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Examining the Effects of Drought on Household Food Security: A Case Study of Kanakantapa

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Abstract
This study investigated how drought conditions affect household food security in Kanakantapa Ward, Chongwe District, Zambia. The concern arose because droughts have become more frequent in recent years, making it harder for rural households to maintain reliable food supplies. The focus was placed on three main aspects of food security: availability, accessibility, and the coping mechanisms used by families. A mixed-methods approach was employed to achieve a comprehensive understanding of the problem. Quantitative data were collected through structured questionnaires administered to 100 households purposively selected from a vulnerable population of approximately 200 households. Qualitative insights were gathered to complement the survey and provide deeper context on community experiences during drought. Information collected included household demographics, economic activities, crop production patterns, and how families manage food shortages during periods of insufficient rainfall. The findings revealed that drought significantly undermines household food security in Kanakantapa Ward. A total of **96%** of households reported experiencing food shortages during drought, while **97%** reduced the number of meals consumed per day. Farming activities remained heavily rain-dependent, with **87.9%** of households relying on agriculture as their main source of income and **75.8%** identifying as farmers. Although **68.7%** practiced crop diversification, maize remained the dominant crop and was identified by **91%** of respondents as the most affected by drought. Dependence on maize made households highly vulnerable to rainfall failures. Only **17.2%** of households received government or NGO support during drought periods, leaving **82.8%** without assistance. Meal reduction (**75.8%**) was the most common coping strategy. Preparedness levels were low, with **85.9%** never receiving training on drought coping strategies and **56.6%** lacking access to early warning systems. Low monthly incomes **71.7%** earning K100–K500 further limited families' ability to cope. The study concludes that drought poses a severe threat to food security in Kanakantapa Ward. It recommends promoting drought-tolerant crops, expanding irrigation and water-harvesting systems, improving access to climate information, and supporting livelihood diversification to build long-term resilience.

1. Introduction
This research report examines the effects of drought on household food security in Kanakantapa Ward, Chongwe District, Zambia, focusing on the vulnerability of rural farming communities to climate-related shocks.

1.1 Background
Climate change represents one of the most pressing global challenges of the 21st century, with drought emerging as a critical threat to food systems, particularly in developing countries. The Intergovernmental Panel on Climate Change (IPCC, 2022) reports that droughts are occurring more frequently and with greater severity due to rising temperatures, changing rainfall patterns, and land degradation. These conditions have severely affected agriculture, which remains vital for providing food and income to millions of households in sub-Saharan Africa. The Food and Agriculture Organization (FAO, 2023) [7] estimates that over 700 million people worldwide face food insecurity risks due to climate-related disasters including droughts, floods, and storms.

Africa bears the heaviest burden of climate disasters despite contributing minimally to global greenhouse gas emissions (UNDRR, 2021). Droughts across the continent have caused widespread crop failures, water scarcity, and escalating food prices. In sub-Saharan Africa, where most agriculture depends on rainfall, insufficient precipitation directly translates to household food shortages. The African Development Bank (AfDB, 2022) [1] reports that approximately 280 million Africans experience food insecurity, with projections indicating this number will rise due to climate change impacts. Small-scale farmers face the highest risks as they lack adequate tools, safety nets, and irrigation systems to cope with prolonged dry periods.

In Zambia, drought frequency has increased significantly over the past two decades. The Zambia Meteorological Department (2024) highlights that the 2023/2024 rainy season was the driest in over 40 years, severely impacting agricultural activities nationwide. Rural Zambians overwhelmingly depend on farming for both food and income, making drought-induced crop losses particularly devastating. The World Food Programme (WFP, 2024) reports that over 2 million Zambians currently face food insecurity due to drought and its cascading effects. Rural areas like Kanakantapa suffer most severely, as residents primarily engage in subsistence agriculture for survival.

Despite government efforts through programmes such as the Farmer Input Support Programme (FISP) and disaster relief initiatives, food insecurity persists in drought-affected areas. The Zambia Statistics Agency (ZamStats, 2023) [25] indicates that food poverty remains critically high in rural districts, with some areas reporting over 60% of populations experiencing food insecurity. To survive, many families resort to selling livestock, reducing meals, or migrating to urban areas short-term solutions that often generate additional problems.

