

BINDURA UNIVERSITY OF SCIENCE EDUCATION



FACULTY OF SCIENCE AND ENGINEERING

DEPARTMENT OF GEOSCIENCES

**THE ROLE OF CLIMATE SMART AGRICULTURE IN ALLEVIATING HUNGER IN
WARD 4 OF MUREWA DISTRICT**

BY

JANUARY GRANT

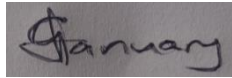
**A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT OF THE
REQUIREMENTS OF THE MASTER OF SCIENCE DEGREE IN CLIMATE CHANGE
AND SUSTAINABLE DEVELOPMENT**

MAY 2024

DECLARATION

I Grant January, do hereby declare that this research project, which is being submitted to the Bindura University of Science Education for the Master of Science degree in Climate Change and Sustainable Development (MSC CCSD), has not been submitted previously for a degree at any other University, that it represents my own work, and that all sources which I have quoted in the text have been acknowledged by means of a complete reference list.

SIGNATURE:



DATE

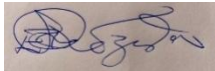
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31/05/2024

APPROVAL FORM

The undersigned certify that they have read and recommend to the Bindura University of Science Education for acceptance, a research project entitled: The role of Climate Smart Agriculture (CSA) on alleviating hunger in Ward 4 of Murewa District submitted by Grant January in partial fulfillment of the requirements for the Master of Science degree in Climate Change and Sustainable Development (MSC CCSD).

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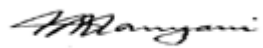


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Chairperson: ...Dr A. Manyani.....

Signature... 
...10/10/24.....

Date:

RELEASE FORM

Name of Author: Grant January

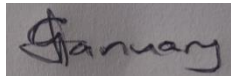
Title of Project: The role of Climate Smart Agriculture in alleviating hunger in Ward 4 of Murewa District.

Programme: Master of Science degree in Climate Change and Sustainable Development (MSC CCSD).

Year Granted: 2024

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Signed:

A rectangular box containing a handwritten signature in black ink that reads "Grant January".

ACKNOWLEDGEMENTS

This journey was never an individual effort but several people were helpful in making it a success. My sincere gratitude goes to my research supervisor Mr. E. Pedzisai who corrected and guided me throughout the project; your patience did not go unnoticed. In the same vein I would want to acknowledge in a special way the support my friend Calvin Chokwenda who stood with me financially, emotionally and physically throughout the entire research project, your suggestions, criticisms and encouragements were much appreciated and they make me a better researcher. Lastly, I would want to acknowledge my friends, Cleopatra Masona, Rodwell Jasi, Nyasha Chikari, Mai Mukundiwashe and Tatenda Mavondo for their ideas and continuous proof reading for this project to be a success.

DEDICATION

This piece of work is dedicated to my beautiful wife Sibon and the two kids she bore me, Nicky and Nicole.

ABSTRACT

Climate change disrupts weather patterns, reduces agricultural productivity and increases already existing vulnerabilities leading to increased hunger and poverty, particularly in rural areas. The increasing frequency and intensity of extreme weather events such as droughts and heat waves have disrupted agricultural productivity and threaten food production systems. This study focused on the role of climate smart agriculture (CSA) in alleviating hunger in Ward 4 of Murewa district. The study sought to bridge the gap on how to effectively scale up successful CSA approaches to smallholder farmers. Using information from 45 respondents, a mixed research approach was used. Quantitative data was collected from 35 farmers through self-administered questionnaires whilst qualitative data was collected from AGRITEX officers, policy makers and non-governmental organization (NGOs) representatives through face-to-face interviews. Snowball sampling method was used to select the respondents in this study. The study sought to portray the initiatives or programmes that can promote CSA techniques in the ward, the challenges that can hinder the successful implementation of these initiatives and measures that can be put in place to correct that. Results from the study established that CSA technique like conservation farming plays a vital role in alleviating hunger in the ward through improved productivity, reduced production cost through use of local resources and reduced crop failure. The study ended with recommendations that could be used to mitigate factors that hinder the successful implementation of CSA such as capacity building towards CSA, financial assistance, access to resources and policy and regulatory support.

Contents

DECLARATION	i
RELEASE FORM.....	iii
ACKNOWLEDGEMENTS	iv
DEDICATION	v
ABSTRACT.....	vi
LIST OF FIGURES	ix
LIST OF APPENDICES.....	x
LIST OF ACRONYMS	xi
CHAPTER ONE: THE PROBLEM AND ITS SETTING	1
1.1 Introduction.....	1
1.2 Background of the study	1
1.3 Problem statement.....	2
1.4 Significance of the Study	2
1.5 Research Questions	2
1.6 Research Aim.....	3
1.7 Specific research objectives	3
1.8 Assumptions.....	3
1.9 Delimitation of the Study.....	3
1.10 Study outline	3
CHAPTER TWO: LITERATURE REVIEW	5
2.1 Introduction.....	5
2.2 Background and significance of climate change and hunger.....	5
2.3 Brief Overview of CSA and its principles	5
2.4 The aims of climate smart agriculture	6
2.5 Global, regional and national perspective on the CSA	6
2.6 Challenges and Constraints of CSA.....	7
2.7 Knowledge gap in literature.....	7
2.8 Chapter Summary	8
CHAPTER THREE: RESEARCH METHODOLOGY	9
3.1 Introduction.....	9
3.2 Description of study area	9
3.3 Research Design.....	10
3.4 Target Population.....	11

3.5	Sampling.....	11
3.5.1	Sampling Procedure.....	11
3.5.2	Sample Size.....	12
3.6	Data.....	12
3.6.1	Primary Data.....	12
3.6.2	Secondary Data.....	12
3.7	Data Collection.....	13
3.7.1	Data collection instruments.....	13
3.7.2	Data collection methods.....	14
3.7.3	Data Collection Procedure.....	14
3.8	Data preprocessing and analysis.....	15
3.9	Validity and Reliability.....	15
3.10	Ethical Considerations.....	16
3.11	Limitations of the Study.....	16
3.12	Summary.....	16
CHAPTER FOUR:	RESULTS AND DISCUSSION.....	17
4.1	Introduction.....	17
4.2	Response rate.....	17
4.3	Demographic data.....	17
4.4	Familiarity with CSA response.....	18
4.5	The CSA as a climate change mitigation strategy.....	19
4.6	Challenges in the successful implementation of CSA.....	21
4.7	CSA alleviating hunger.....	22
4.8	The CSA programmes or initiatives that can alleviate hunger.....	23
4.9	Challenges hindering the successful implementation of CSA.....	25
4.10	Observations made from the field.....	26
4.11	Discussion.....	29
4.12	Chapter summary.....	30
CHAPTER FIVE:	SUMMARY, CONCLUSIONS AND RECOMMENDATIONS.....	31
5.1	Introduction.....	31
5.2	Summary.....	31
5.3	Conclusions.....	31
REFERENCES	35
APPENDICES	38

LIST OF FIGURES

Figure 3.1: Study area	10
Figure 4.1:Community familiarity with CSA	198
Figure 4.2: CSA as a climate change mitigation strategy	19
Figure 4. 3: Challenges faced in the implementation of CSA.	210
Figure 4. 4: CSA initiatives to alleviate hunger.....	221
Figure 4.5: Initiatives to alleviate hunger.....	21
Figure 4.6: Challenges hindering the implementation of CSA.....	23
Figure 4.7: Ms E. Gogodo's Pfumvudza plot.....	24
Figure 4.8: Mr P. Mutadzapasi's Pfumvudza maize plot.....	25
Figure 4.9: Awareness campaign by Agritex Officer.....	26

LIST OF APPENDICES

APPENDIX	PAGE
APPENDIX I: Questionnaire For Farmers	37
APPENDIX II: Interview Guide For AREX Officers, Policy Makers and NGO Representatives	40
APPENDIX III: Observation guide	41
APPENDIX IV: Consent Form.....	42

LIST OF ACRONYMS

CATF	Conservation Agriculture Task Force
CSA	Climate Smart Agriculture
ECOWAS	Economic Community of West African States
EU	European Union
FAO	Food and Agriculture Organization
LFSP	Livelihoods and Food Security Program
MRDC	Murewa Rural District Council
NGO	Non-Governmental Organization
SDG	Sustainable Development Goals
SPSS	Statistical Packages for Social Sciences
UNDP	United Nations Development Programme
USDA	United States Department of Agriculture
WBCSA	World Bank's Climate Smart Agriculture Programme

CHAPTER ONE: THE PROBLEM AND ITS SETTING

1.1 Introduction

Climate change is one of the most significant challenges facing humanity in the 21st century. Its impacts are being felt across various sectors including agriculture, with potentially severe consequences for global food security. Changing climatic patterns like erratic rainfall, increased temperatures and extreme weather events have disrupted traditional farming practices and significantly impacted agricultural productivity. According to Akaniyene and Zikos (2023), these changes have profound implications for food security and the well-being of the local population since low crop yields results in food shortages, increased food prices and reduced access to nutritious food. This research will assess the impact of climate smart agriculture (CSA) on alleviating hunger in Ward 4 of Murewa district.

1.2 Background of the study

Feeding a growing global population during the era of a changing climate is a complex challenge. Climate change disrupts weather patterns, reduces agricultural productivity and increases already existing vulnerabilities leading to increased hunger and poverty, particularly in rural areas. The CSA emerges as a promising approach to address these intertwined challenges. The World Bank (2019) argues that the CSA manages landscapes like cropland and this addresses the challenges of food security. As noted by Dilling (2015), if appropriate adaptation and mitigation strategies are implemented, climate change impacts are minimized. United Nations (2019) believes CSA offers a promising approach to address the challenges posed by climate change. CSA aims to increase agricultural productivity, build resilience and reduce greenhouse gas emissions. Through implementing CSA techniques, farmers can enhance their resilience to climate change while improving their food security and livelihoods. Practices such as conservation farming and crop diversity help to conserve soil moisture and enhance fertility of the soil thus reducing the risk of crop failure. According to FAO (2020), population growth will increase food consumption meaning that agricultural production will need to increase so as to meet global demand for food. Climate change impacts reduce productivity in the agricultural sector which in turn will lead to

hunger and poverty. CSA is anchored on sustainable agriculture, which if implemented, would contribute to achieving SDG of reducing poverty. As noted by the World Bank (2019), the CSA addresses climate change issues in the agrifood system by considering the synergies and tradeoffs that exist between productivity, adaptation and mitigation. The background of this study can be traced back on the recognition that climate change poses significant challenges to agricultural systems worldwide. Climate change effects like heat waves, floods and drought disrupt crop growth and reduce yields. This can be minimized as shown in this study through the use of climate smart techniques. The study explores the importance of the CSA in ensuring food security in a climate changing era.

