The Effect Of Weather Changing Pattern On Farming Activities In Uganda, A Case Study Of Bulamagi Sub County, Iganga DISTRICT

1 Alitubera Phiona, 2 Dr Arinaitwe Julius, 3 Magala Muhammed

1, 2, 3 Metropolitan International University

Abstract: *This phenomenological study sought to investigate the impact of Uganda's shifting climate on agricultural activities, specifically in Bulamagi Sub County and Iganga District. The study focused on identifying the Bulamagi sub county's residents' techniques for coping with climate change, as well as the factors that influence global warming and how hot temperatures affect farming operations. The study used a sample of participants in the Bulamagi sub county Iganga district and conducted a qualitative and quantitative survey analysis. According to the study, smallholder farmers in Bulamagi adopted practices for adapting to climate change, such as moving gardens from lowland to highland during droughts, using crop varieties that are drought tolerant and mature early, altering planting dates or starting early in anticipation of the downpours, tree planting, and more. The relationship between the cause of global warming and its patterns is weakly correlated, as indicated by the correlation coefficient of 0.456. Since the P value (0.324) is greater than 0.05 level of significance, this is statistically negligible at 95% confidence interval. As a result, we accept the null hypothesis and come to the conclusion that the factors influencing environmental issues have no discernible impact on the trends of climate change. This study suggests that women-headed households should be deliberately and selectively encouraged to plant crops on time because it is a less expensive technique and easier to adopt than using crop varieties that have been acquired. Improved early warning systems would make it easier for farmers to embrace the technique because they could be better prepared.*

Keywords: weather changing pattern and farming activities

Background of the study

Climate change is defined by the Intergovernmental Panel on Climate Change (IPCC) as the variation between a region's typical climate (rainfall, temperature, wind) and a different but recurring set of climate parameters. It results from an increase in the atmospheric emissions of greenhouse gases (GHGs), which weaken the ozone layer and cause global warming (IPCC, 2001). Crop production are impacted by elevated temperature, which can promote the growth of weeds and pests. Increased floods and droughts raise the probability of short-term crop failures and long-term production losses in both crops and livestock, according to studies by the International Food Policy Research Institute (IFPRI) (IFPRI, 2009). Climate change is predicted to reduce the global Gross Domestic Product (GDP) per capita by 20% in 2200, endangering the world's food security (Stern, 2006). Recent assessments for Uganda have also revealed that while the occurrence of droughts there previously approximated one per decade, over seven have occurred in the last ten years alone (MWLE, 2007). Parallel to this, the country has experienced a rise in the frequency of food and water shortages, with the dry cattle corridor, which runs from the Uganda-Tanzania border to the Karamoja region, becoming the most affected area. There have also been reports of cattle deaths due to a shortage of water in other countries' surveys, as well as the indigenous herdsmen' and herders' movement to nearby regions or wildlife reserves.

Problem Statement

The climate of Uganda is ventures usually and prone to droughts, which have a detrimental socioeconomic impact, particularly on the agricultural sector and agricultural operations (Dankleman, 2008). Surface temperatures in Uganda are predicted to rise by up to 1.5 oC in the next 20 years and by up to 4.3 oC by the 2080s because of human-caused climate change. These growth rates are exceptional. As rainfall is a key factor in farming, changes in rainfall patterns and annual totals are also anticipated. Due to human-induced causes including reforestation, which is occurring at a rapid rate because of sugarcane cultivation, charcoal burning, and industrialization, Bulamagi Sub County is very susceptible to climate change and variability. All of these affect the climate.

Specific objective

1. To examine the factors influencing climate change in Bulamagi sub county, Iganga

    District.

2. To examine the effects of high temperatures on farming activities in Bulamagi sub county, Iganga District.
3. To establish the climate change adaptation strategies adapted by the people of Bulamagi sub county.

Research questions

1. What are the factors influencing climate change in Bulamagi sub county, Iganga District?
2. What are the effects of high temperatures on farming activities in Bulamagi sub county, Iganga District.?
3. Which climate change adaptation strategies are adapted by farmers in Bulamagi Sub

County

Methodology
Research Design

Descriptive and inferential data analysis methods were employed by the researcher. The research used a variety of subjective data sources, including observational research (fieldwork), interviews, questionnaires, written materials, and satellite images. In quantitative studies, data is gathered through questionnaires and surveys, amended, and summarized in numbers so that data analysis may describe the data. Hence, the researchers utilized mixed methodologies of research method, which is both qualitative and quantitative research strategy at the same time, for successful and effective data collecting, analysis, and evaluation.

Sample Size and Sampling Technique

The sample was drawn from residents operating and living in and around Bulamagi Sub County. Other persons who were interviewed are Iganga District local government officials from the natural resources department.
Simple Random sampling methods was used to ensure each member of the target population have an equal and independent chance of being included in the sample.

