**Response Letter to Editor and Peer Reviewers**

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To the Editor-in-chief,

Experimental Agriculture

**Subject: Revision and resubmission of Manuscript**

Dear Editor,

Thank you for the opportunity to submit a revised version of our manuscript, titled “**Maize-Urochloa Grass Intercropping: An Option for Improving Sustainable Agriculture in the Brazilian Savannah**” to *Experimental Agriculture*. I sincerely appreciate the time and effort that you and the reviewers have dedicated to evaluating our work and providing valuable feedback.

In this revision, I have carefully incorporated all the suggested changes, which are highlighted in green within the manuscript. Additionally, I have included the reviewers' comments immediately after this letter, along with detailed responses explaining how each suggestion was addressed and the corresponding modifications made in the manuscript.

All authors have reviewed and approved the revisions, and I am submitting this manuscript as the corresponding author.

Thank you for your time and consideration. I look forward to your feedback.

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**COVER LETTER TO THE REVIEWERS**

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| **Manuscript Number: EAG-D-24-00227** |
| **Title:** Maize-Urochloa Grass Intercropping: An option for improving sustainable agriculture in the Brazilian Savannah |
| **Authors:** Victória Santos Souza¹; Jaqueline Balbina Gomes Ferreira2; Darliane de Castro Santos2; Lucas T. Greschuk1; Bruna Emanuelle Schiebelbein1; Larissa de Souza Bortolo3; Tulio Porto Gonçalo4; Arlini Rodrigues Fialho5; Stéfany Oliveira de Souza6; Tiago do Prado Paim2; Rodrigo Estevam Munhoz de Almeida7; Lourival Vilela5; Maurício Roberto Cherubin1. |

**1. Initial Considerations**

1.1 We start by thanking the reviewers for the pertinent comments addressed in their reports about our manuscript. They helped us to improve the manuscript in many aspects. Previously to explicitly specify these changes, we remark here that, as a principle, we tried to clarify all the questions raised in your reports.

1.2 This letter serves as a guide to identifying all the changes we have introduced into the revised version of the manuscript to consider your pertinent suggestions. The most relevant changes in the manuscript are identified by highlighted text in the file “**Revised Manuscript with highlighted changes**”.

Text in green indicate how the authors addressed the comment/question from the reviewers in the manuscript.

**2. Reviewer**

**Reviewer #1:**

The manuscript provides valuable insights into Brazilian agriculture and the dynamics of maize and brachiaria intercropping in tropical regions. However, there are several critical issues that need to be addressed. The manuscript contains numerous errors in English language usage, several unreferenced citations, incorrect citations, and fundamental problems with the application of the Land Equivalent Ratio (LER) formula, leading to inaccurate statements and results throughout the text. These concerns necessitate a Major Review. Moreover, the study does not include any analysis of soil health indicators, which is a significant oversight considering the context. Therefore, while I recommend major revision to the manuscript, I leave the final decision to the Editor regarding its fit within the special collection on soil health. I strongly recommend a professional revision for the English language and the correction of the LER data.

**Author’s comment:** Thank you for your valuable feedback. We have carefully reviewed and revised the LER calculation, ensuring greater clarity and accuracy. The LER has been recalculated to include both maize grain yield and forage biomass, considering their respective single and intercropped treatments, following widely used methodologies in intercropping studies (Dunea and Dincǎ 2014; Mead & Willey, 1980; Agegnehu et al., 2008). Our primary focus remains on maize performance, as it is the most economically relevant crop in this system. However, we recognize the importance of assessing the productivity of the entire system. To ensure a more comprehensive evaluation, we have now included monoculture treatments for both maize and forage species in the LER calculations.

To enhance transparency, we have clearly described this revised methodology in the Materials and Methods section, detailing the inclusion of both maize grain yield and forage biomass in the intercropping treatments, along with their respective monoculture counterparts. This revision ensures a complete assessment of intercropping efficiency while maintaining our focus on maize yield.

* English Language Revision:

We have carefully revised the manuscript to correct English errors.

