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REVIEWER'S REPORT

Manuscript No.: IJAR-54022 Date: 25.09.2025

Title: Diagnosis of water needs and improved solar pumping solution: case of market gardeners in the Plateaux region, Togo

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** **Date:** 25.09.2025

Reviewer's Comment for Publication.

(*To be published with the manuscript in the journal*)

The reviewer is requested to provide a brief comment (3-4 lines) highlighting the significance, strengths, or key insights of the manuscript. This comment will be Displayed in the journal publication alongside with the reviewers name.

General Comments

The manuscript addresses an important and timely issue of sustainable irrigation and water management in the context of climate change in Togo. The study provides useful survey data and develops a solar-powered pumping solution with practical applications for smallholder farmers. The work has both scientific and socio-economic relevance. However, the manuscript requires improvements in clarity, conciseness, and overall flow to enhance readability.

Content and Originality

- The paper combines survey analysis with technical design of a solar irrigation system, which is original and valuable.
- The integration of socio-economic data (age, gender, challenges faced) with engineering solutions strengthens the paper's applied relevance.
- The originality is moderate to high, though the technical modeling is based largely on existing standard equations (Penman-Monteith, Bernoulli, etc.). The real contribution lies in contextualizing these models for the Plateau region.

Technical Quality

- The technical methodology is sound and equations are correctly presented, though the formatting of formulas needs to be improved.
- Field validation at 75 sites adds robustness.

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- Some results could be better supported with statistical analyses rather than descriptive percentages.
- More detail is needed on how survey sampling was conducted (random, purposive, etc.).

Language and Presentation

- The manuscript is understandable but has several grammatical errors, inconsistent tense usage, and awkward phrasing that affect readability.
- Figures and tables are informative, but captions should be more detailed and self-explanatory.
- The writing style should be made more concise by reducing repetition (e.g., repeated references to survey percentages).

Structure and Organization

- The manuscript generally follows the standard structure (Introduction, Methodology, Results, Discussion, Conclusion).
- The introduction is informative but could be shortened and focused more directly on the research gap.
- The Results and Discussion sections are combined; it would be clearer to separate them.
- Some equations (e.g., (3), (7), (10)) are poorly formatted and need clearer variable explanations.

References and Citations

- References are adequate and recent, covering climate change, irrigation, and solar energy literature.
- Some citations are not fully standardized (e.g., [16] is incomplete, [18] has only a web link without proper citation).
- Ensure uniform reference style according to the journal guidelines.
- Include more international comparative studies on solar irrigation for stronger contextualization.

Overall Recommendation

Minor Revision

The manuscript addresses a highly relevant problem and has potential for publication. However, significant revisions are required to improve the clarity of language, the formatting of equations and references, and the organization of results. Strengthening the statistical analysis of survey data and ensuring consistent citation style will improve the technical credibility and presentation quality.

Detailed Reviewer's Report