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SUSTAINABLE DEVELOMENT DEPARTMENT

THE INTERPLAY BETWEEN CASH CROP PRODUCTION, CLIMATIC SHOCKS AND HOUSEHOLD FOOD SECURITY FOR SMALLHOLDER FARMERS IN SHAMVA DISTRICT ZIMBABWE.

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APPROVAL FORM

The undersigned do hereby certify that they have been satisfied and approved the researcher student number B221108B's dissertation titled " The interplay between cash crop production, climatic shocks and household food security for small holder farmers in Shamva district Zimbabwe" to be submitted partial fulfillment of the requirement of Bachelor of science honors degree in Development studies at Bindura university of science education.



18/06/2026

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Supervisor signature Date



14/08/2026

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Chairperson Signature Date

DEDICATION

This research is dedicated to my beloved parents for their unconditional love, support and inspiration. Not forgetting my sisters and brother who remained a tower of strength throughout this academic journey. Also, special thanks are given to Mr. Muchenje my supervisor and others who contributed in various forms during my academic struggle.

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ABSTRACT

Food security remains one of the most pressing challenges facing rural communities in Zimbabwe, particularly among smallholder farmers whose livelihoods depend heavily on rain-fed agriculture. In Shamva district, farmers navigate a difficult balance between growing cash crops for income and producing food crops for household consumption, all while contending with increasingly erratic rainfall and recurring droughts. This study set out to understand how these forces interact and what they ultimately mean for household food security at the local level. Using a mixed approach, the study surveyed 81 smallholder farming households across four wards(2,4,10and 14) in shamva district. Structured questionnaires captured data on crop production, income and food access, while semi-structured interviews with agricultural extension officers and community leaders added depth and context to the numbers. Both datasets were analyzed together to build a fuller picture of how farming choices and climate shocks shape what families eat and how they cope when things go wrong. The study found that neither farming system fully shields households from food insecurity. Cash crop farmers, particularly those growing tobacco and cotton, earned higher incomes but were left exposed when markets shifted or rains failed. Food crop farmers ate more steadily but often lacked the cash needed for healthcare, school fees and a varied diet. Droughts and unpredictable rainfall hurt both groups, reducing yield and forcing households into difficult trade-offs. Common responses included skipping meals, selling livestock, taking on casual work and gradually shifting toward more drought-tolerant crops. These findings suggest that simply encouraging cash crop production is not enough to improve rural food security. What farmers need are policies that account for climate risk, support market stability and promote diversified farming system. Evidence gathered from Shamva district points the importance of designing agricultural interventions that are grounded in local realities rather

LIST OF ACRONYMS

AGRITEX	Agricultural Technical and Extension Services
ENSO	El Nino – Southern Oscillation
FAO	Food and Agriculture Organization
HDDS	Household Dietary Diversity Score
HFIAS	Household Food Insecurity Access Scale
IFAD	International Fund for Agricultural Development
IPCC	Intergovernmental Panel on Climate Change
PRA	Participatory Rural Appraisal
SFI	Seasonal Food Insecurity
SLF	Sustainable Livelihoods Framework
SPSS	Statistical Package for the Social Sciences
SSA	Sub-Saharan Africa
WFP	World Food Programmed
ZIMSTAT	Zimbabwe National Statistics Agency
ZIMVAC	Zimbabwe Vulnerabilities Assessment Committee

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CHAPTER 1

1.1: Introduction

The following chapter one (1) is going to focus on the specific topics which include the background of the study, statement of the problem, research aim, objectives, research questions, justification of the study, definition of the terms, delimitation of the study or the scope, limitations of the study, the organization of the study and lastly the conclusion.

1.2 Background of the study

One of the most urgent development issues of the 21st century, especially of the countries of the Global South, is food security. It is directly related to sustainable development since health, productivity, and social stability depend on adequate and reliable access to food. According to the FAO (2018), food security can be defined as a state whereby all individuals, at any point in time, have physical, social, and economic access to safe, nutritious, and adequate food that meets their dietary needs and preferences toward an active and healthy life. This definition is pegged on four dimensions that are interrelated availability, access, utilization and stability.

The concept of food security, as formalized by the FAO (2018), rests on four interconnected pillars: availability, access, utilization, and stability ensuring that every person has reliable physical, social, and economic means to obtain sufficient, safe and nutritious food. Despite the critical role played by more than 500 million smallholder farmers in global food production, particularly across developing nations, their own food security remains highly unpredictable and poorly understood IFAD (2021). Nowhere is this vulnerability more pronounced than in Sub-Saharan Africa (SSA), where high poverty rates, rapid population growth, and an overwhelming dependence on rain-fed agriculture magnify exposure to climatic risks. Rising temperatures, shifting rainfall patterns, and more frequent extreme weather events all driven by climate change further undermine crop yields and rural livelihoods across the region IPCC (2022).

In Sub-Saharan Africa (SSA), smallholder farmers have diversified their livelihoods to address the household food demands in an environment that is characterized by uncertainty in the climate and the market. Within Sub-Saharian Africa (SSA), smallholder farmers adopt a variety of livelihood

strategies to meet household food needs in an environment marked by climate and market uncertainties. These strategies can be broadly classified into two groups. On the one hand there is the farmers concerned with food crops like maize, millet and sorghum who grow to consume at home and sell small amounts of surpluses. This is one of the direct pathways to food security as the household relies much on its personal harvest. Conversely, specialized farmers specialize in cash crops such as tobacco, cotton or in horticultural crops such as tomatoes. It provides an indirect food security, in which income gained through sales is purchased to get food and other basic necessities Mutyasira et al (2018). But the question of whether cash cropping is more resilient than subsistence farming is an open question. Production based on markets can lead to increased incomes, but these advantages can be tied to the stable prices, available markets, and the capability to manage production and price risks Vroegindewey& Hodbod (2021).

Zimbabwe is a good example to investigate these dynamics. Agriculture remains the backbone of Zimbabwe's economy, directly supporting more than 60 percent of the national population. Nonetheless, the industry has been stretched due to recurring droughts caused by climate change, continuous economic uncertainties, and intermittent policy execution Moyo et al (2022). The El Niño-induced droughts of the 2015–2016, 2018–2019, and the exceptionally harsh 2023–2024 seasons resulted in extensive crop failures across smallholder farming areas. Consequently, Zimbabwe, once a regional food exporter has repeatedly shifted to receiving humanitarian food assistance WFP (2023). Dependence of the nation on maize, which is very susceptible to mid-season dry spells, exposes smallholder farmers especially because most farmers depend on rain-fed production.

The government of Zimbabwe and development partners have in turn advocated agricultural intensification and commercialization as avenues to rural prosperity. Tobacco is now being used as a high-value crop, and a large number of smallholders are involved in contract farming schemes Mujeyi et al (2021). Simultaneously, food crops continue to be the core of household livelihood facilitated by programs such as Pfumvudza/Intwasa, which is designed to enhance food self-reliance. However, there is limited evidence on the impacts of these various livelihood strategies on household food security particularly on local level. Key questions persist, will tobacco income reliably guarantee access to food all year round, or does exposure to volatile markets increase the chances of being hungry? On the other hand, does an emphasis on food crops give more steady

access to staple foods at the expense of the households purchasing other basic goods and diversifying their diets? These are the questions that are most crucial in the development of agricultural, social protection, and climate-resilience policies.

Shamva District in Mashonaland Central Province provides a perfect location to make a comparative study of the two farming pathways. The district is located in Natural Region II with fairly favorable rainfall patterns and agricultural potential. Both staple food production like maize and groundnuts and a great presence of cash crops, including tobacco, cotton, and horticultural produce are supported by this environment Mubaya & Mafongoya (2021). The fact that both agricultural regimes function under identical climatic and economic conditions and on the same geographic area, gives Shamva an opportunity to study which approach is more useful to household food security.

Nevertheless, it is important to note that smallholder farmers in Shamva continue to face much of the limitations found in the country, such as the variability of rainfall, the degradation of soil fertility, lack of access to formal credit, and the inability to connect with the market Nciizah & Mubaya (2022). The preliminary remarks bring to light the intricate nature of each of the two farming methods. Even a cash-crop farmer can realize a high yield of tobacco, but still fail to purchase sufficient maize when the price of maize on the auction market is low, or on the domestic market, the country faces a shortage of maize as prices rise Mujeyi et al (2021). On the other hand, a subsistence farmer specializing in food crops can supply sufficient quantities of maize to prevent acute hunger but cannot afford healthcare, school fees, or nutritious diets - causing chronic, low-level food insecurity (Mutambara et al (2022) & Zingwena (2023).

This circumstance highlights a significant gap in knowledge. The national datasets, including ZIMVAC, offer a general perspective on the trends of food insecurity without showing how various farming practices influence the outcomes of household food access, food security, and dietary outcomes at the local level. There is a paucity of recent, place-specific evidence that compares food-crop and cash-crop farmers on all four dimensions of food security.

The available literature is in agreement that three main pathways interconnect cash crop production and food security (1) the income pathway, where sales raise cash to purchase food (2) the production trade-off pathway, where the allocation of land and labor to cash crops may reduce

food crop production and (3) the climatic vulnerability pathway, where weather extremes subvert food crop production and income. This research therefore aims at coming up with empirical data on the relative food security performance of smallholder farmers who focus on cash crops as compared to those who focus on food crops in Shamva District. The study seeks to explain the relative risks, benefits, and resilience patterns of each of the approaches in an environment characterized by climatic uncertainty and economic volatility. The results of this research will assist policymakers in the Ministry of Lands, Agriculture, Fisheries, Water and Rural Development; development agencies, like WFP and FAO, and other stakeholders in planning specific interventions. These could be customized climate-sensitive agricultural assistance, more efficient market structures, or more appropriate social protection. Finally, the study can help in the national agenda to enhance food security at community scale by studying the interactions between climate change and livelihood decisions in developing resilient agricultural livelihoods in Zimbabwe under the NDS1.

1.3 Statement of the problem

The main issue that this research will focus on is the lack of localized and empirical knowledge of how climatic shocks can affect the relationship between cash crop production and household food security of smallholder farmers living in Shamva District, Zimbabwe. The lack of localized evidence limits policymakers and development practitioners, who usually rely on national statistics that do not reflect the district-specific vulnerabilities resulting in poorly targeted programs like subsidies or irrigation subsidies. Further, development agencies and extension officers often believe that higher cash income will necessarily raise food security, but unless there is empirical evidence on the relationship between climate variability and this relationship, interventions may be useless or harmful. Academically, the lack of localized data restricts the capacity to come up with context-specific theories and models that explain the interactions between climate variability and rural livelihoods. The importance of filling this research gap is thus to enhance the design of the adaptive, evidence-based policies and programs that would enhance the resilience of smallholder households in the face of climatic and economic shocks in Shamva District.

1.4 Aim of the study

To assess and evaluating the interplay between cash crop production, climatic shocks and household security for smallholder farmers in Shamva district Zimbabwe.

1.5 Objectives of the study

- To compare the levels of household food security between smallholder farmers engaged in cash crop production and those involved in food crop production in Shamva district.
- To analyses the coping mechanisms adopted by cash crop producing households and food crop producing households to mitigate food insecurity in the district.
- To explore smallholder farmers perceptions on the opportunities and risks that cash crop and food crop production presents for their resilience to climate change and their household food security.

1.6 Research questions

- How do levels of household food security differ between smallholder farmers who focus on cash crop production and those engaged in food crop production in Shamva District?
- What coping and adaptation mechanisms do cash crop producing and food crop producing households employ to manage food insecurity and the effects of climatic shocks in Shamva District?
- What are smallholder farmers' perceptions of the opportunities and risks that cash crop and food crop production present for strengthening their resilience to climate change and ensuring household food security?

1.7 Justification of the study

The research is supported by the increasing desire to comprehend the effects of climatic shocks on livelihoods and food security of smallholder farmers who rely on cash crop production. The existing literature (both national trends and case study of particular cash crops) does not evaluate the changing balance between income generation and food consumption as a result of climate variability. The research thus addresses a very important gap in knowledge by adding context specific insights into the interactions of cash crop production with climate shock to determine the food security outcomes.

Beyond its academic contribution, this study offers practical value for policymakers and development practitioners. The empirical evidence generated can directly inform the design of climate-resilient agricultural policies, early warning systems, and targeted social protection programs. For local authorities and agricultural extension officers, the findings highlight which household categories require prioritized support and how income diversification can be promoted. Researchers gain a context-specific case that adds to the growing body of literature on climate–livelihood interactions in semi-arid Sub-Saharan Africa. Ultimately, this study is justified by its potential to advance sustainable livelihoods and strengthen household food security amid rising climate volatility in Zimbabwe.

1.8 Definitions of major terms

Cash crop production Cash crop production can be defined as the production of crops which are directed to market sale or exportation to make profit as opposed to the consumption or utilization of crops by the farmer him/herself. Such crops, cotton, coffee, tea and tobacco are produced with the aim of commercial value as opposed to subsistence cropping which produce crops to supply themselves. To take an example, Tobacco and cotton are cash and food crops, which are produced in Shamva district Hashmiu (2022).

Household food security can be described as the condition in which a household has a steady physical, social, and economic access to adequate, safe, and nutritious food to satisfy the dietary requirements and choices of a healthy and active life Coleman et al (2022).

Academically, smallholder farmers in the Shamva District can be described as rural agricultural producers who operate small landholdings, typically ranging between 3.5 and 3.7 hectares, who mainly rely on family labor, low-input production systems and rain-fed production and whose production is largely focused on household food security and low market engagement Rubhara (2019). The group is usually found in communal and A1 resettlement, traditional technologies, and limited access to credit, irrigation facilities, extension facilities, and commercial inputs. Their farming practices have been a major contributor to the livelihoods and food system in the district, yet are extremely susceptible to climate change and resource shortages.

1.9 Limitation of the study

The research is limited to Shamva District of the Mashonaland Central Province in Zimbabwe that has a solid agricultural foundation especially in the production of cash crops. The emphasis on Shamva is a choice of the researcher to deeply comprehend socio-economic and environmental dynamics that determine the interaction between cash crop farming, climatic shocks and household food security. By focusing on one district, this research can produce in-depth, location-specific data not always evident in larger national researches.

Only the smallholder farmers (3.5and 6 hectares) are included in the study, since they are the most agricultural producers in the district and are susceptible to climate variability. The study looks at the impacts of climatic shocks on their production of major cash crops that include tobacco and cotton which are the mainstay of the local economy and household incomes.

The research time will be one agricultural season (one year) to reflect the impacts of the recent climatic changes on the crop production and food security of households. Through this period, the study will be able to examine the immediate reactions and determine the trends of susceptibility and acclimatization. The scope also does not include subsistence-based farming systems which are too narrow to be overlapping and keep the focus on cash crop production and its direct connection to the food security. This narrowing is necessary, so that the results will be limited to the economic and climatic environment of cash crop-reliant households in Shamva District.

1.10 Limitation of the study

A significant community involvement issue is that not all farmers might be willing to participate in the study because they will distrust the study or have research fatigue and fear that their information might be abused. In order to overcome this issue, the research will utilize the methods of Participatory Rural Appraisal (PRA), such as focus groups and key informants' interviews, as well as community mapping. These strategies will aid in the development of a free and interactive atmosphere where farmers will feel free to share their experiences and views. The researcher will also consult the local leaders and agricultural extension officers at the initial stages of the research to create some form of trust, clarify the objectives of the research and guarantee the participants that the study will be confidential and non-political.

The scope of data collection might be restricted due to time and resource limitations. The study will thus focus on representative sampling and use practical field work methods that will involve focus group discussions, interviews and surveys that will optimize the accuracy of the data given the time and resources at hand. These methods will involve household survey, direct field observations, and focus group discussions, which will enable effective collection of data and representation of a variety of household experiences. The researcher will also liaise with the officers of the local agricultural departments to enable access to the agricultural communities and to coordinate the field.