Research by various scholars emphasizes the importance of localized studies to comprehensively understand drought's impact on food security. Ochieng et al. (2022) note that while Zambia may appear food secure at the national level, many rural areas continue experiencing hunger. Phiri et al. (2021) [14] found that dry weather in Eastern Zambia reduced household food availability, compromised dietary quality, and worsened children's nutritional status. These studies demonstrate that many policies and support systems fail to address the real challenges facing rural farming families.

This context necessitates focused research in specific areas. Kanakantapa, a rural ward in Chongwe District, provides an appropriate setting to investigate how drought affects household food security, the coping mechanisms people employ, and community resilience during dry periods. Enhanced understanding of these dynamics will help improve support for rural communities and contribute to Zambia's progress toward Sustainable Development Goal 2 (Zero Hunger) while strengthening climate change adaptation strategies.

1.2 Statement of the Problem
Drought remains one of the world's most destructive climate disasters, affecting approximately 1.84 billion people between 2000 and 2019 (UNDRR, 2021). It jeopardizes food and water security, damages ecosystems, and reduces crop yields. Recurrent droughts have intensified hunger and poverty in Sub-Saharan Africa, particularly affecting rural household's dependent on rain-fed agriculture. The IPCC

(2022) warns that climate extremes such as prolonged dry spells are becoming increasingly severe and frequent, placing millions in Southern Africa at risk of food insecurity.

These trends are already evident in Zambia. The 2023-2024 season was the driest in more than 40 years according to the Zambia Meteorological Department (2024), with rainfall substantially below national averages. Widespread crop failure has resulted, particularly among smallholder farmers. The World Food Programme (2024) reports that over 2 million Zambians currently experience food insecurity, with rural villages like Kanakantapa in Chongwe District among the most affected. During droughts, these populations are especially vulnerable as they frequently lack access to alternative income sources, food stockpiles, or irrigation systems.

Existing literature reveals a paradox where Zambia meets national food production targets while rural households continue suffering from hunger and malnutrition (Ochieng et al., 2022). However, limited localized research examines how drought affects food security at the household level, particularly in areas like Kanakantapa. By analysing drought's impact on household food security in Kanakantapa and identifying employed coping mechanisms, this study aims to address this gap. The findings will inform the development of more targeted and community-responsive interventions to enhance rural resilience under climate stress.

1.3 General Objective
To examine the effects of drought on household food security in Kanakantapa Ward, Chongwe District.

1.4 Specific Objectives
1. To assess the effects of frequent droughts on household food availability and access in Kanakantapa Ward.
2. To examine the coping strategies adopted by households in response to food insecurity caused by drought.
3. To evaluate the effectiveness of local and governmental interventions in addressing drought-induced food insecurity in Kanakantapa Ward.

1.5 Research Questions
1. What are the effects of frequent droughts on household food availability and access in Kanakantapa Ward?
2. What coping strategies do households in Kanakantapa Ward employ to respond to drought-induced food insecurity?
3. How effective are local and governmental interventions in reducing food insecurity during drought periods in Kanakantapa Ward?

1.6 Theoretical Framework
Understanding how rural households cope with drought calls for a broader perspective one that looks beyond just farming losses. The Sustainable Livelihoods Framework (SLF) provides this wider lens by examining how people use the resources around them to survive and adapt when crises like drought occur. According to Department for International Development (DFID, 2017) states it was introduced first by the SLF focuses on five key livelihood assets: natural, human, physical, financial and social capital. These assets help explain how households strive to stay food secure and

rebuild their lives despite difficult conditions.

In rural communities like Kanakantapa, where many people rely on small-scale farming, drought doesn't only affect crops. It impacts income, access to food, water availability, and even people's health and sense of security. According to Mutenje (2019) highlights that theory makes it easier to see how drought affects access to things like land, seeds, labour, and markets and how local institutions and support systems come into play.

1.7 Scope of the Study
The study was undertaken in selected areas of Kanakantapa Ward in Chongwe District, Southern Province, Zambia. The ward was chosen due to its high agricultural dependence, vulnerability to drought, and limited previous research on household food security dynamics in the area.

