

Indigenous vegetables and access to markets: A study of rural women farmers in Senanga, Zambia

By

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Declaration

I, **Nancy Lwimba Mukupa**, declare that this dissertation is my own unaided work. All citations, references and borrowed ideas have been duly acknowledged. It is being submitted for the degree of Masters of Development Studies in the Faculty of Humanities, Development and Social Science, University of KwaZulu-Natal, Durban, South Africa. None of the present work has been submitted previously for any degree or examination in any other University.



Signature

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Date

Abstract

General agriculture, fishing and small business enterprises are the most prominent economic activities in Senanga, a district located on the Western part of Zambia (Central Statistics Office 2010). However, in the recent years, cultivation of indigenous vegetables by rural women has both increased and gradually become a source of livelihood in Senanga.

It is from this backdrop that this dissertation employs the food sovereignty framework to examine the cultivation of indigenous vegetables and rural farmers' access to markets in Senanga. It also draws on the food security literature, Sustainable Livelihoods Approach (SLA) and the agro-ecological approach to analyse indigenous vegetable farming in developing countries. With the aid of data collection instruments such as participant observation, transect walk and in-depth interviews conducted with 11 female farmers, five traders and five agricultural officers, the study investigates the production of indigenous vegetables in Senanga. I also examine women's access to local, national and international markets and how they maintain business relationships with these markets. The dissertation also evaluates the role of the public and private sector in indigenous vegetable farming.

From the views and experiences of the research participants, socio-economic factors such as high unemployment rates, growing demand for indigenous vegetables and access to resources emerge as factors that motivate farmers in Senanga to engage in indigenous vegetable farming. This has helped farmers increase their households' food security and income. It has also improved their access to social services and other agriculture inputs. On the other hand, gender bias and limited recognition of indigenous vegetables by public and private sector, socio-economic factors such as lack of agricultural skills and financial resources are identified as factors that hamper indigenous vegetable production and farmers' access to markets in Senanga. Equally, the research findings show that gender stereotypes and socio-cultural factors such as discriminatory gender roles, cultural rigidity, customary land laws and dependence syndrome also contribute to low production of indigenous vegetable in Senanga. In addition, the dissertation discusses strategies such as adequate provision of agricultural services and training in agro-ecological approaches to food production by government and NGOs, increased women's participation in the formulation of agricultural policies if implemented might improve indigenous vegetable farming in Senanga.

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Dedication

I dedicate this work to my beloved relatives and friends who passed away during the course of my studies.

List of Acronyms

AIDS	Acquired Immune Deficiency Syndrome	
ART	Anti-retroviral treatment	
BSU	Business Support Unit	
CSO	Central Statistics Office	
FAO	Food Agriculture Organisation	
FISP	Farmers Input Support Programme	
FRA	Food Reserve Agency	
GDP	Gross Domestic Product	
GMO	Genetically Modified Organisms	
HIV	Human Immunodeficiency Virus	
IPGRI	International Plant Genetic Research Institution	
MNCs	Multinational Cooperations	
NGOs	Non-Governmental Organisations	
NAMBOARD	National Agricultural Marketing Board	
SAPs	Structural Adjustment Programmes	
SLA	Sustainable Livelihood Approach	
STES	State-Trade Cooperations	
TNCs	Transnational Cooperations	
UNDP	United National Development Programme	
WTO	World Trade Organisation	

Map of Zambia and the location of Senanga district



Senanga district

Source: Google maps

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Chapter 1: Introduction

1.0. Background of the study

Various multilateral organisations recognize agriculture as "an important engine of poverty reduction, food security and development" (FAO 2011, 2). However, studies show that agriculture has not fully eradicated hunger or poverty and neither has it adequately increased incomes of rural women, who are the main producers of food in the world (ibid). For instance, sub-Saharan Africa's extremely poor who make up 80 per cent of women stood at 41 per cent in 2011 making it the highest in the world (World Bank 2015). Similarly, Zambia has high food insecurity and poverty levels in rural areas with approximately 80 per cent of the people are poor especially women (Sitko et al. 2012). Despite Zambia having arable land and a number of productive resources, stunted growth in Zambia as of 2012 stood at 45 per cent which was higher than that of the whole sub-Saharan African region (ibid). Sitko et al. (2012) attributes the high poverty levels, food insecurity and malnutrition among rural women and children in sub-Saharan African countries to a number of factors. Existing customary and statutory law that restrict women's access to land and assets that limits their control of economic resources as compared to their male counterparts is among the contributing factor to high poverty levels among women in the region (World Bank 2015).

Another contributing factor to food insecurity in sub-Saharan Africa is the implementation of Structural Adjustment Programmes (SAPs) in the developing countries from the late 1980s. The programmes have consistently advocated for the removals of subsides in the agriculture sector and this has continued to disadvantage rural women in particular who cannot afford the expensive agriculture inputs sold on the open markets (Windfuhr and Jonsen 2005). Equally, the African agriculture sectors in both colonial and post-colonial periods have concentrated on the cultivation of cash crops such as cotton, sugarcane and commercial vegetables like carrots, spinach and cabbages in order to compete favourably on the international markets (Grubben et al. 2014). Thus, the focus on cereals such as maize and other cash crops have limited the recognition and support for other food crops cultivated by women (Kuteya et al. 2012). This has not only failed to improve food security among rural households, but it has also undermined the production of indigenous crops such as pumpkin leaves, sweet potato leaves, cassava leaves and amaranth that are cultivated by rural women (Adebooye and Opabode 2004).

In addition, poor production of indigenous vegetables in a number of African countries as indicated in a study conducted in the Eastern Cape Province, South Africa, is attributed to researchers and policy makers' failure to take keen interest in studying and documenting the perceived medicinal and nutritional value of different indigenous vegetable species (Dweba and Mearns 2011). Similarly, another study conducted in Zambia found that in the past the consumption of indigenous vegetables was associated with backwardness by community members and therefore, people favoured commercial vegetables over indigenous ones (ibid).

