

Perception of climate change and coping strategies among smallholder irrigators in Zimbabwe

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Abstract

Introduction: Across sub-Saharan Africa, governments and international aid agencies are making huge investments in smallholder irrigation schemes to enhance food security, climate resilience and economic transformation in rain-fed farming systems. Unfortunately, a majority of the smallholder irrigation schemes have performed dismally on these fronts. Climate change is a major exacerbating factor to existing challenges resulting in the poor performance of the schemes. Hence, it is crucial to understand smallholder irrigators' perceptions of climate change and current adaptation strategies to co-design appropriate and acceptable adaptation strategies to address water stress in the schemes. This area had received less significant research attention. This study aims to determine the perception of climate change and coping strategies in smallholder schemes.

Methods: A mixed-method research strategy was used to collect data from 317 irrigation scheme farmers in three schemes (Exchange, Insukamini, and Ruchanyu) in Midlands Province. A binary logistic regression (BLR) method was used for data analysis.

Results: The results suggest that scheme farmers have noticed changes in temperature and rainfall patterns. Results obtained from the model show that climate change perception was mainly influenced by age, gender, location, irrigation experience, and plot size. Farmers perceived that climatic change has resulted in decreased irrigation water availability, thus leading to poor yields. This study also shows that the main adaptation strategies to water stress include improving soil moisture conservation, construction of small-scale reservoirs, water charging and trade, setting clear water use priorities, and adoption of climate-resilient and short-season crop varieties. Perception of high temperatures, long dry periods, late rainfall, increase in the frequency of drought, shortening of cold season, and shortening of rain season influence adaptation strategies adopted by scheme farmers.

Conclusion: This study offered useful data for policymakers and irrigation developers to develop appropriate policies and programs to improve the sustainability of schemes given current and projected water stress in Zimbabwe and sub-Saharan Africa in general.