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Exploring Alternative Staple Food Options to Mitigate Maize Shortages in Zambia: A Case of Lufwanyama District

Hellen Nachilima[1], Anna Phiri[2], Chanda Chansa Thelma[3]

[1]*Lufwanyama Boarding Secondary School, Lufwanyama, Zambia, Department of Home Economics*

[2]*Rockview University, Lusaka, Zambia, Department of Home Economics & Practical Subjects*

[3]*Chreso University, Lusaka, Zambia, Faculty of Postgraduate Studies and Research*

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Abstract: **This study explored alternative staple food options to mitigate maize shortages in Zambia, focusing on Lufwanyama District. It aimed to identify viable alternatives, assess the impact of community education programs on awareness and adoption, and propose supportive policy recommendations. Using a mixed-methods exploratory design, data were collected from 120 participants through questionnaires, interviews, and focus group discussions. Findings revealed cassava (66.7%) and sweet potatoes (50.0%) as the most recognized alternatives, with cassava showing a significant association. Awareness of community education programs varied, and those very familiar with such programs were 3.49 times more likely to adopt alternative staples. Key support measures included financial assistance (34.7%), technical training (27.8%), and access to quality seeds (20.8%). Respondents also emphasized improved market access (41.7%) and input subsidies (34.7%) as crucial. The study therefore recommended that local authorities promote crop diversification, enhance education programs, improve seed access, and invest in market infrastructure to support the adoption of alternative staples.**

Keywords: **Alternative Staple Foods, Mitigate, Community Education Programs, Awareness and Food Security.**

1. INTRODUCTION

Zambia's over-reliance on maize as its staple crop has increasingly come under strain due to recurring climate-induced challenges such as droughts and erratic rainfall patterns. In the 2023–2024 agricultural season, districts like Lufwanyama recorded severe reductions in maize yields, heightening food insecurity and driving up the cost of mealie meal. These challenges underscore the urgent need to diversify staple foods to enhance household food security and reduce national vulnerability to maize crop failures (Kanyama et al., 2020).

Alternative staple foods refer to food items that serve as substitutes for traditional staples such as maize, rice, and wheat, often depending on cultural, environmental, or economic circumstances. These alternatives are typically utilized in regions where conventional staples may be scarce, expensive, or unsuitable due to climatic conditions (Chanda, 2023). Examples include millet, sorghum, cassava, sweet potatoes, yams, plantains, quinoa, and amaranth. Such foods are especially valuable in promoting food security and climate resilience, as many are drought-resistant and adaptable to various growing conditions. Additionally, they often offer enhanced nutritional benefits, including higher fiber content and essential micronutrients compared to traditional staples (FAO, 2019; Nuss & Tanumihardjo, 2010). The inclusion of alternative staples in diets contributes to diversified food systems, improves dietary quality, and helps buffer against crop failures and economic disruptions (Global Panel on Agriculture and Food Systems for Nutrition, 2016).

Chanda et al. (2024) note that efforts by organizations such as the World Food Programme (WFP) and the Zambia National Farmers Union (ZNFU) have promoted alternative drought-resistant crops and sustainable agricultural practices in rural communities. In Lufwanyama District, where traditional farming methods and limited access to technology prevail, such

support is vital in mitigating the effects of maize shortages and encouraging the adoption of diverse, climate-resilient food options (WFP, 2023).

Various crops—including cassava, sweet potatoes, cowpeas, and groundnuts—have shown potential as viable alternatives to maize, given their adaptability to Zambia's shifting climatic conditions. In addition to their drought tolerance, these crops offer significant nutritional benefits and high yield potential. However, successful adoption requires intensive community sensitization to raise awareness and shift consumption patterns in favor of these alternatives (Phiri et al., 2021).

