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Assessing the Effectiveness of Community-Based Drought Adaptation Strategies in Enhancing Agricultural Productivity: A Case Study of Mayukwayukwa Resettlement Scheme, Kaoma District, Western Province, Zambia

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Abstract

Drought is a major challenge affecting agricultural production, food security and the livelihoods of smallholder farmers, particularly in areas that depend heavily on rain-fed agriculture. This study assessed the effectiveness of community-based drought adaptation strategies in enhancing agricultural productivity among smallholder farmers in Mayukwayukwa Resettlement Scheme, Kaoma District, Western Province, Zambia. The study specifically examined the drought adaptation strategies adopted by farmers, determined their effects on agricultural productivity and analyzed the challenges affecting their implementation. A mixed-methods research design was employed, combining quantitative and qualitative approaches. Data were collected from 50 smallholder farmers using structured questionnaires, while additional information was obtained through interviews with key informants and field observations. The quantitative data were analyzed using descriptive statistics, including frequencies and percentages, while qualitative information was analyzed thematically. The findings revealed that conservation farming was the most widely adopted drought adaptation strategy, followed by crop diversification, agroforestry, water harvesting and irrigation. Regarding effectiveness, 82% of respondents reported improvements in crop yields following the adoption of drought adaptation strategies, while 76% indicated improvements in household food security. Conservation farming was identified as the most effective strategy by the largest proportion of respondents. However, the implementation of these strategies was constrained by inadequate agricultural inputs, financial limitations, persistent drought conditions, insufficient technical knowledge and limited institutional support. The study concludes that community-based drought adaptation strategies contribute positively to agricultural productivity and household food security, although their effectiveness depends on the availability of adequate resources and institutional support. The study recommends strengthening access to agricultural inputs, farmer training, extension services, financial assistance and reliable water resources to improve the sustainability of drought adaptation initiatives in Mayukwayukwa Resettlement Scheme.

Keywords: Agricultural Productivity, Climate Change, Community-Based Adaptation, Drought, Food Security, Smallholder Farmers

1. Introduction

1.1 Background of the Study

Drought refers to prolonged periods of abnormally low rainfall and inadequate water availability that negatively affect agricultural activities and livelihoods. It has become a major global concern because of its effects on agriculture, food security and livelihoods. Agriculture is highly sensitive to drought because inadequate rainfall affects crop growth, soil fertility and water availability. Consequently, different countries have promoted adaptation strategies to help farmers cope with drought and sustain agricultural production. International frameworks such as the Paris Agreement also encourage countries to strengthen resilience, particularly in vulnerable sectors such as agriculture.

In Africa, particularly sub-Saharan Africa, the effects of drought are more severe because of the high dependence on rain-fed agriculture and limited adaptive capacity. The region has experienced frequent droughts, floods and increased rainfall

variability, which have significantly affected agricultural productivity (FAO, 2023) [4]. According to the IPCC (2022) [6], crop yields in sub-Saharan Africa could decline by up to 30% if effective adaptation measures are not implemented. In response, governments and development organizations have promoted community-based drought adaptation strategies that involve local communities identifying and implementing solutions suited to their environment. These strategies include conservation agriculture, agroforestry, crop diversification and water management practices. However, their effectiveness may depend on farmers' access to resources, knowledge and institutional support.

In Zambia, drought continues to pose a serious threat to agriculture, which is an important sector for economic growth and rural livelihoods. Agriculture contributes about 20% to the Gross Domestic Product (GDP) and employs over 70% of the rural population (World Bank, 2022) [18]. However, agriculture in Zambia is mainly rain-fed, making it highly vulnerable to drought. The country has experienced recurrent droughts, delayed rainfall and rising temperatures, which have negatively affected crop production, particularly maize (FAO, 2023) [4]. National policies and agricultural programmes have therefore promoted adaptation strategies such as conservation farming and agroforestry to improve resilience among smallholder farmers.

At the local level, Mayukwayukwa Resettlement Scheme in Kaoma District of Western Province faces environmental and agricultural challenges. The area is characterized by poor soil fertility, deforestation and unpredictable rainfall patterns, which affect farming activities and reduce crop yields. Smallholder farmers in the scheme depend heavily on rain-fed agriculture and are therefore highly vulnerable to drought. In response, farmers have adopted community-based drought adaptation strategies such as conservation farming, crop diversification, agroforestry and water harvesting. These strategies are intended to improve soil quality, conserve moisture and increase agricultural productivity.