1.11 The organization of the study

The research will be subdivided into five chapters. Chapter one is the introduction of the study, it is aimed at determining the research background, the research problem, aim and objectives. The second chapter is concerned with literature review. The research methodology is also discussed in chapter three. The second last is the chapter four that narrates the results and statistical analysis and finally, the last chapter is chapter five that provides the summary of the entire project and conclusion/ recommendations.

1.12 Conclusion

In summation, this chapter is focused on the introduction, background of the study, statement of the problem, the aim, the objectives, research questions, justification of the study, definition of key terms, delimitation of the study, limitations of the study as well the organization of the whole study. The following chapter will be focusing on literature review.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter examines the literature relevant to the study on the nexus between cash crop farming, climatic shocks and smallholder farmers' food security. The review draws on the study objectives and questions in Chapter One. This includes what the literature tells us about household food security among cash crop and food crop farmers, the type and impact of climatic shocks on smallholder farming, coping and adaptation strategies of farming households and farmers' views on the risks and benefits of different farming systems. This chapter places the study in a global, regional (Sub-Saharan Africa), national (Zimbabwe) and local (Shamva District) context to understand patterns, debates and knowledge gaps. This chapter synthesizes this literature to provide empirical and theoretical background to the study and demonstrate the need for a localized, comparative analysis.

2.2 Food insecurity and food security

Food insecurity persists as a major development challenge even in a period of rising global food production. The FAO (2006) defines food security as a condition in which every person, at all times, has physical, social, and economic access to sufficient, safe, and nutritious food a definition organized around availability, access, utilization, and stability. Recent FAO estimates (2023) indicate that between 691 and 783 million people still experience hunger, underscoring deep inequities in access. Scholars offer different explanations for this persistence. Researcher do not fully agree on why food insecurity for example Barret (2017) argues that poverty and poor market access matter more than low production. Pingali (2017) makes a different point that says increasing farm output does not automatically fix nutrition, especially for smallholders. Meanwhile Maxwell (2019) emphasizes structural inequality and weak rural livelihoods and Von Braun (2020) adds that climate change, conflict and price swings all pile on top of each other. More recently, Barret (2021) has emphasized that global food systems remain highly vulnerable to crises such as pandemics and extreme weather events. Taken together, these perspectives show that food insecurity is shaped by economic, structural, and environmental forces implying that climate change and reliance on cash crop production could similarly affect household food security in settings like Shamva District.

Across Sub-Saharan Africa, food insecurity is driven by a combination of environmental constraints and structural weaknesses inherent in smallholder farming systems. The region's heavy reliance on rain-fed cultivation makes it acutely vulnerable to droughts, floods, and erratic rainfall. Additional limiting factors include poor access to agricultural inputs, inadequate rural infrastructure, and high levels of rural poverty, all of which constrain both food production and household purchasing power. Food security outcomes vary considerably within the region. Countries with more diversified economies and advanced food systems, such as Mauritius and South Africa, achieve relatively higher food security, while nations like South Sudan and Somalia plagued by conflict, drought, and weak institutions rank among the most food-insecure globally. Zimbabwe falls into a moderately food-insecure category, as its agricultural output is frequently curtailed by drought, macroeconomic instability, and input shortages, often necessitating food imports during dry years FAO (2023). Frank (2015) notes that smallholder vulnerability in Africa is exacerbated by an overreliance on climate-sensitive agriculture with minimal livelihood diversification.Tekle (2016) points to declining soil fertility and low adoption of improved technologies as persistent constraints. Similarly, Tafadzwa (2018) argues that climate variability, land degradation, and population pressure collectively erode agricultural resilience. These observations confirm that food insecurity in Sub-Saharan Africa arises from intertwined environmental and structural factors, with Zimbabwe occupying a middle position between the region's most and least food-secure countries.

Zimbabwe is one example of a case study of many of the regional dynamics of food insecurity, with rural households being highly dependent on smallholder farming and thus susceptible to climate and economic shocks. Zimbabwe Vulnerability Assessment Committee Zivic (2023) states that many rural households are unable to meet their annual food needs, especially during drought-prone years when crop production falls significantly. Previous ZimVAC (2021-2021) also warned of increasing food insecurity in rural areas, largely due to unreliable rainfall and declining crop yields. Moyo (2016) explains that climate change has emerged as a significant threat to rural livelihoods in Zimbabwe, by diminishing crop yields and household resilience. Mubaya (2018) notes that unreliability of rainfall and frequent droughts are undermining smallholder farming systems and destabilising food supply. Mafongoya (2019) also explains that soil fertility challenges and limited uptake of modern farming technologies still limit agricultural production, particularly for poor farmers. Likewise Matsika (2020) notes that economic crises, such as

inflation and scarcity of agricultural inputs, has decreased farmers' ability to invest in agriculture, and thus, increased household food insecurity. Similarly, Tendai (2022) notes that rural households often engage in negative coping mechanisms such as skipping meals, selling livestock or engaging in low-productive jobs to survive food scarcity. In general, this evidence demonstrates that Zimbabwe's food insecurity is influenced by a combination of climatic, environmental and economic factors, highlighting the need to incorporate different livelihood strategies into household food security in specific local contexts like Shamva District.

2.3 Smallholder Farmers' Food Security

Household food insecurity is a global issue among smallholder farmers who play a crucial role in food production. Globally, smallholder households are often paradoxically food insecure because of their low assets, limited integration into the market and susceptibility to climate and market shocks Food and Agriculture Organization (2018). The International Fund for Agricultural Development (2021) also suggests that many rural farming households continue to experience food insecurity as agricultural incomes are often seasonal, volatile and inadequate to sustain food security throughout the year. Meanwhile another scholars Maxwell and Slater (2022) also note that structural inequities in food systems still fail to ensure equitable food access, despite high production. Barrett et al (2021) note that although commercialization of agriculture can increase farm income, it does not necessarily translate into better nutrition outcomes, especially in situations of volatile markets. Roodman (2020) note that increased farm income does not necessarily lead to improved nutritional outcomes, as households may still be exposed to price volatility and income constraints. Hirvonen et al (2021) also note that despite increased agricultural productivity in some areas, rural households have low dietary diversity because of income limitations and lack of access to diverse food items.

In Sub-Saharan Africa, food insecurity is more prevalent because of continued dependence on rain-fed farming systems and high rural poverty that undermines household resilience. Adding on, Ellis and Freeman (2019) note that smallholder farmers in this region have low resilience production systems where climate variability has a direct impact on food availability and stability. In addition, Mutyasva et al (2018) explain that households in countries like Ethiopia, Ghana and Malawi that engage in staple crop production can often meet basic food needs, but are still exposed to droughts and other climate-related risks. Another support from Hashimu et al (2022) also

explain that cash crop farmers are more dependent on markets, meaning that their food security is more affected by price and income variability than food production. Overall, these studies demonstrate that food security in Sub-Saharan Africa is not determined by food production, but also by access to markets, income security and the increasingly erratic climate.

In Zimbabwe, national food security assessments ZIMVAC (2020, 2021, 2023) reveal high levels of rural food insecurity in both agriculture-rich and poor districts, largely due to drought, economic hardships and lack of inputs. Also Moyo et al. (2022) point out that national figures mask significant local variations where different livelihood strategies of households' influence food security differently. Meanwhile Mubaya & Mafongoya (2021) argue that climate change and soil fertility depletion continue to affect agricultural production, leaving rural households vulnerable to seasonal food insecurity. Mutambara et al. (2022) also note that households have different levels of resilience, depending on whether they sell crops, mix crops and livestock or practice subsistence farming.

Locally, research in Mashonaland Central suggests that many households still face seasonal hunger despite being involved in cash crop production, implying that cash crop production does not necessarily lead to guaranteed food security. But existing studies lack direct comparisons between cash crop and food crop producers within the same communities, although evidence shows that food crop producers have more stable food access while cash crop producers are more vulnerable to market and price shocks. This knowledge gap is significant as it constrains understanding of which type of agriculture strategy is more food secure in the face of changing climatic and economic environments, and it is this gap that the current study aims to fill.

2.4 Theoretical Framework

A theoretical framework to understand household food security among smallholder farmers needs to take into account the multiple and interconnected factors affecting rural livelihoods. The Food and Agriculture Organization FAO (1996), defines food security as a situation where all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs for an active and healthy life. This is commonly broken down into four dimensions: food availability, food access, food utilization and food stability. Food availability describes having enough food through production, distribution or imports. Food access relates to

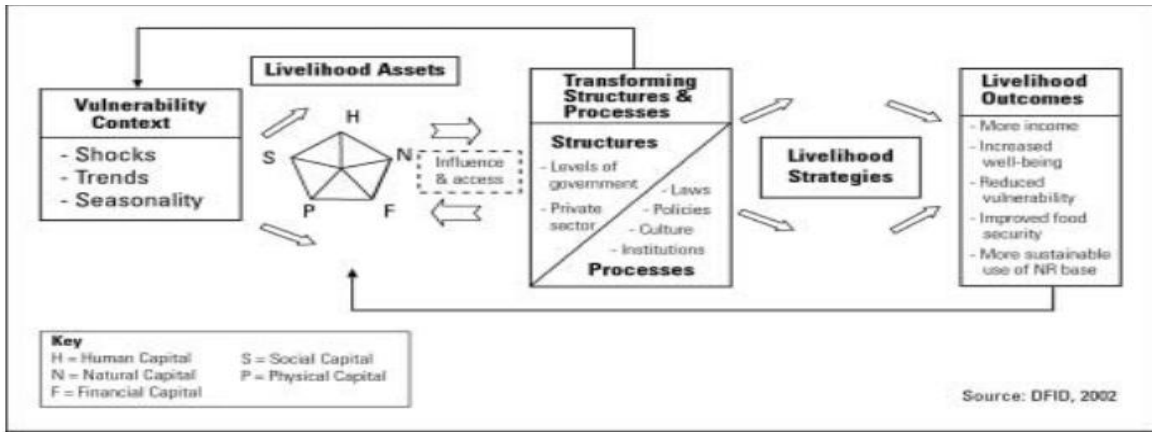
the ability to access food through wealth, markets and other means. Food utilization is concerned with the use of food within the body, such as the quality of the diet, the ways it is prepared and health status. Food stability relates to the ongoing access to food over time, despite shocks like drought, economic shocks and market price shocks. Moreover, Barret et al (2021) contend that these aspects show that food security is about more than just agricultural production but also income and market dynamics. The Food and Agriculture Organization FAO (2018) also stresses that exposure to climate and economic shocks remain a threat to all four dimensions, particularly for rural families. Pingali (2019) also argues that food systems need to be understood beyond production; social and economic factors are critical to households achieving food security.

In this study, the Sustainable Livelihoods Framework (SLF) was used to analyses these inter-related aspects. This framework was pioneered in the early 1990s by the Department for International Development and expanded by development as a means of better analyzing poverty and rural livelihoods in development settings. It was later refined and popularized by authors such as Scoones (2015) and Ellis (2019) who used it to better understand smallholder farming systems and rural development. The framework consists of a number of elements including the vulnerability context, livelihood assets, transforming structures and processes, livelihood strategies and livelihood outcomes. The vulnerability context are external shocks and stresses (e.g. drought, climate change and market fluctuations) that affect livelihood opportunities. Livelihood assets refer to the five types of capital human, natural, financial, physical and social that households access to undertake livelihood activities. Transforming structures and processes are policies, institutions and governance regimes that affect resource and opportunity access. These factors influence livelihood strategies such as producing cash crops or food crops, or undertaking diversification to other livelihood activities. The results of these strategies can be increased income, resilience and food security within households as supported by Ellis (2020) & Scoones (2015).

The Sustainable Livelihoods Framework is suitable for this study as it offers a holistic approach to studying smallholder farmers' responses to climate and economic shocks. In rural livelihoods like Shamva District food security is dependent not only on agricultural production but also on livelihood assets, institutional support and household resilience to climatic and economic shocks. As such, this framework allows this study to explore how various livelihood strategies, such as cash crop and food crop farming interact with climate and resources to influence food security. By

highlighting the interactions between vulnerability, assets and livelihood strategies, the framework provides insights into understanding the differences in food security between households in similar situations. As such, the Sustainable Livelihoods Framework offers a suitable theoretical basis for understanding the intricacies of how climatic variability, farming systems and food security interact in smallholder households in Shama District.

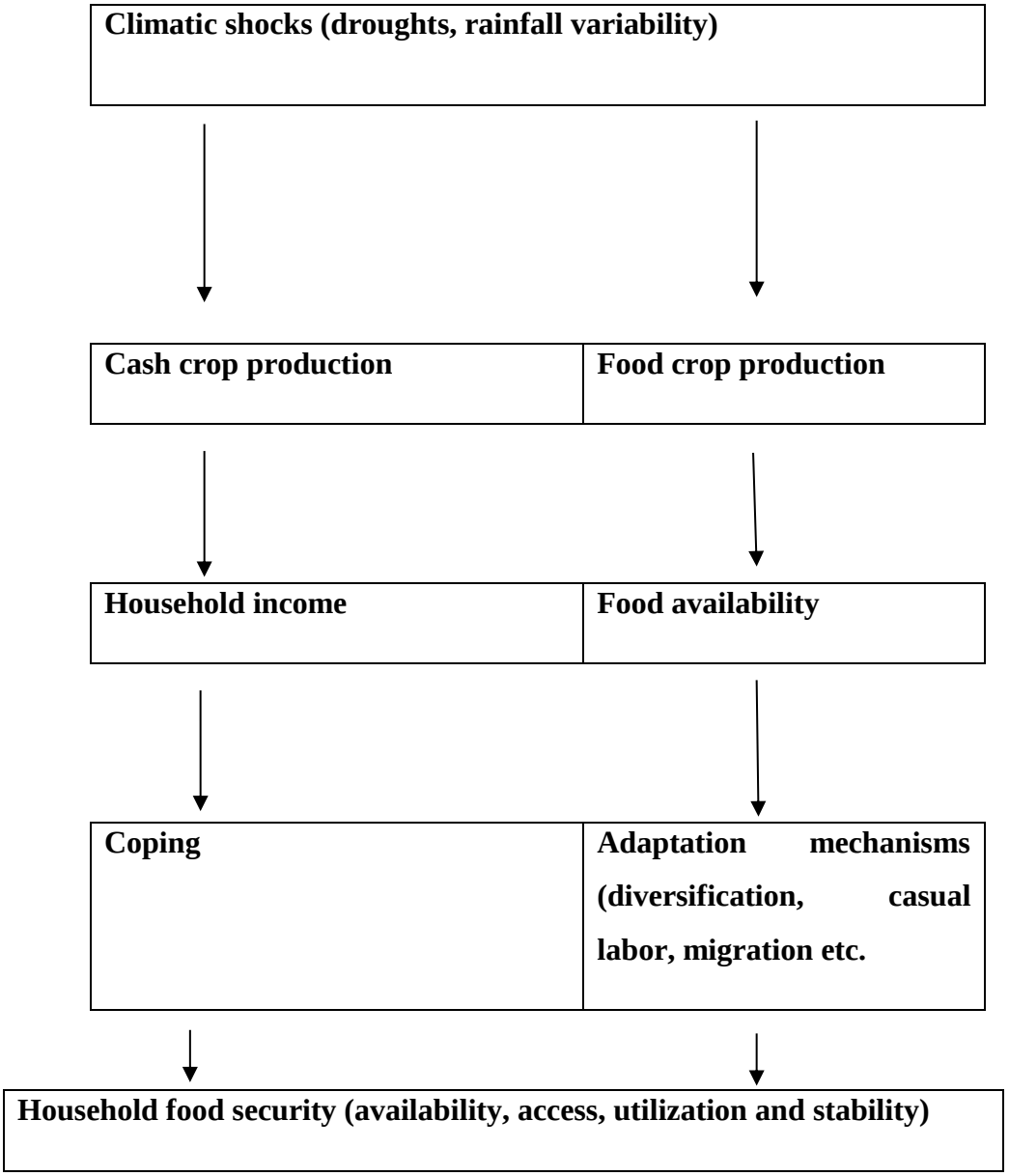
Fig.2:1The Sustainable livelihood framework



2.5 Conceptual Framework

The conceptual framework for this study connects cash crop production and food crop production to household food security, through climatic shocks and coping strategies. In the framework, climatic shocks (drought, rainfall variability) are external factors impacting crop yields and income. Household livelihood strategies (cash crop vs food crop) affect food availability and access via income and production channels. Adaptation and coping strategies affect the stability and utilization aspects of food security. This framework is in line with the research objectives, and provides guidance for data collection and analysis.