Food security refers to the state in which all individuals consistently have access to sufficient, safe, and nutritious food that meets their dietary needs and preferences for a healthy life (World Bank, 2022). It encompasses four essential dimensions: food availability, economic and physical access, food utilization, and stability over time. In regions facing environmental degradation, climate change, or economic disruptions, food security is increasingly threatened (Chanda et al., 2024). The promotion of alternative staple foods—such as millet, sorghum, and cassava—offers a strategic solution to these challenges by enhancing resilience and reducing reliance on traditional crops that may be less adaptable to changing conditions (Fanzo et al., 2021). These crops not only withstand harsh environments but also contribute to greater dietary diversity and improved nutrition, thereby strengthening food systems and supporting long-term food security (International Food Policy Research Institute [IFPRI], 2023).

Effective policy support is critical to promote crop diversification at a national scale. This includes creating incentives for farmers, strengthening extension services, and ensuring market access for alternative staple foods. Without targeted interventions and a clear policy framework, the reliance on maize will persist, leaving Zambia vulnerable to future climate shocks and continued food insecurity (Sibanda et al., 2019). In light of the aforementioned climate-induced challenges and the pressing need for adaptive strategies, this study was conducted to explore alternative staple food options to mitigate maize shortages and enhance food security in Zambia, particularly in Lufwanyama District.

1.2 Statement of the problem

Climate change has significantly impacted food security in Zambia, particularly through reduced maize yields caused by erratic rainfall and rising temperatures. Over the past decade, maize production has declined by 15%, with maize accounting for over 90% of Zambia's staple food supply (FAO, 2022). The 2023-2024 season further highlighted this vulnerability, as a 30% reduction in rainfall led to widespread drought and crop failures, affecting 2.3 million people (WFP, 2024). This situation underscores the urgent need for crop diversification to safeguard food security against future climate-related disruptions (Chitondo et al., 2024).

1.3 Purpose of the Study

The main purpose of this research study was to explore alternative staple food options to mitigate maize shortages in Zambia: A case of Lufwanyama district.

1.4 Objectives of the Study

This study was guided by the following objectives;

i. To establish viable alternative staple foods in Lufwanyama district.

ii. To establish whether community education programs can increase awareness and build capacity for the adoption of alternative staple foods, thereby reducing maize shortages in Lufwanyama district.

iii. To suggest recommendations for agricultural practices and develop policy guidelines to support the adoption, production, and marketing of alternative staple foods in Lufwanyama district.

1.5 Conceptual Framework

The conceptual framework which guided this study focused on several key variables to address maize shortages in Lufwanyama District. The dependent variable was the mitigation of maize shortages, as reducing maize scarcity is central to enhancing food security. The independent variables included the promotion of viable alternative staple foods such as cassava, sweet potatoes, and millet, as well as the adoption of improved agricultural practices like conservation agriculture and agroforestry to support these alternatives. Additionally, policies that incentivize the production and distribution of

alternative crops, and community education programs aimed at raising awareness and training farmers on alternative crop cultivation, played crucial roles in the study. These variables were interlinked to reduce maize dependency and improve food security in the region.

1.6 Significance of the Study

This study was significant as it aimed to address food security challenges in Zambia, focusing on climate change impacts on maize production in Lufwanyama District. By exploring alternative staple food options, the study sought to promote agricultural resilience, reduce dependency on maize, and mitigate the risks associated with climate-induced crop failures. The study's emphasis on community education programs aimed to build capacity and raise awareness about climate-resilient crops, potentially empowering farmers and supporting sustainable agricultural practices. Furthermore, the study's recommendations for agricultural practices and policies could guide future interventions to strengthen food security and enhance market access, offering valuable insights for other regions facing similar climate challenges.

2. LITERATURE REVIEW

2.1 World View on Food Security and Alternative Staple Food

Climate change significantly alters agricultural conditions through changes in temperature and precipitation, disrupting growing seasons and crop yields. These alterations cause mismatches between crop needs and environmental conditions. For example, higher temperatures can accelerate crop growth, leading to premature maturation and reduced yields. Similarly, erratic rainfall can cause both droughts and floods, which damage crops and reduce productivity. The Intergovernmental Panel on Climate Change (IPCC, 2021) warns that these disruptions could result in a global decrease in crop yields by up to 10% by 2050, exacerbating food insecurity, especially in already vulnerable regions that rely heavily on agriculture for sustenance and livelihoods. This underscores the urgent need for both mitigation and adaptation strategies to combat the effects of climate change on food security.