* Lack of soil health indicators:

Although our study does not include direct measurements of soil health, we consider the Land Equivalent Ratio (LER) to be an indirect indicator of soil health, as it reflects the efficiency of resource use in intercropping systems. Higher LER values can be associated with improved biomass production, better nutrient cycling and better soil cover, all of which contribute to long-term improvements in soil health. We have revised the discussion to acknowledge this perspective and to highlight how biomass inputs and intercropping practices influence soil health over time. In addition, we emphasise the need for future studies to include detailed soil health assessments, including physical, chemical and biological indicators, to improve our understanding of the interactions between intercropping systems and soil sustainability.

**How LER in the maize-forage intercropping was measured if no treatment of monocropping forage was reported?**

**Author’s reply:** Thank you for your comments. The monoculture forage treatments are now clearly reported in the Materials and methods section. The biomass values for both monoculture and intercropping systems are reported in the supplementary material. As the focus of this study is on maize yield, these data were not initially highlighted but have now been properly documented to ensure clarity and transparency in the LER calculations.

* Discussion

**Because of that the post-emergence herbicide management is recommended in this cases. Its important discuss this briefly in the discussion, and highlight to readers that this management was no adopt in this study**

**Author’s reply: Thank you. This point has been addressed in lines 394–396.**

**Reviewer #2:**

The manuscript addresses a relevant topic, but some sections could be better developed to strengthen the argumentation. Suggestions and comments have been made directly in the file.

**Author’s comment: Ok, thank you.**

Introduction

Algumas frases poderiam ser reestruturadas para facilitar a leitura e melhorar a organização lógica;

A introdução menciona diversos benefícios do consórcio, mas precisa apresentar de forma mais evidente quais lacunas específicas o estudo pretende preencher.

O texto discute biomassa e saúde do solo extensivamente, mas esses aspectos não aparecem nos objetivos nem na hipótese de forma clara.

O objetivo do estudo está um pouco vago... poderia ser mais específico;

A parte final da introdução deveria destacar melhor a relevância do estudo e como ele se diferencia de pesquisas anteriores.

**Author’s comment: Thank you. We have revised the introduction to address these points. The text has been restructured to improve readability and logical flow. We have also made the study's research gap more explicit by clearly stating the specific questions it aims to address. In addition, we have refined the objectives and hypotheses to better align with the discussion on biomass and soil health (L: 119-125).**

* Methodology

How LER in the maize-forage intercropping was measured if no treatment of monocropping forage was reported?

**Author’s comment:** Thank you for your comments. The monoculture forage treatments are now clearly reported in the Materials and methods section.

* Results

O texto menciona que o rendimento do milho apresentou forte correlação positiva com várias variáveis (massa de forragem, precipitação, etc.), mas não especifica os valores ou coeficientes de correlação, o que tornaria a interpretação mais precisa.

A frase sobre a LER ser "mais fortemente correlacionada com rendimento e peso de mil grãos" precisa de mais detalhes para esclarecer a magnitude dessa correlação em relação às outras variáveis. O texto destaca a correlação negativa de "sowing days" com quase todas as variáveis do milho, mas essa observação não é explorada em termos de significado agronômico ou impacto. A exceção apontada (número de plantas) poderia ser mais bem discutida, explicando por que essa variável é diferente.

**Author’s comment:** Thank you very much. We have addressed these concerns in lines 338-346.

O texto menciona que "duas dimensões explicam 60% da variância dos dados", mas não especifica quanto cada dimensão contribui individualmente para essa variância. Além disso, não vi menção às variáveis que têm maior peso em cada componente principal. A afirmação sobre "número de dias" estar em quadrantes opostos a yield, LER e TGW está ok, mas falta uma explicação mais detalhada do que isso significa no contexto agronômico. Por exemplo, a influência específica do manejo ou da precipitação não foi bem fundamentada. A PCA não prova causalidade, ela mostra associações estatísticas, acho incoerente afirmar que a redução da precipitação é a única responsável pela queda do rendimento....acho que não pode ser afirmada com base apenas na PCA. Sugiro reformular para sugerir uma associação e não causalidade.

**Author’s comment:** Thank you very much. We have addressed these concerns in lines 357-366.

* Conclusions

Sugiro reformular as conclusões para enfatizar os achados específicos do estudo e conectar melhor os resultados ao objetivo, achei algumas frases muito vagas... também faltou destacar qual a principal contribuição do estudo em relação ao que já era conhecido sobre consórcios agrícolas.

**Author’s comment: Thank you very much. We have revised the conclusion to emphasise the specific findings of the study and to better link the results to the original objectives and hypotheses.**