Study population

The study targeted 50 respondents of which 40 were community members from Bulamagi Sub County, 7 were local leaders from the district and from the sub county while the rest (3) were officials from the ministry of environment.

Sample size

Sample is a subgroup in a population which can be used as a representative of the population to derive inferences about the Guidance of that population (Kingori, 2004). According to Mulusa (1988), at least 30% of the total population is representative. Therefore, the sample size for this study was 15 respondents.

Table 1 Category of Sample Population and Size

Sample	Total population	Sample size
Community members	147	143
Local leaders	6	2
Ministry officials	3	1
Total	149	146

Sampling methods

Sampling techniques can be categorized into two categories, according to Saunders et al. (2009): probabilistic or purposeful sampling and quasi or judgemental sampling. According to Surbhi (2016), likelihood sampling is a sampling technique in which each member of the population has a predetermined and average probability of joining the sample. In contrast, quasi sampling refers to a sampling techniques in which the researcher chooses the components that will comprise the sample at his or her discretion without using any theoretical framework for assessing population characteristics. The researcher employed both techniques.

Instruments of data collection

To do the research efficiently, the data was collected using questionnaire, structured interview focus group discussion, observation, digital camera as a primary data source. The data also was collected from official documents related to the problem under study and using satellite image.

Questionnaires

A questionnaire is one of the key primary data collection tools and shall be mainly used for this research. The questionnaire was be considered an appropriate tool for this research, as it enables the researcher to obtain elaborated answers from respondents. The contents of the questionnaires shall focus on the opinions, feelings and preferences of the local communityy regarding ongoing urbanization and the resulting deforestation problem.

Key informant interview

Key informant interview also be carried out with those individuals who have wider concept and idea on the problematic issue. Key individuals from the community leader, District administration, experts from the towns forest Environmental Protection Office and other relevant bureaus were interviewed.
Hence, a total of 6 key informant interviewers (3 from community leader, 1 from Nangabo town forest and Environmental Protection Office, 2 from the town administration office, was be carried out.

Data analysis Techniques

Primarily data collected from sampled households shall be processed and analyzed by using the Statistical Package for Social Scientists (SPSS) Prior to analysis, completed questionnaires was coded, and organized. A coding system of some variables was already prepared at the time of the questionnaire design.
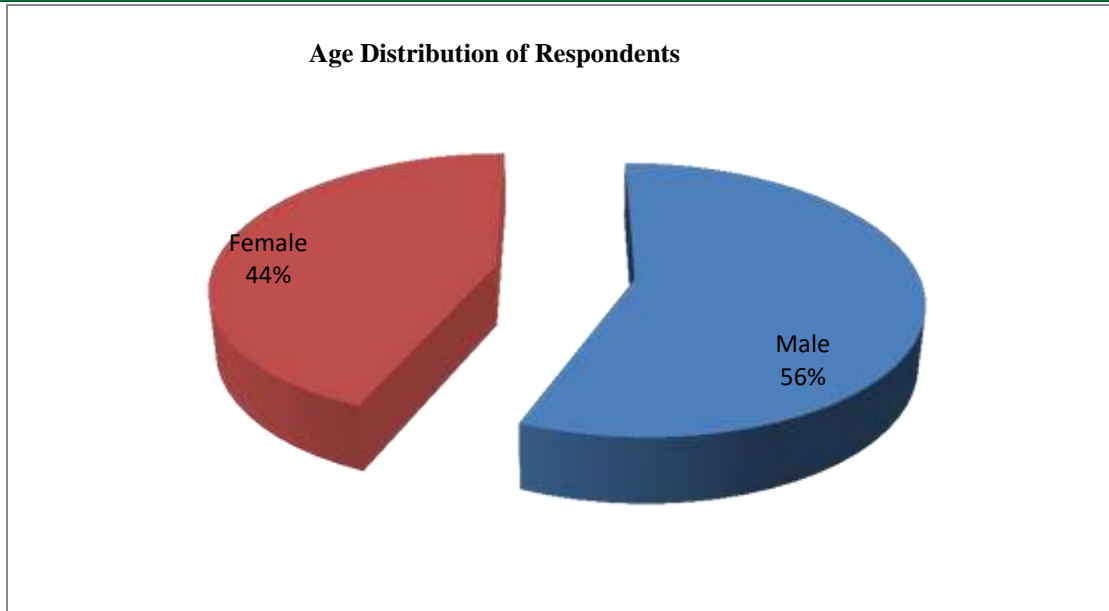RESULTS

Socio demographic characteristics of the respondents

This sub section presented the background information of the respondents who participated in the study. The purpose of this background information was to find out the characteristics of the respondents and show the distribution of the' respondents in the study in terms of gender, age, academic qualifications and marital status. The findings were elaborated in the subsequent sub- sections.

