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REVIEWER'S REPORT

Manuscript No.: IJAR-50368 Date: 24-02-2025

Title: ANALYSIS AND NUMERICAL MODELING OF SOLAR DRYERS IN AGRI-FOOD CHAINS: INVESTIGATION ON PINEAPPLE DRYING PROCESS

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's Name: Tahir Ahmad

Reviewer's Decision about Paper: **Recommended for Publication.**

Comments (*Use additional pages, if required*)
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Reviewer's Comment / Report

Overall Evaluation:
The paper provides a detailed and well-structured analysis of solar drying systems in the agri-food industry, with a specific focus on pineapple drying. It effectively presents the significance of numerical modeling in predicting drying time and optimizing dryer configurations. The study is grounded in extensive literature research, incorporating data from multiple academic databases and emphasizing the importance of local climate adaptation, particularly in Cotonou, Benin.

Abstract:
The abstract concisely summarizes the objectives and findings of the study. It effectively highlights the research gap concerning the development of a pineapple drying model tailored to Cotonou's meteorological conditions. The inclusion of key methodologies and findings makes it informative and relevant.

Introduction:
The introduction provides a strong background on post-harvest losses and the importance of drying technologies. The discussion on the advantages and disadvantages of various drying methods, including solar drying, is well-articulated. The section successfully contextualizes the necessity of numerical

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modeling in optimizing solar drying processes. Relevant references support the claims, and the discussion on the role of solar dryers in improving food security and sustainability is noteworthy.

Literature Review:
The literature review is comprehensive, covering multiple aspects of solar drying, mathematical modeling, and their applications in the food industry. The systematic research approach in selecting relevant studies from different databases is well-documented. The review effectively identifies the strengths and limitations of existing research while emphasizing the gap related to pineapple drying under Cotonou's specific conditions.

Methodology:
The methodology is clearly outlined, particularly in the approach to selecting research articles. The criteria for inclusion and exclusion of studies are well-defined. The study's reliance on keywords for identifying relevant literature demonstrates a structured approach. The use of computational modeling techniques and comparative analysis of different models aligns well with the study's objectives.

Findings and Discussion:
The study presents a well-organized discussion on the performance of different drying models. The evaluation of existing solar dryers and their efficiency in preserving pineapple is well-supported by literature. The findings contribute valuable insights into the importance of regional climatic factors in modeling solar drying systems. The emphasis on the need for location-specific models differentiates this study from existing literature.

Conclusion:
The conclusion effectively summarizes the key findings and reiterates the significance of developing a pineapple drying model adapted to Cotonou's weather conditions. The discussion reinforces the relevance of mathematical modeling in optimizing solar drying processes.

References:
The paper is well-referenced, drawing from credible academic sources. The citations provide strong support for the arguments presented throughout the study.

Final Remarks:
The study is well-structured and makes a valuable contribution to the field of solar drying technology. The comprehensive analysis of literature and the focus on numerical modeling enhance its relevance to both researchers and practitioners in the field of food preservation and renewable energy applications.