Fig.2.2 Conceptual framework



Source: Author

2.6 Food security between cash crop and food crop households.

Around the world, cash crop farming has been advocated as a means for rural development, to generate income and engage with markets. The traditional literature on development suggests that commercialization allows households to buy food, purchase productivity-enhancing inputs and buffer consumption Pingali (2019). Adding on Barret et al (2021) support this claim, reporting that better market integration increases rural incomes and consumption levels.

However, empirical evidence from cocoa and coffee systems in West Africa and Latin America indicate positive income impacts, but varied food security impacts, especially when households switch away from food crops Anderman et al (2014). Another scholar Hashimu et al (2022) note commercialization leads to higher income but not necessarily dietary diversity. Similarly, Vroegindewey and Hodbod (2021) observe that food security is not always improved in cash crop systems.

Empirical evidence from Sub-Saharan Africa presents a mixed picture regarding the food security effects of cash crop production. On the positive side, Mujeyi et al (2021) demonstrate that contract farming arrangements can improve household food security by bundling credit, extension services, and guaranteed markets. Bellemare and Novak (2017) similarly find welfare gains from contract farming, provided institutional environments are stable Tonet al. (2018) also report income improvements for smallholders engaged in contract schemes. However, countervailing evidence exists. Another scholar Govereh and Jayne (2019) caution that cash crop expansion may come at the expense of food crop area, potentially undermining household food availability. Dzanku et al. (2020) elaborate that labor reallocation toward cash crops can reduce time available for food production. Jayne et al.(2021)further note that market volatility and climate shocks can destabilize any income-mediated food security gains, leaving cash crop households exposed.

Zimbabwe's smallholder cash cropping is dominated by tobacco and cotton. Scoones et al. (2018) note tobacco contract farming has lifted incomes for some, but not all, farmers. Mujeyi et al. (2021) report that debt and contract agreements restrict profits from cash cropping. Zingwena (2023) notes that the effects of drought and price shocks persistently affect food security.

Studies in Shamva District focus primarily on commercialization and income. But they offer little insight into how cash cropping relates to climatic shocks in influencing food security. This reflects a need for comparative, climate sensitive district-level analysis.

2.7 Climatic Shocks and Smallholder Agriculture

Across the globe, smallholder farmers are experiencing more frequent and intense climatic shocks including droughts, mid-season dry spells, and highly variable rainfall. According to the IPCC (2022), climate change has disproportionately harmed rain-fed agricultural systems, eroding both productivity and the livelihoods that depend on them. A growing body of international research confirms that such shocks directly compromise food and income security, particularly in settings with limited adaptive capacity IPCC (2022), Wheeler& Von Braun (2013).

In Sub-Saharan Africa, recurrent droughts and rainfall variability has been linked to a reduction in agricultural productivity and food insecurity Serdeczny et al. (2017). According to Shiferaw et al. (2014) points out that rainfall variability has a large negative impact on agricultural productivity and vulnerability of smallholder farmers. Similarly, Moyo et al. (2022) emphasize that climatic shocks continue to jeopardize rural livelihoods and food security. Vroegindewey and Hodbod (2021) also explain that crop responses to climatic stress vary, with some cash crops needing higher levels of input and being more dependent on good rainfall, which exposes farmers to risks. Likewise, Nciizah and Mubaya (2022) note that crop response to climatic stress is determined by production input levels and climatic conditions.

In Zimbabwe, official reports confirm that El Niño–Southern Oscillation (ENSO)-related droughts have repeatedly disrupted maize-based farming systems Government of Zimbabwe (2019). The World Food Programme WFP (2023) agreed that rainfall variability remains a primary driver of rural food insecurity. Moyo et al. (2022) provide empirical evidence that such climatic factors directly reduce agricultural output and undermine household livelihoods. They specifically note that maize yields decline sharply during drought years, especially when dry spells coincide with critical crop growth stages. Nciizah and Mubaya (2022) add that mid-season dry spells and irregular rainfall patterns increase the likelihood of complete crop failure. Taken together, these shocks systematically erode household food security Government of Zimbabwe (2019).

Adding on Scoones Scoones et al. (2018) agrees that tobacco farming is very sensitive to rainfall and input variations. Vroegindewey and Hodbod (2021) also point out that cotton production

decreases in drought, affecting household incomes. Moyo et al. (2022) point out that cash crop revenues' decline constrains household food purchases in the lean seasons. The FAO 92018) observes that drought-resistant crops like sorghum, millet and legumes are important in building resilience in arid areas. According to Jayne et al. (2021), crop diversification enhances resilience to climate change. Meanwhile, Mutyasira et al. (2018) adds that indigenous grains and legumes are more suited to semi-arid regions and promote food security. Nciizah and Mubaya (2022) Nciizah and Mubaya (2022) note that conservation agriculture is also widely practiced in response to climate change in Zimbabwe. Moyoet al. (2022) point out that crop diversification is another adaptation measure. Scoones et al. (2018) also note that livelihood diversification reduces climate risks.

2.8 Coping and Adaptation Strategies to Food Insecurity

Coping and adaptation strategies are key to understanding household responses to food insecurity and climate change. While these terms are sometimes used interchangeably, researchers draw distinction with regard to their timing and purpose. Coping mechanisms are short-term responses households make to cope with food scarcity or loss of income, whereas adaptation strategies are longer-term changes that elicit resilience to future threats. Maxwell et al. (2014) notes coping is often reactive and geared towards survival in times of crisis. The Food and Agriculture Organization FAO (2018) also notes that adaptation refers to deliberate changes aimed at increasing households' resilience. Barret et al. (2021) also note that the difference between coping and adaptation is crucial in determining long-term food security.

Globally, households facing food insecurity often cope by decreasing the size of meals or number of meals per day or switching between foods for food security, borrowing food or money from family and friends, or selling assets for income to pay for food. These strategies are well-documented immediate coping responses to food insecurity. These actions can help households maintain food consumption in the short term, but can also have negative effects in the long run. The Food and Agriculture Organization FAO (2018) indicates that distressed asset selling, such as productive assets or livestock, can reduce future livelihood opportunities and resilience.

In Sub-Saharan Africa, coping approaches are well documented among smallholder farmers whose livelihoods are instrumental in rain-fed farming. In times of drought or crop failure, households

can participate in temporary work, collect wild foods, cut back on food and other expenses, or depend on social networks. Ellis and Freeman (2019) state that such strategies are prevalent in rural livelihoods but reflective of vulnerability. Mutyaisa et al. (2018) note that frequent use of coping strategies can lead to a loss of resilience. Shiefaw et al. (2014) also note the frequency of such coping strategies is exacerbated by climate variability among farmers.

Beyond short-term coping, farmers across Sub-Saharan Africa are increasingly adopting longer-term adaptation measures to strengthen their resilience to climate variability. Bryan et al. (2016) identify several such strategies: diversifying crop portfolios, planting drought-tolerant varieties, practicing conservation agriculture, and pursuing off-farm income sources.

In Zimbabwe, smallholder farmers employ a range of coping and adaptation responses to manage food insecurity and climatic shocks. Mubaya and Mafongoya (2021) document several immediate coping strategies, including reducing food intake, selling livestock, and relying on remittances. Nciizah and Mubaya (2022) add that seeking casual wage labor is a common way to generate income during food deficits. Chiba and Thebe (2023) confirm that such coping practices are widespread in rural areas during drought seasons. Alongside these short-term measures, farmers are progressively adopting longer-term adaptations such as staggered planting dates, crop diversification, and participation in government programs like Pfumvudza, which promotes conservation agriculture and input access. However, as Nciizah and Mubaya (2022) caution, the success of these adaptive measures depends heavily on household resource endowments, institutional support, and prevailing climatic conditions.

Meanwhile, farmers are increasingly engaging in longer term strategies such as staggered planting, crop diversification and engaging in government agricultural support programs such as Pfumvudza which encourage conservation agriculture and access to inputs. Nciizah and Mubaya (2022) note that these measures can build resilience, but again depend on resource endowments, institutional factors and climate conditions.

2.9 The impact of cash crop and food crop production on smallholder farmers' food security

Globally, there is a large body of research on the link between agricultural commercialization and household food security, yielding mixed results. Some early research suggested that cash crop

farming enhances food security through the income effect, enabling households to buy food and adopt a more diverse diet Pingali (2019). For instance, Carletto et al. 92017) report from rural Guatemala that households involved in export farming have higher income and increased food expenditure but the nutritional benefits are not shared equally. Bellemare and Novak (2017) also found in Kenya that farmers in contract farming schemes experience higher income and food spending, but not all farmers benefit equally. Markelova et al. (2018) also report from various developing countries that commercialization can increase food market access and income stability, but it does not always lead to improved dietary diversity and food security

But more recent research which includeBarret et al. (2021) and Hirvonen et al. (2021) indicates that agricultural income increases do not necessarily translate into better household food security, particularly in the presence of volatile markets and weak institutions. For instance, Hirvonen et al. (2021) report that income gains in rural Ethiopia did not always translate into more diverse diets due to high food prices and low market food availability. Anderman et al. (2014) also found that higher cash income did not translate into improved nutrition due to alternative household spending priorities and limited food availability during the year. Sibhatu and Qaim (2018) also report from smallholder farming that income gains have limited connections to dietary quality. These studies show that food security depends on more than just income, and so there is a need to explore the relationship between agricultural livelihoods and food security in contexts such as Shamva District.

In Sub-Saharan Africa, evidence reveals clear but contextual nuances in the food security of cash and food croppers. In Ghana, Dzanku et al. (2020) report that food crop producers were more food secure in terms of staple food access, but more vulnerable to income shocks and market fluctuations. In Ethiopia, Mutyasa et al. (2018) found that food crop production enhanced food access stability despite lower incomes. Similarly, in Malawi Ellis and Freeman (2019) find food crop growers had lower seasonal food insecurity than cash crop growers who relied on price signals. Jayne et al. (2021) also stress that while commercialization increases dietary diversity, this is dependent on the efficiency of markets, market infrastructure and stable climate.

At the national level in Zimbabwe, existing evidence on food security tends to be compartmentalized and rarely compares different livelihood strategies directly. The Zimbabwe Vulnerability Assessment Committee ZimVAC (2022) documented widespread rural food insecurity, particularly during drought years, but did not disaggregate findings by production type

(cash crop versus food crop). The following year, ZimVAC (2023) again reported heightened food insecurity across rural districts without differentiating by farming system. Qualitative case studies offer partial insights. Scoones et al. (2018) found that tobacco production can raise household incomes, but noted that food security outcomes remain variable and strongly influenced by market factors. Mujeyi et al. (2021) observed that while contract farming increases incomes, this does not reliably translate into improved household food security. Mubaya and Mafongoya (2021) confirmed that climate variability continues to undermine agricultural performance, but their work lacks a comparative assessment between cash crop and food crop farmers. This fragmented evidence base makes it difficult to determine which livelihood strategy is more effective in enhancing food security. The present study addresses this gap by providing a comparative, climate-responsive analysis of cash crop and food crop systems in relation to household food security.

At the local level, there are a number of studies from Mashonaland Central Province that point to seasonal food insecurity despite relatively high cash crop production. For example, (Mutambara et al. 2022) explored rural livelihood strategies and food insecurity in Mashonaland Central and highlighted that while many households engage in cash crop farming such as tobacco, seasonal food insecurity persists. Likewise, Zingwena (2023) examining the impact of agricultural commercialization on rural livelihoods in in Guruve District, Mashonaland Central Province, found that although cash crop production boosts household incomes, it does not guarantee food security because of climatic risks and market factors. Previous studies by Mujeyi et al. (2021) on contract farming and smallholder tobacco production in Bindura and Mazowe districts northern Zimbabwe also tended to focus on income and productivity, rather than the broader aspects of household food security. Similarly, Mubaya and Mafongoya (2021) investigated climate change adaptation of smallholder farmers in Mbire and Guruve districts of Mashonaland central, focusing on the impacts of climatic variability on agricultural production and livelihoods, but not comparing food security status of households engaged in cash crop production versus food crop production. Although these studies offer insights into rural livelihoods, commercialization and climate adaptation, they rarely compare households engaged in cash crop and food crop production within a district. This constrains the assessment of the impact of different household production strategies on food security outcomes under similar climatic and economic environments. This study therefore fills this gap, by presenting a comparative case study of household food security between cash crop and food crop producers in Shamva District.

2.11 Smallholder farmers' perceptions of cash crop and food crop risks and opportunities

In global studies of farmers' perceptions, farmers' livelihood choices are driven not only by the economic returns they expect, but also by their perceptions of climatic risk, past farming experiences and expectations of future environmental conditions Adger et al. (2019) and Morton (2017). For instance, Tesfaye and Seiuf (2016) in Ethopia farmers' perceptions of climate change and adaptation strategies in smallholder farming research, highlighted that empirical evidence indicates that many smallholder farmers continue to pursue livelihood strategies that are highly risky, especially when they provide immediate income opportunities or when there are few or no alternatives. For example, research in some areas of Sub-Saharan Africa such as Morton (2017) reporting on evidence from drought-prone farming systems in Southern Africa, shows that smallholder farmers continue to practice maize monocropping because it is culturally favored and is the staple food supported by food security policies. Likewise, in research on agricultural commercialization, farmers are observed to continue investing in cash crops like cotton and tobacco (which require good rainfall, fertilizers and pesticides) because these crops offer contract farming opportunities and short-term income streams, despite the risks posed by climate variability and market price fluctuations Adger et al. (2019) and Morton (2017). In drought-prone regions of Sub-Saharan Africa, especially in semi-arid regions of nations like Zimbabwe, Zambia and Kenya, farmers have been found expanding cropping into marginal, drought-prone lands or maintaining reliance on rain-fed cropping systems, despite this increasing vulnerability to crop losses during droughts. In these contexts, farming decisions are often constrained by land scarcity, lack of irrigation infrastructure and alternative livelihood options, which leaves farmers with little choice but to continue farming in high-risk environments despite the recurrent climate shocks. These case studies show that farmers' livelihood strategies can be informed by a combination of perceived benefits, institutional drivers and lack of viable alternatives, and this influences households to continue to operate production systems that are vulnerable to climatic shocks.

In Sub-Saharan Africa, a number of studies reveal that farmers often have mixed views on the advantages and disadvantages of producing cash crops, and that these views influence livelihood choices. For instance, studies in Malawi Arslan et al. (2018) and Tanzania Bellemare et al. (2017) show that many farmers perceived cash crops like cotton and tobacco as valuable sources of

income that can help meet food and school needs, boost standards of living and make life easier. But these farmers also felt that the costs associated with cash crop production (such as input costs and price volatility) and risks posed by uncertain rainfall patterns sometime made them wary of investing in cash crops. Likewise, in studies in Kenya and Zambia reported by Jayne et al. (2021), while commercialization of cotton and tobacco can lead to higher household income, farmers are often reluctant to fully engage in cash crop production because the income generated from cash crops can be inconsistent, particularly in the presence of climatic and market shocks. This has made some farmers prefer a mix of cash crops and food crops for risk mitigation. Furthermore, studies in Ghana and Ethiopia by Vroegindewey and Hodbod (2018) show that farmers often view food crops (maize, sorghum and millet) as superior to cash crops for supporting household food provisioning, despite their low productivity. This shapes livelihood strategies, with households opting for a balance between food crop production for home consumption and some cash crop production for income. Therefore, although cash crops can offer economic opportunities, farmers' risk-averse perceptions of cash crops also affect their production decisions and in turn impact household food security in the region.