However, despite the adoption of these strategies, agricultural productivity in Mayukwayukwa remains low, and many households continue to experience food insecurity. The effectiveness of adaptation strategies may be limited by challenges such as lack of financial resources, limited access to extension services, poor infrastructure and inadequate institutional support (FAO, 2018; World Bank, 2022) [2, 18]. This creates a gap between the expected benefits of drought adaptation strategies and the actual outcomes experienced by farmers.

Therefore, there is a need to assess the effectiveness of community-based drought adaptation strategies in improving agricultural productivity at the local level. Understanding how these strategies work in practice, as well as the challenges faced by farmers, is important for improving policy implementation and promoting sustainable agriculture. This study focuses on Mayukwayukwa Resettlement Scheme to provide empirical evidence that can support better decision-making and contribute to improved food security and rural livelihoods in Zambia.

1.2 Problem Statement

Agriculture is the primary source of livelihood for most rural households in Zambia, particularly among smallholder farmers who rely heavily on rain-fed production. However, drought is increasingly disrupting agricultural systems through irregular rainfall, prolonged dry periods and rising temperatures, leading to reduced crop yields and heightened food insecurity (FAO, 2023) [4].

In recent years, Zambia has experienced severe drought conditions that have reduced maize production by over 30% in some areas, threatening food security and household incomes (FAO, 2023) [4]. Although agriculture contributes approximately 20% to the national GDP and employs more than 70% of the rural population, the sector remains highly vulnerable to drought (World Bank, 2022) [18].

Community-based drought adaptation strategies such as conservation farming, agroforestry, crop diversification and water harvesting have been promoted to enhance resilience and agricultural productivity. However, agricultural productivity in many rural areas, including Mayukwayukwa Resettlement Scheme, remains low despite the adoption of these interventions. Farmers continue to experience poor harvests, unstable incomes and persistent food insecurity, raising concerns about the actual effectiveness of these strategies.

Moreover, most existing studies tend to focus on identifying adaptation strategies rather than assessing their actual impact on agricultural productivity at the local level. This creates a gap between expected outcomes and observed realities. Therefore, a localized study is necessary to assess the effectiveness of community-based drought adaptation strategies in improving agricultural productivity among smallholder farmers in Mayukwayukwa Resettlement Scheme.

2. Literature Review

2.1 Community Based Drought Adaptation Strategies Used by Smallholder Farmers

Smallholder farmers use different strategies to respond to the effects of drought and maintain agricultural production. Common community based drought adaptation strategies include conservation farming, crop diversification, agroforestry, irrigation and water harvesting. These strategies are intended to improve farmers' ability to cope with changing climatic conditions while maintaining agricultural activities.

Conservation farming is one of the strategies promoted among smallholder farmers because it helps conserve soil moisture, improve soil fertility and reduce soil degradation. Crop diversification also provides farmers with alternatives when particular crops are affected by drought. Agroforestry can contribute to soil protection and moisture conservation, while water harvesting and irrigation provide alternative sources of water for crop production during periods of inadequate rainfall.

In Zambia, the adoption of these strategies is influenced by factors such as access to agricultural inputs, financial resources, and knowledge and extension services. Farmers' ability to adopt and sustain adaptation practices therefore differs according to their available resources and the conditions within their communities.

2.2 Effectiveness of Community Based Drought Adaptation Strategies on Agricultural Productivity

Drought adaptation strategies are expected to contribute to agricultural productivity by helping farmers maintain or improve crop production under changing climatic conditions. Conservation farming, crop diversification, agroforestry, irrigation and water harvesting can support

agricultural production by improving soil moisture, reducing crop losses and providing farmers with alternative production options.

However, the effectiveness of adaptation strategies cannot be considered independently of the conditions under which farmers implement them. Limited access to agricultural inputs, finance, water resources and extension services may reduce the ability of farmers to fully benefit from adaptation practices. Therefore, assessing effectiveness at the local level is important for understanding whether strategies adopted by farmers are contributing to agricultural productivity and household food security.