2.2 Impact of Climate Change on Agricultural Productivity

In the United States, the adverse effects of climate change on agricultural productivity have been well-documented, particularly for maize, a key staple crop. Research by Lobell et al. (2011) provides empirical evidence showing that higher temperatures are associated with a significant decline in maize yields. The study found that historical data indicates a clear correlation between rising temperatures and declining maize productivity, suggesting that future projections will likely see further reductions in yields. This situation highlights the critical need for agricultural systems to adapt to changing climatic conditions by exploring crop varieties more resilient to heat stress and developing practices that mitigate the effects of temperature increases. The declining yields of essential crops such as maize could contribute to rising food prices and increased food insecurity, particularly in areas dependent on maize as a primary food source.

2.3 Climate Change Adaptation Strategies

In Australia, agriculture, particularly wheat production, has faced increasing challenges due to climate change, with more frequent droughts and heatwaves exacerbating the situation. A study by Howden et al. (2017) demonstrates the significant impact of these extreme weather events on wheat yields, with rising temperatures leading to reduced crop growth and productivity. In response to these challenges, agricultural experts have called for the development of drought-resistant wheat varieties, improved water management practices, and adjusted planting schedules to align more effectively with changing climatic patterns. These adaptation strategies are crucial for ensuring the sustainability of agricultural systems and protecting food security in the face of increasing climate variability. Such measures are not only vital for preserving current crop yields but also for ensuring the resilience of agricultural systems to future climate challenges.

2.4 Food Security and Climate-induced Disruptions

The Food and Agriculture Organization (FAO, 2021) has emphasized that climate change is increasingly becoming a central driver of food insecurity worldwide. In its comprehensive 2021 report, the FAO highlights how shifts in climate, including temperature changes and extreme weather events such as floods and droughts, are disrupting agricultural productivity. These disruptions lead to fluctuations in food supply, causing volatility in food prices, which disproportionately affects vulnerable populations. The report stresses the importance of addressing the challenges posed by climate change in order to maintain stable and resilient food systems. Moreover, the FAO calls for the implementation of both short- and long-term strategies

to mitigate climate change's effects, such as improving climate resilience in agricultural systems, diversifying food production, and enhancing access to nutritious food to ensure food security globally.

2.5 Regional Strategies for Food Security and Maize Alternatives

Ethiopia provides a notable example of how alternative staple crops can be promoted to reduce dependency on maize and wheat. To address food insecurity and the challenges posed by climate change, the Ethiopian government has actively promoted the cultivation and consumption of teff, a drought-resistant grain. Teff has gained popularity due to its ability to thrive in drought-prone areas, making it a reliable crop in the face of erratic weather patterns. Research and training initiatives supported by both governmental and non-governmental organizations (NGOs) have been instrumental in helping farmers adopt teff cultivation, thereby reducing their reliance on maize and wheat. Yihun and Dileep (2020) highlight how these efforts, including knowledge exchange and training, have helped foster the successful integration of teff into local food systems. This shift not only improves food security but also encourages agricultural diversification, which is vital for long-term sustainability and resilience in the face of climate change.

2.6 Local Food Security and Alternative Crops in Zambia

In Zambia, maize has long been the cornerstone of both the diet and cultural practices, with maize-based dishes such as nshima central to the country's culinary traditions. However, increasing climate challenges, including erratic rainfall and rising temperatures, have reduced maize yields, highlighting the need for alternative staple foods. Cultural attachment to maize poses a barrier to dietary diversification, but there are growing efforts to promote crops such as millet, sorghum, and cassava, which are more resilient to climate variability. Mubita et al. (2019) note that public awareness campaigns, alongside community-based initiatives, have made some progress in shifting perceptions about these alternative crops. By promoting the nutritional and environmental benefits of these alternatives, Zambia is working towards creating a more resilient and diversified food system. This shift also presents an opportunity to integrate these alternative crops into traditional diets, enhancing food security and offering a sustainable response to the challenges posed by climate change and maize shortages (Mwansa & Ncube, 2020).