Evidence from Zimbabwe shows that smallholder farmers perceive a range of opportunities and risks for cash crop and food crop farming, especially in the face of a changing climate. Research by Scoones et al. (2018) reveals that many farmers in northern Zimbabwe perceive cash crops like tobacco and cotton as a critical source of income that allows households to buy food, buy agricultural inputs and cover other non-farm livelihood expenses such as school fees and health care. Likewise, Mubaya and Mafongoya (2021) report that smallholder farmers tend to view cash crop production as providing greater livelihood opportunities and the prospect of asset accumulation. But farmers are also aware of the risks involved in producing these crops, including the need for timely rainfall, the cost of inputs and price volatility. In years of drought or when markets are unstable, low yields and production costs can restrict farmers' income and capacity to buy food, thus compromising the anticipated food security gains from agricultural commercialization Scoones et al. 2018 and Moyo et al (2022).

Concurrently, farmers regard food crop production as a critical form of insurance against food insecurity. In rural settings where maize serves as the primary staple, growing one's own food guarantees a baseline of consumption even when harvests are modest. Food crops are thus seen as

providing more immediate and reliable access to food than income-dependent market purchases. However, research also shows that farmers are increasingly aware of climate-related risks to staple crops. Erratic rainfall, mid-season dry spells, and full droughts all reduce maize productivity Nciizah & Mubaya (2022). Also Moyo et al. (2022) confirm that climate variability persistently undermines the stability of staple crop supplies in smallholder systems. Chiba and Thebe (2023) add that farmers are becoming more conscious of drought impacts and shifting rainfall patterns. This growing awareness influences how households allocate land and labor between cash and food crops. While some farmers diversify by planting both types, others commit entirely to one strategy based on their resource endowment and risk perception. Despite growing research on Zimbabwe's agricultural livelihoods, few studies have examined how farmers themselves perceive the food security trade-offs between cash and food crops under climate variability at district level. The current study in Shamva District addresses this gap by capturing farmer perceptions and analyzing how they shape livelihood decisions and subsequent food security outcomes.

2.12 Chapter Summary

This chapter examined studies on the links among cash crop production, food crop production, climatic shocks and household food security of smallholder farmers. The review revealed that although crop commercialization is frequently touted as a path to improved rural livelihoods, the impacts on household food security are nuanced and dependent on context. Global and regional case studies show that cash crop production can boost household income and food access, but it can also expose farmers to market price shocks, input price shocks and climatic shocks. On the other hand, food crop production increases household food supply, but can generate lower income to support other livelihood needs. The literature also showed that climate shocks (droughts, erratic rainfall and long dry runs) continue to compromise smallholder farming production, especially in Sub-Saharan Africa and Zimbabwe where agricultural production is rain-fed. In turn, farming households engage in various coping and adaptation mechanisms to alleviate food insecurity and production risks, but the success of these strategies depends on the availability of assets, institutions and livelihood opportunities. This chapter also noted that farmers' perceptions of the risks and opportunities of cash and food crops shape their livelihood strategies and food security status. Informed by the Sustainable Livelihoods Framework, this review highlighted the need for contextual comparative research into the effects of climatic shocks on livelihood strategies and

household food security. This justifies the current study that seeks to explore this relationship among smallholder farmers in Shamva District. The next chapter will be on the research method.

CHAPTER 3: METHODOLODY

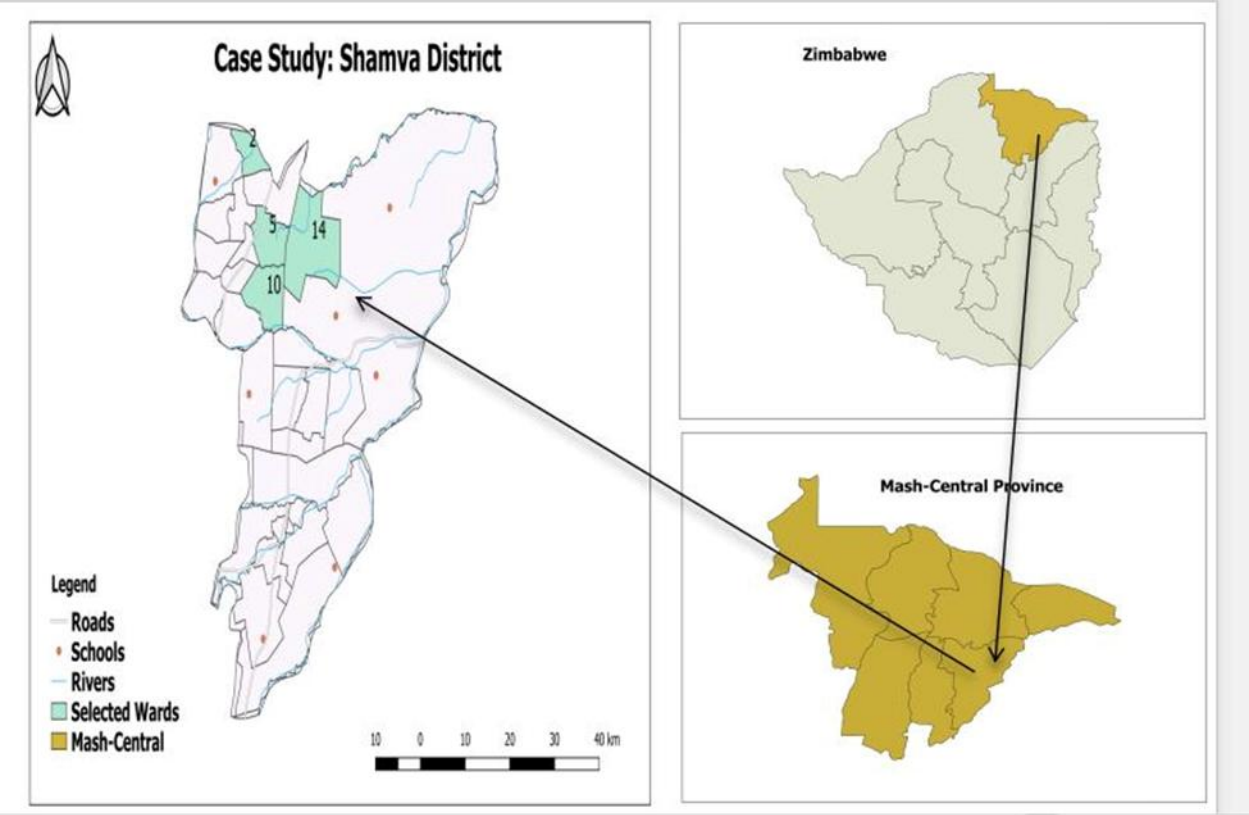
3.1 Introduction

This chapter explains the methods and procedures that was used to conduct the study on the interplay between cash crop production, climatic shocks, and household food security among smallholder farmers in Shamva District, Zimbabwe. It outlines the research design, study area, research paradigm, and approach used in gathering and analyzing data. The aim of this chapter is to ensure that the study can be replicated and that its findings are valid, reliable and grounded in both qualitative and quantitative evidence.

3.2 Description of the Study Area

The research was held in the Shamva District, which is about 90 kilometers north-east of Harare in the Mashonaland Central Province. The district is located in the Natural Region II which is generally marked by rather stable rainfall and fertile soils enabling food and cash crops production. The yearly rainfall is 750 to 1,000 mm and there are moderate temperatures, which historically favor agricultural production. This area is predominantly rural with the majority of families relying on smallholder agriculture as their main source of livelihood and average family size is generally between five and six people (Rubhara et al. 2020). The predominant farming systems in the region are mixed with farmers practicing both food production and cash production on small plots of land with an average size of one to six hectares. Tobacco and cotton are major cash crops, primarily produced to generate income, but maize is the predominant staple crop, produced both as a household consumption crop and occasionally sold. Groundnuts, beans and vegetables are also cultivated as other crops, which help in household nutrition and the supply of the local market. Although these are fairly favorable agro-ecological settings, the district is gradually becoming the recipient of climatic shocks such as droughts, unpredictable rainfall and increase in temperatures that have had adverse impacts on crop production and food security of households. Since the majority of farmers practice rain-fed farming, such climatic changes pose a high level of vulnerability to smallholder families, and Shamva District is a suitable location to investigate the impact of climate shocks on agricultural production strategies and household food security outcomes.

STUDY AREA MAP



3.3 Research Paradigm

The researcher used pragmatism as a research paradigm which guides the principle of this study and endorses the use of a combination of both quantitative and qualitative research in the understanding of complex real-world problems. Pragmatism is concerned with identifying the practical solutions to actual problems instead of adhering to one philosophical side (Creswell & Creswell 2018)

The paradigm was selected with the consideration that the research involves various interacting variables cash crop production, climate shocks and food security that cannot be elucidated completely by utilizing either approach. Quantitative data e.g. household income, crop yields and food consumption levels can be used to demonstrate some quantifiable trends and comparisons between various groups of farmers. Conversely, qualitative data, such as interview and observation data, offer more information on the perception of farmers, their experiences and coping mechanisms in the face of climatic shocks.

The pragmatic paradigm enables a more holistic and realistic interpretation of how the changing weather conditions impact and influence the response of the smallholder farmers in Shamva, and how these responses impact on the household food security. It is also in line with the objectives of the study which seeks to compare, analyses and explore various issues of the cash cropping, food cropping and food security relationship.

3.4 Research Approach

A mixed methods research was used to investigate the correlation between cash crop production, climatic variability and household food security among smallholder farmers. Mixed methods research is a research methodological method that deliberately involves quantitative and qualitative research methods in one study to give a more in-depth insight into a research problem. This approach is centered around the integration of numerical data, which is useful in identifying patterns and trends, and qualitative insights that clarify experiences, perceptions and contextual factors that underlie those trends (Creswell & Creswell 2018). By combining these two types of evidence, the mixed methods research enables a researcher to examine complex social and development issues more comprehensively as opposed to examining them through a single method. The mixed methods approach in this study allowed gathering both quantitative (structured questionnaires) and qualitative (interviews and field observations) information. The combination of these approaches was sufficient to make sure that the research reflected not only quantifiable tendencies in agricultural production but also gave a better understanding of how farmers experience climate shocks and food security issues. The mixed methods approach, therefore, offered a viable framework of the dynamic interplay of cash cropping, climate variability and household food security in smallholder farmers in Shamva District.

3.5 Research Design

The research design that was used in this study was explanatory sequential mixed method. It is designed by gathering and interpreting quantitative data and then qualitative data to interpret and elaborate the quantitative results (Creswell 2018 and Plano Clark 2017).

The first stage is the quantitative stage where household surveys are taken to determine the household food security situation, income levels, crop yields and the impacts of climatic shocks. The stage presented statistical data on the correlation between food security and smallholder

farmers in terms of cash crop production. Interviews and focus group discussions were used to collect qualitative data to gain a more insight into the trends in the survey findings.

The rationale behind this design is that it would enable the researcher to initially determine the general patterns based on the quantitative data then further explain them based on the qualitative inquiry. In an explanatory sequential mixed methods design, quantitative data are gathered and analyzed initially to indicate the important trends and relationships. This is followed by a qualitative phase to describe and interpret such results through exploring the experiences and views of participants. In this way, it assists in connecting statistical findings with life situations, which offer a more detailed insight into the research problem (Creswell and Plano Clark 2017). The design in the study assisted in elucidating the impacts of climatic shocks and agricultural activities on household food security in Shamva District.

3.6 Population of Study, Sample and Sampling methods

The population under study was made up of all the smallholder farming households in Shamva District. The data on the size of the population in Shamva district as provided by the Zimbabwe national population statistics agency (ZIMSTAT 2022) show a total of 165 641 population in the district. Having estimated size of 380 632 households and, approximately 6 people average household size and usually owned 3,5 to 6 hectares of arable land.

The research used a stratified random process. To begin with, the wards 2, 5, 10 and 14 in Shamva District were stratified random sampling as they had a high concentration of small farmer households, difference in cash and food crop production, and differences in agro-ecological conditions as well as differences in market access. The best reason to use stratified random sampling is to get more accurate results by making sure all important subgroups are represented and reducing random error. The study population was determined as all smallholder farming households in the wards after the selection of wards. The sample size was calculated using the formula developed by Yamane (1967) which is n = the size of the sample; N = the total number of smallholder farming households in the sample wards; e = the level of margin of error (0.05 at 95% confidence level). This methodology helped to guarantee that the sample size was statistically representative of the study population and was also within the resources at hand. Application of

the formula-based methods of sampling in social science studies is highly advocated in enhancing the representativeness and reliability of results (Taherdoost 2017).

In agricultural and food security studies, household surveys differ significantly in the sample size used based on the size and purpose large-scale surveys by organizations such as FAO and the World Bank usually sample hundreds to thousands of households to obtain statistical representativeness at regional or national scales. Exploratory or context-specific research can be conducted using smaller sample sizes when resources are constrained, and rigorous sampling formulas are employed to ascertain representativeness. Hence, a sample size of 81 households was determined using the formula of Taro Yamane to determine the sample size and on the basis of the total number of households of smallholder farmers at Wards 2, 5, 10 and 14 a sample was determined. This sample was therefore not presumed but statistically calculated and therefore guarantees the sample is representative in terms of capturing variations in cash crop production, climatic shocks and household food security of the smallholder farmers in Shamva District and at 95% confidence.

The households are selected using a stratified random sampling technique. The method provides each household an equal probability of being selected in the study, thereby limiting selection bias, and making the results reflective of the general population. The local agricultural extension offices were used to get the lists of farmers and random number generation was used to select the participants.

3.7 Research Methods

Research methods are the structured processes and procedures used to gather and analyses data to address research questions (Creswell & Creswell 2018). This research used a mixed methods design, household questionnaire, semi-structured interviews and document analysis. Data triangulation was used to increase validity by employing multiple data sources and methods to verify the results to improve the credibility of the findings and minimize biases (Noble & Heale 2019).

Household food security analysis was based on the four dimensions of food security namely food availability, access, utilization and stability. Information on these were collected and analyzed

using Statistical Package for the Social Sciences (SPSS) for quantitative data and thematic analysis for qualitative data

3.7.1 Household Surveys

A sample of 81 smallholder farming households were surveyed in wards 2, 5 10 and 14 in Shamva District. Quantitative data on crop production (cash and food crops), household income, yield and food security were gathered through the surveys. Household heads or main decision-makers were targeted as they are in charge of making decisions about food, income and consumption in the household. This makes them reliable sources of information on household food availability, access to food through income and markets, and food supply.

3.7.2 Semi-Structured Interviews

A series of semi-structured interviews were conducted with key informants to gain detailed qualitative information on climate and agricultural matters in the study area. The sample was structured not estimated, reflecting the district's administrative structure. Four local agricultural extension officers (Agritex) from each of the four wards were purposively chosen to represent the wards. Eight community leaders were also interviewed, including four ward councilors and four headmen from the various wards. They were selected for their roles in local governance and agricultural support structures. The interviews yielded rich qualitative information on experiences of climate shocks, existing agricultural practices, institutional support and farmers' coping and adaptive strategies. The focus was on how these affect food access, utilization and long-term food security

3.7.4 Document Review

The document review component encompassed the systematic examination of government publications, historical climate records, and prior empirical studies pertaining to agricultural systems and food security in Zimbabwe. This approach offered secondary data to complement and verify primary data, and was used in the triangulation process.