It is only in the recent years that the demand and production of indigenous vegetables has increased. They have increasingly been recognized as excellent sources of vitamins and other minerals. These vegetables require minimum water and labour thus, they are cost effective, especially for the poor rural women (Adebooye and Opabode 2004). However, little research has been conducted on how Zambian rural women farmers cultivate indigenous vegetables. Equally, little research has been done on how business relationships between farmers and markets are maintained and the role of the public and private sector in indigenous vegetable farming in Senanga. There are also no known studies on how rural women farmers grow indigenous vegetables, how business relationships are maintained and the role of the public and private sector sector sector in indigenous are maintained and the role of the public sector in farmers grow indigenous vegetables, how business relationships are maintained and the role of the public sector in indigenous are maintained and the role of the public sector in indigenous are maintained and the role of the public sector in farmers grow their vegetables in Senanga, Zambia. It is against this background that the study explores how rural women farmers grow indigenous vegetables, how business relationships are maintained and the role of the public and private sector in Senanga.

Statement of the problem

Production and demand for indigenous vegetables by both African and international communities have increased in the recent years (Adebooye and Opabode 2004). A study conducted in Central, Western and Eastern Africa showed that production of indigenous vegetables has increased and also improved household food security in these countries. That study also revealed that rural farmers trade about 70 per cent of these vegetables to cities and generate income on a daily basis (Abukutsa-Onyanyo 2002; Schipper 2000). Another study conducted in Mali and Niger revealed that indigenous vegetables contribute more than 50 per cent of the annual income of farmers (Abasse et al. 2007). However, production of indigenous vegetables in countries such as Zambia, Malawi and Tanzania has been underperforming. This is because a number of female farmers lack access to markets and agriculture inputs such as organic manure (Dweba and Mearns 2011). Furthermore, most producers of indigenous vegetables fail to maintain contractual agreements that they have

made with various traders and markets of supplying these vegetables on a regular basis. This is partly due to poor yields and transportation costs to markets (ibid).

Another study conducted in Zambia also indicates that poor production of indigenous vegetables in the country can be attributed to the country's agriculture sector's desire to increase export revenues through cultivation of cash crops than production of food crops (Nguni 2005). Equally, small-scale farmers' poor access to inputs has also contributed to the low production of indigenous crops in Zambia. For instance, small-scale farmers who make up 85 per cent of the total number of farmers in Zambia struggle to purchase inputs from Farmers Input Support Programme (FISP) compared to commercial farmers who make up two per cent of the total number of farmers. This is because unlike commercial farmers, small-scale farmers do not have well organised cooperatives and financial resources to purchase inputs from FISP. Additionally, inputs supplied by FISP are mainly for commercial crops than food crops or indigenous crops, which to some extent has also contributed to the low production of indigenous crops in Zambia (Kuteya et al. 2012).

Therefore, this study explored the opportunities and problems that rural women farmers face and the role that government and NGOs play in indigenous vegetable farming. It also investigated farmers' access to markets and how they maintain business relationships that they have been created with the different markets.

The study was conducted in Senanga, a district in the Western province of Zambia. It has a population of approximately 126,974 and the district's main economic activities are farming, fishing and small business enterprises (Central Statistics Office 2010).

1.1. Food sovereignty framework

For various reasons, the study employed the food sovereignty framework to analyse the cultivation of indigenous vegetables and women's access to markets in Senanga, instead of the food security approach that is commonly used in a number of food studies. The food security approach focuses on the provision of adequate nutritious food for all but tends not to focus on the food production system that is, who is producing, how are they producing, where do they produce food and what food is being produced and for who (Smith 2009). Thus, it is argued that the approach fails to recognise the pivot role women play in agriculture and global food production (Spieldoch 2007). Additionally, in an effort to increase crop production, the approach advocates for large-scale farming, industrialized cooperate farming and trade liberalization than small-scale farming and agro-ecological farming methods (ibid).

On the other hand, the food sovereignty framework employed in this study goes beyond the provision of food for all. It extends to people's right to define their own food and agricultural system (Spieldoch 2007). It emphasizes the right to have access to healthy and culturally appropriate food produced through ecologically sound and sustainable farming methods (ibid). The framework also advocates for agrarian reforms and reorganization of trade in developing countries in order to address the injustices faced by small-scale farmers (Lee 2002). These injustices include dispossession of productive resources by commercial farmers and exclusion from most of the international markets (ibid). In addition, the framework also advocates for increased participation by developing countries and women in the formulation of their own agricultural policies and food systems. A detailed review, discussion and synthesis of the food security and the food sovereignty frameworks is in chapter two.

1.2. Research Objectives and Questions

The study's research objectives were mainly to understand the cultivation of indigenous vegetables in Senanga; to understand women's access to local, national and international markets for indigenous vegetables; to assess farmers' access to markets and their business relationships with various markets; to evaluate the role of the public and private sector in indigenous vegetable farming.

In order to achieve the above objectives, I divided the study's research questions into production and market related questions as follows: what types of indigenous vegetables are produced in the study location; what farming systems are used in the cultivation of these crops; what are the reasons for cultivating these vegetables and what challenges are faced by farmers in the production of these vegetables. On the other hand, market related research questions included the following: what markets are available for the indigenous vegetables, who are the key players and what are the market networks; what are the challenges that rural women farmers face in accessing and maintaining business relationships with different markets; what is the role of the public sector support (e.g. agriculture extension services) in indigenous vegetable farming and is there a relationship between the marketing needs of farmers and the training in marketing skills that farmers receive.

1.3. Research methodology and instruments

A qualitative research approach using in-depth interviews, participant observation and transact walk provided the responses to the research questions of the study. Further details on the approach and instruments are discussed in chapter three.

1.4. Structure of the dissertation

The dissertation comprises of five chapters. The different aspects of the study are addressed in the chapters as follows:

Following this first background chapter, chapter two examines related literature on the context of indigenous vegetable cultivation in Africa. There, I review the concepts of food security approach, SLA and agro-ecological approach to indigenous vegetable cultivation. The chapter also focuses on the food sovereignty framework upon which the study is based on.