2. Literature Review
This section reviews literature from various sources to enable understanding of existing research on drought impacts on household food security. By reviewing various literatures, the study identifies existing knowledge gaps. The chapter reviews literature from global, African, and Zambian perspectives.

2.1 Drought Impacts on Household Food Availability and Access
Brown *et al*. (2016) [33] argue that climate change has significantly amplified food insecurity risks globally, especially in regions where agricultural production heavily depends on rainfall. They identify drought as one of the most devastating climate change consequences because it directly affects crop yields and food availability. In areas where families rely on subsistence farming, a single season of drought-induced crop failure can trigger food shortages, hunger, and malnutrition. This production loss threatens both local market food availability and household food access capacity.

Brown *et al*. (2016) [33] further discuss how recurring droughts progressively undermine household recovery capacity. When droughts occur year after year, farmers lose not only crops but also savings, stored food, and sometimes livestock. This gradual resource depletion leaves households with fewer options for coping with future shocks. Many households adopt negative coping strategies such as skipping meals or consuming less nutritious foods. While sometimes necessary, these mechanisms exacerbate drought's long-term effects, particularly on vulnerable groups like children and the elderly.

Khan *et al*. (2016) [50] emphasize that climate change has significantly influenced developing country vulnerability, particularly regarding agriculture and food security. They emphasize that frequent droughts, as direct climate change consequences, exacerbate challenges facing small-scale farmers. Droughts reduce water availability, which affects crop yields, leading to insufficient food production. This scarcity impacts both food availability and access, especially for households depending on local agricultural production. Khan *et al*. (2016) [50] highlight that such food system disruptions often result in shortages leading to higher food prices, making household food purchases more difficult.

Ahmad *et al*. (2022) [31] explain that climate change, particularly drought, profoundly impacts small-scale farmer livelihoods in dryland regions, significantly affecting food availability and access. Smallholders in these areas are particularly vulnerable because their livelihoods tightly link to agricultural productivity, which heavily depends on rainfall. Drought reduces water availability needed for crop production, directly impacting food supply. Ahmad *et al*. (2022) [31] highlight that in many dryland regions, farmers face reduced crop yields during drought years, making household food production difficult.

2.2 Household Coping Mechanisms During Food Insecurity
Jones *et al*. (2019) [49] highlight how Zimbabwean families used natural resources like firewood, wild fruits, and thatching grass to survive after crop failures due to drought and inflation. This reflects how Zambian households often rely on natural resources as last resort survival strategies when food becomes scarce. Such strategies highlight the environment's critical role in buffering communities against food insecurity's worst effects during drought.

Alam *et al*. (2024) [32] examined how Burkina Faso families coped with food insecurity during the COVID-19 pandemic, when drought intensified existing shortages and food prices rose sharply. Many households reduced daily meal numbers, cut portion sizes, or borrowed food and money from relatives, neighbours, and local shops. Asset sales such as livestock were used as last resorts, though this jeopardized future livelihoods. The study highlights how multiple crises climatic and health compound food insecurity and underscores the need for stronger government and NGO support systems.

Mabula *et al*. (2020) [52] argue that indigenous knowledge plays key roles in helping Kgalagadi-North District farmers in Botswana cope with drought and food insecurity effects. Farmers have developed methods for reading natural signs such as animal behavior, wind patterns, and plant flowering to predict weather changes. This helps them plan planting or harvesting timing, critically important when rains are unreliable. The authors note these traditional forecasting methods are more trusted by local farmers than modern weather forecasts because they're based on personal experience and generational knowledge.

2.3 Effectiveness of Food Security Interventions and Support Systems
The World Food Programme (2024) identifies key ways local and global efforts address drought-induced food insecurity in Zambia through direct smallholder farmer support. WFP helps more than 17,000 small-scale farmers in rural areas by building climate shock resilience through training in improved farming methods, financial service access provision, and weather forecasting tool introduction. WFP pursues not just short-term food aid but long-term solutions empowering farmers to grow more food even during hardships.