3.8 Data Analysis and Interpretation

Descriptive statistical analysis of quantitative data was preferred to allow for the summarization and comparison of household attributes and food security status. This allowed for the presentation of distribution of variables in frequencies and percentages, and cross tabulations to compare food

security between cash cropping and food cropping households. Analysis of quantitative findings emphasized discerning patterns and associations between climate change, crop cultivation, income and food security levels.

Qualitative data were analyzed using thematic analysis a method well suited to identifying, organizing, and interpreting patterns within large volumes of textual material. Through this approach, the researcher extracted key themes, including climate-related production risks, household coping and adaptation mechanisms, and the relationship between cash crop income and food security outcomes. These themes were then used to contextualize and deepen the interpretation of the quantitative results, ensuring that the analysis captured both statistical patterns and lived household realities.

The integration of quantitative and qualitative findings strengthened the overall interpretation, as statistical trends could be understood through the lens of farmers' own experiences and explanations. This methodological triangulation ensured that the results were not only statistically robust but also socially grounded, thereby enhancing the validity and richness of the conclusions.

3.8 Reliability and Validity

To improve the reliability and validity of the study, the questionnaire was pre-tested in an adjacent ward in Chidembo Ward with similar farming, socio-economic and climatic conditions as the main study in the Shamva District area. This pre-testing allowed the researcher to detect confusing or unclear questions, and to re-word the questions for the main survey. The questionnaire was applied in a similar way as the main study, using face to face interviews with smallholder farmers in similar rural areas. Furthermore, the study used triangulation to enhance validity of the results by comparing data obtained from surveys, interviews and document reviews. Triangulation is defined as a research approach that enhances the credibility of the study findings by combining data collection methods or sources to validate results and reduce the risk of bias from a single method (Noble & Heale 2019). The use of both quantitative and qualitative data allowed the study to identify trends in the data, but also understand the lived experiences of farmers, which in turn improved the rigor, credibility and validity of the research findings.

3.9 Ethical Considerations

The research maintained high ethical standards in the data gathering process to ensure the participants' rights and dignity were upheld. The District Administrator's Office, the AGRITEX, the Shamva Rural District Council, and traditional leaders such as chiefs and village heads in Shamva District granted approval for the study to be carried out. Participants were explained the purpose of the study, as well as their right to participate or refuse to participate at any time, without fear of any negative repercussions. All respondents were asked for their consent before the data collection process, and confidentiality was assured by avoiding the use of personal information (such as names) during data collection. They were identified using codes. The researcher also ensured they did not deceive, coerce or harm the participants, and the data were stored securely and used only for academic purposes.

3.10 Conclusion

This chapter has detailed the methodological framework guiding the study, including the research design, description of the study area, target population, sampling procedures, and data collection instruments. It has also outlined the analytical strategies employed and addressed issues of reliability, validity, and research ethics. Together, these elements provide a transparent foundation intended to support the credibility and trustworthiness of the study's findings.

CHAPTER 4: RESULTS AND FINDINGS

4.1 Introduction

The chapter presents and discusses the findings of the study on the relationship between cash crop production, climatic shocks and food security status of the smallholder farmers in Shamva District, Zimbabwe. The presentation is based on quantitative data collected from 81 household surveys and the qualitative data from 12 key informant interviews with agricultural extension officers, ward councilors and community leaders and on focus group discussions with a total of 17 farmers, from Wards 2, 5, 10 and 14. The three study objectives are presented in the results: comparing food security status of farmers producing cash crops and farmers producing food crops; examining coping and adaptation strategies; and farmer perceptions of the opportunities and risks of each livelihood strategy. Findings from the quantitative data are summarized in descriptive statistics and compared through comparisons and findings from the qualitative data are added to explain and place the observed patterns in a context. The following sections provide the sociodemographic profile of respondents, address each research objective in turn and lastly provide a conclusion.

4.2 Sociodemographic profile of respondents

It is important to understand the sociodemographic profiles of the respondents in order to put the data in context and to explain variations in food security results between the two farming groups. The most salient sociodemographic features of the 81 sampled households are provided in the subsections below, broken down into farming strategies. Each characteristic is introduced in isolation, with a variety of ways of presenting the data.

4.2.1 Gender of household head

Figure 4.1 below presents the gender distribution of household heads across the two farming groups.

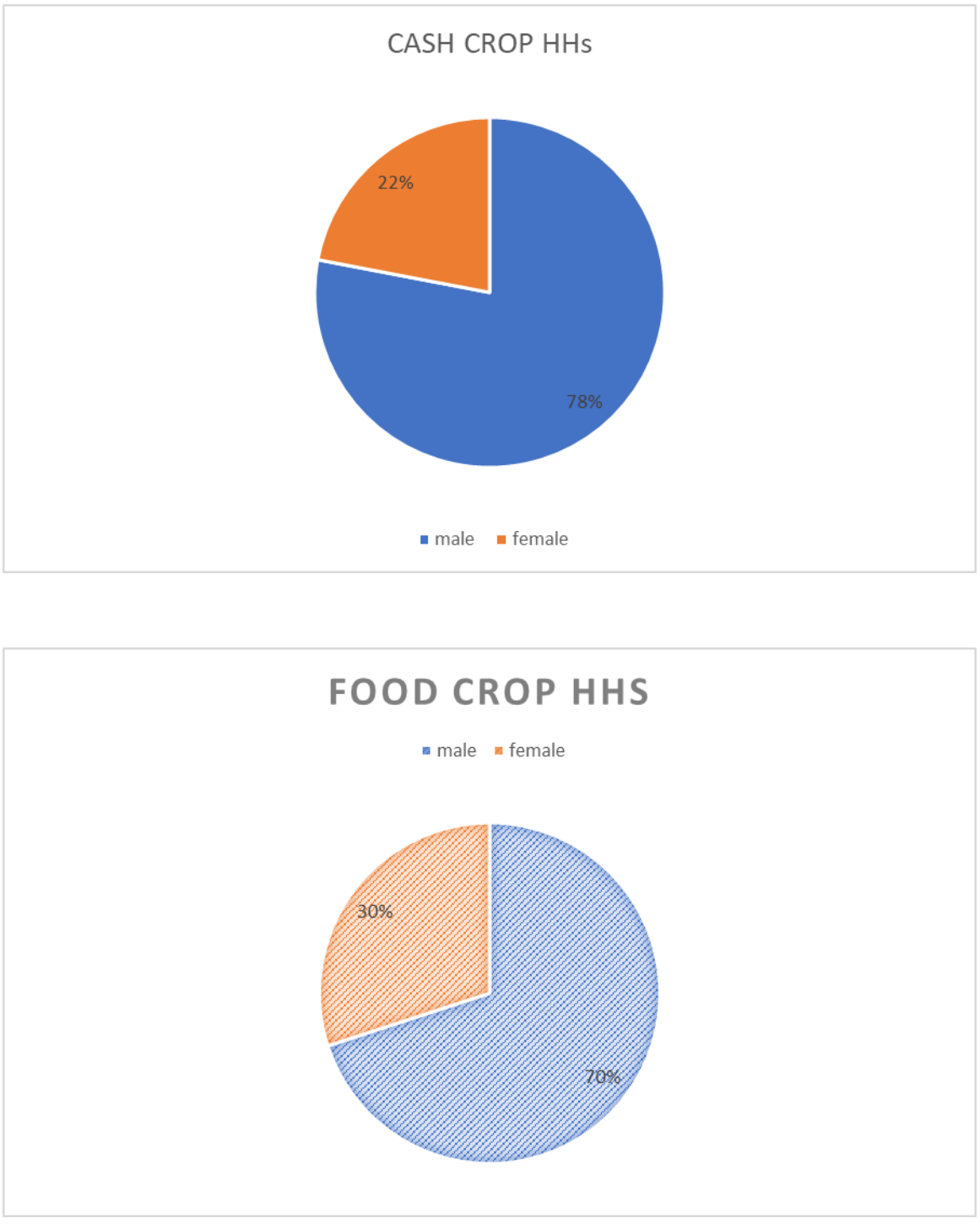


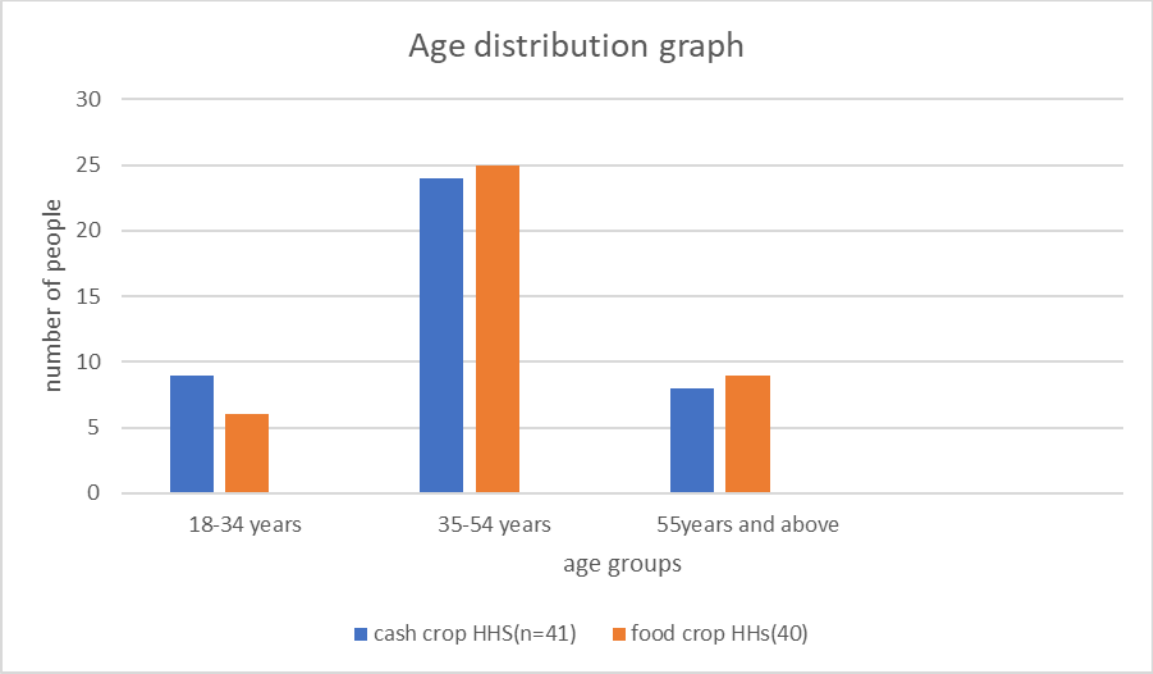
Fig. 4.1: gender of household head by farming strategy

In both farming groups, the male-headed households predominate, with 78% of cash crop households and 70% of food crop households headed by men. More food crop producers were

female headed (30%) than cash crop producers (22%). The patterns are indicative of the overall gender situation in shamva District where women headed households without a consistent income from men give preference to subsistence food production as a direct food security measure

4.2.2 Age distribution of household heads

Figure 4.2 presents the age distribution of household heads in both farming groups.



The farming population was experienced as both farming groups had a majority aged between 35 and 54 years. Twenty-four cash crop household heads and 25 food crop household heads were in this age group. The slight differences in age profile between the two groups are not random but rather important structural determinants of crop choice.

In terms of younger household heads (18-34 years), a significantly higher number of people in cash crop households (9) were observed than in food crop households (6). There are a number of reasons why younger farmers are more likely to grow cash crops such as tobacco and cotton. In the first instance, younger household heads are more inclined to participate in the financial risks involved in input loans (under contract farming), due to their higher risk appetite and willingness to engage with these risks. Second, younger farmers are more likely to have had secondary or vocational education, allowing them to manage the literacy driven needs of tobacco contract farming, including reading input credit agreements and the understanding of quality grading

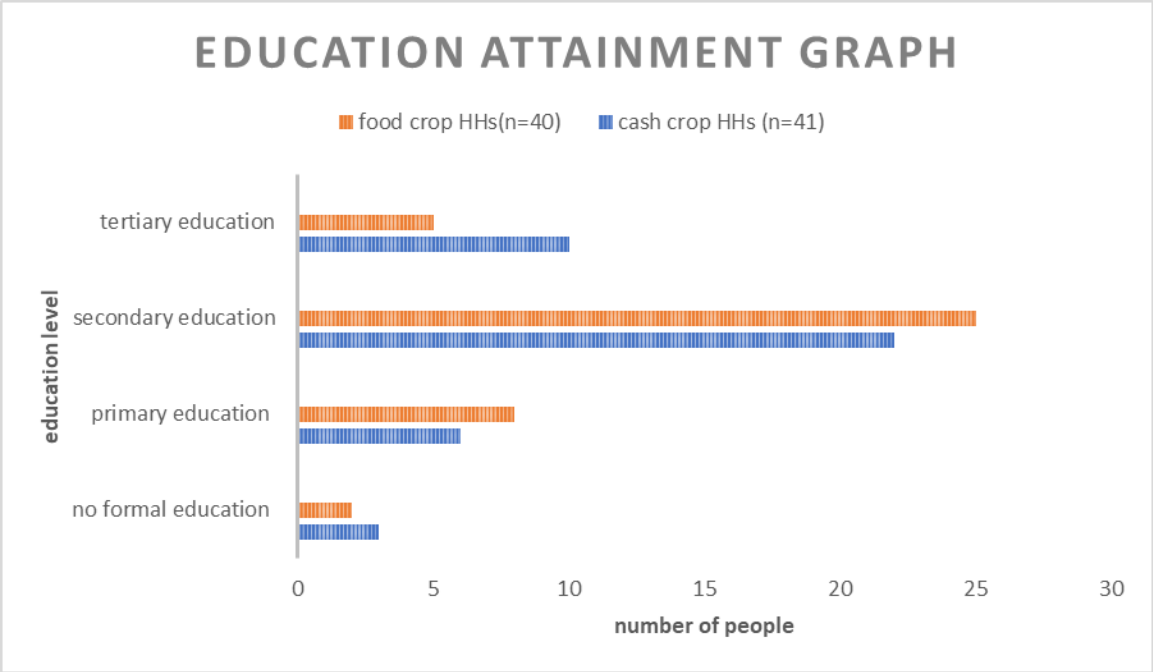
standards at auctions. Third, the younger household heads are more likely to be driven to maximize income as part of the household development strategy, seeing tobacco or cotton production as a quicker path to building assets such as livestock, farm machinery and household items.

At the other end of the spectrum, older household heads (55 years and above) were slightly more prevalent among food crop households which include 22.5% people compared to cash crop households which contained 19.5% people. This represents the conservative and risk aversion attitude to farming that is usually associated with older farmers. They have firsthand experience of the effects of an income crop failure over the decades of farming, such as being in debt to contracting companies and experiencing extreme food insecurity during poor seasons. Maize, groundnuts and sorghum were the favorites of older farmers as they have lower labor demands for agronomic management, and their knowledge of local agro-ecological conditions is ancient with deep cultural knowledge developed over many seasons of farming.

A higher percentage of respondents had secondary and tertiary level education at 25 persons as compared to 17 persons in the food crop households. A larger percentage of food crop households had primary education (21 % compared to 13 % of the cash crop households). Of particular interest is that there were no reported zero and only a few reported one-year and no formal education in both cash crop and food crop household heads

4.2.3 Educational attainment of household heads

Figure 4.3 presents the educational attainment levels of household heads across the two groups.



In both farming systems education is important, albeit for different reasons. In cash crop growers, a greater level of education is positively correlated with commercial tobacco and cotton production. Literacy and numeracy are functional prerequisites for lucrative engagement in cash crop. Contract farming arrangements involve farmers reading input credit agreements, understanding quality grading requirements and understanding the tobacco auction process. Higher proportion of primary educated household heads in food crop households also suggests another important relationship between education and farming. The traditional knowledge system, community network and extension officer's guidance are more important to these farmers. They rely on their knowledge and experience of the agro-ecological features of the soil and rainfall of their locality rather than on contract documents or market studies to decide on their crops. Education also influences adaptive, with higher education farmers more inclined to use the technical details of drought-tolerant varieties and of conservation agriculture; even primary-educated food crop farmers have shown to be very receptive to the adoption of adaptive practices through participatory extension approaches, indicating that the quality of the extension is as important as formal education.