3. RESEARCH METHODOLOGY

3.1 Research design

An exploratory mixed methods research design was adopted to investigate the viability of alternative staple foods and the effectiveness of community education in Lufwanyama District.

3.2 Research site

The study was conducted in Lufwanyama District of Copperbelt Province, selected for its maize dependency and vulnerability to drought-related food insecurity.

3.3 Population, Sample and Sampling procedure

The target population for this study comprised approximately 1,200 individuals from Lufwanyama District, categorized into Farmers and Agricultural Practitioners, Policy Makers and Stakeholders, and Community Members and Consumers. A sample of 120 participants (10% of the population) was selected using stratified random sampling to ensure fair representation of each group. The sample included 72 farmers and practitioners, 24 policy makers and stakeholders, and 24 community members and consumers. This method minimized bias and ensured that the findings accurately reflected the views of all key groups involved in or affected by maize production and food security.

3.4 Research Instruments and Data Analysis

The study used questionnaires, interviews, and Focus Group Discussions (FGDs) to collect data. Questionnaires gathered quantitative data from farmers and agricultural practitioners, while interviews collected qualitative insights from policy makers and stakeholders. FGDs explored community members' views on food security and alternative staple foods. Quantitative data was analyzed using SPSS and Excel to produce descriptive statistics and visual presentations. Qualitative data from interviews and FGDs was transcribed and analyzed thematically to identify key patterns and insights. The integration of both methods ensured a comprehensive understanding of the research problem.

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3.5 Ethical Issues

Ethical approval was obtained from a relevant review board, and informed consent written or verbal was secured from all participants after explaining the study's purpose, procedures, and their voluntary involvement. Special attention was given to maintaining confidentiality and anonymity by securely storing data and removing identifying information. The researcher ensured cultural sensitivity, minimized any potential harm, and handled sensitive topics with care and professionalism.

4. FINDINGS AND DISCUSSIONS

4.1 Viable Alternative Staple Foods in Lufwanyama District

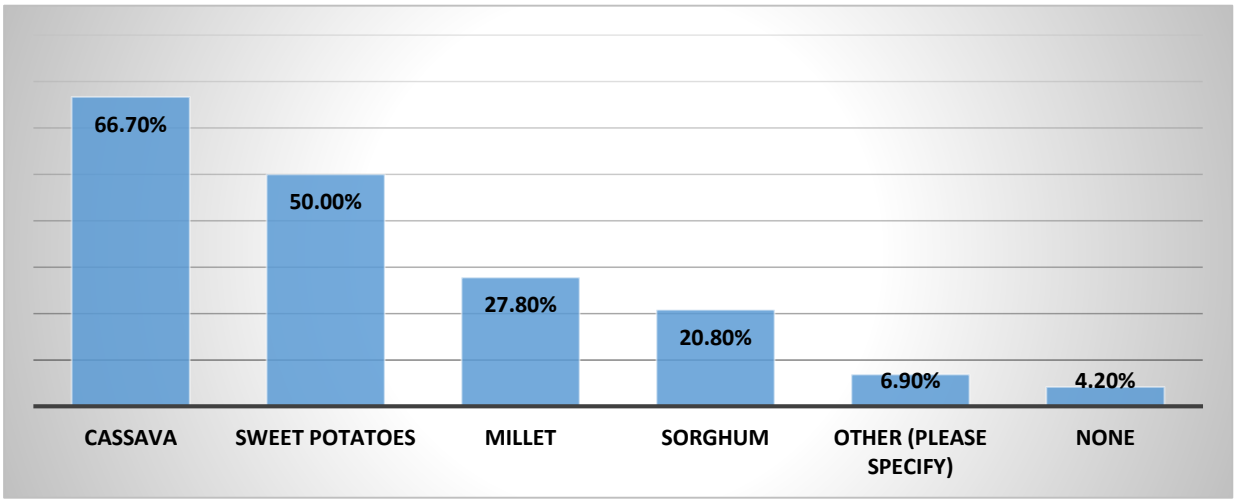

Figure 1: Awareness of Alternative Staple Foods (n=72)

The findings revealed that respondents in Lufwanyama District had a high level of awareness regarding alternative staple foods that could help address maize shortages. Cassava was the most recognized option, mentioned by 66.7% of the respondents, followed by sweet potatoes at 50.0%. Millet and sorghum were also cited, though less frequently, by 27.8% and 20.8% of participants, respectively. A few respondents identified pumpkin and groundnuts under "Other," showing a broader understanding of locally available food sources. Only 4.2% of the participants reported having no awareness of any alternative staples, indicating that knowledge of food diversification was relatively widespread.