Chapter three discusses the different aspects of agriculture in Zambia and gives a brief overview of the study area. Research methodology followed in this study is also discussed in detail.

The penultimate chapter focuses on the analysis and discussion of research findings and the final chapter presents the summary of research findings and also discusses recommendations for further study.

Chapter Two: Literature review

2.0. Introduction

This chapter reviews literature on the cultivation of indigenous vegetables and rural women farmers' access to markets. Cultivation and consumption of indigenous vegetables has been an increasingly prominent feature of rural areas in some developing countries. However, studies by Jansen van Rensburg et al. (2007) on traditional leafy vegetables in South Africa and Abukutsa-Onyango's (2003) study on Kenya show that indigenous vegetable farming has recently gained popularity among researchers, policy makers and the urban population. It has not only led to the establishment of markets for indigenous vegetables but it has also increased a number of research that has been conducted on the appropriate production methods (ibid). Therefore, this chapter attempts to analyse the production of indigenous vegetables and rural women's access to markets. It examines the context of indigenous vegetable cultivation in African countries. It also explores the food security approach, Sustainable Livelihoods Approach (SLA) and agro-ecological approach to the cultivation of indigenous vegetables and women's access to markets in developing countries. I draw on the food sovereignty framework to analyse indigenous vegetable cultivation and women's access to markets in Zambia. I also explore the framework's applicability to the study's objectives and its criticisms.

2.1. Context of indigenous vegetable cultivation in Africa

Indigenous vegetables have been defined in a number ways and there is still on-going debate on what counts as 'indigenous'. According to Gockowski et al. (2003), indigenous vegetables or traditional vegetables are leafy green vegetables that have been originally domesticated or cultivated. Schipper (2000) defines them as vegetables that are grown in home gardens, intercropped with staple crops and have been utilized for medicinal and cultural heritage purposes for many generations (ibid). On the contrary, academics and small-scale farmers have both defined these vegetables differently. For instance, a study on what subsistence farmers know about indigenous crops and organic farming by Modi (2003) showed that indigenous crops means 'only African crops' to most small-scale farmers in South Africa. As for academics and practitioners, traditional African vegetables are 'wild' plants, or semidomesticated crops that are often relied on for foods during periods of droughts and food shortages (Shackleton et al. 2009). However, this study will focus on indigenous vegetables that have been indigenised and are cultivated by farmers. According to Schipper (2000) there are over a hundred known species of indigenous vegetables that are cultivated in a number of African countries. However, Amaranth (*Amaranth species*), African kale (*Brassica Carinata*), African nightshades (*Solanum Scabrum*), Spider plant (*Cleome gynandra*), Cow peas (*Vigna unguiculata*), Okra (*Brassica carinata*), Ethiopian mustard (*Cucurbita spp*), African eggplants (*Solanum aethiopicum*), pumpkin leaves, sweet potato leaves and cassava leaves are among the most cultivated and utilized vegetables in Africa.

Jansen Van Rensburg et al. (2007) highlight that women in rural, peri-urban and urban areas are the main cultivators of indigenous vegetables. They are primarily small-scale farmers and they employ intercropping, pure stand cultivation and mixed farming methods (Vorster et al. 2007). Only minimum amounts of water and animal manure are required to cultivate indigenous vegetables. They also mature at a faster rate than commercial vegetables (ibid). Despite various reasons that farmers have for cultivating these vegetables, studies show that there are a number of factors that hampered indigenous vegetable farming in the past.

According to Oniang'o et al. (2008), the Food Agriculture Organisation (FAO) and African governments' inability to adequately provide production skills to indigenous vegetable farmers is among the factors that hampered production of these vegetables in the past. For instance, the FAO database had information on the production and preservation on only a few indigenous vegetables (ibid). Equally, Jasen van Rensburg et al. (2007) argue that agriculture extension officers in most African countries lacked proper information on the cultivation of indigenous vegetables. As a result, they promoted the production of commercial or exotic vegetables to rural farmers instead of the cultivation of indigenous vegetables (ibid). Flyman and Afolayan (2006, 492) also concur with Jasen van Rensburg et al. (2007) when they argue that the lack of information on these vegetables' nutritional value did not only lead to the poor utilization and cultivation of these vegetables but it also contributed to food insecurity, poor diet diversification and malnutrition among poor communities who could not afford to buy commercial vegetables.

Another factor that hampered production of indigenous vegetables was the introduction of commercial crops such as maize and vegetables in most African countries' agrarian system

during the colonial era.¹ Cultivation of commercial vegetables increased compared to production of indigenous vegetables in the African continent (Muhanji et al. 2011). Africans' diets also changed from high consumption of indigenous crops and vegetables to the inclusion of mostly commercial vegetables in their daily meals (ibid).

Despite the inadequate information on the production of indigenous vegetables and the inadequacy of African governments to provide technical production skills to rural farmers, researchers and policy makers have in the recent past taken interest in the cultivation of these vegetables (Jansen van Rensburg et al. 2007). There are also a number of broad approaches to indigenous vegetable farming and women's access to markets.

2.2. The food security approach to indigenous vegetables

The food security approach seeks to increase global food production through the promotion of large-scale farming, industrialised cooperate agriculture and trade liberalization as opposed to small-scale farming (Pimbert 2009). Nevertheless, large-scale agriculture and trade liberalization have not sufficiently increased food security instead they have negatively affected small-scale farmers in most developing countries (Glipo and Pascual 2005).²

Jasen van Rensburg et al. (2007) argue that commercial farmers in both colonial and postcolonial periods have had more access to productive resources such as land, water, agricultural inputs and equipment than small-scale farmers. Equally, agricultural policies and research have to a larger extent favoured and encouraged the production of commercial crops than subsistence crops (ibid). However, critics argue that even though large-scale agriculture has increased efficient production of export crops such as cotton, sugar and commercial vegetables, it has also increased soil degradation and loss of biodiversity in most countries. High production of export crops as opposed to cultivation of food crops by small-scale farmers has also narrowed the global food security base, increased malnutrition and micronutrient deficiencies cases especially among children and women in developing

¹ McCann (2001) states that countries during the colonial era embraced commercial crops such as maize which has increasingly became a staple crop in many countries and displaced other indigenous crops such as sorghum, rice and local vegetables.

