

**IMPACT OF WEATHER PATTERNS ON FARMING PRACTICES IN RURAL
COMMUNITIES. A CASE STUDY OF KAKUUTO
SUB-COUNTY, KYOTERA DISTRICT**

1 Mabirizi Lawrance, 2 Ojok Alex, 3 Freeman Crispus

1, 2, 3 Metropolitan International University

ABSTRACT

This scientific study research set out to look into the "effect of the environment on traditional farming in farming villages."

a study of the Kakuuto Sub-County in the Kyotera District.

Questionnaires were used to collect data as part of a case study inquiry approach. Both methods of analysis were used on the data.

The objectives of the study were to: look into the implications of unpredictable precipitation patterns on crop production and livelihood in remote communities in Uganda; look into the variables that influence farmers' perceptions and reactions to the distribution of rainfall in Uganda; and look into the effect of climate structures metrics on the nation's agrarian economy. The R-squared number (0.296) WAS greater than the Adjusted R-squared value (0.293) since those accounts for the freedom of motion. Youth emigration, particularly to cities or abroad in search of better prospects, is on the rise.

The majority of farmers are elderly people who find it challenging to keep up with new technological developments.

Using cutting-edge agricultural equipment, software, and programs for meteorological data, for instance.

*Key words: **weather patterns, farming practices and rural communities***

Background of the study

Per the FAO, 2016, more than 2.5 billion individuals are dependent on agriculture as their primary means of subsistence, and those who engage in small-scale farming, herding, fishing, or live in neighborhoods that rely on the forest create more than half of all agricultural production worldwide.

Also, according to the World Bank (2019), 65 percent of working adults who were occupied in 2016 made their primary living from the agricultural industry, and it was projected that food production as a whole accounted for one-third of GDP in 2014.

As a result, agribusiness is crucial to both the personal and the global financial system.

The Sustainable Development Goals of the United Nations place a lot of emphasis on agriculture.

Despite the rapid growth of the global economy, 820 million individuals continue to suffer from chronic malnourishment. By 2050, agricultural output must have increased by almost 50% in order to feed the world's growing population. The greatest tropical continent is found in Africa, which is divided into both hemispheres almost evenly (Sivakumar, 2005).

Due to its vast landmass, which stretches from around 35°N to 35°S, the region has a variety of data on environmental, ranging from humid temperate climates to desert and semi-arid climates to subtropical Adriatic climates with varying levels of temporal variability in temperatures and precipitation (Hulme et al., 2001; Collier et al.; 2008, Haile, 2005). Some places are predicted to become wetter due to climate change (like the eastern portions of Africa), while other regions, like the southern and northern sections of Africa, are predicted to become drier and also more negatively impacted (Collier et al., 2008; Hulme et al., 2001).

Extreme weather conditions are occurring more frequently as a result of weather patterns, which has a detrimental effect on rural populations' employment.

Societies might be more or less vulnerable to catastrophic weather disasters depending on their socioeconomic as well as environmental circumstances.

Whole world food value chains are being impacted by climate change and variability (Tesfaye, K. 2016, with specific implications and hazards for smallholder farmers living in places with

low capacity to adapt) (Asfaw, 2018). The negative impacts of climate change on livelihoods are more severe in such regions because agricultural yields on smallholder farms are generally low and farmers have insufficient income to finance climate adaptation measures, such as diversification of production.

Statement of the problem

On Earth, weather systems are thought to have disastrous consequences.

Agricultural has grown to be a significant hurdle for emerging economies, such as Uganda, where agricultural production employs roughly 55% of the country's working population 15% of its GDP (GoI, 2016).

Also, the unfavorable effects of the climate change on crop yield are causing problems with food and sustainable livelihoods. Most rural families rely heavily on agriculture for their livelihood, and this has had a negative impact on them.

Due to decreased crop productivity, climate change is harming important developmental issues including food and nutrition security.

Objectives of the study

- 1. To examine the effects of changing weather patterns on agricultural production and livelihood in rural communities in Uganda*
- 2. To analyze the factors that influence farmers' perception of and adaptation to weather patterns in Uganda.*
- 3. To examine the indicators of weather patterns on agricultural system in rural communities in Uganda.*

Research questions

- 1. What are the effects of changing weather patterns on agricultural production and livelihood in rural communities in Uganda?*
- 2. What are the factors that influence farmers' perception of and adaptation to weather*

patterns in Uganda?

3.What are the indicators of weather patterns on agricultural system in rural communities in Uganda?

Methodology

Research Design

The study used a descriptive cross-sectional design that was conducted at a single place in time and focused on the research under study (Amin 2005). The descriptive cross-sectional design was used to establish whether there is a significant relationship between weather patterns and farming practices.

Target Population

The target population of the study was primarily 150 respondents including the farmers, community members and local leaders because they are the key formants with the necessary information to complete this study in Kyotera district.

Sample Size and Selection Method

The study used a sample size of 85 respondents because it is large enough compared to the study population in Kakuto sub-county, Kyotera district that is 45 farmers, 35 community members and 5 local leaders.

Sources of information

Considering the nature of the research, the study used both primary and secondary data. This enabled the researcher to gather qualitative and quantitative information. The two main sources of data the researcher used are primary and secondary sources.

Primary data

The main sources of primary data were from respondents collected through the use of interviews, and structured questionnaire.