1.3 Problem statement

Food security worldwide is under threat from the changing climate. The increasing frequency and intensity of extreme weather events such as droughts, floods, heat waves and storms have disrupted agricultural productivity and threaten food production systems. These impacts are particularly severe in vulnerable and marginalized regions with few coping strategies. Despite increasing recognition of these challenges, there is a lack a comprehensive understanding of the use of initiatives such as CSA as a way of boosting agricultural production. The presence of these climate related events require the existence of effective adaptation strategies aimed at enhancing the resilience of the communities. This study hence sought to assess the role of climate smart agriculture in alleviating hunger in Ward 4 of Murewa District. By so doing, CSA improves food security in the area

1.4 Significance of the Study

The study's outcome may contribute to the existing knowledge on the benefits of CSA initiatives in increasing productivity, adapting and building resilience to climate change and reducing greenhouse gases from agriculture. It is of significance to policy makers within Zimbabwe, since it figures out the role of CSA in alleviating hunger and poverty. Thus, it helps towards improving policy making and implementation. Ultimately this study aims at improving the district's capacity to alleviate hunger through the implementation of CSA activities.

1.5 Research Questions

The study seeks to answer the following questions:

1. What is the role of CSA in improving food security in Ward 4 of Murewa District?

2. Which challenges hinder the implementation of CSA for food security and hunger alleviation?
3. Which specific initiatives or programs in your ward are promoting CSA for hunger alleviation and food security?

1.6 Research Aim

- The main purpose of the research is to investigate the role of climate smart agriculture in alleviating hunger in Ward 4 of Murewa District.

1.7 Specific research objectives

The following specific objectives guide the study:

1. To establish solutions to challenges hindering the implementation of CSA for hunger alleviation.
2. To highlight specific initiatives or programs in Ward 4 promoting CSA for hunger alleviation.
3. To come up with CSA initiatives that help to mitigate the negative effects of climate change on agricultural.

1.8 Assumptions

The first assumption was that the Ward 4 community of Murewa District was under threat from hunger and poverty due to climate change induced droughts. It was also assumed that respondents to questionnaires and interviews will respond honestly and truthfully.

1.9 Delimitation of the Study

The study was confined to Ward 4 of Murewa District in Zimbabwe. There are five villages in Ward 4 which are Bere, Dzapasi, Dzvari, Makunha and Shambare. These are the villages where the study was carried out.

1.10 Chapter Summary

The chapter explored the critical intersection of climate smart agriculture and food security, focusing on how innovative agricultural practices can address global hunger challenges exacerbated by climate change which is the problem under study. Research questions and the objectives of the study were spelt out in this chapter. The chapter also contains the significance of

the study and also the area under study which is the delimitation area. The next chapter will look at literature review

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The chapter reviews literature on the use of climate smart agricultural techniques in alleviating hunger and poverty. There will also be justification on the use of CSA as a way of improving agriculture and food security in most rural communities of Zimbabwe.

2.2 Background and significance of climate change and hunger.

The United Nations (2022) viewed climate change as shifts in temperatures and weather patterns that occur over many years. As noted by Mbow et al. (2019), climate change is projected to negatively affect all pillars of food security which are availability, accessibility, quality and the stability of the system. The end result will be hunger and poverty in many rural communities that lack adaptive capacities. This is supported by USDA (2015) who suggests that temperature increases and reductions of water availability all result in reduced agricultural productivity. This ultimately led to hunger in many communities.

2.3 Brief Overview of CSA and its principles

The World Bank (2019) defines the CSA as an approach to manage land to help adapt agricultural methods to the effects of climate change by reducing greenhouse gas emissions from agriculture whilst ensuring food security. According to Akaniyene and Zikos (2023), CSA was first launched in 2010 FAO so as to improve food production. Since then, CSA has been reshaped through the inputs and interactions of multiple stakeholders involved in developing and implementing the concept.

According to United Nations (2019), CSA has three pillars which are to increase agricultural productivity and incomes, adapting and building resilience and reducing greenhouse gas emissions from agriculture. Thus, CSA seeks to stabilize crop production while mitigating the adverse effects of climate change but on the other hand maximizing food security. The CSA recommends the production of drought tolerant crop varieties, mulching, water management and also rearing of drought tolerant animals. The CSA aims to provide globally applicable principles on managing agriculture for food security under climate change era.

2.4 The aims of climate smart agriculture

Farming is widely viewed as an answer to food shortages especially in many communities in Zimbabwe. According to Akaniyene and Zikos (2023), a greater percentage of those in rural areas depend on agriculture as a source of their livelihoods. This is now under threat from climate change which is increasing hunger in these areas. The CSA thus, is responsible for the elimination of food insecurity and poverty through improving productivity

As noted by Lipper et al. (2014), CSA was aimed at achieving the goal of increasing agricultural production. This is in line with United Nations SDG goal of ending hunger. CSA is acting as a vehicle that helps vulnerable farmers to overcome the negative impacts of climate change. The CSA strategy such as irrigation guarantees a continuous production of food in rural communities. According to Ghosh (2019), farmers who implemented CSA strategies in Ghana achieved higher production as compared to their counterparts. This is further supported by Alare et al. (2018) cited an example of Ghana where there was an improvement in income and food output among farmers who did dry season farming in the semi-arid region.

Lipper et al. (2014) are of the view that CSA work with other methods of sustainable utilization and makes suggestions to sustain productivity amidst climate shocks. This shows that by adopting CSA initiatives, farmers in rural areas are able to improve their agricultural outputs whilst promoting sustainable agriculture and rural development.

2.5 Global, regional and national perspective on the CSA
The CSA has attained a significant recognition globally as countries seek to address the challenges as a result of a changing climate which is affecting food production. As noted by FAO (2020), over 30 countries have developed CSA country profiles that aim at enhancing agricultural productivity. Global initiatives like World Bank's Climate-Smart Agriculture Programme (WBCSAP) support the scaling up of CSA techniques. The E.U integrated CSA principles into its agricultural policies. This led to initiatives such as the EIP-AGRI to facilitate the uptake of CSA practices through knowledge exchange. Sub-Saharan Africa which is mostly vulnerable to hunger also saw CSA as a critical priority to safe guard against food shortages. This can be seen through initiatives like Africa Climate-Smart Agriculture Alliance which work towards mobilizing investment for CSA programmes across the continent. Zimbabwe, due to increased frequency and

intensity of droughts identified CSA as a vital strategy to improve crop productivity through adoption of practices like growing drought tolerant crops and practicing conservation farming. Choruma et al. (2023) argues that changes in temperature will affect agricultural production in Zimbabwe. As a result, Chanza and Gundu- Jakarasi (2020), reiterates that a decline in maize production would occur. This ultimately will lead to hunger to most people in the country.

2.6 Challenges and Constraints of CSA

Though there are successes attributed to CSA, there are some drawbacks emanating from it. Akanami (2021) is of the view that there is limited conceptual understanding of CSA. He further believes that there is no consensus to determine which agricultural techniques constitute an acceptable CSA practice. This has led some rural farmers to practice some agricultural techniques that do not increase productivity. Moreso, CSA efforts are mostly centered on agricultural productivity at the expense of other sectors such as energy which are also vital for boosting agricultural productivity. Tittonell et al. (2018) is of the view that the CSA framework is mainly focused on technological solutions which do not adequately address social and institutional issues, for instance access to resources which are critical for small scale farmers to implement climate smart practices. Innovations concerning CSA are often handed down to farmers with an inadequate understanding of what is to be done within the local farming fraternity and thus the adoption and success of CSA is hindered. Moreso, there is no universally acceptable standards that exists against those who believe they are climate smart and their actions hence most of the proponents of CSA just use the term to be on the limelight.

2.7 Knowledge gap in literature

While many studies have documented positive impacts of CSA, there are knowledge gaps on literature on how the practices can suit marginalized regions. There is a lack of literature on how contextual factors such as socio-economic status, gender dynamics and cultural norms influence the adoption and impacts of CSA practices. More research is needed on how to design and implement CSA interventions that are tailored to specific local contexts. Furthermore, there are gaps in understanding how to effectively build the capacities of farmers, extension agents, policy-makers and other stake holders to plan, implement and scale up CSA practices. Insights are needed on appropriate approaches and knowledge-sharing platforms. Moreso, there is limited evidence on how to effectively scale up successful CSA approaches to smaller holder farmers especially in

marginalized rural areas. More research is needed on the institutional, policy and financial mechanisms required for widespread CSA adoption. Addressing these key knowledge gaps through targeted research, cross-sectorial collaboration and strengthening of monitoring and evaluation systems will be crucial to unlocking the full potential of CSA in contributing to hunger alleviation and food security.

2.8 Chapter Summary

This chapter looked at the literature review of the topic under study. It started by looking at the background and significance of climate change, hunger and poverty and then moved on to the background of CSA. It then reviewed literature on the aims of CSA before concluding on the challenges that are hindering the successful implementing of it. The next chapter is going to look at the research methodology.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the research methodology to be implemented in this study. This includes the description of the study area, research design, population and sampling procedures, data collection and analysis procedure reliability and validity and ethical considerations. The objective is to describe how the research was conducted and discuss methods used to gather data. Data collection methods discussed includes direct observations, questionnaires and interviews.

