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REVIEWER'S REPORT

Manuscript No.: **IJAR-53483** Date: 23-08-2025

Title: Phenotypic screening of 32 West African Sorghum Genotypes for Drought Tolerance

Recommendation:
Accept as it is .....YES.....
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: Tahir Ahmad

Reviewer's Comment for Publication.

The title is concise and descriptive. It clearly reflects the content and scope of the research, highlighting the core activity (phenotypic screening), the subject (32 West African sorghum genotypes), and the focus (drought tolerance). It effectively communicates the experimental framework and thematic emphasis.

Abstract

The abstract provides a detailed and well-structured summary of the study, covering key components including objectives, methodology, results, and conclusions.

- **Objective**: The aim of identifying sorghum adaptation mechanisms and drought-tolerant genotypes is clearly stated early in the abstract.
- **Methods**: The study's methodological focus on agro-physiological and agro-morphological traits under controlled water stress conditions at a critical developmental stage (transition to panicle initiation) is adequately detailed.
- **Findings**: Key results are quantified and presented with precision—e.g., decreases in leaf water potential (–0.59 to –4.84 MPa), stomatal conductance (–25%), photosynthesis (–

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13%), transpiration (–40%), and yield (–47%). These data support the claim of variable drought responses among genotypes.

- Interpretation: Genotypes are categorized by performance (e.g., V26 as elite; others as potential gene reservoirs), and the combined use of physiological data, stress indices (SSI, STI), and multivariate analysis is justified as an integrated selection approach.
- Language and Structure: The abstract maintains a clear academic tone, with logical sequencing of content and terminology consistent with plant physiology and breeding research.

Overall, the abstract offers a comprehensive yet focused overview of the study's scope, findings, and implications for crop improvement.

Introduction

The introduction is well-grounded in context and scientific relevance.

- Contextual Background: The first paragraph positions sorghum within the global agricultural landscape and emphasizes its regional importance in Africa and Asia. The inclusion of both production value (grain and biomass) and ecological niche (semi-arid Sudanian-Sahelian zones) provides clarity about its significance.
- Problem Statement: The introduction outlines how abiotic constraints, especially drought, pose major threats to sorghum production. The connection to climate change and increasing frequency of extreme weather events further amplifies the urgency of the research.
- Literature Support: Citations from relevant studies (e.g., Mindaye et al., 2016; Ben Mariem et al., 2021; Pickson et al., 2023) support the points raised, offering a well-supported scientific rationale. The referencing of recent data (e.g., Deng et al., 2024) highlights the current relevance of the issue.
- Relevance: The introduction builds a logical bridge between global challenges and local solutions by emphasizing the need for drought-resilient genotypes, aligning the study with agricultural adaptation goals under climate change.

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The introduction successfully sets the stage for the experimental study, framing the problem clearly and justifying the research direction.

General Observations

- The content is **scientifically rigorous**, relevant to both academic and applied research in crop improvement under stress conditions.
- There is **strong coherence** between the background context, problem definition, and research purpose.
- The use of **quantitative data and specific genotype identifiers** enhances the transparency and applicability of findings.
- The integration of **multivariate analysis** and stress indices within the methodology demonstrates methodological depth.