2.3 Challenges Faced by Smallholder Farmers in Implementing Drought Adaptation Strategies

Despite the potential benefits of drought adaptation strategies, smallholder farmers face several challenges in implementing them. These include inadequate financial resources, limited access to agricultural inputs, inadequate technical knowledge, persistent drought conditions and limited institutional support.

Such challenges can restrict farmers' ability to adopt or sustain adaptation practices. For example, farmers may be aware of appropriate drought adaptation measures but fail to implement them effectively because they cannot afford the required inputs or lack access to technical assistance. Limited access to water resources can also constrain the adoption of irrigation and water harvesting practices.

The literature therefore indicates that improving the effectiveness of drought adaptation strategies requires more than simply promoting their adoption. Farmers also need appropriate institutional, technical and financial support to implement the strategies effectively.

2.4 Research Gap

The thesis identifies a gap in existing research, noting that most studies have tended to focus on identifying drought adaptation strategies rather than assessing their actual effectiveness on agricultural productivity at the local level. This creates a gap between the expected benefits of adaptation interventions and the outcomes experienced by farmers. The present study addresses this gap by focusing specifically on smallholder farmers in Mayukwayukwa Resettlement Scheme and examining the strategies they use, their perceived effects on agricultural productivity, and the challenges affecting implementation.

3. Methodology

3.1 Research Design

The study adopted a mixed methods research design, combining quantitative and qualitative approaches. The quantitative approach was used to collect numerical information on the drought adaptation strategies adopted by smallholder farmers and their reported effects on agricultural productivity. The qualitative approach was used to obtain detailed information on farmers' experiences, perceptions and challenges through interviews and field observations. The combination of the two approaches enabled the study to capture both measurable findings and experiences related to drought adaptation in Mayukwayukwa Resettlement Scheme.

3.2 Target Population

The target population comprised smallholder farmers in Mayukwayukwa Resettlement Scheme, Kaoma District, Western Province, Zambia. The farmers were selected because they depend heavily on rain fed agriculture and are vulnerable to drought and irregular rainfall patterns. The study also considered key informants, including agricultural extension officers, the Scheme Coordinator and local community leaders, because of their knowledge and experience concerning drought adaptation practices in the study area.

3.3 Sampling Design

The study used both probability and non-probability sampling techniques. Simple random sampling was used to select smallholder farmers, giving each farmer an equal opportunity of being selected. A sampling frame, such as a list of farmers in the resettlement scheme, was used in the selection process. Purposive sampling was used to select key informants based on their knowledge, experience and involvement in drought adaptation activities. The combination of these techniques enabled the study to obtain information from farmers as well as detailed perspectives from knowledgeable community and agricultural stakeholders.

3.4 Sample Size Determination

The study population consisted of 57 smallholder farmers. The sample size was determined using Yamane's formula at a 5% level of precision:

$$n = N / [1 + N (e^2)]$$

Where n represents the sample size, N represents the population size and e represents the level of precision.

Using a population of 57 farmers and a precision level of 0.05, the calculation produced a sample size of 49.89, which was rounded to 50 farmers. In addition, 5 to 10 key informants were purposively selected, resulting in a total potential study population of 55 to 60 respondents.

Description	Symbol	Calculation/Value
Total population	N	57 farmers
Level of precision	e	0.05
Squared precision	e^2	0.0025
Population × squared precision	$N(e^2)$	$57 \times 0.0025 = 0.1425$
$1 + N(e^2)$	—	$1 + 0.1425 = 1.1425$
Calculated sample size	n	$57 \div 1.1425 = 49.89$
Final sample size	**n**	**50 farmers**

3.5 Data Collection Methods

Primary data were collected using structured questionnaires, semi structured interviews and field observations. Structured questionnaires were administered to the 50 selected smallholder farmers to obtain quantitative information on drought adaptation strategies and their reported effects on agricultural productivity. Semi structured interviews were used with key informants to obtain detailed information on the effectiveness of adaptation strategies and challenges faced by farmers. Field observations were also used to assess farming practices and adaptation strategies in the study area and to help verify information obtained from respondents. Secondary information was obtained from books, academic journals, government reports and publications from organizations including the Food and Agriculture Organization, World Bank and IPCC.