Table 2: Gender of the respondents

Gender	No of respondents	Percentage
Male	81	56.3
Female	63	43.8
Total	144	100

Source: primary Data 2023

The results in table and figure 1 show that on the gender of respondents, 56.2% of the respondents was male while 43.8% were female. This indicates that both genders were adequately represented in the study. Documenting the gender differences of the respondents was important in determining the gender distribution of roles and responsibilities in the various selected households in Bulamagi Sub County.

Table 3: Age categories of the respondents

Age	No of respondents	Percentage
20-30 years	36	25
31-40 years	66	45.8
41-50 years	35	24.3
51 and above	7	4.9
Total	144	100

Source: field research 2023

Regarding the age categories of respondents, the results indicate that 25% of the respondents were aged between 20-30 years old, 45.8% of respondents were aged between 31-40 years old,
24.3% of respondents were aged between 41-50 years old and 4.9% of the respondents were

51 years and above. This indicates that the respondents were sourced from various categories of people in Bulamagi Sub County.

Table 4: Education background of respondents

Education background	No of respondents	percentage
Primary	51	35.4
Secondary	67	46.5
Tertiary	26	18.1
Total	144	**100**

Source: field research 2023

Information on the education levels of respondents indicates that 35.4% of the respondents have only done the primary level of education, 46.5% of the respondents have completed their secondary school, and 18.1 % of the respondents were certificate holders. This implies that respondents were from the various educational backgrounds, which helped to expand the pool of information collected, from the least to the most qualifies respondent.

Table 5: Marital status of respondents

	No of respondents	percentage
Single	28	19.4
Married	84	58.3
Widowed	32	22.2
Total	144	100

Source: Field data, 2019

The information regarding the respondents' marital status indicates that 19.4% of the respondents were single, 58.3% of the respondents were married and 22.2% of the respondents were widowed. The information on the marital status of respondents was gathered and considered for purpose of determining the level of individual responsibility of the various respondents. And the results show that majority of the respondents were married.

CORRELATION ANALYSIS

The correlation analysis between the dependent variable and the independent variables

Table 4.3.1: showing the relationship between the dependent and the independent variables

PW CORR	Weather changing patterns	Factors affecting climate changing patterns	High temperatures	strategies
Weather changing patterns	**1.00000**			

Factors affecting climate changing patterns	0.456 0.00	1.0000		
High temperatures	0.578 0.324	0.322 0.561	1.000	
strategies	0.885 0.000	0.231 0.609	0.234 0.07	1.000

Ho: There is no significant relationship between the factors affecting climate change and climate changing patterns

Ha: There is a significant relationship between the factors affecting climate change and climate changing patterns

Ho: There is no significant relationship between the effect of high temperatures and the climate change

Ha: There is a significant relationship between the effect of high temperatures and the climate change

Ho: There is no significant relationship between the strategies of climate change and climate changing patterns

Ha: There is a significant relationship between the strategies of climate change and climate changing patterns

High temperatures and patterns of climate change are moderately positively correlated, as indicated by the correlation value of 0.578. We reject the null hypothesis and come to the conclusion that there is a significant association between high temperatures and patterns of climate change because the P value (0.00) is less than 0.05 level of significance.

The relationship between the causes of climate change and its patterns is weakly correlated, as indicated by the correlation coefficient of 0.456. Since the P value (0.324) is greater than the 0.05 level of significance, this is statistically insignificant at a 95% confidence level. As a result, we accept the null hypothesis and come to the conclusion that the factors causing climate change have no discernible impact on the patterns of global warming. The correlation coefficient of 0.885 indicates a strong positive link between climate change approaches and characteristics of climate change. Since the P value (0.00) is less than 0.05 and the result is statistically meaningful at the 95% confidence level, we dismiss the null hypothesis and draw the conclusion that the policies for addressing climate change have a significant impact on the trends of climate change.

Conclusion

The correlation coefficient 0.456 shows a weak correlation coefficient between the factors affecting climate change and climate changing patterns. This is statistically insignificant at 95% confidence interval since the P value (0.324) is greater than 0.05 level of significance and therefore we accept the null hypothesis and conclude that the factors affecting climate change have no significant effect on climate changing patterns

Recommendations

This study recommends that timely planting being a less costly practice and yet easier to implement compared to use of purchased crop varieties should be promoted for all farmers; female headed households need to be specifically and selectively reinforced. In order to facilitate adoption of the practice, early warning systems should be improved so that farmers can be prepared adequately.

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