3.2 Description of study area

Murewa District is located in Mashonaland East Province in Zimbabwe. The land measures 3,556km² and the population from the 2022 Census was 205,440 (males 97,553 and females 107,870) (Zimbabwe National Statistics Agency). Murewa district is 90km to the North East of Harare along the Nyamapanda highway. It shares boundaries with Uzumba-Maramba-Pfungwe to the North, Mutoko to the East, and Goromonzi to the West. There are 46,679 farming households in the district (AARDS Crop and Livestock Assessment report 2013). Ward 4 is comprised of five villages which are, Bere, Dzapasi, Dzvari, Makunha and Shambare. Ward 4 is to the Northern boundary of the district close to Uzumba-Maramba-Pfungwe district. There are two primary schools and two secondary schools in the area. Figure 3.1 shows the map showing the study area.

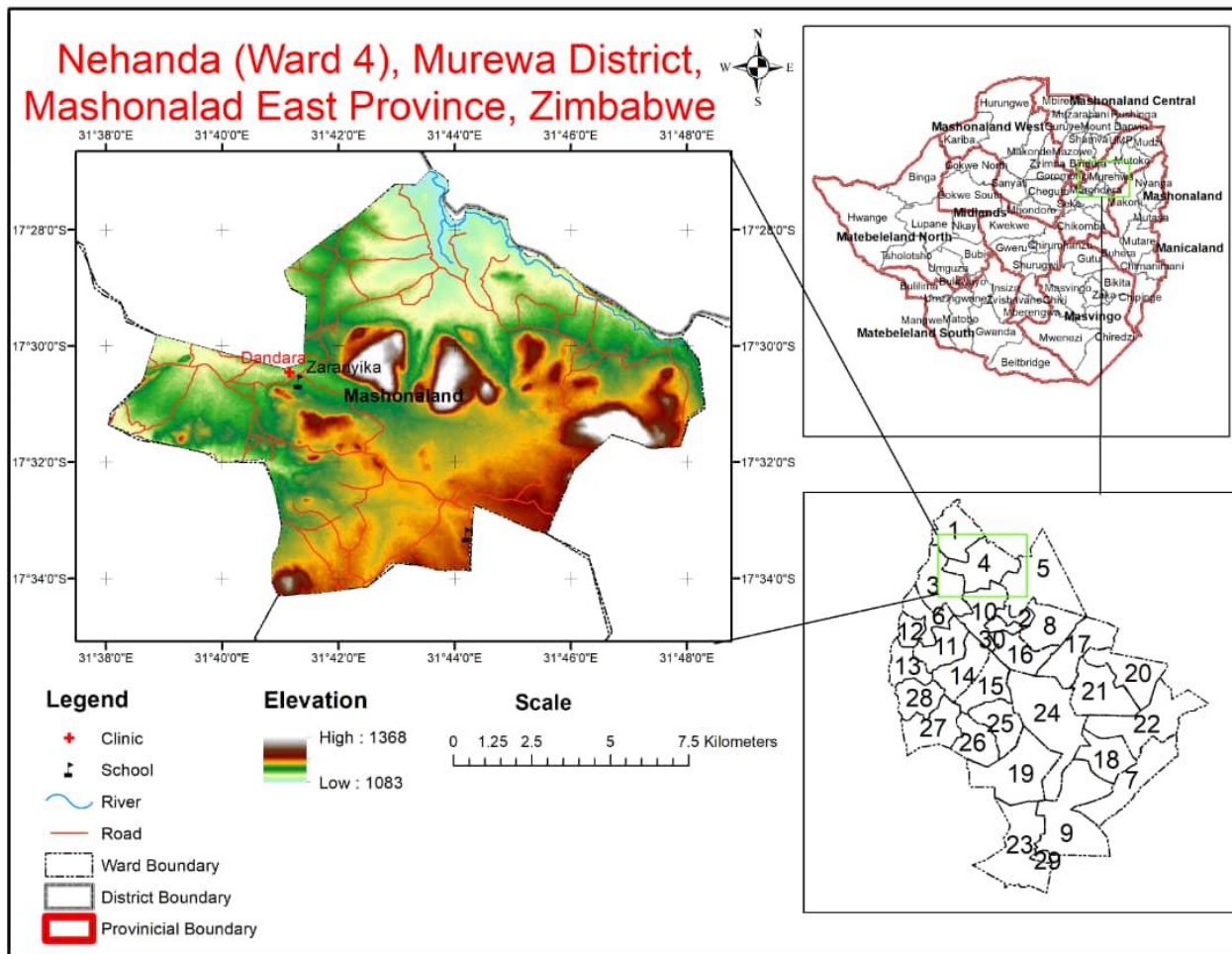


Figure 3.1: Study area.

Source: Field work.

3.3 Philosophical Position of the study

The philosophical position of climate smart agriculture on alleviating hunger is rooted in the belief that sustainable, adaptive and equitable agricultural practices can effectively tackle the challenges posed by climate change while ensuring food security for present and future generations. By integrating these principles, CSA aims to create resilient agricultural system that not only feeds people but also protects the planet.

3.4 Research Design

Graeme et al. (2023) define a research design as the overall strategy utilized to answer research questions. It clearly outlines models and theories which the research follows that is research

questions, methods of gathering data and strategies of obtaining answers from the gathered data. The research design employed by the researcher was case study since the research was only focused on activities in one area which is ward four. The researcher used a survey approach that was vital for an intensive investigation into the role of CSA in alleviating hunger and improving food security in the ward. This was due to the fact that the researcher focused on farming activities carried in one area, which is ward 4 of Murewa District. Field surveys and observations were done and in depth interviews were done in ward 4.

3.5 Target Population

The population under investigation included all people involved in agricultural activities in Ward 4 of Murewa District. These included the local community people who were engaged in farming activities being affected by poverty and hunger. Government department workers for example the Agritex workers were also included since they were the focal people in the growing of crops and rearing of animals in the ward. Non- governmental organizations (NGOs) and civil society groups were also be included in the study.

3.6 Sampling

It was impossible to acquire data from everyone and as a result, data was collected from a sample of the inhabitants of the ward. According to Creswell (2021), a sample is a part representing the whole population under study. The sample selected represented the whole population and provided data to answer the research questions of the study.

3.6.1 Sampling Procedure

The sample collected data using convenient sampling from 45 people who included 35 Murewa Ward 4 farmers, 5 Agritex workers, 3 NGO workers and 2 policy makers. Snowball sampling was then used to track these respondents. Ferguson and Monfaredi (2018), describes snowballing as a process by which existing participants in the study are used to recruit more participants into the sample. The study used referrals from initial respondents mostly extension workers on the farmers within the ward to generate additional information regarding the role of CSA in alleviating hunger and improving food security. As a result of this sampling method, enough information on the activities in the ward useful for the research was gathered.

3.6.2 Sample Size

A total of 45 participants were used in the research. This decision to include 45 participants was influenced by Bougie (2020) who suggests that sample sizes larger than 30 and less than 500 are suitable for most studies. 35 participants that is Murewa Ward 4 farmers were allocated to questionnaire survey. For interviews, five participants were from Agritex, two from policy makers and three from NGO workers. The selection of participants was based on the ability to produce information on the problem that is being investigated.

3.7 Data

Data used in the study was classified into two categories, which are data obtained directly from the ward by the researcher and secondary from other available literature on CSA.

3.7.1 Primary Data

Primary data on the role of climate smart agriculture in alleviating hunger was gathered through interviews with AGRITEX officers. During questionnaire surveys given to farmers from the ward, first-hand information on CSA was gathered. There were also direct observations on climate smart activities made in the ward by the researcher and these were compared with results from both questionnaires surveys and interview surveys. The researcher visited farming areas in the ward observing climate smart activities done by the farmers and this helped him a lot in his study.

3.7.2 Secondary Data

Secondary data used in this study was obtained from other sources written on climate smart agriculture and its impacts on alleviating hunger. The economy of Zimbabwe is deeply rooted in agriculture with a majority of the rural inhabitants depending on it for their livelihoods and as such there is a lot of scholarly work on ways to improve production with climate smart initiatives being one of the ways. Ndegwa et al. (2023) observed that at least 70% of the country's population depends on agriculture for their livelihoods and their coping assets are from the agricultural sector through saving and investment. This however is now being affected climate change and its impacts with Mashizha (2019) arguing that changes in climate particularly affects the livelihood of the people in these communities. Mavhura (2022) also supported these views by noting that due to climate change, the average growth of agricultural input over the years since independence has significantly declined. As such the concept of CSA reflects an initiative to improve food security

under the changing climate. As noted by FAO (2020), CSA initiatives sustainably increase productivity, enhance resilience and reduce greenhouse gases and require planning to address trade-offs and synergies between these three pillars: production, adaptation and mitigation. Muhoyi and Mbonigaba (2022) noted that farmers in rural areas like Murewa have adapted to the negative ripple effects of climate change through various measures like planting drought resistant crops, contour ploughing and crop rotation among others.

3.8 Data Collection

The data used in this study was collected from thirty-five ward 4 farmers, five agriculture extension workers, three non-governmental workers and two policy makers. Data collection instruments and methods outlined below were used to collect the data.

3.8.1 Data collection instruments

Data collection instruments play a crucial role in understanding the role of climate smart agriculture in alleviating hunger. Questionnaires were used to collect data from thirty-five ward 4 farmers. Appendix 1 shows the questionnaire which was used. The questionnaire was subdivided into two sections with the first section targeting the demographic details of the farmers. The second part of the questionnaire targeted the farmers' knowledge towards CSA and how it can help in alleviating hunger in the ward and the challenges they are facing in implementing the activities. The former part of the questionnaire was influential in assessing the role played by the farmers' background towards the type of farming he/she carries out. The latter part of the questionnaire managed to explore whether the farmers understand the concept of CSA. The use of a questionnaire made it possible to gather data from the farmers which were vital for the study. The confidentiality and anonymity of the questionnaires encouraged respondents to feel comfortable to give information in a threat free environment. This is supported by Creswell and Creswell (2021) who argues that unambiguous and precise questions provide a suitable environment for carrying out the research.

Barriers to implementing CSA techniques such as lack of knowledge, financial resources and government support were explored through the interview guide (Appendix 2). The interview guide was used on five agricultural extension workers, three non-governmental organization representatives working in the ward and two policy makers. Face-to-face interviews used in this study have an advantage in gathering information since it allows respondents to clarify their points

and moreover, the interviewer can probe further through the use of follow up questions. Through the interviews, benefits of implementing CSA activities were unearthed and also the challenges that were affecting its full implementation.