3.6 Data Analysis
Quantitative data obtained through the questionnaires were analyzed using descriptive statistics, particularly frequencies and percentages, and presented using tables and charts. These methods were used to summarize respondents' answers and identify patterns concerning drought adaptation strategies and agricultural productivity.

Qualitative information obtained through interviews and observations was analyzed using **thematic analysis**. Responses were organized into categories and themes based on the research objectives, particularly farmers' experiences, perceptions and challenges associated with drought adaptation. The combination of quantitative and qualitative analysis provided numerical findings alongside explanations of farmers' experiences.

3.7 Triangulation
Triangulation was used to strengthen the validity and reliability of the findings. The study compared information obtained through questionnaires, interviews and field observations. Responses from smallholder farmers were compared with information obtained from key informants and observations made in the field. This process helped to identify consistencies in the information collected and reduce the possibility of bias or errors.

3.8 Limitations of the Study
The study was subject to limitations related to time and financial resources, which could restrict the size of the sample and the depth of data collection. There was also a possibility that some respondents could provide inaccurate or incomplete information due to misunderstanding of questions or personal bias. Poor road networks and long distances within the study area could also create difficulties in reaching some participants. In addition, because the study was conducted specifically in Mayukwayukwa Resettlement Scheme, the findings may not be fully generalizable to other regions of Zambia. Careful planning, clear questionnaires and triangulation were used to minimize these limitations.

3.9 Ethical Considerations
The study observed ethical principles throughout the research process. Informed consent was obtained from participants, who were informed about the purpose of the study, their involvement and their right to withdraw. Confidentiality and anonymity were maintained, and personal information was not disclosed in the research report. Participation was voluntary, and measures were taken to ensure that participants were not subjected to physical, psychological or social harm. Ethical clearance was obtained from the ICU Research Ethics Committee, while permission to conduct the research was sought from the Principal Land Resettlement Officer in Mongu. The researcher also maintained honesty and integrity by accurately reporting findings and acknowledging sources of information.

4. Results
4.1 Respondents' Awareness and Experience of Drought
The study first established the respondents' awareness and direct experience of drought conditions in Mayukwayukwa Resettlement Scheme. The findings showed a high level of awareness of drought among the farmers. Of the 50 respondents, 47 (94%) reported that they were aware of drought conditions, while 3 (6%) were not aware. This indicated that drought was a familiar issue among the majority of the farmers surveyed.

The study further established whether respondents had personally experienced drought conditions that affected their farming activities. The findings showed that 48 respondents (96%) had experienced drought affecting their farming, while 2 respondents (4%) had not. The high proportion of farmers reporting direct experience demonstrates that drought was a significant agricultural challenge in the study area.

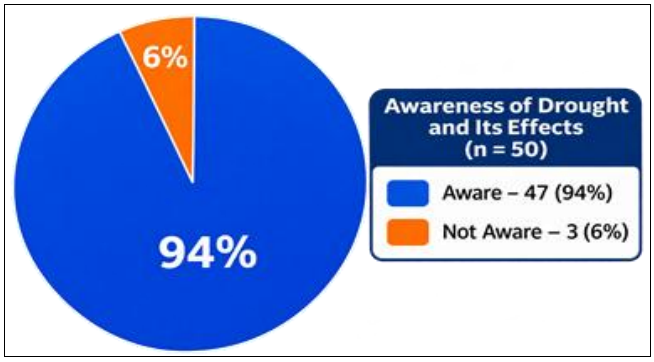


Fig 1: Awareness of Drought and Its Effects on Farming

4.2 Community Based Drought Adaptation Strategies Adopted by Farmers
The study examined the drought adaptation strategies used by smallholder farmers. Respondents were allowed to select more than one strategy because households could combine different practices depending on their farming conditions and available resources.

Conservation farming was the most commonly reported strategy, adopted by 39 respondents (78%), followed by crop diversification at 34 respondents (68%). Agroforestry was reported by 27 respondents (54%), while 22 respondents (44%) reported using water harvesting. Irrigation was reported by 9 respondents (18%), while 4 respondents (8%) reported other strategies.

