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Factors explaining the adoption of water-saving strategies by irrigators in Burkina Faso

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Abstract

In a context marked by increasingly scarce water resources and the growing vulnerability of agriculture to the effects of climate change, it is essential to promote the adoption of Water Saving Strategies (WSS) in order to improve water use efficiency and strengthen the resilience of agricultural systems. This study examines the determinants of WSS adoption and intensity of adoption among irrigators in Burkina Faso. The analysis is based on primary survey data collected from 1,126 irrigators in several areas covering 13 of the country's 17 regions. The methodological approach is based on the estimation of a Ridge (L2) regularized multinomial logistic regression model to identify the micro, meso-individual, and meso-structural factors influencing adoption behaviour. The intensity of adoption was measured using a categorical variable reflecting the number of water-saving strategies implemented by each irrigator. The results indicate that institutional support, particularly from local water committees, significantly increases the probability and intensity of WSS adoption. Environmental awareness alone is not sufficient to promote consistent adoption. However, its interaction with institutional support produces a strong and statistically significant positive effect, highlighting the complementary role of cognitive and institutional factors. Farm size also positively influences the intensity of adoption, suggesting that large-scale irrigators are more inclined to invest in water-saving practices. On the other hand, high opportunity costs are a major constraint, limiting irrigators' ability to adopt such strategies. These results highlight the importance of strengthening institutional support mechanisms, improving access to extension services, and raising environmental awareness in order to promote sustainable water management. The study contributes to the literature by providing empirical evidence from the Sahelian context and by incorporating the interaction effects between environmental awareness and institutional support.

Keywords: Adoption of innovations, Burkina Faso, irrigation, sustainable water management, water-saving strategies

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