

REVIEWER'S REPORT

Manuscript No.: JNAVS -014

Title: Data-driven Assessment of Climate-Smart Agriculture Adoption among Small holder Farmers in Semi-arid Zones of Nigeria.

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 - ID: JPR-170

Reviewer's Comment for Publication.

This manuscript addresses an important and timely topic—the adoption of Climate-Smart Agriculture (CSA) among smallholder farmers in climate-vulnerable regions of Nigeria. The authors have made a commendable effort to integrate household survey data, qualitative insights, geospatial analysis, and machine learning techniques, which represents a methodologically ambitious and potentially valuable contribution to the literature on agricultural adaptation. However, several substantive issues must be addressed before the manuscript can be considered for publication. First, the manuscript suffers from significant structural and presentation problems. The opening lines of the abstract and introduction contain fragmented text and incomplete sentences, suggesting inadequate proofreading. More critically, the manuscript refers extensively to tables and figures that are not included in the submitted file—including Figure 1 (study area map), Table 1 (LGA coordinates), Figure 2 (analytical workflow), Figure 3 (ROC curve), Figure 4 (feature importance plot), and Figure 5 (spatial distribution map). Without these visual elements, the reader cannot evaluate the spatial analysis, model performance, or geographic patterns that form the core of the study's contributions.

Second, while the integration of multiple data sources is commendable, the analytical depth requires strengthening. The machine learning approach is described in general terms, but critical details—such as which specific algorithms were tested, how hyperparameters were tuned, how validation was performed, and how the composite adoption index was constructed—are insufficiently explained. The qualitative findings, though informative, are presented thematically but lack the depth of direct quotations or systematic coding procedures that would strengthen their credibility. Third, the discussion section, while adequately connecting findings to existing literature, does not critically engage with limitations or alternative explanations. The policy implications, though relevant, remain somewhat generic and could be more tightly linked to the spatial heterogeneity identified in the analysis.

Finally, the reference list, while extensive, contains several formatting inconsistencies and would benefit from updating with more recent publications where available. In conclusion, this manuscript demonstrates considerable potential but requires major revisions to address the missing visual elements, provide greater methodological transparency, deepen the analytical discussion, and correct presentation

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issues. With these improvements, the study could make a meaningful contribution to understanding CSA adoption dynamics in semi-arid Africa.