4.2.4 Household size

Table 4.1 presents the distribution of household sizes across both farming groups.

Household Size	Cash Crop HHs n=41 (%)	Food Crop HHs n=40 (%)
1–3 members	5 (12.2%)	6 (15.0%)
4–6 members	22 (53.7%)	21 (52.5%)
7+ members	14 (34.1%)	13 (32.5%)

Fig. 4.4: Household Size Distribution by Farming Strategy.

The household sizes were fairly similar across both types of households with 53.7% of the cash crop households consisting of four to six persons compared with 52.5% of food crop households. A significant proportion in both groups had seven or more members, (34.1% and 32.5% respectively) reflecting the large household sizes characteristic from the smallholder farming communities in Shamva District that serve to enhance food demand and the pressure faced by agriculture in meeting the food requirement in the district.

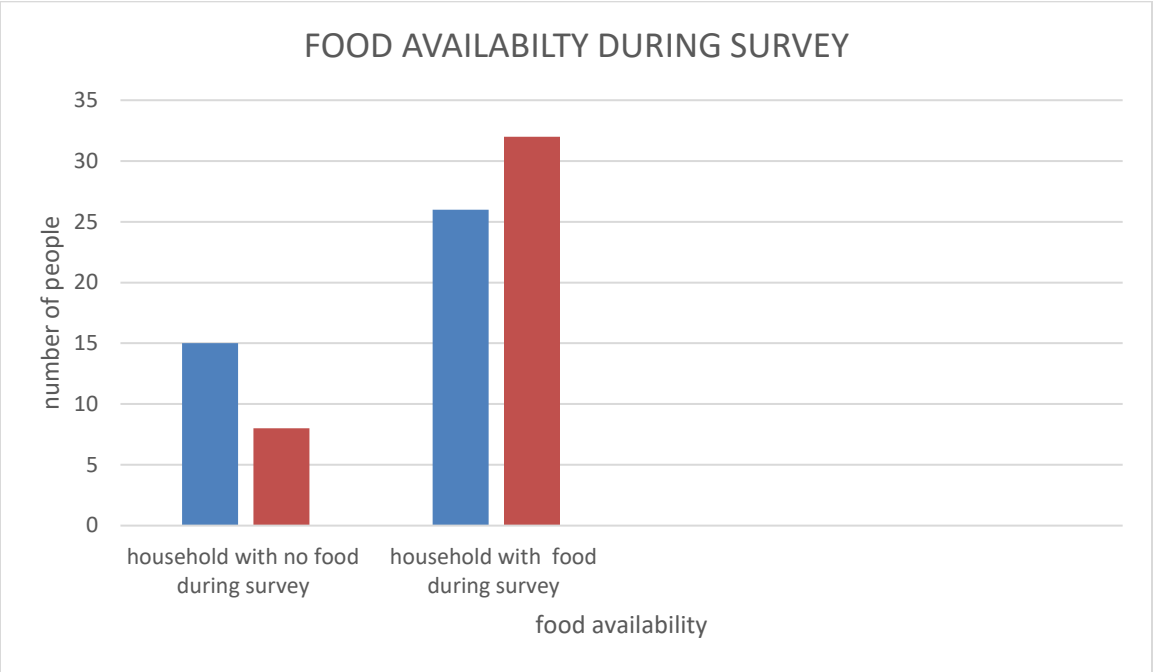
4.3 Household food security levels between cash crop and food crop producers

The first study objective was to compare the level of food security of cash crop and food crop farmers household of Shamva District. Food security was measured for the four dimensions of food security, such as food availability, food access, food utilization and food stability. Food availability concerns the physical supply of food within or near the household; food access concerns households' economic ability to obtain food, food utilization concerns the nutritional quality and diversity of what is consumed and food stability concerns the consistency of food access over time and particularly in the face of shocks such as drought, pest outbreaks and market disruptions. Each dimension is discussed below, both as a comparison between the two farming groups, and the effect of climatic shocks, specifically drought, on the performance of each group under that dimension.

4.3.1 Food availability

Food availability is the amount of food available for household consumption, that is, the physical availability of adequate quantities of food in or in the immediate vicinity of the household. It was measured in this study in terms of the amount of food stocks in the household storeroom or granary at the time of the survey and the number of months per year households had adequate food supply

from their own production. They directly indicate whether households have physical food at their disposal, rather than considering how they acquired it. The food a is shown in the Fig 4.4 presents the food availability chart



The graph depicts that food availability was higher among food crop households than cash crop households. The graph shows that 32 food crop households had food stocks available at the time of the survey compared to 26 cash crop households, while only 8 food crop households had no food stocks compared to 15 cash crop households. Looking at these numbers, food crop household clearly had an edge. They stored what they grew, so when drought hit, they still had something in the granary. Cash crop farmers, by contrast depend on tobacco or cotton income to buy food and when that income disappeared so did their access to meals.

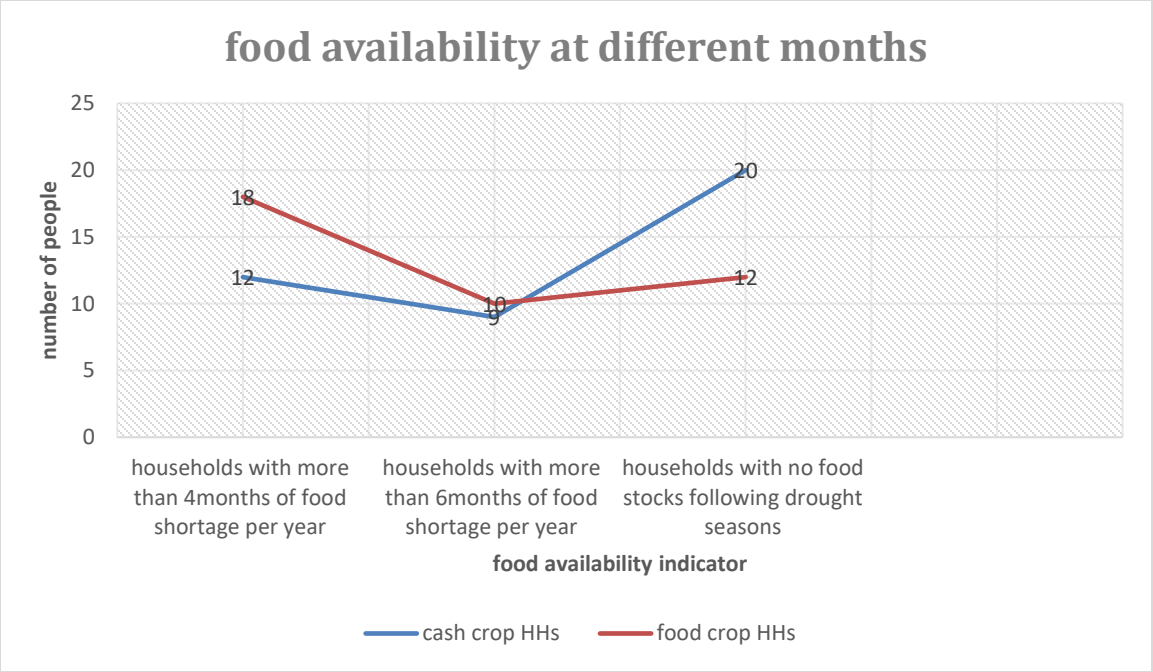


Fig4.5 food availability

The graph indicates that food crop households had stronger and more stable food availability than cash crop households. Among cash crop households, only 12 households had food stocks lasting more than four months and 9 households had food lasting more than six months, while a larger proportion of 20 households reported having no food after drought occurrence. In contrast, food crop households performed better, with 18 households having food for more than four months and 10 households maintaining food stocks for more than six months, while only 12 households reported having no food during drought periods. The trend suggests that food crop households were more resilient to climatic shocks because they produced crops mainly for household consumption and storage, whereas cash crop households were more vulnerable due to their dependence on income from tobacco and cotton production.

Table 4.2 presents the mean of the food availability.

Food availability	Cash crop HHs(n=41)	Food crop HHs(n=40)
Means months of food sufficiency from own production pear	5.8 months	8.3 months

The mean months of food sufficiency further substantiate that the food availability situation of food crop households was better than that of cash crop households. The average number of months a household had sufficient food from its own production was 8.3 months for food crop households and 5.8 months for cash crop households. This is consistent with the previous results where households with more food crops reported stocking more food and fewer households had total food shortfall during weak seasons of drought. The results indicated that food crop households had a better advantage in meeting food requirements throughout the year as they grew food crops principally for their own consumption and storage, while cash crop households were more dependent on income generated from the sale of tobacco and cotton to supplement their food supplies, resulting in greater vulnerability during periods of drought and income losses.

An extension officer described the situation plainly:

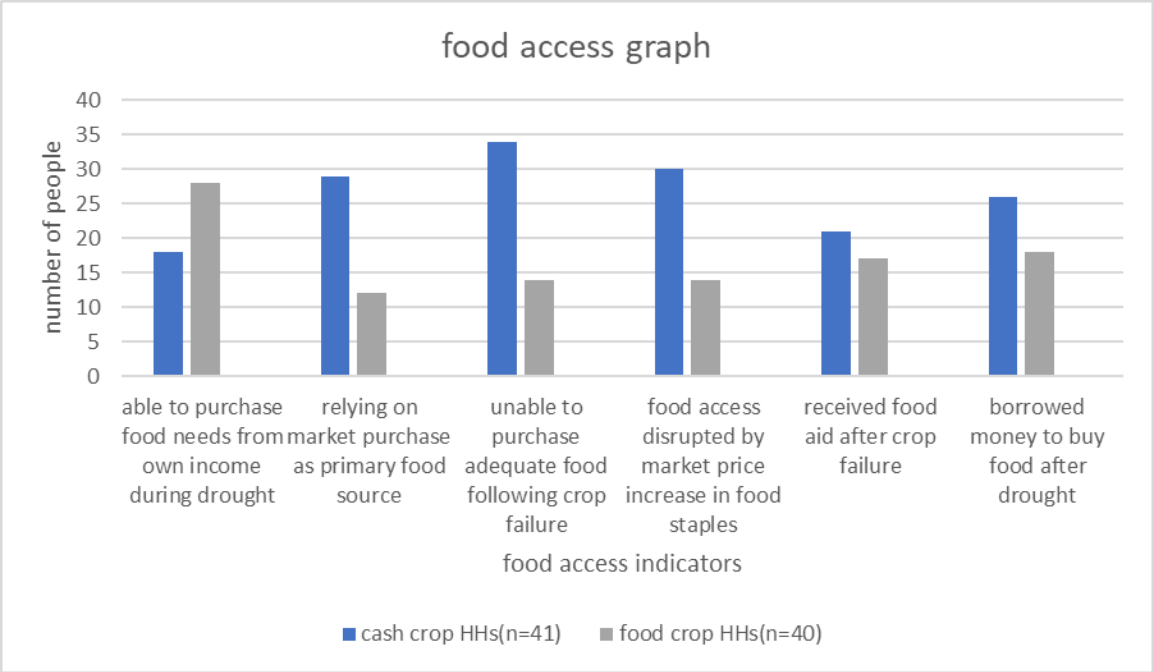
> *"Tobacco farmers lost a lot in the 2023 to 2024 season. The dry spell came right at transplanting time and many fields were badly affected. Some farmers had very little to take to the auction."*

One male cash crop farmer from Ward 5 put it in terms of food availability during bad seasons:

> *"We grow tobacco because the income is better, but when the season is bad and we have no money, there is nothing in our granary. Food crop farmers at least have something to eat from their fields."*

4.3.2 Food access

Access to food is defined as the capacity of households to have access to enough food in economic terms, which is mainly the capacity to buy food by using income from farming and/or other activities. The ability to access food is different from the ability to have food household may have access to food close to a well-stocked market but may not be able to purchase food if they don't have the purchasing power to buy food. Food access was assessed on the basis of food purchasing capacity of the households from their own income in the lean season and the impact of wages loss and food price hikes on the food purchasing ability. The following graph which is fig4.6 presents the information about food accessibility.



While generally there was greater food access during favorable seasons, food access for cash crop households in lean seasons and after climatic shocks was significantly down. During the lean season, 28 food crop households (70.0%) were able to buy their food needs from their own food income while only 18 cash crop households (43.9%) could afford to purchase food needs using their own food income. This is due to the mismatch in timing of the cash crop auction revenues (March and June) and the time of the lean season (when food is needed most is July to October). Many cash crop households have insufficient cash reserves remaining to cover food costs for several months; after paying the money they borrowed for inputs back to the bank. What happens is that many cash crop households find fewer cash resources during the lean season, once they have paid back the money borrowed for inputs to the bank, and their expenses have been paid for input goods.

The critical finding with respect to food access is crop failure due to drought. While 14 food crop households (35.0%) indicated that they were unable to buy sufficient food after the failure of food crops, 34 cash crop households (82.9%) were unable to buy sufficient food following the failure of cash crop. This situation of crop failure due to Drought -33also reduces income, the sole source of food, and it also removes any food stocks – there were none to be taken. Partial crop failures, however, do not affect food crop households' access to their crops since they are able to retain some portion of the harvest even if their purchasing power declines. The impact of the rise in food

staples on food access was greater for cash crop households (73.2%) than food crop households (35.0%) as the food procurement system of cash crop households is mostly market-based and thus highly vulnerable to food commodity price inflation, while food crop households mostly self-provision food, which is less vulnerable to market price changes in food commodities.

An agricultural extension summarized that the situation of tobacco farmers after drought-affected seasons:

> *"Most tobacco farmers here come to me after a drought year asking how to apply for food aid. They expected to earn from their crop and buy food, but when the crop fails, they have nothing, no harvest, no income."*

A male cash crop farmer from Ward 14 described the 2023–2024 drought season directly:

> *"The tobacco was badly hit. We had planted most of our land with tobacco and had no maize because we expected to buy food from tobacco income. When the crop was affected, we had nothing in the granary and no money to buy either. We were completely stuck we could not eat from the field and we could not buy."*

Households that received food aid were more likely to be cash crop (51.2%) than food crop (42.5%) households, reflecting their greater food access failure. Households in the cash crop group were more likely to fall into the eligibility range of the ward-level assistance as their level of food stocks was lower and their purchasing power was low. The high rate of debt-financed food purchase among cash crop households (63.4%) was also observed to be higher than among food crop households (45.0%), highlighting the vulnerability of accessing food in cash crop households due to drought-induced access failure

4.3.3 Food utilization and dietary diversity

Food utilization is not just about having food available and accessible, but how its utilization is nutritional and how it receives the nutritional benefits needed for health and wellbeing. Utilization includes dietary diversity, balance of macro and micronutrients, and food preparation practices, as well as the capacity for a diverse diet throughout seasons and when facing challenges. The food utilization was measured by the Household Dietary Diversity Score (HDDS), defined as the number of different kinds of food eaten by the household during the previous 24-hour period, out of a possible 12 different food groups.

Table 4.3: Food Utilization Indicators by Farming Strategy (Including Climatic Shock Impact)

Food utilization indicator	Cash crop HHs(n=41)	Food crop HHs(n=40)
Households consuming >5 food groups	17(41.5%)	20(50%)
Mean HDDS score (out of 6 food groups)	4.3	4.8
Consuming legumes from own garden	12 (29.3%)	28(70%)
Consuming fruits and vegetables daily	13(31.7%)	18(45.0%)
Diet dominated primarily by staples only	24(58.5%)	18(45.0%)
Estimated mean HDDS during post-drought period	2.8 food groups	3.5 food groups

The mean HDDS of food crop households (4.8) was somewhat higher than cash crop households (4.3). Both groups had an average score below the five food groups, reinforcing the idea of a structural problem of food quality in both farming systems in Shamva District, and that both groups' diets were dominated by starchy staples with low animal proteins, dairy and low intake of diverse vegetables.