To compliment questionnaires and structured interviews, direct observations on climate smart activities in ward were conducted using checklists, note taking and audios whilst maintaining objectivity and minimizing bias. Breaks were taken to review and organize notes. In post observation, notes were thoroughly reviewed and organized and finally codes were created and audios were transcribed for data analysis. Appendix 3 shows a copy of the observation guide used.

3.8.2 Data collection methods

Various methods to gather relevant information and insights on the role of CSA in alleviating hunger in ward 4 were used. Questionnaires were given to thirty-five farmers and face to face interviews were carried out with agricultural extension workers, non-governmental organization representatives and policy makers. These interactions provided valuable qualitative data on the challenges faced by farmers and the resultant effects on food security. Observations in the ward on agricultural practices using remote sensing technologies were also done to assess changes in land use and crop production. Moreover, there were collaborations with government agencies like Agricultural Extension workers and non-governmental organizations that provided official statistics on agricultural output, food availability and nutrition. As a result of this, there was a comprehensive understanding of the role of CSA in addressing global hunger challenges.

3.8.3 Data Collection Procedure

In this study, permission was sought in writing from Murewa Rural District Council (MRDC) and from the local Headman Nheweyembwa to carry out the survey in the ward. After permission was granted, the initial visit made constituted the pilot study and this served the purpose of making appointments for the face-to-face interviews and testing of research instruments.

Procedures related to structured interviews, questionnaires and direct observations followed after the pre-visit. Thirty-five questionnaires were administered in person to the farmers upon explaining the purpose of the research. They were completed and collected after the agreed times and this ensured a high response rate.

Data gathering in the form of interviews with agricultural extension workers and policy makers required more time as appointments were postponed due to other commitments by the latter. In depth interviews with the above stakeholders were carried out during a Field-day event carried out at Muchinjike Business Centre which is the ward centre. To compliment questionnaires and structured interviews, direct observations on climate smart activities in ward were noted.

3.9 Data preprocessing and analysis

There was use of thematic analysis to analyze responses from questionnaires surveys and interview guides. This involved analyzing and transcribing information gathered according to themes and categories. The study made use of the steps of analyzing qualitative data as noted by Fryer (2022) and the initial step involved familiarization of the data gathered from the ward. The next step involved the generation of codes that was aimed at organizing data into a systematic manner. The coding of the data was done following its relevance to research questions and they were grouped.

Upon completing the coding process, the data was translated to specific themes and the themes were reviewed to verify if they made sense in relation to the objectives of the study. The Nvivo software was then used to make the process quicker and easier. Comments followed on the findings of the study, highlighting the perceptions of the smallholder farmers on the importance of climate smart techniques in reducing hunger in the ward.

Quantitative data collected through questionnaire surveys was analyzed using Statistical Packages for Social Sciences (SPSS). This made it possible to easily quantify data hence making it easier to show the findings in tabulation tables and graphs. The process of analyzing this quantitative data involved creating a template that captured the questions from questionnaire surveys. Descriptive statistics for instance, percentiles, mode, frequencies and mean were calculated to assess the responses of the farmers in relation to the Likert scale used in the questionnaire.

3.10 Validity and Reliability

As a way of safeguarding the authenticity of the data, the study assessed the validity and reliability of the information gathered. Validity was guaranteed through using established measurement instruments and conducting pre-surveys to ensure the research design aligned with the research questions. The study tested for reliability by employing the test-retest analysis which was done

after three weeks. A reliability coefficient above 7 was obtained showing that the results were acceptable. This was done so as to ensure the credibility and trustworthiness of the findings since some respondents have a tendency of giving answers that they presume will help them get relief aid from NGOs working in the ward.

3.11 Ethical Considerations

This study ensured that privacy, respect and confidentiality were maintained by all means possible throughout the study. There was consideration of informed consent on the participants which Davies-Teye et al. (2021) defined as a process of enlightening research participants on the purpose of the research. Participation in this study was voluntary and the participants were allowed to withdraw from the study without any penalty if they wished to do so. There was assurance of anonymity of the participants and confidentiality as specified by the Panel on Research Ethics. The participants in this study were also assured of protection from potential harm as a result of taking part in this study. This was done through ensuring that the carrying out of the study was cleared by officials from Murewa Rural District Council (MRDC.)

3.12 Limitations of the Study

The study was spatially limited to farmers in ward 4 of Murewa only. However, CSA is not only confined to this spatial location since it could be practiced elsewhere and maybe differently. This then limits its generalisability. Some participants purposefully lied in the hope of getting food aid. Such misleading data could as well lead to incorrect deductions. However to get reliable data, the researcher had to do a test-retest analysis to detect purposeful lying. Some areas were inaccessible making the collection of information difficult. The researcher had to use local transport of donkeys to circumvent the rugged terrain in some parts of the ward.

3.13 Summary

The unit dealt with the research methodology of the study. It examined the research design adopted and why it was chosen in this research study. The chapter also discussed the populations, sampling procedures as well as instruments used to gather information. Testing the reliability of the instruments was also highlighted in this chapter. It finally looked at the ethical considerations that were followed for this research to be a success. The next chapter will focus on results and discussions of the findings of the study.

CHAPTER FOUR: RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents research finding and the discussion of those results of the role of CSA in alleviating hunger in Ward 4 of Murewa district. The analysis of data is linked to the research objectives outlined in chapter 1.

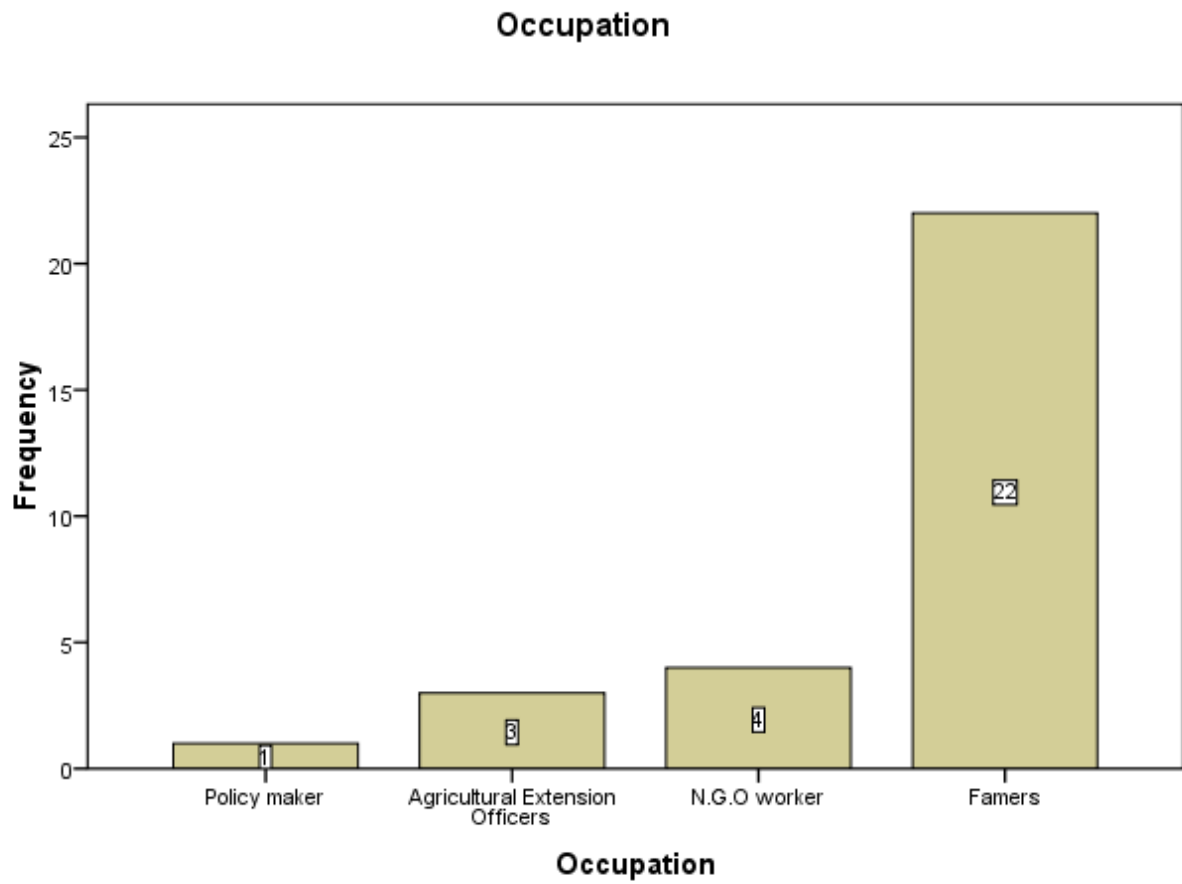
4.2 Response rate

Thirty-five questionnaires were distributed but thirty were completed and returned giving a response rate of 86%. The higher response rate can be attributed to the fact that questionnaires were distributed by hand and were completed and collected on the same day. The five questionnaires that were not completed were due to language barrier since they were written in English. Face to face interviews yielded a 100% response rate since they were carried out on appointed times.

4.3 Demographic data

On gender responses, males responded more than females because the distribution of questionnaire survey was meant for more males as they are the ones who are mostly taking part in a lot of farming activities in the ward as compared to their counterparts. The majority of the respondents were from the 20 to 40 years range since they are the ones who are still able bodied. Those above 60years were very few since most of them have retired from farming activities.

Responses from occupation showed that the majority were farmers engaged in mixed farming activities. Most of the respondents rely on agriculture as a source of their livelihood. Agricultural extension workers formed the second largest group of respondents and policy makers were the least. On education, responses indicated that the majority were reached secondary level, followed by diplomas and lastly post graduates. This shows that a greater number of respondents engaged into farming as soon as they were or just completed secondary level. The bar graph below show the occupation of the respondents with the majority of them being farmers.



4.4 Familiarity with CSA response

In trying to explore the importance of CSA, there was need to ascertain the familiarity of the farmers to the concept of CSA. Figure 4.1 shows the results obtained.