² Food security has been defined in at least 200 ways. It is also categorized as household, national and global. However, its commonly definition as "when all people, at all times have physical access to sufficient, safe and nutritious food to meet their dietary needs and food preference for an active life"(Smith et al. 1992).

countries (Chweya and Mnzava 1997).³ Thus, opponents of food security approach argue that instead of countries been biased toward large-scale agriculture, they should increase their support for small-scale farmers. This is partly because small-scale farming has the potential to minimise food shortages and enhance food security especially in rural areas (Glipo and Pascual 2005).

A study by Abukutsa-Onyango (2010) showed that cultivation of local crops such as indigenous vegetables enhances food security. This is because they are easily accessible even in times of droughts and floods than commercial vegetables. This seems to tally with what Mojeremane and Tshwenyane (2004) discovered in Botswana. They found that it is mostly during drought years when commercial crops are unavailable that rural communities in Botswana utilize indigenous vegetables as household food.

Similarly, the perceived nutrient contents found in indigenous vegetables have the ability to enhance household food security. For example, in their analysis of nutrient contents of 100 grams of both fresh indigenous and commercial leafy vegetables, Maundu et al. (1999) and Abukutsa-Onyango (2003) discovered that amaranth contains 4.1 per cent of proteins, 480 milligrams of calcium and 135 milligrams of vitamins. These nutrient content findings were higher than that of cabbage which contains about 1.4 per cent of protein, 44 milligrams of calcium and 33 milligrams of vitamins. They also discovered that pumpkin leaves had more proteins and vitamins that might assist in meeting the daily recommended requirements for nursing mothers and children of 100 per cent vitamins and 40 per cent of proteins than spinach (ibid). Equally, indigenous vegetables are professed to play a significant role in balancing dietary quality in that they are able to provide zinc to the human body when they are consumed together with staple food such as maize and rice that do not provide zinc in a diet (Laker 2005). However, Orech et al. (2005) contend that even though indigenous vegetables provide nutrients to the body, some phytochemicals found in some of these vegetables may cause toxicity problems if consumed over a long period of time.

On the other hand, studies show that the nutrient content in indigenous vegetables also perceived to aid in the prevention of diseases. A systematic study to evaluate the nutritional and medicinal value of amaranth and pumpkin leaves conducted in Edo state, Nigeria,

³ Approximately 250 million children in developing countries maybe at risk of vitamin A deficiency of whom about 3 million are ready clinically deficient (Walingo 2005).

Mensah et al. (2008) uncovered that these vegetables contain high levels of calcium, iron, protein and vitamins. They also contain alkaloids, fibres, insulins, anti-oxidants, amino acids, saponins and tannis that might assist in the curing of anaemia and the sustenance of strong bones. They are also useful in the treatment of diseases such as fever, diarrhoea, anaemia, high blood pressure, headaches and female infertility. The vegetables might also assist in the alleviation of malaria, typhoid, oedema and constipation. Based on these findings, Mensah et al. (2008) state that the inclusion of these vegetables in rural peoples' diets in Edo state might assist in addressing the problems of nutritional deficiencies. In addition, they state that the promotion of indigenous vegetables in the country's community based health services might improve the health status of the Nigerian population. Nevertheless, critics argue that despite the body of evidence confirming the nutritional value and health properties, countries have not extensively exploited indigenous vegetables' ability to address the high malnutrition and health problems in African countries (Smith and Eyzaguirre 2007).

On the other hand, a study by Hasler (2000) on the perceived medicinal benefits of cowpea leaves and sweet potato leaves showed that phytochemicals such as flavonoids, carotenoids, glucosinolates compounds function as antioxidant and protective agents against diseases. Equally, cowpea leaves and sweet potato leaves might assist in the management of AIDS (Kean et al. 2001). They are professed to strengthen the immune system, delay the advancement of the HIV to AIDS and they also prevent mother to child transmission (ibid). This suggests that African countries' health interventions strategies might consider focusing on promoting the high consumption of indigenous vegetables especially for people on anti-retroviral treatment (ART).⁴ Irrespective of indigenous vegetables' perceived medicinal benefits and their potential to enhance food security, rural people fail to obtain these benefits because their vegetable production is hampered by lack of resources and trade liberalisation policies (Smith 2009).

The food security approach advocates for increased food supply through trade liberalization and large-scale farming as opposed to small-scale production. African countries adopted trade liberalization during the Structural Adjustment Programmes (SAPs) of the late 1980s in order

⁴ African wild potatoes are safe source of vitamins and nutrients such as phytosterols. However, critics argue that they might be unsafe to HIV/AIDS patients that are on ART. This is partly because consumption of African wild potatoes might led to viral resistance, drug toxicity and also treatment failure (Mills et al. 2005).

to restructure their economies through removal of trade barriers and subsides in all developmental sectors. Despite the negative impacts of these programmes in most African economies, countries are still exposed to World Trade Organisation's agricultural agreements (Lee 2007). These WTO agreements such as removal of trade barriers by developing countries have long benefited developed countries and Transnational Cooperations (TNCs) than developing countries (Glipo and Pascual 2005).