According to the Emergency Rehabilitation Division of FAO (2013) [41], helping communities become more drought-resilient is key to reducing food insecurity and protecting nutrition. The report explains many families lose crops and animals during droughts, making feeding themselves and earning income difficult. FAO supports local communities by training them in climate-smart farming techniques such as growing drought-tolerant crops and using water more efficiently.

2.4 Establishment of the Gap and Personal Critique
Studies have employed either descriptive or exploratory designs. The current study utilized mixed design for triangulation purposes. Additionally, the current study focused on rural households in Kanakantapa Ward experiencing direct drought impacts. This contrasts with other studies focusing on young people generally, female populations specifically, or national-level assessments. The current study focused specifically on Kanakantapa Ward in Chongwe District, where no such comprehensive study has been undertaken. Previous Zambian research concentrated on Copperbelt and Muchinga provinces, focusing on both in-school and out-of-school youth or examining national agricultural trends without household-level depth.

3. Research Methodology
This section discusses the study's research methodology, clearly describing the research design, sampling procedure, target population, sample size, data collection instruments, data analysis techniques, and ethical considerations.

3.1 Research Design
This study adopted a descriptive research design using a mixed methods approach. The design is suitable as the research objectives necessitate both quantitative data and qualitative experiences. To find out how drought affects the availability and access to food in households, we will use structured questionnaires to collect quantitative data that will show how common and severe food insecurity. To examine coping strategies and to evaluate interventions that will guide us in understanding household behaviors, perceptions, and experiences, which will be obtained through qualitative methods, including interviews and focus group discussions. The mixed methods approach also allows for triangulation of data, helping to validate and strengthen the findings, which makes the results more credible by comparing statistical trends with personal stories. This method design was also appropriate as it facilitates the study's ability to quantify the extent of food insecurity while also providing nuanced understanding of household responses and perceptions of interventions.
The sampling procedure involved both probability and non-probability sampling for descriptive and exploratory study components respectively. Under probability sampling, systematic sampling technique was employed while purposive sampling technique was used under non-probability sampling.

3.2 Target Population
The target population for this study includes all households in Kanakantapa Ward, located in Chongwe District, Lusaka Province. According to the most recent 2022 Census, Chongwe District had a population of 313,389 people City Population, 2025. While specifically for Kanakantapa Ward, the 2022 Census estimated its population at 14,017. Using Zambia's average annual population growth rate of 2.9%, it is reasonable to assume that the current population is higher. Based on the national average household size of 4.8 persons, Kanakantapa had roughly 2,800 households in 2022. These households form the main unit of analysis for this study, as they are directly affected by drought-related challenges to food access and availability. The target population also includes key local informants such as community leaders, agricultural officers and farmers whose insights will help

capture the wider social and institutional responses to drought. Due to fieldwork limitations and the need for in-depth engagement, the study focused on a sample of about 200 households. These were selected based on their vulnerability and exposure to drought, ensuring the findings are both relevant and actionable for the community.

3.3 Sampling Design
This study used purposive sampling to select participants. This method was appropriate because it allowed us to deliberately choose households and key informants who are most affected by drought and have relevant knowledge on food security challenges (Kothari, 2016). The target population consists of households in Kanakantapa Ward, but due to resource and time constraints, a sample size of 100 households was selected. Purposive sampling ensures that participants have direct experience with the effects of drought, making the findings more relevant and reliable (Etikan *et al.*, 2016).

3.4 Sample Size Determination
To determine the appropriate number of households for this study, the systematic sampling method was applied using the k-th formula. The formula is expressed as:

$$k = N/n$$

Where:
kkk = sampling interval
NNN = total number of households in the target population
nnn = desired sample size Based on the updated target population of 200 households(N=200) and a desired sample size of 100 households(n=100),the formula is applied as follows:

$$k = 200/100 = 2$$

This means that every 2nd household was selected to participate in the study, after randomly choosing a starting point between household 1 and 2. Using this interval ensures that the sample was evenly spread across the population and minimizes selection bias. It was also simple to implement in the field, especially when working with household listings or maps.