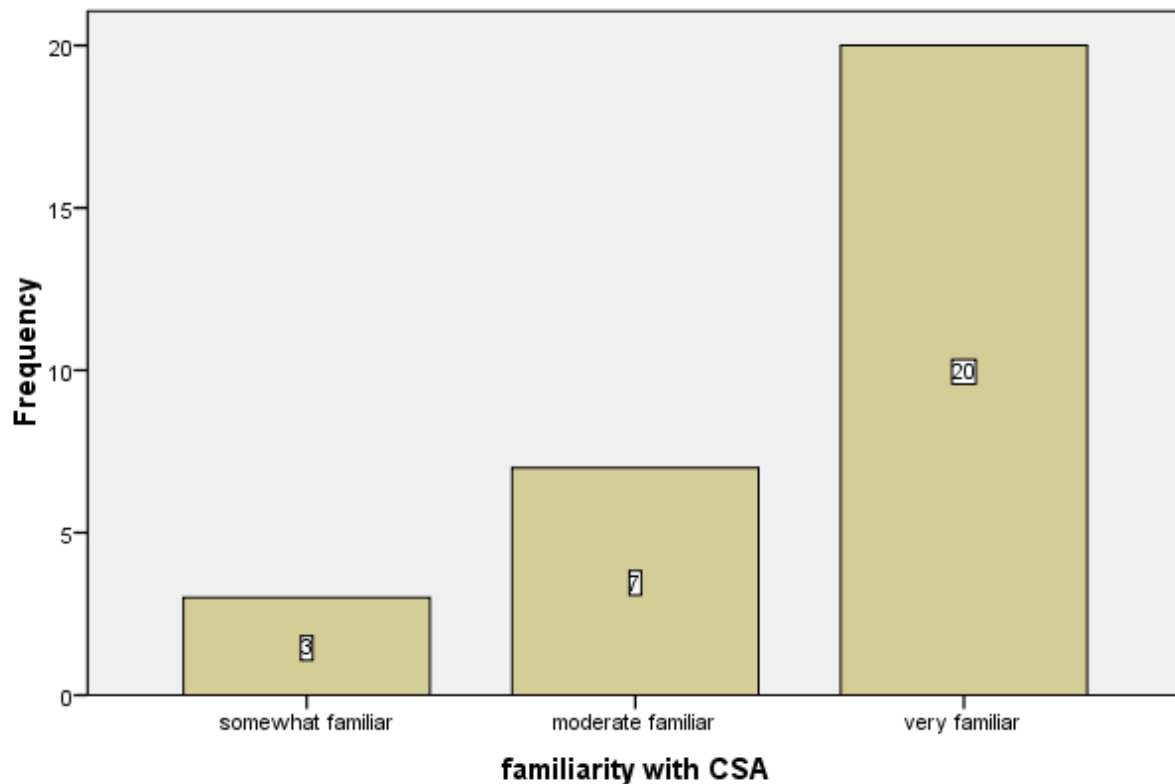


Figure 4.1 Familiarity of participants with CSA. Source: Field work.

From Figure 4.1, it was noted that most of the respondents (67%) were well familiar of the importance of CSA towards alleviating hunger and were practicing activities that are in line with it like crop rotation, use of mulch and Pfumvudza/ Intwasa. The farmers attributed this awareness of the knowledge about CSA to educational campaigns carried out in the ward by the ward agricultural extension workers. Common CSA practice carried out in the ward is minimum tillage in the form of Pfumvudza programme. The cause of less familiarity on CSA by some farmers was attributed to unavailability of CSA information in some marginalized areas of the ward.

4.5 The CSA as a climate change mitigation strategy

Figure 4.2 shows results from the perceptions of farmers on whether CSA helps in the mitigation of climate change.

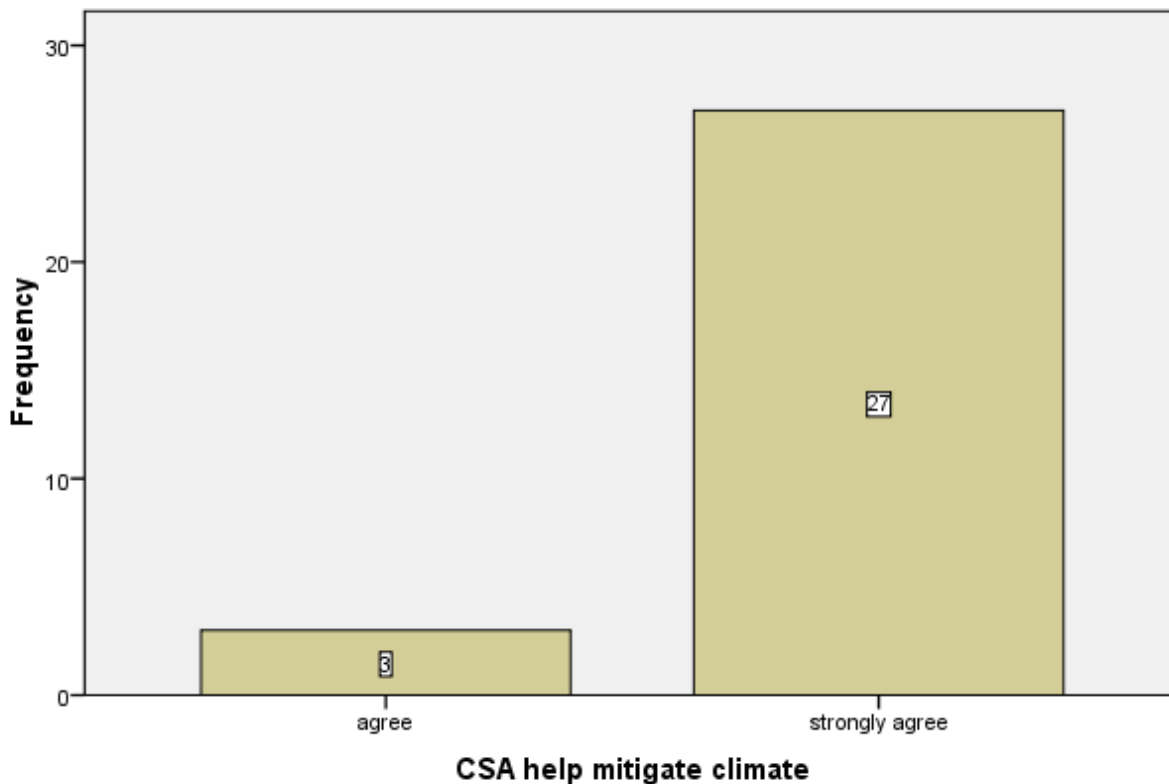


Figure 4.2: CSA as a climate change mitigation strategy

Source: Field work.

From Figure 4.2 above, it can be deduced that a majority of farmers strongly agreed to the fact that CSA help in reducing the impacts of climate change. Activities highlighted by the respondents that helped in the mitigation of climate change were through the implementation of conservation agriculture practices like zero tillage and crop rotation that can increase soil carbon sequestration. The use of compost and other organic amendments like humus from vegetation litter enhanced soil health that further boosts soil carbon sequestration. Most farmers in the ward have gum tree plantations around their crop fields that increase carbon storage in biomass and storage.

However, 10 % of the farmers were of the view that CSA techniques such as precision farming are actually expensive for a majority of smaller holder farmers and instead some farmers use means that are locally available which might cause climate change.

4.6 Challenges in the successful implementation of CSA.

The successful implementation of CSA initiatives in the ward has not been so smooth due to a number of challenges such as unavailability of funds, lack of resources like seeds and fertilizers and lack of information on climate smart activities. Ignorance and misconceptions from other farmers in the ward pertaining CSA was another challenge faced which affected its full scale implementation. CSA activities were not well received by some sections of the farmers. Figure 4.3 shows the responses to the third research question which looked at whether the challenges faced in the implementation of CSA can be solved or not. The graph below shows responses from the respondents whether the challenges outlined above can be solved or not

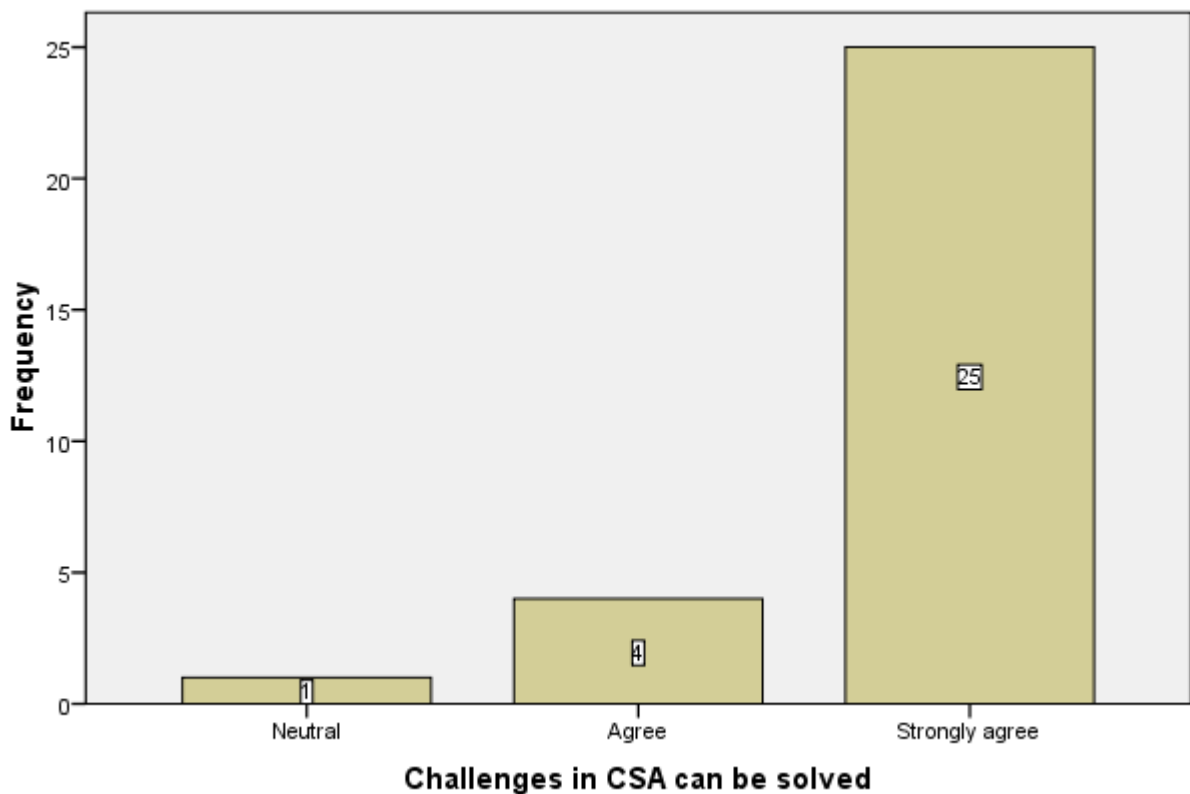


Figure 4. 2: Responds showing whether challenges faced in the implementation of CSA can be solved.