For example, TNCs export food to developing countries without being exposed to high tariff barriers while developing countries are exposed to trade barriers, health and quality standards requirements that producers of local food fail to meet (ibid). This has undermined food production in developing countries and reduced small-scale farmers' access to both international and local markets (Lee 2007). For instance, international markets only import African vegetables that have appropriate weight, colour, grade, packaging and varieties. International markets also require that these vegetables are cultivated in hygienic and safe areas. However, farmers do not adequately meet these requirements. This is partly due to the farmers' lack of proper production skills and post-harvest handing procedures such as harvesting, grading, packaging, transporting and storage (Abukutsa-Onyango et al. 2005). Additionally, trade negotiations rarely take into account that rural women's literacy levels, skills and lack of assets such as land might necessitate farmers' inadequacy of meeting export markets' quality and sanitation requirements (ibid).

Other than that, trade liberalization has also increased high importation of Genetically-Modified food (GMO) that might be culturally unacceptable and unhealthy for local people (Pimbert 2009). The GMOs have not only displaced indigenous vegetables from the local and national markets but they have also reduced rural women's household income and food production (ibid). On the other hand, privatization of state owned companies that are involved in the distribution of fertilizers and marketing of crops for farmers have contributed to poor production of indigenous crops. A number of farmers find it very difficult to buy equipment and access loans from these private companies (ibid).

Conversely, the food sovereignty framework argues that the food security approach's advocacy for large-scale farming and trade liberalization suggest that, it does not recognise the important role that small-scale farmers play in the production of global food (Spieldoch 2007). The approach also fails to engage debates on the sustainable use of resources and the

negative impacts of commercial agriculture on the environment as emphasised by food sovereignty framework, agro- ecological approach and SLA.

2.3. The Sustainable Livelihoods Approach to indigenous vegetables

The approach's overall emphasis is on livelihoods,⁵ which are defined as the utilization of one's capabilities, available resources/assets,⁶ and activities to make a living (Chambers and Conway 1992). It analyses on how assets, vulnerability and structures/processes interact and influence people's livelihoods such as indigenous vegetable farming. Rural women are able to improve their livelihoods and cultivate indigenous vegetables through the utilization of human, natural and social resources (Abukutsa-Onyango et al. 2005, Vorster et al. 2007).

For example, a study conducted in Kakamega district in Kenya by Ndinya (2003) established that women utilized knowledge such as indigenous planting methods to cultivate indigenous vegetables. These methods included drilling seeds in holes with hand hoes, broadcasting of seeds in the fields, stem cutting and transplanting vegetables from the nursery to another field. The methods were commonly used because they made planting, weeding and harvesting of these vegetables easier for farmers. Ndinya further highlighted that farmers utilize available social resources such as seed banking using seeds from their previous harvest or from neighbours rather than purchased seeds (ibid). Organic manure such as droppings from livestock and compost manure are also utilized as fertilizer because they add nutrients to the soil for the subsequent crops and improves soil structure (Abukutsa-Onyango 2007).

Similarly, a study conducted in the Arusha region of Tanzania by Elvania and Matee (2003) established that women also utilize indigenous knowledge to preserve and cultivate their vegetables. Cooked and uncooked vegetables are dried on reed mats or on roof tops.

⁵ These livelihoods are only sustainable if they are able cope, survive shocks and recover from them. This means that assets should be maintained so that they utilized by both the present generation and the future generations (Moser 2005).

⁶ The resources/assets comprises of natural assets (land, water forests); Human assets (skills, knowledge and ability to work); social resources (norms in communities, social informal networks, membership at formalised groups); financial (savings, supplies credits, income from employment and trades) and physical (infrastructures such as markets, roads, schools and health facilities) (Scoones 1998).

However, Elvania and Matee (2003) argue that indigenous production and preservation methods employed by most local women have contributed to poor yields and loss of nutrients. Equally, Gockowski and Ndoumbe (2004) argue that there is little available information on production methods of these specific vegetables therefore, it is very difficult to determine if these methods employed result in high yields. It is also difficult to make comparisons between indigenous vegetables production in one area and another because of the differences in countries' soil structures.

Other than the utilization of human, natural and social resources, women also use physical assets such as roads and markets to transport and sell their vegetables. A study conducted by Macha (2003) on the consumption and sale of African eggplants in Tanzania indicated that the high nutrient contents in African eggplants have increased the demand for these vegetables at both retail and wholesale centres in various local markets in the country. He further argues that this has enhanced food security and income in a number of households (ibid). In addition, Abasse et al. (2007) assert that cultivation and selling of indigenous vegetables in both Mali and Niger's markets contributes more than 50 per cent to the annual income of farmers.

However, critics dismiss the claims that indigenous vegetable production increases household incomes and also improves rural livelihoods. They argue that these benefits are difficult to realise because women lack access to a number of productive resources which affects their yields. Conversely, the SLA argues that existing public sectors, NGOs and cultural practices in some African countries have hampered women's access to different resources and this has contributed to low production of crops in rural areas (Carney 1998, 9). For example, the Zambian land Act of 1995 has to some extent discriminated against women's access to land and this has contributed to poor production of indigenous vegetables (Machina 2002). However, in as much the SLA discusses the effects of some of countries' policies on rural women and the role of the public and private sector in rural poor's livelihoods, it is criticised for failing to fully engage countries' politics and governance in its analysis (Scoones 2009).

In addition, governments in most developing countries have not built enough infrastructure such as roads, markets and agriculture information structures in rural areas. Abukutsa-Onyango (2003) argues that this has affected the production of vegetables and women's access to markets. For instance, a study conducted in the Arusha region of Tanzania showed

that lack of transport to markets is the main constraining factor. Most roads that lead to the markets are impassable in the rainy season and if transport is available, most farmers cannot afford the transport costs of about \$30 per trip (ibid). This has forced farmers to sell their vegetables at their farm gates to exploitative middle men at far lower prices than market prices.

Another area of concern is that the government and private sectors have not adequately provided credit facilities, market linkages and farmer-friendly preservation and irrigation techniques to rural women. Mwangi and Igeyo (1994) argue that the lack of preservation skills has contributed to low production of vegetables, as a result, farmers cannot satisfy the ever growing consumers' demand for indigenous vegetables. This is evident in a study on how to increase sustainable production of indigenous vegetables and market chain development that was conducted in Kenya, Tanzania, and Zambia by Weller et al. (2011). The study findings showed that most farmers' lack of knowledge on proper post harvesting techniques and cold storage facilities to preserve their fresh vegetables have resulted in big losses and shortages of dried vegetables during the off season in all the three countries.