The advantage of food crop households is most noticeable in the use of food crops. Twenty-eight food crop households (70.0%) ate legumes from their garden while 12 cash crop households (29.3%) did not; 18 food crop households (45.0%) ate fruits and vegetables every day, compared to 13 cash crop households (31.7%). Such differences come straight from the crops that are cultivated. Food crop households grow groundnuts, sugar beans, cowpeas, sorghum and indigenous leafy vegetables crops which supply protein, micronutrients and dietary variety and use a share of their production for their own consumption but do not require cash. Cash crop households grow tobacco and cotton, which are not food crops, and have no food crops available,

so they have to buy their food diversity from the cash crop. If that is not enough, people start eating less variety in their diets.

A female food crop farmer from Ward 10 described the nutritional benefit of growing food directly:

> *"We are able to eat different things throughout the year because our garden always has groundnuts, beans or vegetables that we use without needing to go to the shops."*

There was a significant increase in the utilization gap between the two groups when climatic shocks occurred. Both groups experienced a reduction in food intake due to drought, but this was more rapid and severe for the cash crop households. With food crop households, drought caused a switch to the most basic food staples, including maize and whatever drought-tolerant grains were still available, but there was still some dietary diversity in the form of stored legumes and vegetables. Within cash crop households, the drought impacted both income and production, meaning that they no longer had access to a wide variety of foods but only to low-cost staple foods that they were able to obtain through food assistance or borrowing. The mean HDDS for cash crop households dropped from 4.3 food groups during baseline to an estimated mean of 2.8 food groups during post-drought, and the mean for food crop households decreased from 4.8 food groups during baseline to 3.5 food groups during post-drought. While both reductions are nutritionally relevant, cash crop households saw a more severe and long-lasting deterioration in dietary quality as recovery relied solely on the return of income, which was slowed by the need to repay debts and the low prices at auctions in the wake of the drought.

4.3.4 Food stability

Food stability means that a household has access to adequate food supplies on a sustained, consistent and shock-proof basis. Food stability occurs when a household has adequate access to food for a good season, but not during the lean season or if a food shock occurs. Stability is therefore a cross-cutting dimension which can assess the resilience of availability, access and use in adverse contexts. The level of food stability was assessed using the Household Food Insecurity Access Scale (HFIAS) and the number of reported different types of food shocks.

Table 4.4 shows that the farming strategy was the most important determinant of food stability indicators.

Food Stability Indicator	Cash Crop HHs (n=41)	Food Crop HHs (n=40)
Experienced lean season food shortage	28 (68.3%)	21 (52.5%)
Experienced food shortage following drought	34 (82.9%)	22 (55.0%)
Experienced food shortage due to market price increases	30 (73.2%)	14 (35.0%)
Experienced food shortage due to pest or disease outbreak	19 (46.3%)	12 (30.0%)
Mean HFIAS score (0–27, lower = more food secure)	14.2	11.6
Classified as severely food insecure (HFIAS category)	12 (29.3%)	6 (15.0%)

For HFIAS Score

The mean HFIAS score uses the arithmetic mean:

Mean HFIAS = (Sum of all individual household HFIAS scores) ÷ Total households

- Cash crop: total scores summed and divided by 41- mean of 14.2
- Food crop: total scores summed and divided by 40- mean of 11.6

The dimension that was most clearly separated between the two farming groups and where the effect of climatic shocks is most evident was food stability. In all indicators of vulnerability, cash crop households were more vulnerable. 68.3% of cash crop households had lean season food shortages as compared to 52.5% of food crop households. Of the households that were food short, 82.9 per cent of cash crop households were food short whereas 55.0 per cent of households in the food crop sector were food short. Food shortages due to market price shocks also affected more households of cash crop families (73.2%) than of food crop families (35.0%) and pest/disease outbreaks were more destabilizing to cash crop families (46.3%) than to

food crop families (30.0%). The mean HFIAS score for cash crop households was 14.2, whereas the mean score for food crop households was 11.6, with 29.3% of the cash crop households classified as severely food insecure (SFI), while 15.0% of the food crop households were classified as SFI.

Each failure in the cash crop system exacerbates the other failures, making the system more unstable than any single failure. There is a timing mismatch between when cash crop households receive cash for tobacco (March to June) and the lean season for food purchases (October to February). During a normal year, this gap is hard, but not impossible, for families that have enough auction money and have what it takes to save money. However, when drought sets in, total food security failure occurs since income from the cash crop has been cut, food stocks are depleted because no food was produced and the lean season is also the time of maximum food requirement. This leaves cash crop households without all three of the food security production, income and food security reserves at the same time.

Both groups reported increasingly unpredictable rainfall as a key driver of instability. A participant from Ward 2 described the shared experience:

> *"In the past, we knew when the rains would come. We could plan our planting. Now, the rain confuses us. It comes early, then stops. We plant, and then a dry spell kills the crops. Every farmer here, whether tobacco or maize is suffering from this."*

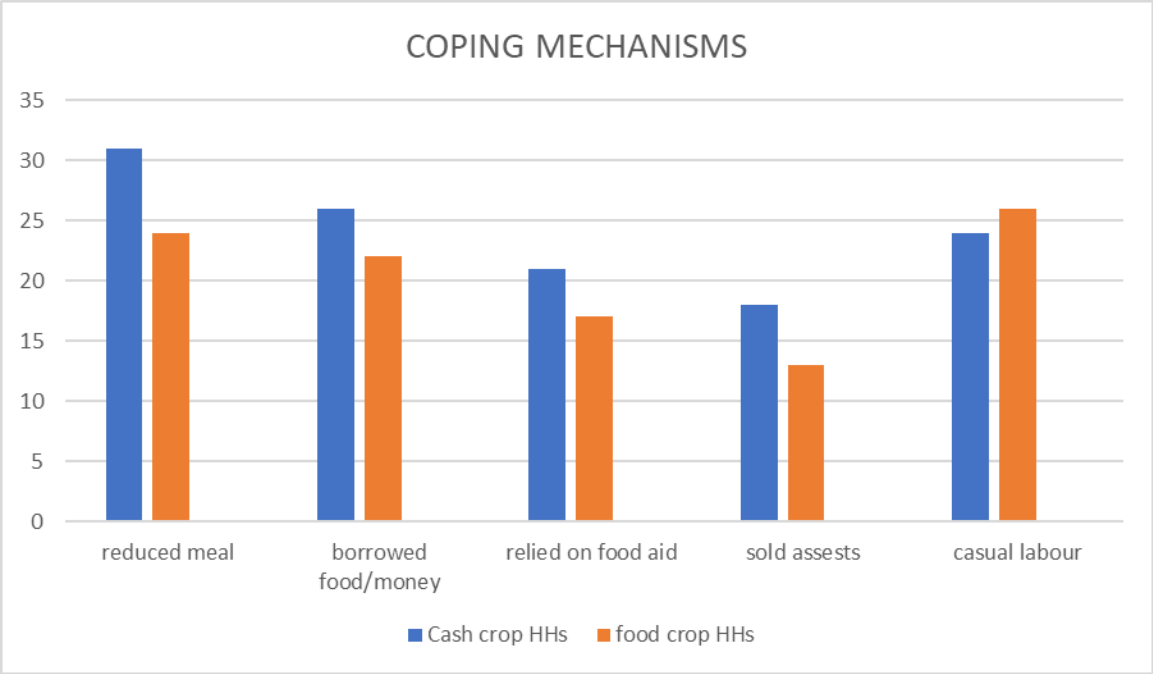
But the impact of this common climatic experience is very different. If a drought occurs, households producing food crops are able to maintain some stability as they can use their stored food crops to buffer them and look for alternative income and equipment coping measures. They even get time if they are only partly harvested. Drought-affected households of cash crops have no such cushion to fall back on and are immediately plunged into a crisis situation of food availability and access in the first week after a damaged harvest, with their only options being food aid, debt and asset sales. Overall, food crop producing households exhibited a generally higher food security resilience in all four food security dimensions in normal conditions and in the face of the added stressor of climatic shocks.

4.5 Coping and adaptation mechanisms adopted by farming households

The second study objective examined the coping and adaptation mechanisms employed by cash crop and food crop households to manage food insecurity and the effects of climatic shocks. This section maintains a distinction between coping mechanisms, which are immediate responses to food shortfalls.

4.5.1 Coping mechanisms

Fig4.6 below presents coping mechanisms reported by farming groups.



Asset sales represented the second major short-term coping mechanism with a notable difference between groups. Cash crop households (43.9%) were more likely to sell assets than food crop households (32.5%). While disposing of productive assets such as livestock or farm equipment which provides immediate relief for food deficits, it undermines the household's productive capacity for future agricultural recovery, thereby deepening long-term vulnerability

Casual labor engagement was broadly comparable between the two group, indicating that off-farm piece work is a universal coping strategy across farming systems in the district. Activities included brick molding, construction labor, domestic work and gardening for neighboring households.

4.5.1.1 Meal reduction during food shortages

Meal reduction was the most prevalent coping mechanism across both groups and was significantly more common among cash crop households

Table 4.5 below shows the full distribution of daily meal frequency during food shortage periods, disaggregated by farming group.

Meals Per Day During Shortage Period	Cash Crop HHs n=41 (%)	Food Crop HHs n=40 (%)
0 meals per day (no food available)	4 (9.8%)	1 (2.5%)
1 meal per day	16 (39.0%)	10 (25.0%)
2 meals per day	11 (26.8%)	13 (32.5%)
3 or more meals per day	10 (24.4%)	16 (40.0%)

Cash crop households experienced more severe meal reductions. A total of 9.8% of cash crop households reported complete food cutoffs during the lean season compared to only 2.5% of food crop households. Furthermore, 39.0% of cash crop households were reduced to one meal per day during shortage periods compared to 25.0% of food crop households. By contrast, 40.0% of food crop households maintained three or more meals per day even during food shortage periods, compared to only 24.4% of cash crop households. These differences reflect the more limited food reserves and purchasing capacity of cash crop households when income and stocks are simultaneously depleted.

4.6 Farmers' perceptions of the opportunities and risks associated with each production strategy

The third study objective explored smallholder farmers' perceptions of the opportunities and risks that cash crop and food crop production present for climate resilience and household food security. Perceptions were assessed through questionnaire responses, and the perceptions of cash crop and food crop producers are compared separately.

4.6.1 Perceptions of cash crop income and food security

A substantial majority of cash crop households agreed that cash crops provide better income than food crops in good seasons. This divergence reflects the direct lived experience of each crop producers have first-hand knowledge of the higher gross income potential of tobacco and cotton during years with adequate rainfall and favorable auction prices, while food crop producers assess agricultural performance through the lens of food supply consistency rather than income maximization. The lower agreement among food crop households does not indicate ignorance of cash crop income potential; it reflects a different set of priorities rooted in the primacy of food self-sufficiency.

However, 70.7% of cash crop households simultaneously agreed that tobacco or cotton income cannot guarantee year-round food access.. That's an important finding because most cash crop farmers already know the risks, they understand that tobacco money comes at a certain time, that pries can crash and also drought can wipe them out. But knowing and being able to change are two different things. A total of 78.0% of cash crop households agreed that input costs are too high relative to returns, compared to 62.5% of food crop households. One participant from Ward 5 confirmed:

> *"Many tobacco farmers in the area finish the selling season with very little net income after repaying input loans. In drought-affected years some farmers end the season in debt to the contracting company."*

4.6.2 Perceptions of food crop reliability and climate risk

Food crop households expressed substantially stronger agreement that food crops provide a more reliable household food supply year-round (87.5%) compared to cash crop households (63.4%). The gap is meaningful because even among cash crop producers, nearly two-thirds recognize the food supply reliability advantage of subsistence-oriented farming despite not practicing it as their primary strategy. Near-universal agreement was recorded across both groups that climate change has significantly worsened food insecurity in the area representing the smallest disagreement between the two groups across all perception items. Both groups described observable changes in rainfall patterns over the past decade including shorter rainy seasons, more frequent mid-season dry spells and increasingly severe drought years. A participant from Ward 2 described this:

> *"In the past, we knew when the rains would come. We could plan our planting. Now, the rain confuses us. It comes early, then stops. We plant, and then a dry spell kills the crops. Every farmer here, whether tobacco or maize is suffering from this."*

4.6.3 Perceptions of crop diversification and government support

Crop diversification was endorsed as beneficial to household food security by 75.6% of cash crop households and 87.5% of food crop households. Among cash crop households, a significant

perception-practice gap is evident, while 75.6% endorse diversification, actual diversification rates in this group are substantially lower. This gap reflects structural barriers rather than irrationality

contract farming obligations require specific crop allocations; limited land holdings force a choice between income crops and food crops and input credit arrangements lock in cropping decisions before the season begins.

Dissatisfaction with government support was consistent and pronounced across both groups, with only 22.0% of cash crop households and 25.0% of food crop households agreeing that government support adequately addresses climate-related risks. Farmers and extension officers identified delays in input distribution under the Presidential Input Scheme, limited irrigation infrastructure access, insufficient weather forecast information at village level and inadequate market support as the primary institutional gaps. A participant from Ward 14 captured the shared frustration:

> *"Farmers are always told that help is coming but the inputs often arrive too late for planting, or they do not reach all households in the ward*."

4.6.4 Trade-offs and divergent risk farming between the two groups

Comparing the two groups' perceptions reveals not a simple factual disagreement but a genuine difference in how each group frames the purpose of farming and weighs the trade-off between income and food security. Cash crop producers frame agricultural success primarily in terms of income generation, measuring a good season by whether they earned enough to meet household needs and service input loans. However, food crop producers frame agricultural success primarily in terms of food supply reliability, measuring a good season by how many months their stored harvest lasts and whether they fed their household without resorting to food aid or borrowing.

These different risk framings are rational given the divergent structural positions of the two groups, not driven by ignorance of alternatives as evidenced by the high cross-group recognition of each strategy's advantages. They reflect the path-dependency of farming a household has invested in the infrastructure, relationships and knowledge systems required for cash crop production, the barriers to shifting are substantial. Both groups share strong recognition of the value of diversification and strong dissatisfaction with institutional support, pointing toward a practical basis for integrated farming system interventions that combine the income potential of cash crops with the food security resilience of food crops.

4.7 Conclusion

This chapter presented the findings of the study on the interplay between cash crop production, climatic shocks and household food security among smallholder farmers in Shamva District, Zimbabwe. Food crop-

producing households demonstrated consistently stronger food security across all four FAO dimensions, more moderate coping responses and higher adoption of climate-adaptive practices, while cash crop households faced compounded vulnerabilities when climatic shocks disrupted income-mediated food access. Both groups shared strong recognition of climate risks, the value of diversification and dissatisfaction with institutional support. The following chapter, Chapter Five, presents the study's conclusions and recommendations.

CHAPTER 5: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter synthesizes the key findings from the study on the interplay between cash crop production, climatic shocks, and household food security among smallholder farmers in Shamva District, Zimbabwe. Drawing on quantitative data from 81 household surveys and qualitative evidence from 12 key informant interviews and focus group discussions across Wards 2, 5, 10, and 14, the chapter presents a summary of findings, conclusions aligned to the three study objectives, and evidence-based recommendations for policymakers, development agencies, and extension services. The Sustainable Livelihoods Framework guided the analysis throughout.