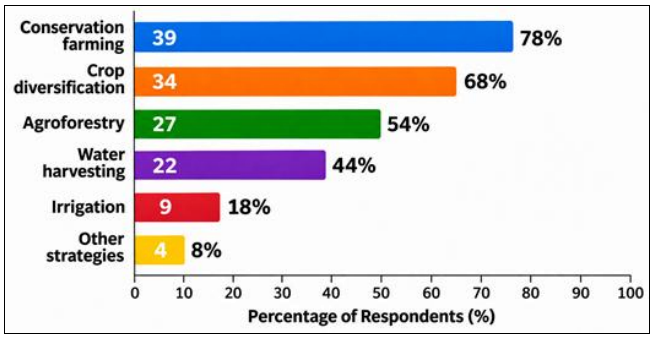


Fig 2: Community-Based Drought Adaptation Strategies Adopted by Respondents

The results demonstrate that farmers relied mainly on practices that could help conserve soil moisture, manage agricultural resources and reduce dependence on a single crop. Conservation farming and crop diversification were particularly prominent among the respondents.

4.3 Effect of Drought Adaptation Strategies on Agricultural Productivity

4.3.1 Improvement in Crop Yields

The study assessed whether farmers perceived an improvement in crop yields following the adoption of drought adaptation strategies. Crop yield was considered an important indicator of agricultural productivity in assessing whether farmers were able to maintain or improve production under drought conditions.

The findings showed that 41 respondents (82%) reported that their crop yields had improved, while 9 respondents (18%) reported that their yields had not improved. Thus, the majority of farmers perceived a positive effect of the drought adaptation strategies on crop yields.

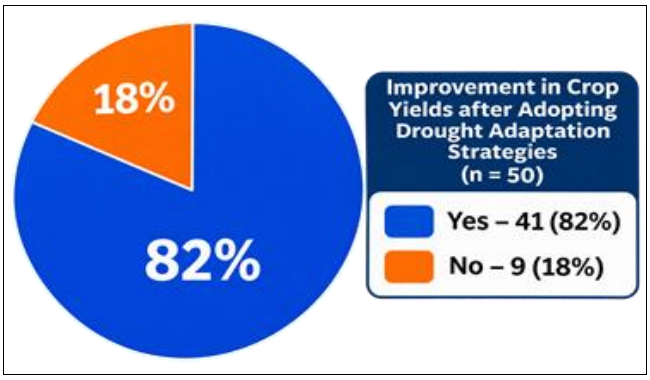


Chart 1: Improvement in Crop Yields Following Adoption of Drought Adaptation Strategies

The finding suggests a generally positive perceived relationship between adoption of drought adaptation strategies and crop yields. However, the thesis also indicates that adoption did not guarantee improved outcomes for every farmer. Differences in access to agricultural inputs, farming resources, technical knowledge, water and other forms of support could influence the results obtained by individual households.

4.3.2 Extent of Improvement in Agricultural Productivity

Among the 41 respondents who reported improved crop yields, 20 respondents (48.8%) reported a moderate level of improvement, 16 respondents (39.0%) reported a high level of improvement and 5 respondents (12.2%) reported a **low** level of improvement.

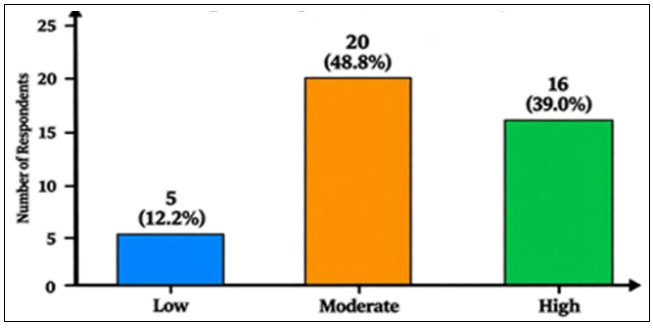


Chart 2: Extent to Which Drought Adaptation Strategies Improved Agricultural Productivity

The findings indicate that although most farmers who reported improvement experienced moderate or high improvements, the extent of improvement differed among households.

4.4 Effect on Household Food Security and Most Effective Strategies

The study also examined whether drought adaptation strategies contributed to household food security. The findings showed that 38 respondents (76%) reported that the strategies contributed to household food security, while 12 respondents (24%) reported that they did not.