3.5 Data Collection Methods
This study adopted a mixed methods approach, combining quantitative and qualitative techniques. Quantitative data were collected through structured questionnaires administered to 100 households, focusing on food consumption, income, and coping strategies. Qualitative data were obtained through key informant interviews with local leaders, agricultural officers, and health personnel, as well as focus group discussions with women, youth, and farmers. These tools provided both measurable indicators and deeper insights into community experiences, ensuring validity and reliability through triangulation (Saunders *et al.*, 2019; Creswell & Creswell, 2018 [87]; Bryman, 2016 [86]; Flick, 2018).

3.6 Data Analysis
Descriptive data analysis techniques analysed quantitative data collected from 100 household respondents. STATA and

Microsoft Excel tools were used during these descriptive analyses including frequency tables, bar charts, and pie charts creation. Content analysis helped generate themes providing meanings and helping interpret collected data (Hsieh & Shannon, 2016).

3.7 Ethical Considerations
To ensure required ethical considerations, necessary approvals were obtained from District Education Board office equivalents, community leaders, and all respondents. Respondents received confidentiality assurances regarding collected information and were informed about information use. Research was conducted to avoid any respondent harm including reducing impending harm risks.

4. Data Analysis and Presentation
4.1 Overview
This chapter presents research findings systematically, with headings formulated according to research questions. Quantitative findings are presented using frequency tables and charts while qualitative findings appear in narrative form.

4.2 Demographic Characteristics of Respondents

Table 4.2.1: Distribution of Respondents by Age
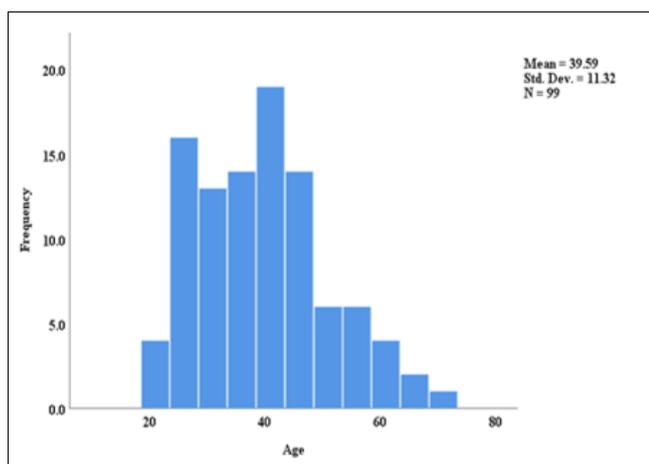
Source: Primary Data,2025

The majority of respondents fell within the 75th percentile comprising age groups between 25 and 55 years, indicating most are economically active. The median age appeared around 40-45 years, with approximately 50% of respondents younger and 50% older than this central point.

Table 4.2.2: Distribution Based on Education Level

Education Level	Frequency	Percentage
Pre-school	0	0%
Primary	34	35%
Secondary	47	47%
Tertiary	1	1%
Never attended school	24	24%
Total	**100**	**100%**

Source: Primary Data, 2025

This figure outlines how primary education accounts for over one-third of the respondents indicating that when combined with secondary education, approximately 84% of the sample has received formal schooling. However, a notable portion has never attended school, representing educational exclusion that may correlate with vulnerability to drought impacts. Tertiary education is minimal at just 1%, reflecting limited access to higher education in the study area.

Table 4.2.3: Distribution Based on Main Profession

Profession	Frequency	Percentage
Farmer	75	75.76%
Trader	15	15.15%
Civil servant	5	5.05%
Other	5	5.05%
Total	**100**	**100%**

Source: Primary Data, 2025

Close to 75.76% of respondents are farmers, making the community heavily agriculture-dependent. Only 24.24% work in other occupations. This high farming reliance makes the entire population extremely drought-vulnerable, as most households lack alternative income sources when crops fail.

Table 4.2.4: Distribution Based on Main Income Source

Income Source	Frequency	Percentage
Agriculture	87	87.88%
Business	12	12.12%
Total	**100**	**100%**

Source: Primary Data,2025

This reveals 87.88% of households rely on agriculture as their main income source, while only 12.12% depend on business. This extreme agriculture dependence makes the community highly drought-vulnerable, as nearly 9 out of 10 households lack diversified income sources.

