Review Form 3

Journal Name:	**Asian Journal of Agricultural Extension, Economics & Sociology**
Manuscript Number:	**Ms_AJAEES_125951**
Title of the Manuscript:	**Vanishing paddies: Tracing the transformation of rice cultivation in Kerala**
Type of the Article	**Original Research Article**

Review Form 3

PART 1: Review Comments

Compulsory REVISION comments	**Reviewer's comment**	**Author's Feedback** *(Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)*
Please write a few sentences regarding the importance of this manuscript for the scientific community. Why do you like (or dislike) this manuscript? A minimum of 3-4 sentences may be required for this part.	This manuscript is significant for the scientific community as it analyses the transformative changes in rice cultivation in Kerala over an extensive period. The study offers knowledge of agricultural trends that can inform future research and policy-making. The manuscript also highlights the importance of interventions like the Kerala Conservation of Paddy and Wetland Act, which contribute to understanding effective measures for sustainable agriculture. It could benefit from a detailed exploration of the implications of regional disparities in rice production.	
Is the title of the article suitable? **(If not, please suggest an alternative title)**	It is suitable but can be modified to **"*The Evolution of Rice Cultivation in Kerala, India: Analysing Historical Trends, Productivity, and Policy Interventions.*"**	
Is the abstract of the article comprehensive? Do you suggest the addition (or deletion) of some points in this section? Please write your suggestions here.	**It is somewhat comprehensive, but it should be improved based on the specific comments I have provided in the attachment.**	
Are subsections and structure of the manuscript appropriate?	Yes, it is appropriate	
Please write a few sentences regarding the scientific correctness of this manuscript. Why do you think that this manuscript is scientifically robust and technically sound? A minimum of 3-4 sentences may be required for this part.	This manuscript demonstrates scientific correctness through its extensive data analysis spanning over six decades. This provides an understanding of the trends in rice cultivation in Kerala. A structured period-wise analysis effectively captures the shifts in agricultural practices and land use. It further provides a clear narrative supported by empirical evidence. Additionally, integrating socio-economic factors and government interventions showcases a clear approach to understanding the decline in rice cultivation. The manuscript is technically sound, employing appropriate methodologies and a well-defined framework that strengthens its conclusions and recommendations for future policy interventions.	
Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form. **-**	Sufficient	

Review Form 3

Minor REVISION comments **Is the language/English quality of the article suitable for scholarly communications?**	Suitable but needs to be improved by experts	
Optional/General comments	**Title** The title could be reviewed as "**The Evolution of Rice Cultivation in Kerala, India: Analysing Historical Trends, Productivity, and Policy Interventions**" **Abstract** • Clearly stating the primary objectives or research questions at the beginning could provide context for the significance. • Although you mentioned a district-wise analysis and periods, briefly mentioning the research methods or analytical techniques used (e.g., statistical analysis, historical analysis) would strengthen the methodology component in the abstract. • While you mention the decline in area and productivity, providing specific quantitative results (e.g., percentages of decline or increases in yield) in the findings aspect could make the findings impactful. • Presenting the implications of your findings, such as the potential impact on food security or socio-economic conditions in Kerala, could emphasise the importance of the abstract. • Suggesting specific areas for future research could highlight ongoing issues and indicate that the topic remains relevant. **Introduction** • Expand briefly on climate impacts specific to rice production (e.g., rainfall changes, extreme weather) and link these to Kerala's vulnerabilities, creating a smooth transition between global and local contexts. • Clarify why Kerala's experience with the Green Revolution may differ from other Indian states. • Add context on socio-economic drivers like profitability shifts, labour changes, and crop shifts that have contributed to the decline of rice productivity. • Briefly touch on water scarcity and climate variability's specific effects on Kerala's rice farms. Use data to illustrate the scale of decline. • Mention rice's socio-cultural significance in Kerala to underline the impact of its decline on local heritage and diets. • Explicitly state the research gap. • explain how identifying structural breaks and trends could support local policies for sustainable rice production. • Briefly define *structural breaks* for clarity and note that district-wise analysis captures important regional differences. • Link the objective directly to food security and policy outcomes.	