The respondents were further asked to identify the adaptation strategy they considered most effective. Conservation farming was identified by 40% of respondents, followed by crop diversification at 28%, water harvesting at 18% and agroforestry at 14%.

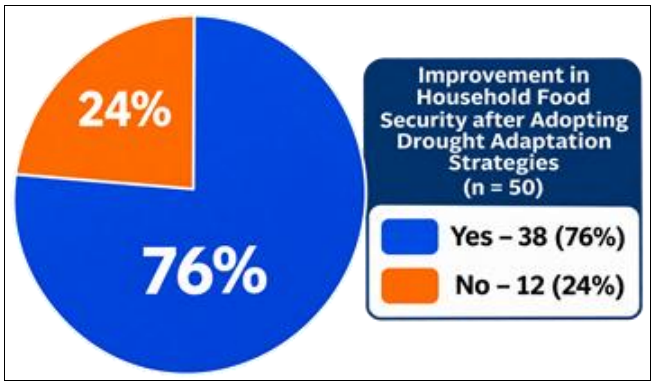


Fig 3: Effect of Drought Adaptation Strategies on Household Food Security

The results reinforce the prominence of conservation farming in the study area, as it was both the most commonly adopted strategy and the strategy most frequently perceived by respondents as effective.

4.5 Reported Ways in Which Adaptation Strategies Improved Productivity

The study examined the specific ways in which respondents believed drought adaptation strategies had improved agricultural productivity. The findings showed that 15 respondents (30%) reported improved soil moisture retention, while 13 respondents (26%) reported improved crop yields. A further 9 respondents (18%) reported reduced crop losses during dry periods, 8 respondents (16%) reported increased household food production, and 5 respondents (10%) indicated that the strategies enabled them to continue farming during dry periods.

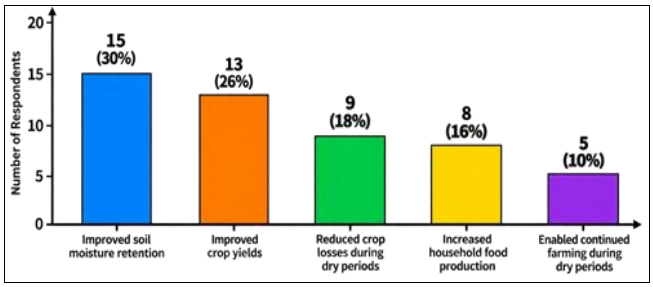


Fig 4: Reported Ways in Which Drought Adaptation Strategies Improved Agricultural Productivity

These findings show that the perceived benefits of adaptation extended beyond crop yields to include soil moisture management, reduction of crop losses, household food production and the ability to continue farming during dry periods.

4.6 Challenges in Implementing Drought Adaptation Strategies

The study examined the challenges that affected farmers' ability to adopt and effectively implement drought adaptation strategies. Respondents could identify more than one challenge; therefore, the percentages do not necessarily total 100%.

Lack of financial resources was the most frequently reported challenge, identified by 36 respondents (72%). This was followed by lack of agricultural inputs, reported by 31 respondents (62%). Persistent drought conditions were reported by 27 respondents (54%), while 22 respondents (44%) identified inadequate knowledge and technical information as a challenge. Limited institutional support was reported by 19 respondents (38%).

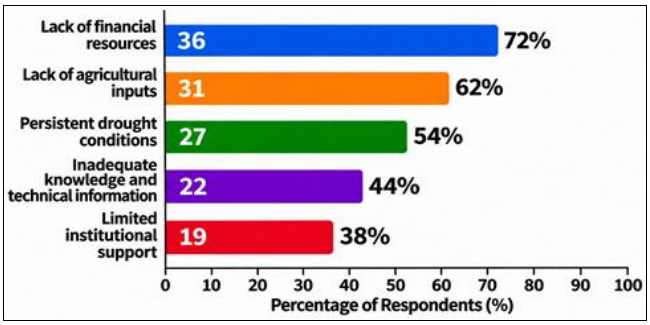


Fig 5: Challenges Faced by Smallholder Farmers in Implementing Drought Adaptation Strategies

The findings indicate that financial and material constraints were major barriers to effective implementation. Persistent drought also remained a challenge despite the use of adaptation strategies, indicating that the strategies did not completely eliminate the effects of drought on agricultural production.

