

# **Climate Change Adaptation Constraints among Smallholder Farmers in Rural Households of Central Region of Ghana**

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## **Abstract**

Agriculture in Africa is reported to be vulnerable to climate change due to high rate of poverty, rain-fed dependent agriculture and low adaptive capacity. Adaptation remains essentially necessary and sufficient condition to reduce the adverse effect of climate change. Smallholder farmers, however, face plethora of constraints in the choice of adaptation mechanisms. The study employed both secondary (daily rainfall from 1994–2014) and primary data to identify the adaptation mechanisms and assess the level of significance and agreement on the factors that constrain the utilization of the identified mechanisms among smallholder farmers in the rural households of Central region of Ghana. A multi-stage sampling technique was used to select 214 households across three agro-ecological zones in the region. Household questionnaire administration was preceded by community focus group discussions and key informant interviews. Kendall's coefficient of concordance and Friedman's test were used to test the level of agreement and significance of mean ranks of identified constraints, respectively. The findings showed that there is a vast intra and inter annual variability of rainfall over the 20-year period and smallholder farmers have embraced adaptation mechanisms such as crop diversification, improved variety and breed, soil and water conservation, soil and plant related strategies, and diversification to non-farming activities. Moreover, there was relatively good agreement (about 50 percent) among smallholder farmers of the identified constraints. The mean ranks of the constraints significantly differ from one another with the three topmost constraints being unreliable water source, lack of information on climate change and limited income. But for crop diversification, poor extension services and lack of credit are factors that cut across all the identified adaptation mechanisms. The study recommends among others that government policies should ensure an extensive accessibility of farmers to extension services.