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Climate-Smart Agriculture Techniques and Rice Yield Evolution in Benin's Plains: A Theoretical Framework

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Abstract

{ "background": "Climate-smart agriculture (CSA) techniques are increasingly recognised for their potential to enhance agricultural productivity while mitigating environmental impacts. In Benin's plains, a region characterized by high rainfall and fertile soil, rice cultivation is a cornerstone of the economy. However, climate variability poses significant challenges to achieving sustainable yields.", "purposeandobjectives": "This theoretical framework article aims to develop a comprehensive understanding of how CSA techniques can be effectively applied in Benin's rice-growing areas. The objectives are to identify key CSA interventions that could lead to increased yield stability and resilience against climatic fluctuations, and to establish the foundational knowledge for future empirical studies.", "methodology": "The methodology will involve literature review, stakeholder consultations, and analysis of existing data from Benin's rice farms to assess the efficacy of various CSA techniques. The theoretical framework will be constructed based on these insights, without requiring empirical results or data collection.", "keyinsights": "A key insight is that a combination of conservation agriculture practices, such as mulching and crop rotation, can significantly increase yield stability by reducing water loss and soil erosion in the region's arable lands. This insight highlights the need for tailored CSA approaches to maximise benefits across diverse climate conditions.", "conclusion": "This theoretical framework provides a robust foundation for understanding how CSA techniques could be deployed to enhance rice yields in Benin's plains, with potential applications extending beyond this study area.", "recommendations": "Recommendations include prioritising research into the specific impact of CSA on soil health and water management, as these factors are critical for achieving sustainable yield outcomes. Additionally, engaging local communities and farmers is essential for the successful implementation and adoption of CSA strategies in Benin's rice-growing regions.", "keywords": "Climate-Smart Agriculture, Conservation Agriculture, Rice Yield Stability, Benin Plains",

"contribution_statement": "This article introduces a novel theoretical framework that identifies key CSA techniques with potential to enhance rice yields in Benin's plains, offering a roadmap for future empirical studies

Keywords: *Benin, GIS, Sustainability, Climate Change Adaptation, Participatory Monitoring, Integrated Pest Management, Yield Gap Analysis*

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