4.7 Institutional Support

The study further examined the support received from government and non-governmental organizations. The findings showed that 29 respondents (58%) had received support, while 21 respondents (42%) had not received such support.

Among those who received support, the assistance included training (41.4%), agricultural inputs (27.6%), extension services (17.2%) and financial support (13.8%).

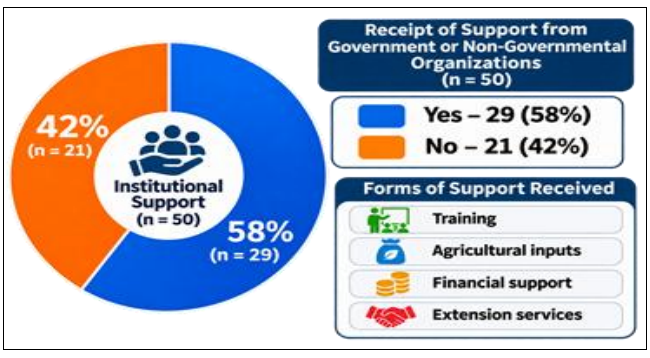


Fig 6: Support from government institutions or non-governmental organizations

The respondents also identified areas where additional support was needed. Agricultural inputs were the most frequently suggested form of support at 28%, followed by increased farmer training at 22%, improved irrigation and water resources at 20%, financial support at 16% and extension services at 14%.

Overall, the results demonstrate that farmers in Mayukwayukwa Resettlement Scheme were actively using several drought adaptation strategies, with conservation farming being the dominant strategy. Most respondents reported improved crop yields and household food security, although the effectiveness of adaptation was constrained by financial limitations, inadequate agricultural inputs, persistent drought, limited technical knowledge and institutional support.

5. Discussion

5.1 Adoption of Community Based Drought Adaptation Strategies

The findings show that smallholder farmers in Mayukwayukwa Resettlement Scheme were actively responding to drought through a range of adaptation strategies. Conservation farming was the most widely adopted strategy, reported by 78% of respondents, followed by crop diversification at 68%, agroforestry at 54%, water harvesting at 44% and irrigation at 18%. The use of several strategies by individual farmers suggests that households did not depend on a single response but combined practices according to their farming circumstances and available resources.

The predominance of conservation farming is particularly important because the thesis identifies it as both the most widely adopted strategy and the strategy perceived by the largest proportion of farmers to be most effective. This finding is consistent with the Climate Resilient Development (CRD) Framework used in the study, which views adaptation as an important process through which communities reduce their vulnerability to climate related risks.

The findings therefore demonstrate that farmers were not simply passive recipients of drought impacts. They were making practical adjustments to their agricultural activities in response to changing climatic conditions. This supports the thesis argument that community level adaptation forms an important component of agricultural resilience in Mayukwayukwa.

5.2 Effectiveness of Adaptation Strategies on Agricultural Productivity

The study found that 82% of respondents reported improvements in crop yields following adoption of drought adaptation strategies, while 18% reported no improvement. In addition, 76% of respondents reported that the strategies contributed to household food security. These findings suggest that adaptation practices were associated with positive perceived outcomes in both agricultural production and household food availability.

The reported benefits included improved soil moisture retention, improved crop yields, reduced crop losses during dry periods, increased household food production and the ability to continue farming during dry periods. These findings support the thesis conclusion that adaptation practices helped farmers maintain agricultural production under drought conditions and improve household food availability.

However, the results should be interpreted in the context of the study design. The findings represent farmers' reported or

perceived improvements rather than an experimental measurement of the causal effect of each individual strategy. The fact that 18% of respondents did not report improved yields also demonstrates that adoption of an adaptation strategy did not automatically produce the same outcome for every household. The thesis attributes these differences partly to variations in access to inputs, farming resources, technical knowledge, water and institutional support.

5.3 Constraints Affecting the Effectiveness of Adaptation

Although farmers reported positive outcomes from drought adaptation, the findings demonstrate that the effectiveness of these strategies was constrained by several socioeconomic, climatic and institutional factors. Lack of financial resources was the most frequently reported challenge at 72%, followed by lack of agricultural inputs at 62%, persistent drought at 54%, inadequate knowledge and technical information at 44%, and limited institutional support at 38%.