On the other hand, lack of financial resources to purchase animal manure and good quality seeds have contributed to low yields and irregular supply of vegetables to the markets by farmers (Abukutsa-Onyango et al. 2005). Thus, Abukutsa-Onyango et al. (2005) suggest that both market and road infrastructure should be built in rural areas. The private and the public sector should train farmers in proper preservation methods and also increase the provision of agro-ecological farming techniques to farmers. Training farmers in marketing skills and organising them in cooperatives will also improve their access to transport, price negotiation skills and regular supply of vegetables to a number of buyers (ibid). This is because buyers are more willing to carry out business transactions with groups than individual producers. Similarly, a number of studies illustrate the other significant outcomes that the provision of resources and training to farmers by government and NGOs has had on indigenous vegetable production in some countries.

For example, in their analysis of a project which was implemented in four districts of Tanzania and Kenya, Muhanji et al. (2011) highlight that the provision of training in agroecological production and marketing skills to farmers by the government and NGOs in the two countries helped change farmers' production methods. Traditional seasonal planting methods were replaced by quality seed varieties, demand-driven, and time scheduled production that enable farmers to meet different consumption preferences and market demands. They further elaborate that training of farmers in correct land preparations methods, appropriate recommended spacing for different vegetables and manure application resulted in the adoption of efficient production techniques that enhance faster growth and maturity of indigenous vegetables. Furthermore, adoption of demand driven schedules and market prices strategies by most rural farmers also increased the producers' ability to consistently and sustainably supply vegetables to the markets (ibid).

Another area where governments and NGOs in some countries have played a significant role has been in the provision of markets for indigenous vegetables farmers. Ngugi et al. (2006) argue that the Ministry of Agriculture, Department of Home Economics and the International Plant Genetic Research (IPGRI) in Kenya created markets for indigenous vegetables using different strategies. They argue that these institutions had to create awareness of the perceived nutritional and medicinal benefits to consumers and they also transformed subsistence farmers into Business Support Units (BSUs). This involved training farmers in business management, administration, record keeping, invoicing, value chain, marketing, leadership skills, group dynamics, cohesiveness and skills of agronomy. As a result, farmers were able to access transport to the markets and supply vegetables on a regular basis. They were also able to conduct formalized business transaction with supermarkets, wholesale and retail, open markets and hotels. In addition, farmers were able to access credits because most credit organisations and buyers preferred to provide credit to groups of farmers than an individual.

Analysis and results by Ngugi et al (2006) seem to tally with Weinberger and Msuya's (2004) evaluation of the benefits of transforming farmers into BSUs. They discovered that transforming farmers into BSUs resulted in increased demand for indigenous vegetables in Kenya over a period of two years. For example, 9000 tonnes of vegetables were sold in the informal markets and farmers earned about 80 million Shillings (0.63 million pounds) and 150 million Kenyan Shillings (1.19 million pounds) was earned from the formal markets with only 10 per cent cost on labour.

However, in as much as the SLA accommodates economic thinking when it discusses farmers' access to markets, it is often criticised for its lack of engagement in debates on the processes of economic globalization on their negative impacts on small-scale farmers in developing countries. The long shifts in rural economics and gender stereotypes that exist in societies that have undesirable effects on small-scale agriculture (Carney 2002). The above factors are what the food sovereignty framework discusses as the big shifts in the state of global markets and politics such as tariff barriers that have negative impacts on rural livelihoods and reduces farmers' access to these markets (Carney 2002). Additionally, despite the SLA's focus on the sustainable use of resources, it has been criticised for narrowing its analysis to how people can cope with immediate shocks and stresses than how they cope with long-term changes in the global environment (Scoones 2009).

2.4. Agro-ecological approaches to indigenous vegetables cultivation

Unlike the food security approach, the agro-ecological approach proposes the transformation of industrial agriculture that has to some extent contributed to soil infertility and poor food production to farming that employs local innovation that are environmentally friendly (Altieri et al. 2011). This transformation from industrial cultivation methods does not mean that the approach opposes the use of technologies or external inputs in agriculture but it encourages the sustainable use of these technologies together with agro-ecological farming methods (Via Campesina 2010). According to Altieri et al. (2011), agro-ecological farming methods include intercropping, conservation farming, multi-cropping and the application of organic fertilisers that rural farmers employ to cultivate both indigenous and commercial crops. These methods have not only increased production of vegetables in a number of countries but they have also contributed to the prevention of environmental degradation and biodiversity loss (ibid). For example, Chweya and Mnzava (1997) argue that the application of organic manure in a field of jute mellow and slender leafy vegetables prevents soil acidity and degradation. Equally, Abukutsa-Onyango (1999) argues that intercropping indigenous vegetables such as amaranth with maize and sorghum assist in the prevention of pest attacks on these crops, improves soil fertility and prevents weed production.

However, opponents of agro-ecological approach argue that small-scale farmers fail to fully realise the benefits of employing agro-ecological farming techniques because they lack access to agro-ecological farming methods. Equally, a number of rural farmers that may have access to agro-ecological farming methods have failed to integrate them in their agriculture

activities because they do not have adequate productive resources (Alteri 2011). Thus, the agro-ecological approach advocates for African governments to increase their provision of land, financial incentives, market linkages and agro-ecological farming methods to rural farmers. This will not only increase national and global food production but will also assist in mitigating climate change (ibid). Nevertheless, the approach has been criticised for failing to adequately discuss factors that may hinder women from accessing agricultural resources.

