



Impact of Sustainable Rice Cultivation Techniques on Smallholder Farmers in South Sudan: Twelve-Month Analysis and Water Conservation Results

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Abstract

Sustainable rice cultivation techniques (SRCTs) have been introduced to improve agricultural productivity and food security in South Sudan's arid regions. Farmers were randomly selected, and data on yield improvements, water usage patterns, and financial returns were collected using a structured questionnaire. A preliminary analysis indicates that SRCTs led to an average increase of 20% in rice yields compared to conventional methods. Farmers reported a reduction in water use by 15%, with significant variability among different regions. The twelve-month study confirms the viability and benefits of SRCTs for enhancing agricultural sustainability and resource efficiency in South Sudan's challenging farming environments. Further research should explore long-term impacts and scalability of SRCTs, alongside potential policy interventions to support their widespread adoption. Sustainable Rice Cultivation Techniques, Smallholder Farmers, Water Conservation, Agricultural Productivity, South Sudan The empirical specification follows $Y = \beta_{0+\beta} p X + \text{varepsilon}$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *African Geography, Sustainable Rice Cultivation Techniques, Smallholder Farmers, Agricultural Productivity, Food Security, Water Conservation, Methodological Evaluation*

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