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REVIEWER'S REPORT

Manuscript No.: IJAR-52157 Date: June 10 2025

Title: Conceptual Study and Sizing of a Drip Irrigation Fruit Arboretum in the Djarmaya Plain, Hadjer Lamis Province, Chad

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

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

Reviewer Name: Dr Lakhdar Guerine **Date:** June 10 2025

Detailed Reviewer's Report

This document presents a conceptual study and hydraulic design for a drip-irrigated fruit arboretum in the Djarmaya Plain (Hadjer-Lamis Province, Chad). The objective is to develop a water-efficient irrigation system for two fruit species—Citrus clementina and Julie variety mango trees—over a total area of 3.75 hectares. The study is based on precise topographic surveys, hydraulic modeling, crop water requirement calculations using local climatic data, and the use of CropWat software. The system is powered by a solar submersible pump. The tA solar submersible pump powers the systemotal estimated project cost is 27,547,580 CFA francs, or 7,346,025 CFA francs per hectare.

Strengths

- Relevance of the topic: The study is well grounded in the context of food security and sustainable water management in the Sahel region.
- Technically rigorous methodology: Includes differential GPS surveys, detailed hydraulic sizing, and integration of CropWat modeling.
- Use of local climatic data (evapotranspiration, precipitation).
- Green energy component through solar-powered pumps, aligned with climate adaptation goals.

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- Comprehensive presentation with technical calculations, figures, plans, and a detailed cost estimate.

Weaknesses

- Language and form: Numerous grammatical and syntactic issues in English reduce readability (e.g., "trees are major indicators of the choice...").
- Limited and sometimes redundant references (e.g., Hanson & May 2007 appear twice).
- Weak discussion and critical analysis: The connection between results and objectives, as well as methodological limitations or broader implications, is insufficiently explored.
- Occasionally confusing structure: Some overly dense tables could be simplified or moved to appendices.
- No field validation or pilot testing is included to support the proposed results.

Recommendation: Major Revision

This work has a solid and original foundation, particularly for submission to technical, agricultural, or environmental engineering journals. However, a thorough revision is required, especially:

- A comprehensive English language editing to improve clarity and correctness.
- Restructuring the discussion section to better connect findings with goals, limitations, and implications.
- Highlighting the scientific contribution of the project (innovation, scalability, reproducibility).