4.3 Effects of Frequent Droughts on Household Food Availability and Access

Table 4.3.1: Distribution of Crops Grown

Crop Type	Frequency	Percentage
Maize only	31	31.31%
Mixed crops (maize + others)	68	68.69%
Total	**100**	**100%**

Source: Primary Data, 2025

Most farmers (68.69%) practice crop diversification, primarily combining maize with sweet potatoes, beans, and groundnuts. Only 31.31% grow maize exclusively. Mixed cropping helps reduce drought risk and provides nutritional and economic security through multiple crop sources.
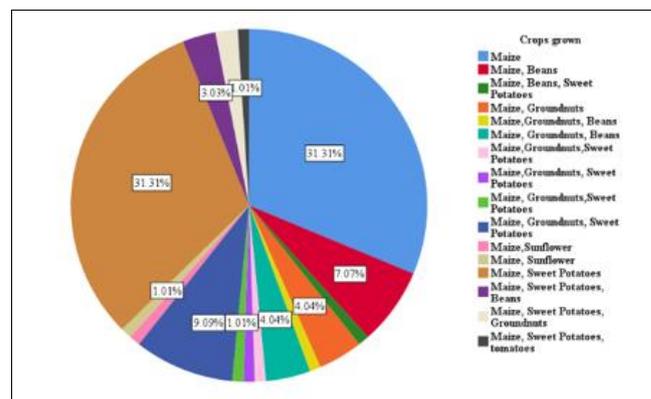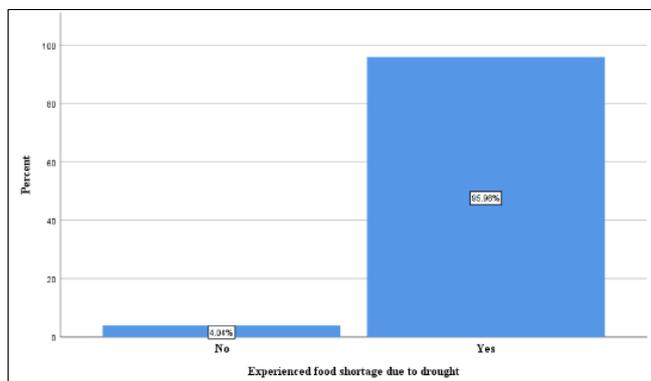

Source: Primary Data, 2025

Fig 4.3.2: Crops Most Affected by Drought

Maize emerges as the most drought-affected crop (52%), directly threatening household food security given its central role in Zambian diets. Beans (15%), groundnuts (10%), and other crops also suffered drought impacts.
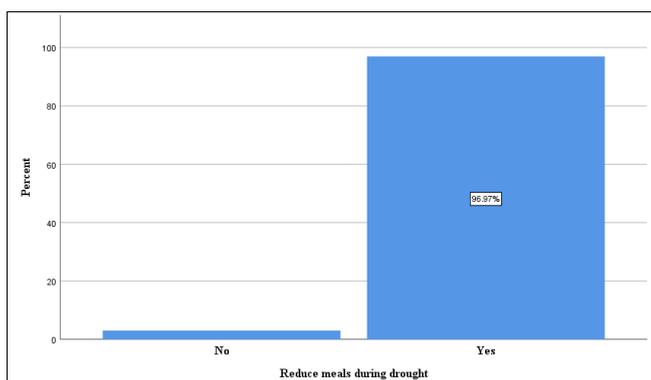
Table 4.3.3: Experience of Food Shortages Due to Drought

Source: Primary Data, 2025

An overwhelming 96% of respondents experienced food shortages due to drought, while only 4% avoided food insecurity. This demonstrates drought creates widespread, systematic food access problems affecting almost the entire community.