Review Form 3

	• Note the environmental implications of declining rice cultivation, like biodiversity impacts or water table changes, to emphasise sustainability risks. • Mention past or existing state policies that might have affected rice cultivation, providing context for discussing policy needs. **Methodology** • Connect Kerala geographical diversity directly to how it influences rice cultivation variability and explain why this variation is significant for the analysis. • Specify the data types (e.g., yield, area, productivity) and their granularity. • Explain why the study period began in 1957-58 and district-level data analysis started in 1987-88. • Clearly state why the Chow test and Bai-Perron method are needed to detect breakpoints, emphasising how they complement each other. • Briefly justify the choice of CAGR over other growth measures and explain why using Excel's LOGEST function improves accuracy. • Explain what area variance, yield variance, and area-yield covariance represent and why they are critical to understanding rice production trends. • Justify the selection of the Cuddy-Della Valle Instability Index and clarify when and why the coefficient of variation (CV) is used as an alternative. • Simplify complex notations and terminology where possible. • Ensure a logical flow, starting with general data collection methods and ending with specific analytical tools. **Results and Discussion** • Begin with a clear overview of the general trends in rice cultivation in Kerala over the entire period (1957-2023), focusing on the decline in the cultivated area versus the increase in productivity. • Present quantitative data, e.g., the percentage reduction in cultivation area and the specific increase in productivity over time. • Break down the study periods (1957-2023) into the specified four structural phases, analysing each for key shifts in trends, policies, and other influences. • For each period, elaborate on the primary forces affecting rice cultivation, including government policies, shifts to other crops, and productivity changes due to farming innovations. • 1957-1986: Highlight the peak in rice cultivation and productivity growth and the introduction of the Green Revolution, land reforms, and their impact on productivity. Address competition from coconut and rubber crops during this period. • 1987-1996: Detail the beginning of significant declines in rice area due to a shift towards more profitable crops, especially coconut and rubber. Emphasise the contrast between area	

Review Form 3

	reduction and productivity gains and the effects of these dynamics on total production. • 1997-2006: Discuss the continued decrease in rice area and production, alongside further productivity increases. Explain the role of population growth and land demand in the decline, as well as the influence of real estate on land use. • 2007-2023: Focus on the effects of the 2008 Paddy Land and Wetland Act and the subsequent changes in cultivation trends, showing how government intervention helped slow the decline in rice areas. Address how these policy-driven efforts and productivity advancements positively impacted production despite land constraints. • Compare district-specific impacts on rice cultivation, area reductions, and productivity gains. This can provide insights into the regional variability within Kerala. • Highlight districts like Ernakulam and Thrissur, which experienced significant declines, and contrast with areas showing positive productivity growth, like Malappuram and Palakkad. • Discuss how the rise of coconut and rubber cultivation impacted rice land availability and shaped Kerala's agricultural priorities. • Explain the economic incentives for shifting to these high-demand cash crops and the broader influence of market and profitability factors on farmers' decisions. • Address the role of population growth in intensifying land demand for non-agricultural purposes, which led to rice field conversions for residential and commercial uses. • Assess the importance of governmental policies like the 2008 Paddy Land and Wetland Act, illustrating how legal frameworks and incentives helped slow the decline in rice areas. • Discuss advancements in agricultural technology and high-yielding varieties as contributing factors to productivity gains, helping counterbalance the impacts of land reduction on total production. • Provide a concise summary of the findings, linking the evolution of rice cultivation to policy, economic shifts, and social factors. • Highlight policy implications for sustainable agriculture and recommendations for balancing rice cultivation with cash crop demands in Kerala's agricultural strategy. **Conclusion and Recommendations** • Highlight the main trends in rice cultivation, including the decline in area, increase in productivity, and the socio-economic factors contributing to these changes. • Stress the importance of implementing the recommended policy measures to address the decline in rice cultivation and ensure sustainability. • Discuss the need for long-term strategies beyond immediate interventions, focusing on sustainable land use and agricultural practices.	

Review Form 3

	• Mention the potential for technology adoption to enhance productivity and make rice farming more economically viable. • Suggest ways to engage local communities and farmers in decision-making processes related to agricultural policies and practices. • Acknowledge potential future challenges, such as climate change impacts, and recommend adaptive strategies. • Recommend areas for future research to understand the complexities of rice cultivation dynamics and the effectiveness of policy interventions. **References** • Format references as per Journal guidelines **Appendices** • Shift long tables to the appendix section	

PART 2:

	Reviewer's comment	**Author's comment** *(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)*
Are there ethical issues in this manuscript?	*(If yes, Kindly please write down the ethical issues here in details)*	

Reviewer Details:

Name:	**Dickson Utonga**
Department, University & Country	**Tengeru Institute of Community Development, Tanzania**