Source: Field work.

From Figure 4.3, it can be noted that a majority of the respondents concur with the fact that challenges facing the successful implementation of CSA can be solved. Some of the measures

highlighted by the farmers included making information on CSA available to farmers through investing in agricultural extension services and training programmes to educate and empower farmers on the benefits and implementation of CSA techniques. Other initiatives outlined by the farmers were through provision of affordable credit loans to support farmers in transitioning to CSA practices. They also highlighted the need to improve access to inputs like seeds, fertilizers and technological solutions for small scale and marginalized farmers

4.7 CSA alleviating hunger

Figure 4.4 below shows responses from face-to-face interviews on CSA initiatives that are vital for alleviating hunger in the ward.

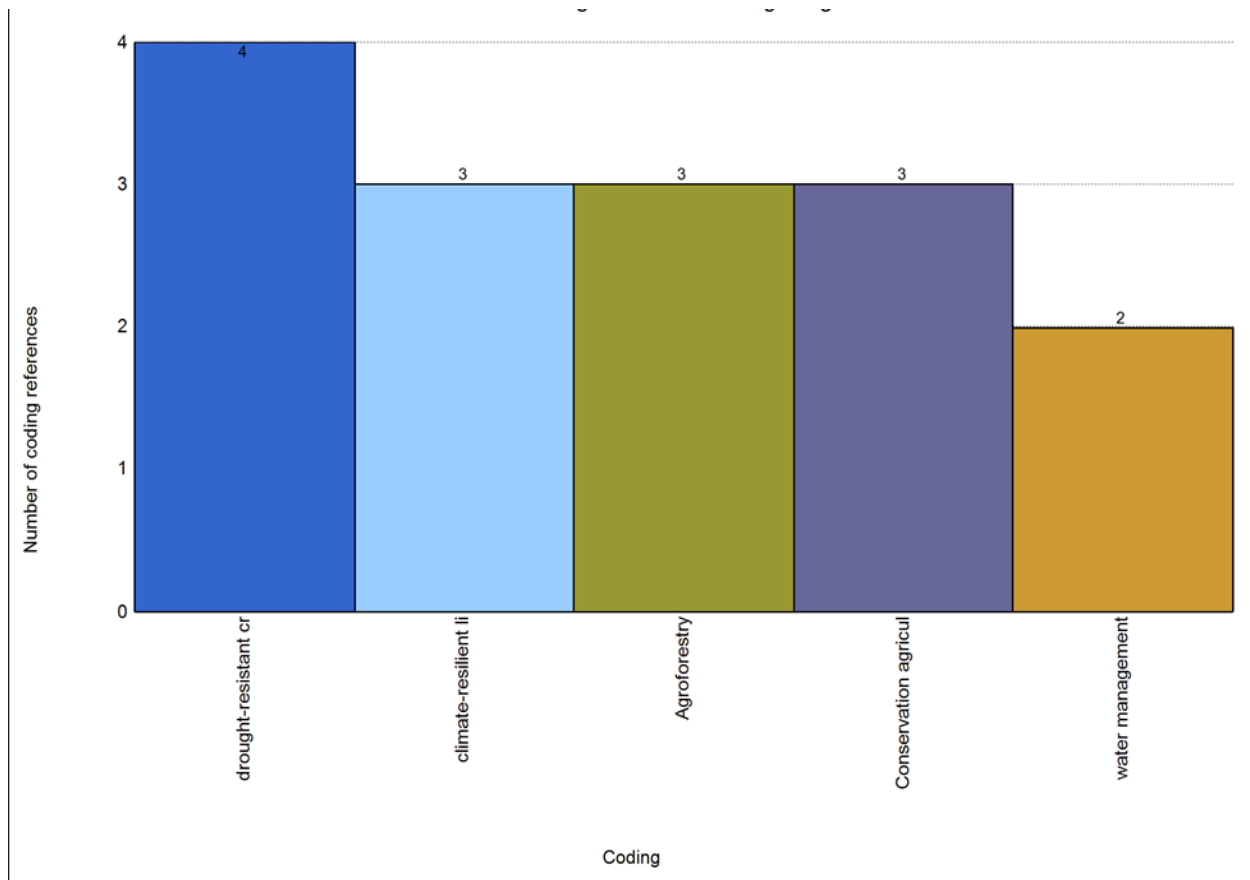


Figure 4. 3 The CSA initiatives to alleviate hunger.

Source: Field work.

In Figure 4.4, the highest coding reference of the respondents showed that drought-resistant crops maybe a way through to alleviate hunger in Murewa Ward 4 as planting crops that are more tolerant to drought and water scarcity can help ensure a stable food supply even during periods of low rainfall. Climate-resilient livestock management is another way to alleviate hunger in Ward 4 through implementing strategies to protect livestock from extreme weather events, such as heat stress and disease outbreaks and this can help maintain healthy animal populations for food production. More so, alleviation of hunger in the ward can also be through practices such as minimal disturbance of soil, crop rotation, and which can help mulching which lead to better crop yields over time. It can be concluded that by adopting these and other CSA practices, farmers can build resilience to climate change, improve food security, and contribute to reducing hunger and poverty.

4.8 The CSA programmes or initiatives that can alleviate hunger

There are a number of CSA programmes that can be initiated in the ward to alleviate hunger. Though they are various, the histogram below shows some that are tailor made for the ward.

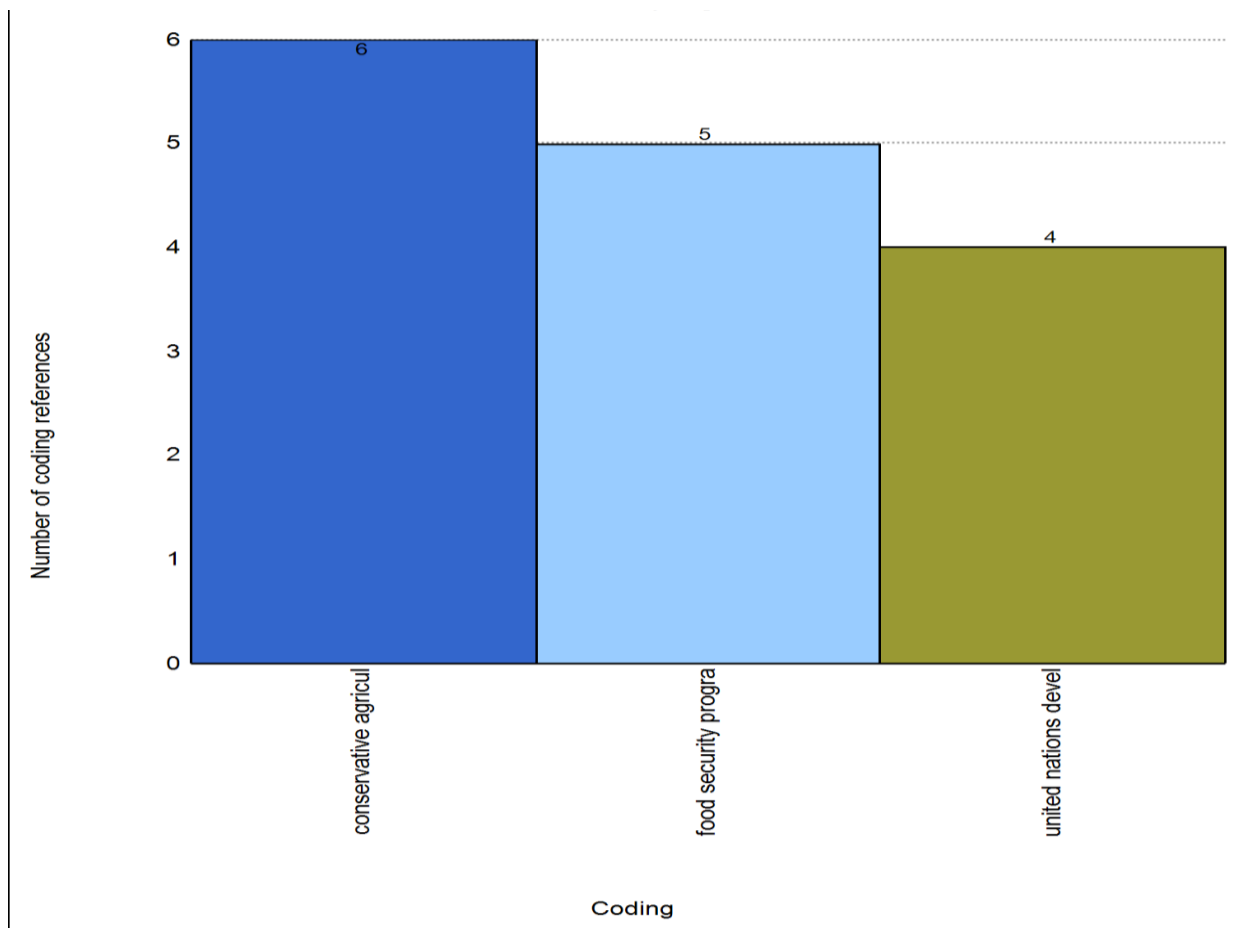


Figure 4. 4: Initiatives to alleviate hunger using CSA

Source: Field work

From the above figure, it can be noted that the majority of the respondents (40%) agreed that conservation farming is most well-known initiative that can alleviate hunger. The respondents pointed out that Conservation Agriculture Task Force (CATF) in Zimbabwe is promoting sustainable farming practices as an initiative that helps increase crop yields in the ward. They further pointed out that CATF is providing training, resources, and support to farmers to adopt conservation agriculture techniques for example Pfumvudza/Intwasa. The United Nations Development Programme (UNDP) works with local communities in Zimbabwe to promote climate-smart agriculture practices as a program to alleviate hunger in Zimbabwe’s rural areas. They focus on reducing food insecurity, and improving livelihoods through sustainable farming methods. The other program highlighted by the respondents was through food security programs for instance the Zimbabwe Livelihoods and Food Security Program (LFSP) a multi-donor initiative

that supports smallholder farmers in Zimbabwe to improve their agricultural practices. They provide training, access to inputs, and market linkages to help farmers increase productivity and adapt to climate change. From the findings it is clear that these initiatives and programs are vital in promoting sustainable agriculture practices, enhancing food security, and combating hunger in Zimbabwe as well as Ward 4, Murewa in particular.