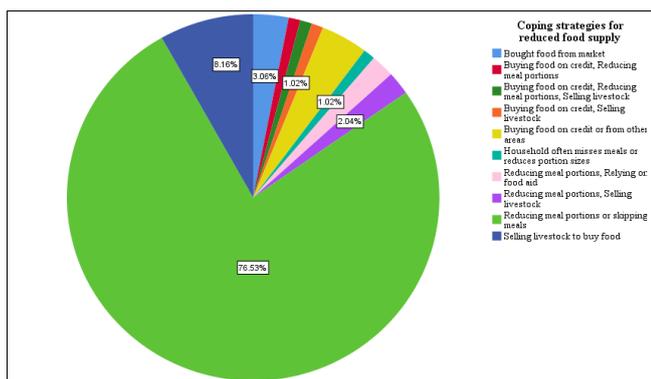**Table 4.3.4:** Reduction in Number of Daily Meals

Source: Primary Data, 2025

97% of respondents reduced daily meals during drought periods, while only 3% maintained meal frequency. This indicates near-universal adoption of meal reduction as a primary drought response strategy.

4.4 Household Coping Strategies

Table 4.4.1: Primary Coping Strategies Used

Source: Primary Data, 2025

Three-quarters (75.8%) of households cope primarily by reducing daily meals, making this the primary food insecurity response. Other approaches have much lower adoption rates.

Table 4.4.2: Growing Drought-Tolerant Crops

Response	Frequency	Percentage
No	74	74.7%
Yes	25	25.3%
Total	**100**	**100%**

Source: Primary Data, 2025

Only 25% of households grow drought-tolerant crops, while 75% do not use climate-adapted varieties. This low adoption represents a missed resilience-building opportunity.

Table 4.4.3: Received Training on Drought Coping

Response	Frequency	Percentage
No	85	85.86%
Yes	14	14.14%
Total	**99**	**100%**

Source: Primary Data, 2025

Only 14.14% received drought coping information or training, while 85.86% did not receive any such training. This reveals a significant drought preparedness training gap.

4.5 Government and Local Interventions

Table 4.5.1: Receipt of Food Assistance During Drought

Response	Frequency	Percentage
No	82	82.84%
Yes	17	17.17%
Total	**99**	**100%**

Source: Primary Data, 2025

Only 17.17% received food assistance during drought periods, while 82.84% did not receive any support despite widespread food shortages.

Table 4.5.2: Desired Support from Government/Organizations

Support Type	Frequency	Percentage
Irrigation support	56	56.6%
Subsidized farming inputs	15	15%
Food relief	9	9%
Drought training	9	9%
Combination approaches	10	10%
Total	**100**	**100%**

Source: Primary Data, 2025

The community overwhelmingly prioritizes irrigation support (56.6%) as their top drought solution, followed by subsidized farming inputs (15%).

Table 4.5.3: Access to Drought Warning Systems

Response	Frequency	Percentage
No	56	56.6%
Yes	43	43.4%
Total	**99**	**100%**

Source: Primary Data, 2025

56.6% of respondents did not receive drought warnings, while 43.4% received warnings, indicating mixed early warning system performance.

4.6 Discussion of the Findings

4.6.1 Back ground characteristics of the respondents

The current study reveals that the demographic data show that 75% of respondents are aged 25–55, representing a predominantly active workforce typical of rural Zambia (CSO, 2020). About 83% have some formal education, while 24% never attended school, limiting their access to drought adaptation information. Similar findings by Busiku (2016) [38] indicate that education enhances adoption of climate-smart practices. Younger respondents display higher education levels, reflecting generational progress in educational access.

Occupationally, 75.76% are farmers, with 87.88% depending on agriculture for income, confirming the community's vulnerability to climate shocks (Chibinga, 2017). Most households (71.7%) earn K100–K500 monthly, and only 8% earn above K500, showing limited financial capacity to withstand drought-related losses.

4.6.2 Coping Strategies Employed by Households

The current study reveals limited coping strategy ranges, with meal reduction dominating household responses. When experiencing drought-induced food shortages (96% of households), the primary response was reducing daily meals (75.75% of households). Alternative strategies account for only 24.24% of responses, including purchasing food from markets and various combination approaches.

Mbhenyane *et al*. (2020) [53] agree that households in South Africa's Sekhukhune District face severe drought-induced food insecurity, often surviving on starchy staples lacking essential nutrients. They note common coping strategies include eating fewer meals, reducing portion sizes, making watery porridge, or sending children to relatives. The current study findings align with these broader patterns of negative coping mechanisms across drought-affected Southern African communities.

