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REVIEWER'S REPORT

Manuscript No.: **IJAR-57303**

Title: *La recherche agronomique au Sénégal : Analyse critique des pratiques.*

Recommendation:

Accept after minor revision.....

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

Reviewer Name: Faheem Abdullah

Reviewer's Comment

This manuscript presents a systematic review and critical analysis of statistical methods used in agronomic research in Senegal over a period spanning more than three decades (1988–2023). The study evaluates experimental designs, sampling techniques, and analytical approaches employed in 129 selected studies, with the objective of identifying methodological gaps and proposing improvements.

The topic is highly relevant, particularly in the context of agricultural development and food security in Sub-Saharan Africa. The manuscript makes a valuable contribution by critically assessing the methodological rigor of agronomic research and highlighting areas where statistical practices can be strengthened to improve reliability and reproducibility.

Scientific Contribution and Analytical Depth

The manuscript provides a strong empirical and analytical contribution through its systematic evaluation of statistical practices. The identification of dominant experimental designs—particularly the

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Randomized Complete Block Design (52.54%)—and the widespread use of ANOVA (43.31%) is clearly presented and supported by data (pp. 4–5).

The analysis of sampling techniques, showing the predominance of random sampling (75%), adds further depth to the study (p. 6). The discussion of bootstrap-based estimation of sampling error and confidence intervals is a notable strength, as it demonstrates a more advanced analytical approach to evaluating data reliability (pp. 3–4).

Importantly, the manuscript goes beyond description by identifying critical methodological shortcomings, such as the lack of justification for experimental design choices, insufficient verification of statistical assumptions, and inadequate reporting of sample size determination. These insights significantly enhance the paper's contribution.

However, while the analytical discussion is generally strong, some sections could further deepen the interpretation of results. For example, the implications of methodological weaknesses for policy, agricultural productivity, or research outcomes could be more explicitly elaborated.

Methodology and Analytical Approach

The use of a systematic review guided by PRISMA methodology is appropriate and strengthens the credibility of the study (pp. 2–3). The process of document selection—from 2,863 initial records to 129 included studies—is clearly described and demonstrates methodological transparency.

The application of statistical tools using R (version 4.2.0), along with bootstrap techniques for estimating sampling error and confidence intervals, reflects methodological rigor and appropriate use of analytical tools (pp. 3–4).

Nevertheless, minor clarifications could improve this section. The manuscript could provide more detail on how data were extracted from the selected studies and how variables were coded or categorized. Additionally, potential biases arising from database selection or publication availability could be briefly acknowledged.

Structure, Style, and Presentation

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The manuscript is well structured, with clear sections including introduction, methodology, results, discussion, and conclusion. The logical progression from data collection to analysis and interpretation enhances readability.

The use of figures and tables significantly improves the presentation of results. For instance, the graphical representation of experimental designs (Figure 2, page 5) and statistical methods (Figure 3, page 5) effectively illustrates key findings, while the PRISMA flow diagram (Figure 1, page 3) enhances methodological transparency.

However, there are minor issues related to language and presentation. Some sentences are lengthy and could be simplified for clarity. There are also occasional typographical inconsistencies and formatting issues, particularly in spacing and punctuation.

Specific Observations

The manuscript effectively highlights the lack of verification of ANOVA assumptions, which is a critical methodological concern affecting result validity (p. 7).

The discussion on the limited use of crop models is particularly relevant and could be further emphasized as a future research direction (p. 8).

The recommendations provided are practical and well aligned with the findings, especially those related to improving experimental planning and statistical training.

Final Recommendation

Overall, the manuscript presents a well-executed and methodologically sound study that offers valuable insights into the quality of statistical practices in agronomic research in Senegal. Its systematic approach, clear presentation of results, and practical recommendations are notable strengths.

With minor revisions focusing on enhancing clarity in methodological description, refining language, and slightly deepening analytical interpretation, the manuscript is suitable for publication.

Decision: Accepted with minor revisions.

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