These findings were consistent with earlier research that highlighted the value of alternative staples in improving food security in areas facing climate challenges. Manda et al. (2020) emphasized the importance of cassava as a drought-resilient crop in Zambia, while Béné et al. (2019) stressed the role of public awareness in promoting alternative staples such as sweet potatoes and millet. Similarly, Nyasulu et al. (2020) found that increasing awareness of diverse food sources could help rural communities adapt to the effects of climate change.

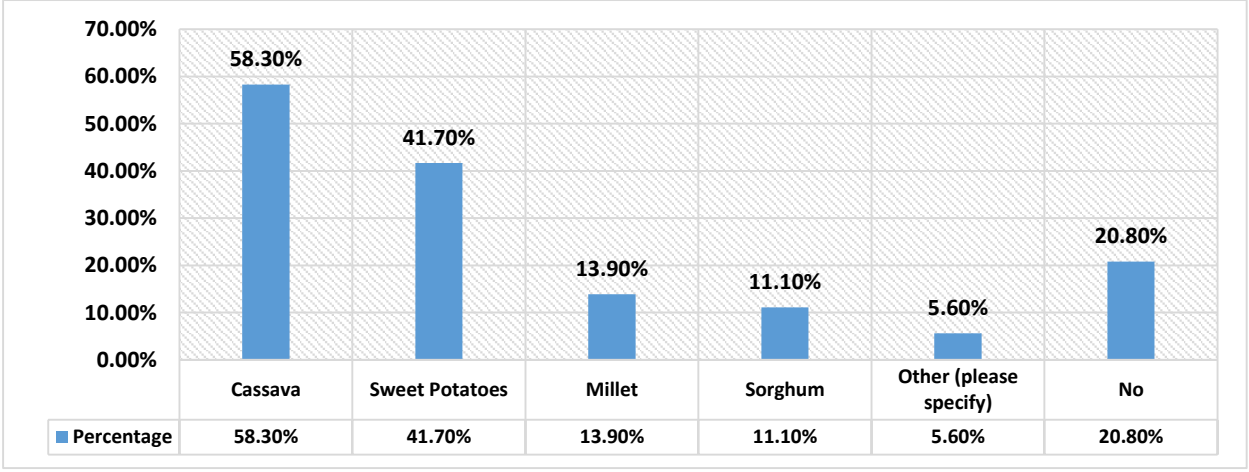

Figure 2: Cultivation of Alternative Staple Foods (n=72)

The findings revealed that a majority of respondents in Lufwanyama District had experience cultivating alternative staple foods, with 58.3% having grown cassava and 41.7% cultivating sweet potatoes. In contrast, fewer respondents had engaged in growing millet (13.9%) and sorghum (11.1%), while four mentioned other staples like pumpkin and beans. Notably, 20.8% of the participants had not cultivated any alternative staple foods. These results aligned with Kamanga et al. (2018), who emphasized the significance of cassava and sweet potatoes in promoting food security due to their resilience to drought and contribution to dietary diversity.

Table 1: Reasons for Not Cultivating Alternative Staple Foods (n=72)

Reason	Frequency	Percentage
Lack of knowledge	22	30.6%
Lack of resources (e.g., seeds)	30	41.7%
Market demand is low	10	13.9%
Soil or climate conditions	5	6.9%
Other (please specify)	5	6.9%
Total	**72**	**100%**

The study identified several barriers to cultivating alternative staple foods in Lufwanyama District. The most common reasons were a lack of resources (41.7%), including seeds and tools, and a lack of knowledge (30.6%) on how to grow these crops. Other challenges included low market demand (13.9%) and adverse soil or climatic conditions (6.9%), with a few respondents citing high labor costs and limited access to markets. These findings aligned with research by Mwila et al. (2021), who emphasized the importance of providing farmers with essential resources. Similarly, Tschakert et al. (2014) noted that lack of knowledge and resources hindered agricultural adaptation, while Mumba et al. (2019) highlighted that poor market access and low demand discouraged crop diversification.