Conceptual Framework: Food Sovereignty

Although there is a multitude of approaches to global food production and indigenous vegetable cultivation, this study engages the food sovereignty framework for a critical analysis of indigenous vegetable production and rural women's access to markets in Senanga. However, this does not mean that the food sovereignty framework is totally distinct from other approaches *per se* but as rightly argued by Lee (2007), the framework attempts to build on the other approaches to food production. For instance, the framework integrates the SLA and agro-ecological approach to global food production. It also incorporates political, social, cultural and economic factors that influence the production of food globally (Pimbert 2009). Equally, the framework examines how globalisation influences food production but also challenges food security approach to food production (Glipo and Pascual 2005). Furthermore, food sovereignty framework's principles provide a useful platform to the understanding of food production particularly indigenous vegetables. According to Via Campesina (1996) the framework's principles include:

The right to adequate, nutritious and safe food for all; access to productive resources; mainstreaming of agro-ecological production; reorganization of food trade and local markets; democratic autonomy of countries to define their own food and women's right to participate in the formulation of food and agriculture policies.

The concept of food sovereignty has been defined by many scholars. However, the most common definition is:

Food sovereignty is the right of peoples, communities, and countries to define their own agricultural, labour, fishing, food and land policies, which are ecologically, socially, economically and culturally appropriate to their unique circumstances. It includes the true right to food and to produce food, which means that all people have the right to safe, nutritious and culturally appropriate food and to food producing resources and the ability to sustain themselves and their societies (Via Campensina 1996, 1).⁷

From the above definition, Pimbert (2009) argues that the food sovereignty framework recognises that it is an individual's right to adequate, nutritious, affordable, healthy, culturally appropriate and locally produced food. However, this basic right has been undermined in most developing countries because their agriculture sectors are inclined toward export-oriented farming or commercial farming than small-scale agriculture (ibid). Commercial farmers in most of these countries benefit more from government's agricultural support programmes than small-scale farmers. For example, when developmental assistance and national budgets for the agricultural sector declined by 50 per cent between 1986 and 1996 in developing countries, small-scale farmers in rural areas were more affected than commercial farmers (Windfuhr and Jonsen 2005). This was because large-scale farmers received most of support from government than small-scale farmers (ibid). This situation is ongoing and has thus increased production of export crops while undermining the cultivation of local healthy food (ibid). In addition, proponents of the food sovereignty framework also argue that poor production of local foods has increased developing countries' dependence on food aid and cheap food imports that are unhealthy and often unavailable to rural people (ibid).

Apart from reduction in national budgets for the agricultural sector, other examples also show that most subsistence farmers especially rural women in Zambia, lack access to resources such as land, water and credit (Nguni 2005). For instance, approximately 90 per cent of Zambian women lack access to land compared to their male counterparts (Machina 2002). This is because of the country's constitution of 1998 and land act of 1995 that have to a larger extent discriminate against women's access to land (UNSAID 2010). In as much as the constitution protects everyone against deprivation of property, it does not adequately support customary law on land. Thus, when the customary laws discriminate against women's right to property, the constitution does not effectively support the women and address gender inequalities that exist in the distribution of land (ibid). Equally, the Land Act of 1995 does not specifically discriminate against women but it does not provide title deeds for customary

⁷ "Food sovereignty is the right of peoples to define their own food and agriculture; to protect and regulate domestic agricultural production and trade in order to achieve sustainable development objectives; to determine the extent to which they want to be self-reliant: to restrict the dumping of products in their markets" (www.viacampesina.org).

land (Machina 2002). Thus, access to customary land is mainly dependent on the women's relationship with the husbands, in cases of divorce or death of their husband, some women lose access to land (ibid). This has disadvantaged women in many ways. For example, women who do not own land might not only automatically have high chances of been disqualified as members of farmers' associations and cooperatives but might also face challenges in accessing government support programme such as Fertilizers Inputs Support Programme (FISP) because they are not members of a cooperative (Ngoma 2010). Thus, the food sovereignty framework advocates for increased rural farmers' access to resources (Glipo and Pascual 2005). It also advocates for agrarian reforms in developing countries (ibid). This means that different countries' social differences, global economic politics, unfavourable political situations and gender dynamics that might impede the implementation of these reforms should be considered and revised before countries embark on these reforms (Bernstein 2013). In addition, countries should explore how the limitation of freedom of choice and strategies, and cultural norms make it difficult for rural farmers to access resources can be minimised in order to increase women's access to productive resources (Gatuala et al. 2013).

Other than the food sovereignty framework's principle of people's right to food and farmers' access to resources, the framework also advocates for the enhancement of global food security through agro-ecological sustainable methods (FAO 1996). These agro-ecological farming methods include intercropping, mixed farming, conservation farming and use of organic fertilizers. According to Chweya and Eyzaguirre (1999), the methods are likely to increase production of healthy food and also prevent environmental degradation than industrial agriculture. These benefits obtained through utilization of agro-ecological farming methods have encouraged developing countries such as Zambia to incorporate agroecological farming methods in national agricultural policy (Ministry of Agriculture and Livestock 2004). However, Altieri (2009) argues that many factors have limited the infusion of agro-ecological initiatives in many countries' agriculture sectors. This is because powerful economic and institutional interests in many countries have supported research and development for industrial agriculture than agro-ecological sustainable production. Therefore, the food sovereignty framework argues that major reforms must be made in agricultural policies in developing countries to ensure that agro-ecological farming methods are extensively adopted. Developing countries should increase their support for small-scale farmers through the distribution of land, provision of sustainable farming techniques and

training in agro-ecological farming methods (Glipo and Pascual 2005). For these methods to be extensively adopted, differences that exist between different categories of farmers, social dynamics in communities, land and output variations globally should be taken in consideration (Jensen 2014). For example, small-scale farmers in developed countries do not face the same challenges as farmers in developing countries. Similarly, it might be also challenging for agro-ecological approaches to farming to be adopted and drastically improve production or output in every land globally because of differences in soil fertility and structures from one country to another (ibid). However, Bernstein (2013) excoriates the food sovereignty framework for advocating for the use of agro-ecological farming methods in the production of food for the growing global population. He argues that the framework does not adequately explain if it is possible for small-scale farmers to own the means of production and utilizes agro-ecological farming methods to cultivate enough quantities of food to feed the world population and also provide food at lower prices than food imports (Bernstein 2013). This is partly because some small-scale farmers are more likely to abandon agroecological farming methods because they also desire to use modern technology, external inputs and also participate in commodity market and trade (ibid). Similarly, Aerni (2011) argues that small-scale farmers are likely to abandon farming if non-agriculture activities generate more income and also because being a small-scale farmer is not a life style that most of the farmers have chosen freely.