5.2 Summary of Findings

Taken together, the evidence from Shamva reveals a fundamental asymmetry in resilience to climatic shock which include food crop households consistently outperformed tobacco and cotton producers across all four-food dimension of food security, not because of superior farming skill or asset holdings, but because retaining a share of their harvest for home consumption created a buffer against drought-induced income collapse. Cash crop households, by contrast, faced a direct and unforgiving conversion chain rop income to market purchases that broke down entirely when the 2023–2024 El Niño drought reduced yields and earnings, forcing them into coping strategies (meal reduction, asset sales, piece work) earlier, more frequently, and with greater severity than food crop households, who could draw on modest grain reserves to delay drastic measures. The irony is that cash crop farmers were not unaware of the risks most spoke positively about diversification and drought-resistant practices, yet contractual obligations and input credit demands left them unable to act on that awareness. While food crop producers enjoyed more varied diets and greater adoption of conservation tillage and mixed cropping, they also acknowledged the narrow cash margins that constrained school fees and health costs. Running through both groups was a shared frustration with late input delivery, inaccessible irrigation, and rigid contracting systems that offered no room to hedge. Far from being passive, these farmers navigated complex trade-offs within institutions that left them little maneuvering room yet the structural advantage of direct food production proved decisive, suggesting that for smallholders in drought-prone Shamva, growing one's own food offers a degree of climate resilience that income-dependent access cannot reliably match.

5.3 Discussion

Perhaps the most consequential finding of this study is that tobacco and cotton farming did not translate into stronger food security outcomes for the households that practiced it. On every dimension the FAO framework offers availability, access, utilization, and stability food crop households fared better. The mechanism driving this gap is not difficult to identify. When food crop producers harvested their maize, groundnuts, or vegetables, a portion went directly into the household store and stayed there until it was needed. Cash crop farmers had no equivalent arrangement; once their crop was sold and the contracting company had recovered its input loans, what remained was cash that had to stretch across all household food needs for the coming months. In a normal year that system might hold together, but the 2023–2024 season was far from normal. The El Niño-driven rainfall failure hit tobacco and cotton production hard, slashing both yields and incomes simultaneously, and with no stored food to fall back on, many cash crop households found themselves in serious difficulty long before the next harvest arrived.

The absence of studies that have directly compared food security outcomes between cash crop and food crop producers under the same field conditions means that the literature can only be brought to bear indirectly on this finding, a limitation worth stating clearly before drawing comparisons. That said, the broader trajectory of existing evidence broadly supports what was observed in Shamva. Mujeyi et al. (2021), working with contract tobacco farmers in Bindura and Mazowe districts of Zimbabwe, established that higher crop incomes did not reliably translate into improved food access, particularly during seasons when rainfall was inadequate. Mubaya and Mafongoya (2021), whose study tracked smallholder adaptation in Mbire and Guruve districts of Mashonaland Central Province, showed that households relying on income to meet food needs remained highly exposed to the double pressure of falling production and rising food prices. Zingwena (2023), examining commercialization trends among farmers in Guruve District, found that cash income from crop sales was frequently eroded before it could serve as an effective food security mechanism. The present study, which was carried out in Shamva District in 2024, adds to this body of knowledge by being, to the researcher's knowledge, the first to directly compare food crop and cash crop households living alongside one another in the same wards, thereby holding constant many of the contextual variables that complicate cross-study comparisons.

When food ran short, farmers in both groups reached for broadly similar strategies: they ate less, they looked for piece work, they asked family members for support, and they sold whatever they

could spare. The meaningful difference between the groups lay not in which responses they chose but in how quickly and how deeply those responses were required. Cash crop households were pushed into drastic measures sooner and stayed there longer. The structure of their farming system offers a clear explanation: a failed or below-average tobacco or cotton season meant losing income and food simultaneously, while also leaving the household locked into repaying input credit. Food crop households faced poor harvests too, but whatever grain they had stored created a delay between the shock and the most severe consequences, and that delay made a material difference. Productive assets cattle in particular, but also ploughs and other equipment were sold by cash crop households at rates and frequencies that food crop households rarely reached. Each such sale, while providing short-term relief, reduced the household's capacity to recover, creating a cycle that was difficult to escape.

This pattern sits comfortably within what the scholarly literature describes about coping behavior under stress, though it must again be noted that existing research has not directly compared coping intensity across these two farming systems. Maxwell et al. (2014), whose work on coping strategy measurement has become a reference point in food security research, characterize the most severe coping responses as those households turn to only after less costly options have been exhausted precisely the trajectory visible among cash crop households in this study. Mubaya and Mafongoya (2021), in their Mashonaland Central study of 2021, found that smallholders facing climatic shocks regularly turned to reduced consumption and livestock sales as primary responses, a pattern closely mirroring what was documented in Shamva among cash crop producers. Nciizah and Mubaya (2022), studying coping strategies across Mashonaland Central Province, found casual wage labor functioning as a critical supplementary income mechanism during lean periods, which again aligns with what cash crop households in this study described. Vroegindewey and Hodbod (2021), drawing on evidence from cash crop farming systems across Sub-Saharan Africa, demonstrated that even farmers who clearly understood the benefits of diversification were often structurally prevented from acting on that understanding by the demands of their contractual arrangements. That finding speaks directly to what emerged in Shamva, where cash crop farmers articulated strong support for growing food crops alongside their commercial crops but explained in considerable detail why doing so was not practically available to them.

The third set of findings relates to how farmers understood and evaluated their own circumstances. What stood out was the degree of clarity both groups brought to their assessments. Cash crop farmers were not under any illusions about the precariousness of what they did; they spoke knowledgeably about the way in which a poor rain season could unravel a year's effort, about market prices that did not always reward the labor invested, and about the grip that input debt could tighten in a bad year. Food crop farmers were equally candid: they appreciated the food security that their system produced but recognized that it left them with limited capacity to meet cash needs, which in a rural Zimbabwean household are not trivial. Across both groups, conversations about climate were notably serious. Farmers described rainfall as having become unreliable in timing, increasingly erratic in distribution, and often insufficient in total volume. Institutional support or more precisely its absence or inadequacy was a theme that surfaced repeatedly. Extension visits were described as infrequent and not always well aligned with the actual challenges farmers faced; input deliveries were often late enough to compromise planting decisions; irrigation remained an aspiration rather than a reality for most; and contract arrangements offered no flexibility to allow cash crop farmers to also cultivate food.

The scholarly literature offers a useful frame for understanding why farmers continue within systems they identify as risky. Morton (2017) argues that risk awareness among smallholders is typically quite high and that persistence in demanding livelihood strategies reflects constrained options rather than poor judgement. Arslan et al. (2018) and Bellemare et al. (2017) both found that commercial crop farmers are generally well aware of the volatility their systems expose them to, even as they remain committed to those systems because the income potential is not easily replicated elsewhere. Vroegindewey and Hodbod (2021) and Tesfaye and Seiuf (2016) reach similar conclusions, noting that structural barriers rather than attitudinal ones typically explain why farmers do not shift toward strategies they themselves acknowledge as preferable. The Shamva findings reinforce this reading: both groups were making rational decisions within real constraints, and the gap between what farmers wanted to do and what they were able to do was largely a product of institutional and contractual conditions, not of ignorance or indifference.

Within the Zimbabwean context, a growing body of research has documented the vulnerabilities that accompany commercial smallholder farming, and the present study connects with that literature while adding to it in specific ways. Scoones et al. (2018), Mubaya and Mafongoya (2021),

Moyo et al. (2022), and Nciizah and Mubaya (2022) have each examined aspects of how cash crop production intersects with climatic risk and household wellbeing among smallholders, finding consistent evidence of exposure and constraint. Zingwena (2023) and Mutambara et al. (2022) further document how climate variability and market instability erode the gains that commercial agriculture is expected to deliver. What the current study contributes that these others do not is a side-by-side comparison of cash crop and food crop households living under the same environmental and institutional conditions in the same communities. That design choice makes it possible to attribute differences in outcomes more confidently to farming system rather than to location, agroecology, or other confounding variables. The implication is practical: interventions that help cash crop farmers incorporate food production into their systems, without the penalty currently imposed by contract arrangements could potentially close the food security gap documented here without requiring farmers to abandon the income they depend on.

5.5 Conclusions

The evidence gathered in Shamva District leads to a conclusion that is both clear and sobering: smallholder households anchored to tobacco and cotton production were considerably more food insecure than their neighbors growing food crops, and this held true whether food security was assessed through what households had available, what they could access, how nutritiously they ate, or how stable their supply remained across the season. The income pathway selling a cash crop and using the proceeds to buy food proved structurally fragile when climatic conditions deteriorated, and the absence of any stored food in these households meant that vulnerability was acute and compounding rather than gradual. Cash crop producers were also pushed further and faster into drastic coping responses, and their slower take-up of long-term adaptive practices was not a reflection of disinterest but of the genuine structural obstacles that contract farming arrangements placed in the way of diversification. Farmers in both groups demonstrated a level of understanding about their situations that belies any simple characterization of rural smallholders as uninformed or passive; their choices reflected the architecture of the systems they operated within far more than any failure of knowledge or ambition. The strong appetite for change that emerged from both groups the desire to diversify, the frustration with inadequate support, the shared sense that current arrangements were not working well enough points toward a practical entry point for policy: not changing farmer

attitudes, which do not need changing, but redesigning the institutional frameworks that currently make food security and commercial farming appear mutually exclusive for households in Shamva and communities like it.

5.6 Recommendations

- The Ministry of Agriculture should incorporate drought- tolerant food crop seeds and legumes into input support programmes targeting cash crop producing households. Investment in smallholder irrigation infrastructure should be prioritized to strengthen resilience against climatic shocks and improve household food security.

- Agricultural Extension Services (Agritex) officers should integrate food security risk assessments into routine extension services to identify vulnerable households before drought events occur.

- Development and Humanitarian Agencies should consider farming strategy as an important criterion when targeting food security interventions and assistance programmes.

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APPENDIX 1

KEY INFORMANT INTERVIEW GUIDE

Study Title:

The interplay between cash crop production, climatic shocks and household food security among smallholder farmers in Shamva District, Zimbabwe

Target Respondents:

- Agricultural extension officers (AGRITEX)
- Local leaders (village heads, headmen)
- NGO officers (if available)

Good day. My name is Lisa Mudondo, a student from Bindura university of science education, conducting research on farming systems, climate change, and household food security in Shamva District.

I would like to ask you a few questions based on your knowledge and experience. The information you provide will be kept confidential and used for academic purposes only.

With your permission, may we proceed?

☐ Yes ☐ No

SECTION A: BACKGROUND INFORMATION

1. What is your role in this community/institution?
2. How long have you been working in this area?

SECTION B: FARMING SYSTEMS IN SHAMVA

3. What are the main crops grown by smallholder farmers in this area?
4. In your view, how common is cash crop farming compared to food crop farming?
5. What are the main reasons farmers choose cash crops (e.g., tobacco, cotton)?
6. What are the main reasons some farmers focus on food crops?

SECTION C: CLIMATIC SHOCKS

7. What types of climatic shocks have affected farmers in this area in recent years? (Probe: droughts, dry spells, erratic rainfall)
8. How frequently do these climatic shocks occur?
9. How have these shocks affected crop production?

10. Are cash crops or food crops more affected by climate variability? Why?

SECTION D: HOUSEHOLD FOOD SECURITY

11. Based on your experience, what is the general food security situation in this area?
12. Do households that grow cash crops have better food security than those growing food crops? Why or why not?
13. What challenges do farmers face in accessing enough food throughout the year?

SECTION E: COPING AND ADAPTATION STRATEGIES

14. What strategies do farmers use to cope with food shortages?
15. What climate adaptation practices are being promoted in this area? (Probe: Pfumvudza, irrigation, crop diversification)
16. How effective are these strategies in improving food security?
17. What challenges do farmers face in adopting these strategies?

SECTION F: PERCEPTIONS AND INSIGHTS

18. In your opinion, what are the advantages of cash crop production?
19. What are the risks associated with cash crop production?
20. What are the benefits of focusing on food crops?
21. Which farming system do you think is more sustainable under climate change? Why?

SECTION G: INSTITUTIONAL SUPPORT

22. What support is provided to farmers in this area? (Probe: government programs, NGOs, input schemes)
23. Are there any gaps in support that affect farmers' food security?
24. What improvements would you recommend to strengthen farmers' resilience?

APPENDIX 2

Dear Sir/Madam,

My name is Lisa Mudondo, a student currently pursuing my studies at Bindura university of science education. I am conducting a research study titled *"The interplay between cash crop production, climatic shocks and household food security among smallholder farmers in Shamva District, Zimbabwe."*

The purpose of this study is to understand how different farming practices and climate-related challenges affect household food security. You have been selected to participate because of your valuable experience as a farmer in this area.

Your participation **is** voluntary, and all the information you provide will be treated with strict confidentiality and used for academic purposes only. You are free to refuse answering any question or withdraw from the study at any time.

I kindly request your cooperation in responding to the questions honestly. Your input will contribute greatly to improving understanding of farming and food security issues in your community.

Thank you for your time and cooperation.

Yours faithfully

Lisa Mudondo

SECTION A: GENERAL INFORMATION

1. Date of interview: _____
2. Village: _____
3. Ward: _____
4. Enumerator name: _____
5. Gender of respondent:

   ☐ Male ☐ Female
6. Age of respondent:

   ☐ 18–30 ☐ 31–45 ☐ 46–60 ☐ 60+
7. Household size:

   ☐ 1–3 ☐ 4–6 ☐ 7–10 ☐ 10+
8. Education level:

   ☐ No formal education

   ☐ Primary

   ☐ Secondary

   ☐ Tertiary

SECTION B: FARMING CHARACTERISTICS

9. Land size (hectares): _____
10. Main type of farming:

    ☐ Cash crop farming

    ☐ Food crop farming

    ☐ Mixed farming
11. Crops grown (tick all that apply):

    ☐ Maize

    ☐ Groundnuts

    ☐ Sorghum

    ☐ Tobacco

    ☐ Cotton

☐ Vegetables

☐ Others (specify): _____

12. Main source of income:

☐ Crop sales

☐ Livestock

☐ Remittances

☐ Casual labor

☐ Other: _____

SECTION C: HOUSEHOLD FOOD SECURITY

13. How many meals does your household eat per day?

☐ 1 ☐ 2 ☐ 3 ☐ More than 3

14. In the past 12 months, did your household experience food shortages?

☐ Yes ☐ No

15. If YES, for how many months?

☐ 1–2 ☐ 3–4 ☐ 5–6 ☐ More than 6

16. How often do you skip meals due to lack of food?

☐ Never ☐ Rarely ☐ Sometimes ☐ Often

17. Dietary diversity (foods eaten in last 24 hours):

☐ Cereals (maize, rice)

☐ Vegetables

☐ Fruits

☐ Meat/fish

☐ Milk

☐ Legumes

18. Do you produce enough food for your household?

☐ Yes ☐ No

SECTION D: CLIMATIC SHOCKS

19. Have you experienced any of the following in the past 5 years?

    ☐ Drought

    ☐ Dry spells

    ☐ Floods

    ☐ Erratic rainfall

20. How often do these occur?

    ☐ Rarely ☐ Sometimes ☐ Frequently

21. How have climatic shocks affected your farming?

    ☐ Reduced yields

    ☐ Crop failure

    ☐ Loss of income

    ☐ No effect

SECTION E: COPING AND ADAPTATION STRATEGIES

22. What strategies do you use during food shortages?

    ☐ Reduce meals

    ☐ Borrow food

    ☐ Sell livestock/assets

    ☐ Casual labor

    ☐ Food aid

23. Have you adopted any climate adaptation practices?

    ☐ Yes ☐ No

24. If YES, which ones?

    ☐ Conservation agriculture (Pfumvudza)

    ☐ Irrigation

    ☐ Crop diversification

    ☐ Early planting

    ☐ Drought-resistant crops

SECTION F: PERCEPTIONS

25. Which farming system improves food security more?

    ☐ Cash crops

    ☐ Food crops

    ☐ Both

26. Why? _____

27. What are the risks of cash crop production?

28. What are the benefits of food crop production?

29. Do you think climate change is affecting your food security?

    ☐ Yes ☐ No

30. Explain how: _____

SECTION G: ADDITIONAL COMMENTS

31. Any other comments: