

MAKERERE UNIVERSITY



Impact of Climate Change on Agricultural Production in a Montane Agro-ecological zone of Bufumbo Sub-county, Mbale District, Eastern Uganda

By:

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ABSTRACT

This study assessed the impact of climate change and variability on smallholder rain-fed agricultural production in a montane agro-ecological zone in Bufumbo sub county, Mbale District. The study focused on the vulnerability of rain fed agriculture, indicators of climate change and adaptive capacity of farmers to climate change and variability. A time series analysis of temperatures and rainfall trends for a 30 year period (i.e. 1981-2011) was conducted. The information generated correlated with responses from 180 randomly sampled farmers and satellite imagery (i.e. Land sat images) biomass interpretations. Majority of respondents (88%) were subsistence farmers of low incomes (i.e. earning less than UGX 500,000 per annum). Subsistence agriculture in Bufumbo over the past 30 years has been vulnerable to changes in temperatures and rainfall patterns; temperatures were consistently rising with each passing decade, while rainfall was increasingly getting unpredictable. A slight change in temperatures and rainfall was associated with substantial decline in the yields of major crops grown in the sub county (i.e. coffee, bananas, beans, maize and cabbages). There was also an overall decline in biomass over the main crop growing season (i.e. April-May) during the 30 year period (i.e. 1981-2011). The major indicators of agriculture vulnerability to climate change and variability were non-flowering of coffee, drying of banana inflorescence and destruction of crops by hailstorms. The indicators were attributed to the rise in temperatures and erratic rains over the past 30 years. Although farmers are trying to adapt to climate change and variability through the application of organic manure to the soil and preservation of food (e.g. maize, beans and cassava) for storage, their coping strategies are limited. Farmers lack modern farming methods, farm inputs (e.g. fertilizers and improved seeds), irrigation options and credit schemes. Farmers thus require interventions/investments in reliable coping strategies, such as; loan schemes, improved seeds (i.e. drought resistant and early maturing), irrigation pumps and early warning systems to effectively cope with climate change and variability.

KEYWORDS: Climate Change, Rain-fed Agriculture, Agro-ecological Zones, Vulnerability and Adaptation/ Coping