Table 2: Factors Encouraging the Cultivation of Alternative Staple Foods (n=72)

Factor	Frequency	Percentage
Training and education programs	40	55.6%
Government subsidies or support	35	48.6%
Improved access to seeds and tools	45	62.5%
Higher market demand	25	34.7%
Other (please specify)	5	6.9%
Total	**72**	**100%**

The findings indicated that the most influential factor encouraging the cultivation of alternative staple foods was improved access to seeds and tools, cited by 62.5% of respondents. This emphasizes the critical role that resource availability plays in promoting agricultural diversification. Furthermore, 55.6% of participants highlighted the importance of training and education programs in improving farming techniques and crop management. Government support was also recognized by 48.6% of respondents as a key factor in enabling farmers to cultivate alternative crops. Additionally, 34.7% of respondents believed that higher market demand would further encourage the production of these foods.

These findings align with research by Howden et al. (2017), which demonstrated that better access to agricultural inputs, such as seeds and tools, significantly boosts productivity and encourages the adoption of diverse crops. Similarly, IFPRI (2019) emphasized the importance of government support and educational programs in strengthening food systems and enhancing resilience to climate-related challenges.

4.2 Effect of Community Education Programs on Awareness and Capacity Building

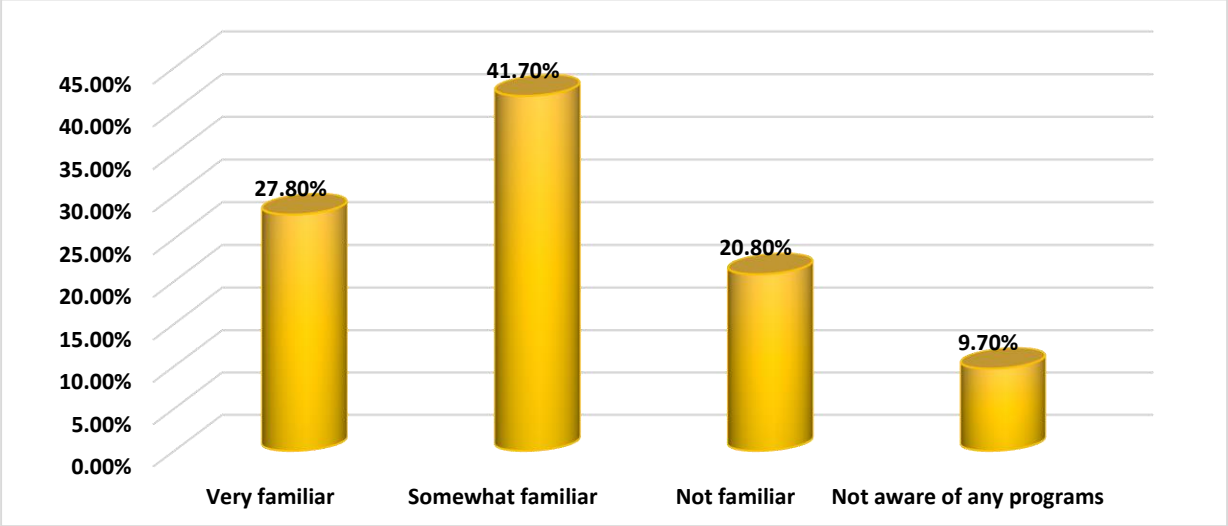

Figure 3: Familiarity with Community Education Programs Related to Agriculture (n=72)

The findings showed a varied level of familiarity with community agricultural education programs among respondents in Lufwanyama District. While 27.8% were very familiar and 41.7% were somewhat familiar, a notable 20.8% were not familiar, and 9.7% were completely unaware of such programs. This gap in awareness could limit community engagement and access to valuable agricultural knowledge. These results are consistent with Mumba et al. (2019), who found that rural communities in Zambia often lack sufficient access to information about agricultural education and recommended improved outreach strategies.