4.9 Challenges hindering the successful implementation of CSA.

Though the CSA has proved to be the most important tool in the fight against hunger, its successful implementation has faced numerous challenges. Figure 4.6 shows some of these challenges.

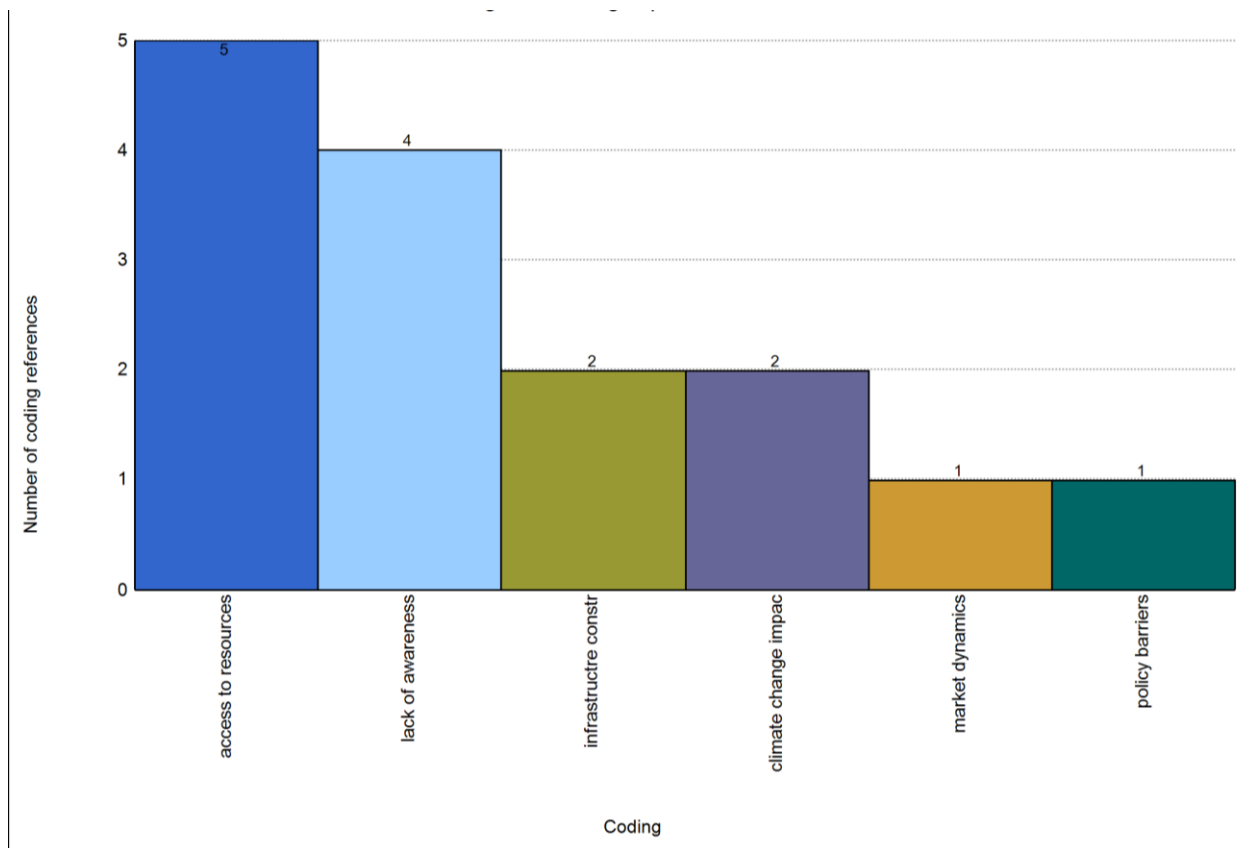


Figure 4. 5: Challenges that hinder the successful implementation of CSA initiatives.

Source: Field work

According to Figure 4.6, most respondents (33%) has shown that access to resources is a major challenge being faced by smallholder farmers, who often stand to benefit the most from CSA practices but they may lack access to necessary

resources such as finance, technology, and training. The second highest coding reference pointed out that lack of awareness and understanding may be posed as a challenge since many farmers may not fully grasp the concept of CSA and its benefits, hindering its widespread adoption. Infrastructure constraints is a challenge hindering the implementation of the CSA as evidenced in Murewa Ward 4 where there is limited access to irrigation system. The respondents also highlighted that climate change impact unpredictability is a fact as climate change is causing weather patterns to become more unpredictable, making it challenging for farmers to plan and implement CSA practices effectively. Few farmers pointed out showing market dynamics as a barrier since fluctuating market prices, lack of market information, and limited market access can discourage farmers from investing in CSA practices. To a lesser extent policy and regulatory barriers were also highlighted as a challenge as inadequate policies can create barriers to the implementation of CSA. It can be noted that addressing these challenges will require a multi-stakeholder approach involving policymakers, agricultural extension services, financial institutions, technology providers, and farmers themselves to promote the adoption of CSA for sustainable food production and hunger alleviation.4.10

Observations made from the field

During visits carried out in the field, the researcher observed some farmers preparing Pfumvudza plots. Figure 4.7 below shows a picture of a Pfumvudza plot prepared by a ward 4 farmer.



Figure 4.7: Pfumvudza plot at a homestead in ward 4

Source: Field work

The above figure shows a Pfumvudza plot which was one of the conservation farming techniques carried out in the ward. Minimum tillage shown on the plot helps in stabilizing the soil since there is minimum disturbance of the soil. This is very vital in retaining the fertility of the soil hence boosting the growth of crops. The mulch which was made of grass and stalks from the previous harvest conserves moisture implying that crops grown can grow regardless of low rainfall received. The resources used on this Pfumvudza plot were locally available meaning that the farmer incurs low costs on the resources yet maximizing production.

Figure 4.8 below shows maize grown on a Pfumvudza plot by another farmer in the ward.



Figure 4.8 A pfumvudza maize plot in the ward

Source; Field work

From the above figure, the researcher observed that maize grown in plots with mulch would be free from weeds that compete with the crops for nutrients. The grass mulch further protects the maize roots from intense heat there by conserving moisture. Crops grown under plots like the one above managed to produce outputs regardless of the low rainfall received during the 2023/2024 growing season as a result of the El Nino effect. This shows that farmers in the ward have found CSA as a coping strategy against hunger due to impacts of climate change.

The researcher also observed that Agritex officers in the ward often held teaching and awareness campaigns to sensitise farmers on climate smart practices that boost production. Figure 4.9 below shows such awareness campaign carried out during a Field day at the best farmer homestead by the AGRITEX officer.



Figure 4.9 Awareness campaign on CSA by Agritex officials

Source: Field work

The above figure shows that Agritex officers play an important part in educating farmers on climate smart practices. Evidence from the figure above shows that crop production is boosted if climate smart initiatives are implemented. Yields from areas where conservation techniques were done produced higher outputs as compared to fields that did not have them. This was because in fields where conservation farming was done, soil fertility was increased and soil moisture was retained which ultimately led to improved yields. This shows that the CSA is a tool that can be used country wide to boost agricultural production hence preventing hunger.

4.11 Discussion

The first objective of the study was to establish the challenges hindering the implementation of the CSA. It has been deduced from the study findings that the successful implementation of CSA strategies was being affected by many varied factors. The majority of respondents pointed to lack of access to resources as a major challenge in the ward. There was lack of finance to purchase hybrid seeds that are tolerant to inadequate rainfall. Lack of awareness was another challenge highlighted by the respondents as vital information on CSA does not reach many people in the ward. There has been lack of training by Agritex workers on the principles of CSA thus hindering its successful implementation. These findings are in line with findings made by Kaptmyer et al. (2019), who

believes that the adoption of CSA practices was very limited with 14 out of 15 member states of ECOWAS failing to mainstream climate change adaptation to their national agricultural investment programmes. Only Burkina Faso managed to align its initiatives showing that adopting CSA strategies in Africa is a huge task.

The second objective of the study was to highlight specific initiatives in ward 4 that promoted CSA. From information gathered from the ward, drought resistant crops like sorghum and millet were grown since they do well even when less rainfall is received. Conservation farming in the form of Pfumvudza was another initiative done in the ward that aimed at minimizing hunger. Pfumvudza plots were prepared in April with people gathering grass for mulch and digging the plots in preparation for the onset of the rains. The findings of the study concurs with Chigumira (2017) who on studying the case of Zimbabwe, highlighted that conservation agriculture is the dominant CSA practice in the country with over 100 000 farmers practicing it. Other practices she noted were the use of drought resistant crops which this study also unearthed showing that CSA is a tool accepted nationally in the fight against hunger.

The final objective of the study was to come up with CSA initiatives that help to mitigate negative impacts of climate change on agriculture. The study findings revealed that a majority of the respondents supported the view that CSA help in reducing the negative impacts of climate change. The dominant initiative carried out in the ward was having gum tree plantations around crop fields so as to increase the sequestration of carbon. Manzungu (2014) in Chigumira (2017) has views in the same line as the findings of the research by noting that agro forestry in the small holder sector has been initiated in Zimbabwe with many research stations propagating seedlings of the African acacia. The move was aimed at mitigating the negative impacts of climate change on agriculture through increasing carbon sequestration.

