mechanisms explaining why biochar failed to significantly reduce nutrient leaching in the short term need deeper discussion.
- The study is limited to pot experiments; therefore, extrapolation to field conditions should be made cautiously.

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- Long-term impacts of biochar application are discussed but were not evaluated experimentally.

Technical Quality

Strengths

- Experimental treatments are clearly described.
- Appropriate laboratory methods were used for nutrient analyses.
- Statistical analyses (ANOVA, Kruskal-Wallis, Tukey HSD) were employed.
- Agronomic efficiency calculations are provided.

Minor Concerns

1. **Inconsistency in Number of Treatments**
   - The manuscript states eight treatments in some sections, whereas only seven treatments (T1–T7) are described. This inconsistency should be corrected.
2. **Pot Experiment Limitation**
   - Results obtained from controlled pot conditions may not accurately represent nutrient dynamics under field conditions.
3. **Lack of Soil Characterization**
   - Initial soil chemical and physical properties are insufficiently presented.
   - Baseline nutrient status of the experimental soil should be reported.
4. **Leaching Assessment**
   - Nutrient concentrations are reported, but total nutrient losses per treatment (mg/pot or kg/ha) are not clearly quantified.
   - Reporting cumulative nutrient losses would strengthen the conclusions.
5. **Replication**
   - Five replications are acceptable, but statistical power should be discussed.
6. **Figures**
   - Graphs require improved formatting, larger font sizes, and clearer legends.
   - Some figures are difficult to interpret and should include error bars where applicable.

Language and Presentation

Minor Revision Required

The manuscript contains numerous grammatical, typographical, and formatting issues in both French and English sections.

Examples include:

- Missing spaces between words.
- Inconsistent use of units.
- Incorrect punctuation.
- Formatting inconsistencies in treatment descriptions.
- Several long sentences require restructuring for readability.

Additional Issues

- The English abstract requires professional language editing.
- Scientific terminology should be standardized throughout the manuscript.
- Abbreviations should be defined consistently when first introduced.

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Structure and Organization
Strengths
- Logical organization:
  - Abstract
  - Introduction
  - Materials and Methods
  - Results
  - Discussion
  - Conclusion

Weaknesses
- Some Results and Discussion sections overlap.
- Discussion is lengthy and occasionally repetitive.
- Certain interpretations are speculative and require stronger evidence.
- Figures should be integrated more effectively into the narrative.
- The conclusion could be more concise and focused on major findings.

References and Citations
Strengths
- The manuscript cites numerous relevant studies related to biochar, nutrient management, and rice cultivation.
- Several recent references (2021–2025) have been included.

Concerns
1. Reference formatting is inconsistent.
2. Some citations appear incomplete.
3. DOI formatting varies considerably.
4. Several references contain spacing and typographical errors.
5. Some references appear unrelated or questionable in relevance:
   - Example: the citation by Saito & Plonsky (2019) appears to concern language pronunciation teaching rather than agronomy and should be verified.
6. Journal style formatting should be standardized throughout the reference list.

Overall Recommendation
The manuscript presents valuable information regarding nutrient management in irrigated rice systems and contributes useful data on the interaction between biochar and urea super granules. The experimental design is generally sound, and the results support the conclusion that USG improves nitrogen use efficiency. However, inconsistencies in methodology reporting, limitations in data presentation, language issues, and reference verification need to be addressed before publication.

Final Decision
Minor Revision
The manuscript has scientific merit and practical relevance but requires substantial revision in methodology clarification, data presentation, language quality, figure formatting, and reference verification before it can be considered for publication.