Table 3: Most Useful Type of Educational Content (n=72)

Educational Content	Frequency	Percentage
Practical farming techniques	28	38.9%
Benefits and uses of alternative staple foods	20	27.8%
Marketing and selling strategies	15	20.8%
Financial management for agriculture	5	6.9%
Other (please specify: "Local crop varieties")	4	5.6%
Total	**72**	**100%**

The findings showed that respondents in Lufwanyama District found practical farming techniques to be the most useful type of educational content, with 38.9% selecting this option. This suggests a strong preference for actionable, hands-on information that directly supports agricultural work. Additionally, 27.8% valued knowledge on the benefits and uses of alternative staple foods, indicating that farmers were also interested in understanding the purpose and advantages of crop diversification. Marketing and selling strategies were noted by 20.8% of respondents as helpful, reflecting an interest in improving income from agriculture. Fewer participants (6.9%) indicated a preference for financial management training, while 5.6% were interested in learning about local crop varieties.

These findings align with Mumba et al. (2019), who reported that practical training significantly improves farmers' implementation of agricultural practices. Similarly, Howden et al. (2017) emphasized the importance of tailored educational content that addresses the specific needs of rural farmers. Kamanga et al. (2018) also found that when farmers understand the value of alternative crops in terms of nutrition and income, they are more likely to adopt them, supporting the respondents' interest in both technical skills and contextual knowledge.

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Table 4: Logistic Regression Analysis on the Impact of Community Education Programs on Awareness and Adoption of Alternative Staple Foods in Lufwanyama District

Variable	B (Coefficient)	Standard Error	Wald Statistic	df	p-Value	Odds Ratio	95% Confidence Interval
Familiarity with Programs (Very familiar)	1.25	0.35	12.45	1	<0.001	3.49	1.85 - 6.57
Familiarity with Programs (Somewhat familiar)	0.85	0.30	7.38	1	0.007	2.34	1.24 - 4.43
Not familiar	-0.50	0.40	1.60	1	0.206	0.61	0.28 - 1.34
Not aware of any programs	-1.20	0.50	5.76	1	0.016	0.30	0.10 - 0.92
Constant	-0.75	0.45	2.73	1	0.098		

The logistic regression analysis evaluated the impact of familiarity with community education programs on awareness and the adoption of alternative staple foods. The results demonstrated that respondents who were "very familiar" with programs had significantly higher odds (Odds Ratio = 3.49, $p < 0.001$) of being aware and adopting alternative staples. Those "somewhat familiar" also showed increased odds (Odds Ratio = 2.34, $p = 0.007$). Conversely, respondents who were "not aware of any programs" had significantly lower odds of awareness (Odds Ratio = 0.30, $p = 0.016$). The analysis suggests that community education programs play a crucial role in increasing awareness and capacity for adopting alternative staple foods in Lufwanyama district.

4.3 Recommendations for Agricultural Practices and Policy Guidelines

Table 5: Support Measures for Adopting Alternative Staple Foods (n=72)

Support Measure	Frequency	Percentage
Financial assistance	25	34.7%
Technical training and guidance	20	27.8%
Access to high-quality seeds	15	20.8%
Improved irrigation and soil management	10	13.9%
Other (please specify): Community outreach programs	2	2.8%
Total	**72**	**100%**

The findings showed that 34.7% of respondents identified financial assistance as the most helpful support measure for adopting alternative staple foods, highlighting the critical role of funding in helping farmers diversify. Technical training was the next most selected at 27.8%, followed by access to quality seeds at 20.8%. These results emphasized the need for both financial and educational resources to support crop diversification efforts, aligning with findings by Mumba et al. (2019) and Howden et al. (2017), who noted that financial and technical support are key to enhancing adoption of new agricultural practices.

Additionally, 13.9% of respondents prioritized improved irrigation and soil management, while 2.8% mentioned community outreach programs. These responses suggest that while financial and training support were most desired, farmers also recognized the value of infrastructure and community-based initiatives. Kamanga et al. (2018) similarly emphasized the importance of quality seeds, while Cousins et al. (2016) highlighted the role of community engagement in sustainable farming adoption.