These findings are important because they show that the adoption of adaptation practices alone is not sufficient to guarantee improved agricultural outcomes. Farmers may be aware of appropriate practices but lack the financial resources, inputs, technical knowledge or water resources required to implement them consistently. Persistent drought also remained a challenge, showing that adaptation measures could reduce vulnerability without completely eliminating the effects of drought.

The findings therefore support the argument in the thesis that adaptation needs to be accompanied by appropriate enabling conditions. Training, agricultural inputs, extension services, financial assistance and improved access to water resources can strengthen farmers' capacity to implement and sustain adaptation practices.

5.4 Linkage with the Climate Resilient Development Framework

The findings closely correspond with the Climate Resilient Development Framework, which formed the theoretical foundation of the study. The framework emphasizes integrating climate adaptation with development interventions to reduce vulnerability, strengthen resilience and improve people's capacity to respond to climate related risks. It also highlights the importance of resources, knowledge, technology and institutional support in determining the effectiveness of adaptation.

In Mayukwayukwa, farmers demonstrated their own capacity to respond to drought through conservation farming, crop diversification, agroforestry, water harvesting and irrigation. However, the ability of farmers to sustain and expand these practices was influenced by access to external support. This demonstrates the connection between community level adaptation and broader agricultural development interventions.

The findings consequently suggest that improving agricultural resilience in Mayukwayukwa requires more than encouraging farmers to adopt drought adaptation strategies. It also requires strengthening the systems that enable farmers to implement those strategies effectively. This is consistent with the CRD position that climate adaptation and sustainable development should be addressed together.

5.5 Overall Interpretation of the Findings

Overall, the study demonstrates that community based drought adaptation strategies played an important role in supporting agricultural productivity and household food security among the surveyed farmers. Conservation farming emerged as the dominant strategy, while the majority of respondents reported improved crop yields and household food security. At the same time, the benefits were not uniform because financial constraints, inadequate agricultural inputs, persistent drought, limited technical knowledge and institutional support affected farmers' ability to implement adaptation measures effectively.

The findings therefore support the central argument of the study: community based drought adaptation can contribute to agricultural resilience, but its effectiveness depends substantially on the enabling conditions surrounding farmers. Strengthening these conditions is essential for making adaptation more sustainable in Mayukwayukwa Resettlement Scheme.

6. Conclusion

The study assessed the effectiveness of community based drought adaptation strategies in enhancing agricultural productivity among smallholder farmers in Mayukwayukwa Resettlement Scheme, Kaoma District. The findings showed that farmers were aware of drought conditions and had adopted different strategies to reduce its effects on agricultural production. The most commonly adopted strategy was conservation farming, followed by crop diversification, agroforestry, water harvesting and irrigation.

The findings further showed that drought adaptation strategies were associated with improvements in agricultural productivity among the farmers. A large majority of respondents, 41 out of 50 (82%), reported that their crop yields had improved after adopting drought adaptation strategies. In addition, 38 respondents (76%) reported that the strategies had contributed to improved household food security. Conservation farming was identified as the most effective strategy by the largest proportion of respondents.

The study also found that the benefits of adaptation strategies included improved soil moisture retention, improved crop yields, reduced crop losses during dry periods, increased household food production and the ability to continue farming during dry periods. These findings indicate that farmers were using a combination of adaptation practices to cope with drought and maintain agricultural production.

However, the effectiveness of the adaptation strategies was affected by several challenges. The major challenges reported by farmers were lack of financial resources, inadequate agricultural inputs, persistent drought, inadequate knowledge and technical information, and limited institutional support. These challenges reduced farmers' capacity to fully implement and benefit from drought adaptation strategies.

Overall, the study concludes that community based drought adaptation strategies play an important role in supporting agricultural productivity and household food security among smallholder farmers in Mayukwayukwa Resettlement Scheme. However, their effectiveness depends on farmers' access to agricultural inputs, financial resources, water,

technical knowledge and institutional support. Strengthening these areas is therefore essential for improving farmers' resilience to drought and supporting sustainable agricultural production.

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