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Solar Irrigation Systems in Southern Malawi: Farmer Profits and Environmental Sustainability Assessment

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Abstract

Solar irrigation systems are increasingly being adopted in Malawi for cotton production due to their potential to enhance both economic returns and environmental sustainability. A comparative analysis was conducted among a sample of Malawian farmers who adopted solar irrigation systems versus those using conventional irrigation methods. Data collection included surveys, interviews, and monitoring of system performance over a two-year period. The findings indicate that solar irrigation systems not only increased cotton yields by an average of 15% but also reduced water usage by 25%, demonstrating significant environmental benefits alongside economic gains for farmers. Solar irrigation systems offer promising prospects for enhancing agricultural productivity and sustainability in Malawi, particularly for cotton production. Policy makers should support the adoption of solar irrigation technologies through subsidies and extension services to maximise their impact on both rural economies and environmental conservation. solar irrigation, cotton cultivation, farmer profits, environmental sustainability, comparative study

Keywords: *Sudanic, Cotton, Irrigation, Sustainability, Renewable, Econometrics, Methodology*

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