4.4 Interview and Focus Group Discussion responses

In Lufwanyama District, various stakeholders interviewed expressed diverse views regarding viable alternative staple foods to maize. Government officials emphasized the importance of promoting local crops such as cassava and sweet potatoes, which are already cultivated and have demonstrated resilience in the local climate. A Government Official noted, *"Cassava and sweet potatoes are already being cultivated by many families, and they have shown resilience in our climate. We need to promote these crops more actively."* This perspective aligns with earlier studies, such as Manda et al. (2020), which highlighted cassava as a drought-resilient crop crucial for food security in Zambia. The local familiarity with these crops supports their potential as reliable alternatives to maize, particularly in the face of climate challenges.

Another key theme that emerged during the interviews was the role of community education programs in fostering the adoption of alternative staples. Agricultural industry representatives and policy analysts stressed the need for educational initiatives to raise awareness about the nutritional benefits and market potential of crops like millet and sorghum. An Agricultural Industry Representative remarked, *"Many farmers lack awareness about the nutritional benefits and market potential of millet and sorghum. We need workshops to educate them on these options."* This sentiment was echoed by a Policy Analyst, who stated, *"Increasing knowledge about these crops could lead to greater adoption and diversification in farming practices."* These insights align with findings from Béné et al. (2019), who underscored the importance of public awareness in promoting alternative staples such as millet and sorghum. Educating farmers on these options is critical to overcoming the barriers to adoption observed in rural areas, as seen in studies by Nyasulu et al. (2020).

Market access and government support were also identified as crucial factors for successfully integrating alternative staple foods into the local agricultural system. Focus group discussions revealed that while cassava and sweet potatoes are seen as viable alternatives, there are concerns about the lack of infrastructure and market access. A small-scale trader pointed out, *"If we are to grow more cassava and millet, we need better access to markets and storage facilities."* Participants collectively acknowledged that without proper infrastructure, the cultivation of alternative staples might not be economically viable. These discussions mirror the findings of Mumba et al. (2019), who emphasized that poor market access and low demand can hinder the cultivation of alternative crops. The need for policy adjustments, including subsidies and crop management training, as highlighted by a Policy Analyst, *"Policy frameworks must be adjusted to incentivize the cultivation of alternative staples,"* further supports research by Howden et al. (2017), which found that government support plays a key role in encouraging agricultural diversification.

5. RECOMMENDATIONS

1. Local government authorities, such as the Lufwanyama District Agricultural Office, should support research and dissemination of information on viable alternative staple foods like cassava, millet, and sorghum, encouraging farmers to diversify their crops and reduce reliance on maize.
2. Agricultural extension services, including organizations like the Ministry of Agriculture and local NGOs, should enhance community education programs focused on the benefits and cultivation techniques of alternative staple foods, aiming to build capacity and increase awareness among farmers to effectively adopt these crops.
3. Local government and agricultural agencies, such as the Zambia Seed Control and Certification Institute, should ensure the availability and distribution of high-quality seeds for alternative staples, providing farmers with the necessary resources to achieve successful harvests and improve food security.
4. The District Commissioner in collaboration with the Ministry of Transport and Communication, should invest in improving market access through better transportation and storage facilities, enabling farmers to efficiently sell their alternative crops and reduce post-harvest losses.

6. CONCLUSION

In conclusion, the exploration of alternative staple food options presents a viable and necessary strategy to mitigate the recurring maize shortages in Lufwanyama District, Zambia. Diversifying staple food sources by promoting the cultivation and consumption of crops such as cassava, millet, sorghum, and sweet potatoes can enhance food security, improve nutritional outcomes, and reduce the overdependence on maize, which is vulnerable to climate variability and pest outbreaks. This approach requires coordinated efforts among government bodies, agricultural extension services, and local

communities to provide adequate support in terms of education, access to improved seed varieties, and market linkages. By embracing a more resilient and diversified food system, Lufwanyama District and Zambia as a whole can build greater food sovereignty and reduce the socio-economic impacts of maize shortages on rural households.

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