The study reveals significant agricultural adaptation gaps, with only 25.3% of households growing drought-tolerant crops. This low adoption represents missed resilience-building opportunities. Grewer *et al*. (2024) [46] found that Malawian farmers successfully adopted early-maturing maize varieties as drought escape strategies. The contrast suggests Kanakantapa farmers either lack access to improved varieties, have limited knowledge about alternatives, or face structural barriers limiting crop portfolio diversification.

4.6.3 Effectiveness of Local and Governmental Interventions

The study reveals significant food assistance coverage gaps, with only 17.17% of respondents receiving drought-period food assistance. The vast majority (82.84%) received no assistance, indicating formal support systems failed reaching most vulnerable households when help was needed most. This finding reflects challenges noted by FEWS NET (2020) regarding limited assistance program scales not fully covering affected population needs.

Community support preferences reveal practical needs understanding, with 57% of respondents prioritizing irrigation support as their top drought solution, followed by subsidized farming inputs (15%). This preference for irrigation infrastructure over direct food aid demonstrates community desires for sustainable, productive solutions rather than temporary relief measures.

The Government of the Republic of Zambia's (2017) [45] Seventh National Development Plan emphasizes addressing rural food security through climate-smart agriculture promotion, irrigation system improvements, and early warning system strengthening. However, implementation gaps exist between policy intentions and ground-level results, as evidenced by only 17.17% of households receiving assistance and 56.6% lacking drought warning access.

5. Conclusions and Recommendations

5.1 Conclusion

Drought severely undermines household food security in Kanakantapa Ward, with 96% of households experiencing food shortages during drought periods. Maize, the primary staple crop, emerges as most drought-vulnerable, affecting 91% of respondents and creating widespread food access challenges. Despite 68.69% of farmers practicing crop diversification, communities remain highly vulnerable due to continued dependence on drought-sensitive crops.

The study reveals limited and predominantly harmful coping mechanisms, with 75.75% of households relying on meal reduction as their primary strategy. Only 25% of households grow drought-tolerant crops, indicating missed agricultural resilience opportunities. Most critically, 56.6% of respondents lacked drought preparedness training access, representing a fundamental gap perpetuating vulnerability and limiting adaptive capacity development.

The study exposed significant failures in both governmental and local intervention systems. Only 17.17% of households received drought-period food assistance, while 82.84% received no support despite experiencing severe food shortages. Early warning systems reached only 43.4% of respondents, leaving the majority without crucial preparedness information. Community preferences strongly favor irrigation infrastructure (56.6%) over temporary relief measures, indicating recognition that sustainable solutions addressing root causes are more valuable than symptomatic treatments.

5.2 Recommendations

Based on research findings, the following recommendations address identified challenges in ensuring effective drought resilience and household food security Promote drought-tolerant crop adoption through subsidized seed distribution, farmer training, and establishing community seed banks for varieties such as sorghum, millet, and cassava. Invest in irrigation infrastructure development prioritized by 56.6% of respondents, including community-managed boreholes, small dams, and water harvesting systems.

Expand and strengthen early warning systems using multiple communication channels including community radio, SMS alerts, and community meetings to reach the 56.6% currently lacking access.

Scale up drought preparedness training to address the 85.86% of households lacking such training, through farmer field schools, agricultural extension services, and community-based training programs. Improve food assistance targeting and coverage to reach the 82.84% of households currently receiving no support, with particular attention to most vulnerable households. Encourage livelihood diversification through skills training in climate-resilient activities such as beekeeping, small livestock keeping, and off-farm income generation. Establish community-level grain banks and encourage household kitchen gardens with drought-resistant vegetable varieties to

improve dietary diversity and food access during crises. Strengthen coordination between government agencies, NGOs, and community organizations to ensure complementary, not duplicative, interventions reach vulnerable households effectively. These recommendations are structured for phased implementation, from immediate actions such as establishing emergency food reserves to long-term solutions focused on building sustainable, community-managed food security systems.

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