4.12 Chapter summary

The chapter presented and discussed data from farmers, agricultural extension workers and non-governmental organization representatives. From the discussions above, it can be deduced that a majority of respondents agrees that CSA plays a vital role in alleviating hunger in ward 4 of Murewa district. Though there are challenges hindering the successful implementation of CSA initiatives, there are measures that can be done for the successful implementation of it.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The chapter is going to give conclusions and recommendations to the study basing on the research objectives provided in chapter one and the findings highlighted in chapter four.

5.2 Summary

The study investigated the role of CSA in alleviating hunger in Ward 4 of Murewa District with the aim of finding solutions to all these hindrances. This is because farmers continue to get low yield and this need to be addressed. The following three research questions were used in this study:

- What is the role of CSA in alleviating hunger in Ward 4 of Murewa District?
- What challenges are hindering the implementation of CSA for hunger alleviation?
- Which specific initiatives or programs in your ward are promoting CSA for hunger alleviation?

In order to provide answers to the research questions above, data was solicited from respondents using the situational case study methodology because this was seen to be the most appropriate since it enabled the researcher to study the role of CSA in alleviating hunger in Ward 4 of Murewa District from the point of view of all major stakeholders. This could then be able to provide with a depth of perceptions meant to give a clearer understanding of the factors that have contributed to the poor farming yields which leads to hunger. Questionnaire surveys and interview guides were research instruments used to gather data from the study participants.

The study unearthed factors such as lack of resources, lack of awareness on CSA and infrastructural constraints as hindering the successful implementation of CSA programmes. Furthermore it was discovered that there are a number of initiatives that can be adopted to increase the implementation of CSA and these include promotion of sustainable agriculture, training and awareness programmes on CSA and partnership initiatives.

5.3 Conclusions

The study results showed that CSA has brought some benefits to the livelihood of many farmers in ward 4 of Murewa district. One of the benefits as a result of CSA was improved crop

productivity. Practices such as the Pfumvudza or conservation agriculture technology have brought in positive results like increasing crop yields using limited resources. The other positive impact brought by CSA is reduced crop failure even during prolonged dry spells through the use of grass mulch to conserve moisture. CSA initiatives also led to reduced production costs through the use of locally available resources like manure and compost. Thus, it can be concluded that CSA is enabling ward 4 farmers to produce more food despite challenging environmental conditions brought about as a result of climate change.

Challenges were also unearthed that are hindering the successful implementation of CSA in the ward. These include:

Limited access to resources – although CSA has been introduced in Ward 4, farmers are still confronting constraints in accessing essential resources such as finance and other CSA technologies.

Lack of awareness on CSA information – information on the CSA is not reaching some farmers in the ward living in marginalized areas.

Infrastructural constraints – CSA implementation is also being hindered as some farmers do not have access to infrastructure such as green houses and irrigation equipment that can help during periods of climate extremes.

The study also noted that there are programmes that are being initiated in the ward that are promoting the CSA include:

Promotion of sustainable agriculture through input support program – Ward 4 farmers are benefiting from the Presidential Input Support Program (PISP) which is aimed at promoting the adoption of Pfumvudza or conservation agriculture technology. Farmers are getting inputs every year in form of seed, fertilizers and insecticides.

Partnership initiatives – development partners like CIMMYT and Bio Hub Trust are complimenting Government efforts in trying to promote the adoption of CSA practices in ward 4 quite a number of research and demonstration works are being undertaken in the ward and farmers are now equipped with both resources and knowledge. Bio Hub Trust is promoting

Agroforestry which is aimed at managing natural resources which will contribute to climate change mitigation.

Increased public and private investment – the private sector Kurima Engineering Pvt, Mealie-Brand and Bio Hub Trust have brought in quite a number of mechanized equipment such as basin diggers, rippers, grass mowers and direct seeders and these encouraged farmers to adopt and practice CSA.

The CSA is playing important roles in alleviating hunger in the ward and some of these roles are:

Increasing productivity- through CSA initiatives, food productivity has increased in the ward, solving the challenges of food insecurity.

Reduced emissions and carbon sequestrations – CSA practices reduce greenhouse gas emissions from the farming system; avoid deforestation due to cropland expansion and carbon sequestration. These efforts contribute to environmental sustainability while addressing the challenges of hunger and food insecurity in ward 4.

Resilience building – CSA practices help build resilience to climate change impacts, enabling ward 4 farmers to adapt to changing weather patterns and mitigate the effects of extreme weather events thus safeguarding their food production.

5.4 Recommendations from the study

The study recommends the full-scale implementation of climate smart practices not only in ward 4 of Murewa District but throughout Zimbabwe's farming regions since it can help in increasing food production. The CSA initiatives if successfully implemented can help in alleviating hunger in the country. The suggestions below are recommended for a successful implementation of the programme:

Policy and Regulatory Support

There is need to develop and implement policies that incentivize the adoption of CSA techniques such as subsidies, tax incentives or carbon pricing mechanisms. The Government should also ensure coordination and integration of CSA strategies across different Government agencies and sectors

Knowledge and capacity building

Investments in agricultural extension services and training programmes to educate and empower farmers on the benefits and implementation of CSA techniques should be prioritized. The Government should also facilitate knowledge sharing platforms and peer to peer learning among farmers and stakeholders

Financial assistance and access to resources

The Government should provide affordable credit, loans and insurance schemes to support farmers in transitioning to CSA practices. There should also be improved access to inputs such as fertilizers, seeds and water efficient irrigation systems. Government should also explore innovative financing mechanisms such as green bonds or public-private partnerships to fund CSA projects

Monitoring, evaluation and adaptation

There should be establishment of robust monitoring and evaluation frameworks to track the effectiveness and impacts of CSA interventions. There should also be promotion of the integration of traditional and scientific knowledge to enhance the resilience and sustainability of agricultural systems.

By implementing the above recommendations, the successful implementation of CSA techniques can be greatly enhanced, leading to improved food security, climate change adaptation and environmental conservation.

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APPENDICES

APPENDIX 1. 1QUESTIONNAIRE FOR FARMERS



Introduction

My name is Grant January (B226408A) a student of the Bindura University doing MScCCSD. I am carrying out a research study on the topic ‘The role of Climate Smart Agriculture (CSA) in alleviating hunger in Ward 4 of Murewa District.’ You have been selected randomly to take part in this study. Could you please assist by completing this questionnaire? Your responses will be kept in strict confidentiality and will be used for the purpose of this study only. I kindly ask you to spare some time to complete this questionnaire. It will only take a few minutes. All the responses provided will be treated with strict confidentiality and shall only be used for the purpose of this study. Participation in this survey is voluntary.

Instructions:

- a) Read and understand the information on all sections carefully.
- b) Be as honest as possible when giving your responses.
- c) For enquires please don't hesitate I will be at your disposal.
- d) Tick in the correct box.
- e) Do not write your name on this questionnaire.

1. Gender

Male

Female

2. Age (Years)

Under 20

20-40

41-60

61 and above

3. Occupation

Farmer

Agricultural extension officer

Policy maker

NGO worker

4. Educational Background

High school or below

Diploma

Bachelor's Degree

Master's Degree or higher

5. How familiar are you with the concept of climate smart agriculture?

Not at all familiar

Somewhat familiar

Moderately familiar

Very familiar

6. Indicate the extent to which you agree with the following statements by ticking in the appropriate box

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Climate Smart Agriculture practices can help mitigate the impact of climate change on agricultural production					
Climate Smart Agriculture can contribute to reducing hunger and improving food security					
Challenges in the successful implementation of CSA practices can be solved					

Your input will greatly contribute to the understanding of the relationship between climate smart agriculture and hunger alleviation.

Thank you for your participation in this survey

APPENDIX II: INTERVIEW GUIDE FOR AREX OFFICERS, POLICY MAKERS AND NGO REPRESENTATIVES



Introduction

My name is Grant January a student of the Bindura University doing MScCCSD. I am carrying out a research study on the topic ‘The role of Climate Smart Agriculture (CSA) in alleviating hunger in Ward 4 of Murewa District.’ You have been selected randomly to take part in this study. Could you please assist by completing these interview questions? Your responses will be kept in strict confidentiality and will be used for the purpose of this study only. I kindly ask you to spare some time to complete these interview questions. It will only take a few minutes. All the responses provided will be treated with strict confidentiality and shall only be used for the purpose of this study. Participation in this survey is voluntary.

Instructions:

Codes will be used to identify each participant. During the interviews, you are not allowed to identify yourselves by name, by position held or your organization. When participating do not use personal information or examples that can identify you and other persons present here or not part of the discussion. The deliberations will be recorded and transcribed later.

Questions

1. How can CSA alleviate hunger in ward 4 of Murewa district?
2. What challenges are hindering the implementation of CSA for hunger alleviation?
3. Which specific initiatives or programs in your ward promote CSA for hunger alleviation?
4. What CSA practices can help mitigate the impact of climate change on agricultural production?

5. What is the role of CSA in alleviating hunger in ward 4 of Murewa District.?

Your input will greatly contribute to the understanding of the relationship between climate smart agriculture and hunger alleviation.

Thank you for your participation in this survey.

APPENDIX III: OBSERVATION GUIDE

Objectives

- To identify CSA practices that are alleviating hunger in ward 4

Setting: Ward 4 farmers' fields and gardens

Participants: farmers

Variables:

- Farmers' farming activities (types of crops grown, farming methods)
- Use of technology

Observation methods

- Direct observation and note taking

Data collection tools

- Check list for farmers practicing CSA
- Rating scale
- Field notes for additional observation

APPENDIX IV: CONSENT FORM

Principal Investigator: Grant January

Phone:

E-mail:

Supervisor:

Phone:

E-mail:

CONSENT

1. Upon signing this consent form, I agree to take part in the research conducted by Grant January and any other persons assisting or associated with the study.
2. By participating in this study, I understand the importance of being as honest as possible in all responses to the questions.
3. I understand that my participation in this project is voluntary and I may refuse participation at any time throughout the survey process.
4. I realize the results of this study could be published, but I understand that I will not be identified individually in any such population.
5. If there is a question I feel strongly about not completing, I understand I have the right to leave it unanswered.

Participant Name.....SignatureDate.....

Witness Signature