Vulnerability to Climate Change and Adaptation Strategies for Small Scale Farmers in North Kinangop Location,Nyandarua South District,Kenya

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Abstract:

The current climate in East Africa is characterized by large variability in rainfall with occurrenceof extreme events in terms of droughts and floods. From 1996 to 2003, there has been a decline in rainfall of 50-150 mm per season (March to May) and correspondingdecline in long-cycle crops (e.g., slowly maturing varieties of sorghum and maize)across most part of eastern Africa. Nyandarua South District is nationally known as a high potential area producing all year round horticulture produce. However, this potentialhas been compromised largely due to loss of productive land as the population in the area grows leading to intensive overuse of the arable land and subdivision. In order to understand better the production trends in the district and factors attributed to the trends, this research was done with the objectives of: assessing the impacts of climate variabilityon production trends; assessing vulnerability of small scale farmers to climate change; and assessing effectiveness of adaptation strategies adopted by the small-scale farmers in the location. Data was obtained through administration of household and institutional questionnaires, observation and focused group discussions. The researcher used a sample size of 'JJ75 households representing 10% of the total households in the study area which was obtained through systematic random sampling. Responses from the small-scale farmers were coded and entered in Statistical Package for Social Science (SPSS) software version 19 for analysis. Descriptive statistics (frequency, mean, percentages) and inferential statistics (chi square, correlations coefficient) were used to produce relationships between variables assessed. Temperature and rainfall data from meteorological stations were analyzed using Microsoft Office Excel 2007 to show trends in temperature and rainfall-variations from the mean and rainfall intensities. The results indicate that small-scale farmers iirNQrth Kinangop Division are moderately vulnerable to climate variability and change: 1'l:l1~was noted by the extreme events in the area including extreme rainfall as noted.in 13 years within the 50 year period and droughts in 7 years within the same 50 year period. According to rainfall and temperature trends, rainfall annual amounts received in the area have not shown any change over the last 50 years while temperatures are on a gradual increase. Rainfall intensity was noted to gradually moderate especially in the month of March. Further analysis showed there was a strong association between increased loss of crops and increased rainfall intensity/X' = 15.411, P =0.05). Analysis further showed that adaptation measures adopted did not significantly reduce vulnerability of small-scale farmers (X2 = 52.468, P = 0.207). Soil, water and land conservation practices were rated as the most effective adaptation measures (96%), while shifting of planting seasons was the highly adopted but least effective. There was an association between the adopted measure and its effectiveness (X2 = 431.215, P = 0.000). From the analysis, the researcher derives a conclusion that small-scale farmers are gradually becoming vulnerable to climate change. It is imperative therefore, that institutions relevant to the small scale-farmers develop and promote adaptation measures based on the observed variations to enhance the farmer's climate change resilience.