Building Climate Resilience in Evolving Food Systems: Strategies to Boost Agricultural Yields among Farmers in Bungoma County

Sanny Anthony Mabele[1], Dr. Godfrey Murunga[2]

[1]MSc. Student at Masinde Muliro University of Science and Technology

[2]Kisiwa Technical Training Institute the Department of Mathematics and Applied Sciences

[1]Corresponding Author Email: antosanny@gmail.com

Abstract

The evolving global climate poses challenges to agricultural systems, necessitating resilience enhancement against environmental variability. This study explored the intersection of climate dynamics and agricultural practices within food systems, impacting food security and livelihoods. In Bungoma County, Kenya, agricultural productivity faces climate change threats, necessitating effective adaptation strategies for long-term food security. The study's objectives include investigating climate variability impacts, evaluating adaptation strategies, and assessing socio-economic implications of climate-resilient practices for long-term food security in the region. The study utilized a mixed-method design, combining quantitative and qualitative approaches, with a sample size of 396 using stratified and random sampling to gather data from targeted One Acre Fund Tupande farmers in nine sub-counties in Bungoma County. Both survey questionnaire and interviews were employed as data collection tools and triangulation, ethical considerations, and statistical analysis were key in understanding climate resilience and enhancing agricultural productivity. Descriptive and inferential statistics were applied to analyse data. Findings indicate that most sampled farmers reported significant impacts of changes in weather patterns and climate variability on agricultural productivity. Farmers perceive traditional farming practices and modern technologies as effective in mitigating the effects of climate change on agricultural yields. However, the feasibility of adopting agroforestry practices and investing in infrastructure for climate resilience is slightly lower. Additionally, farmers view climate-resilient agricultural practices as economically viable and beneficial for improving household income and livelihoods. They expressed confidence in the effectiveness of government policies and the long-term sustainability of these practices for ensuring food security. The findings highlight the impact of climate variability on agricultural productivity and farmers value traditional and modern practices for climate resilience but find agroforestry and infrastructure investment less feasible. Government policies are trusted for ensuring food security through sustainable agricultural practices and tailored interventions are recommended. These results offer insights that can guide the development of tailored interventions to enhance climate resilience and agricultural productivity among farmers in Bungoma County.

Key words: Adaptation Strategies, Agricultural Productivity, Climate Variability, Farmers, Socio-economic Implications