Secondary data

A strategy to be adopted by the researcher in accessing secondary data was through the use of journal articles, books and the internet. The internet and the library sources were particularly useful in accessing a large variety of materials from job rotation propounded by various authorities (Mugenda, O. M. & Mugenda, 1999).

Table 1: Sample size of the respondents

Category	Sample size	Frequency
Farmers	45	53%
Community members	35	41%
Local leaders	5	6
Total	85	100%

Source: Researcher, 2022

Data collection instruments

Questionnaires

This researcher used self-administered questionnaires for the respondents. These was distributed among the respondents in their respective positions. The justification for using this instrument is that questionnaires are easy to quantify and analyze.

Interview guide

Interview guides was also used especially with the local people and the farmers since someone of them don't know how to read and write. In this method, the researcher interviewed the local people of Kakuto sub-county in Kyotera district. The interview focused on the relationship between weather patterns and farming practices.

Data Analysis

Data analysis was done through the use of SPSS and Excel Microsoft (Nelson. K, 2022). These was analyzed through figures and tables. In addition to that, a comparison of data was also done in order to ascertain whether the information gathered from the respondents is accurate.

RESULTS

Data Analysis and Presentation

Table 2: Relationship between the effects of changing weather patterns on agricultural production and livelihood in rural communities in Uganda

<i>Model</i>	<i>R</i>	<i>R Square</i>	<i>Adjusted R Square</i>	<i>Std. Error of the Estimate</i>	<i>Probability</i>
<i>Changing weather patterns</i>	<i>.544</i>	<i>.296</i>	<i>.293</i>	<i>.45355</i>	<i>0.00</i>

Ho: There is no relationship between the effects of changing weather patterns on agricultural production and livelihood in rural communities in Uganda.

Ha: There is a relationship between the effects of changing weather patterns on agricultural production and livelihood in rural communities in Uganda.

In Uganda, a one percent higher in the impact of changing climates on crop yields would, on average, result in a 0.544 improvement in the standard of living in rural areas.

We reject the null hypothesis and come to the conclusion that there's a meaningful correlation seen between effects of shifting climate conditions on agricultural output and subsistence in remote communities in Uganda because this is statistically meaningful at a 95% confidence level and the P-value (0.00) is less than 0.05.

Since it takes the freedom of movement into account, the R-squared value (0.296) is higher than the Modified R-squared value.

Table 3: Relationship between the factors that influence farmers' perception of and adaptation to weather patterns in Uganda.

<i>Model</i>	<i>R</i>	<i>R Square</i>	<i>Adjusted R Square</i>	<i>Std. Error of the Estimate</i>	<i>Probability</i>
<i>farmers' perception</i>	1.23	.786	.678	.5067	0.078

Ho: There is no relationship between the factors that influence farmers' perception of and adaptation to weather patterns in Uganda.

;

Ha: There is a relationship between the factors that influence farmers' perception of and adaptation to weather patterns in Uganda.

In Uganda, a 1% improvement in the elements that affect peasants' perspective would, on average, result in a 1.23 % rise in the average cost of living in rural areas.

Given that the P-value (0.078) is less than 0.05 and that this is statistically meaningful at a 95% level of certainty, we disregard the null hypothesis and draw the inference that there is no connection between the variables that affect farmers' perspective and lifestyle in remote regions in Uganda.

Since it takes the freedom of motion into account, the R-squared value (0.786) is higher than the Calculated R-squared value (0.678).

Table 4: Relationship between the indicators of weather patterns on agricultural system in rural communities in Uganda.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Probability
indicator s of weather patterns	0.987	.767	.508	.467	0.03

Ho: There is no relationship between the indicators of weather patterns on agricultural system in rural communities in Uganda.

Ho: There is a relationship between the indicators of weather patterns on agricultural system in rural communities in Uganda.

A one percent growth in climate patterns variables would, on average, result in a 0.544 increase in the agrarian economy in Uganda's rural villages, assuming all other variables stayed stable.

Given that the P-value (0.00) is less than 0.05 and that this is statistically meaningful at a 95% level of confidence, we dismiss the null hypothesis and come to the conclusion that there is a significant correlation between the metrics of weather systems and the farming methods in remote regions in Uganda.

Because it takes the freedom of motion into account, the R-squared value (0.296) is higher than the Modified R-squared value.

Conclusion

In comparison to previous years, farmers have noticed an increase in warmth, pests and

illnesses, floods and landslides, dryness, and a decline in rainfall.

In comparison to prior years, the thunderstorms and winds have not changed.

The majority of farmers have noticed a greater number of hot days, an increase in the intensity of summer heat, and a drop in the number of wet days.

The survey's findings show the correlations with the local weather information.

Recommendations

There is an increasing trend of migration, especially the youths to the cities or overseas for better opportunities. Most of the farmers belong to the old age population for whom updating with the new technology and information is difficult. For example, using advanced agricultural tools, software and applications on weather information and so on. Therefore, appropriate strategies to reach those farmers with new updates in technology is necessary. [Bibliography](#)

Mugenda, O. M. & Mugenda. (1999). Quantitative and Qualitative.

FAO, (2016). Eastern Africa Climate- Smart Agriculture Scoping Study.

Nelson, K. (2022). Teach yourself SPSS and STATA. International Journal of Academic Pedagogical Research, 7(6), 84-122.

Tesfaye, K. (2016). Challenges and Opportunities for Research EIAR 50th Year Jubilee Anniversary Special Issue. 76–86 .