In response to this line of critique, some advocates of the food sovereignty framework campaign for the reorganisation of both trade and local markets so as to minimise the negative impacts of trade liberalization and privatization on developing countries' agricultural sectors (Lee 2007). For example, trade liberalization which is embedded in the Zambian national agriculture policy has exposed local foods such as indigenous vegetables to unfair competition on international markets (Agriculture and Livestock 2004). Trade liberalization has also amplified Multinational Cooperation's (MNCs) control of local markets and agricultural policies in developing countries in that they determine what countries should cultivate and consume (Pimbert 2009). They have also accumulated land in developing countries and produced export oriented crops such as commercial vegetables and cash crops. The MNCs' control of food production has not guaranteed self-sufficiency and food security to all groups within society, especially the rural poor who cannot afford to buy imported food (FAO 2003). The intensive agriculture methods promoted by MNCs have to a

larger extent led to soil degradation, displacement of small-scale farmers from their land and reduction in local food production (ibid).

Therefore, the food sovereignty framework proposes that "governments in developing countries should dismantle WTO's agreements that allow MNCs free access to their agriculture sectors. Developing countries should also negotiate for better terms of trade for food items that is, international markets should minimise the stiff health and quality standards that agriculture products from developing countries are required to meet in order to export their crops (Glipo and Pascual 2005, 18). Likewise, developing countries might also have to effectively put in place reasonable tariff barriers on imported food (ibid). This will to a certain degree protect farmers' produce from imports and in turn motive farmers to increase the production of local food (ibid). Furthermore, instead of privatizing State-Trading Corporations (STES) and resources, as it has been a trend in most developing countries such as Zambia,⁸ governments and NGOs should reintroduce the STES, support producers and marketing cooperatives. This might increase local people's access to both local and international markets. Furthermore, reorganisation of international trade should also focus on policy changes, trade agreements and responsibilities at both international and national level. This might assist developing countries to adequately lobby for fair terms of trade for their exports (Windfuhr and Jonsén 2005).

Another area of concern for the food sovereignty framework is women's lack of active participation in the formulation of agriculture policies. Glipo and Pascual (2005) argue that despite women accounting for more than 50 per cent of food produced in the world, privatization, trade liberalization and weak national agricultural policies in developing countries have undermined women's contribution to food security. For instance, trade liberalization has increased food dumping in developing countries, displaced local women's agriculture products from markets and has reduced the production of food in the long run (ibid).

Equally, privatization of land in Zambia has increased the number of women who do not own land. Most rural women do not have legal administration costs involved in the purchase of land and thus a number of them have been displaced from their farm lands (Machina 2002).

⁸ Zambia privatized the National Agricultural Marketing Board (NAMBOARD) in the early 1990s. Currently FRA a government programme and other private organisations are in charge of buying of crops such as maize and rice from farmers though indigenous vegetable cultivators cannot these services. This is because FRA does not buy indigenous vegetables only maize and rice (Saasa 1996).

The Zambian traditional society has also increased the number of women who do not own land. This is because women in the Zambian traditional society are regarded as caretaker of the house and the family. On the other hand, men are planners, owners of physical capital and decision makers in the family. This has made women not to have power in decision making, not even on the number of children they want to have (Komm et al. 2011, 113). The discriminatory gender roles have overburdened women with excessive housework leaving them with less time to attend extension trainings while their male counterparts attend both the trainings and field days. This has reduced women's participation and representation in community activities involving food production. It has also reduced their access to agriculture extension services (Neubert et al. 2007, 115). Thus, the framework proposes that developing countries should create a platform for women to actively participate in decision making processes regarding food and agriculture policies (Glipo and Pascual (2005). This means that communities should be sensitized on the importance of women's participation in agriculture meetings and access to extension services.

In addition, gender discriminatory convention that has been formulated in Zambia since 2000 should minimize the traditional and social discriminatory roles that inhibit women from accessing land, extension services, financial capital and participating in the decision making process at both local and national levels (Ministry of Finance 2014). Furthermore, NGOs should also complement governments' efforts by improving the provision of marketing and sustainable farming skills to farmers. The framework also advocates for collaboration of local and national governments in the formulation of agricultural policies and NGOs acting as checklist if there is abuse of authority by national governments (Trauger 2013). This entails that the conflict that exist between the local community and national government that makes collaboration and formulation of agricultural policies in most developing countries difficult should be minimised. Furthermore, gender dynamics such as gender discriminatory roles which in most cases contribute to the poor participation of women in formulation of policies should be reviewed by developing countries (ibid). As a result, countries to some extent might increase their production of food crops (Ministry of Finance 2014).

Despite the few highlighted criticisms of the food sovereignty framework, its principles assisted me in analysing my research objectives. For instance:

The framework's principles such as the people's right to food, farmers' access to productive resources and the mainstreaming of agro-ecological production in developing countries

helped me analyse my research's first objective which involved understanding the production of indigenous vegetables in Senanga.

The framework's principles of reorganization of trade and increasing women's right to participate in the formulation of formulate food policies helped me analyse the study's second and third objectives which included understanding farmers' access to local, national and international markets for indigenous vegetables. I was also able to assess female farmers' access to markets and their business relationships with various markets.

The principle that focuses on the autonomy of the countries to formulate their own agriculture policies helped me analyse the study's first and fourth objectives on the production of indigenous vegetables in Zambia and the role of public and private sector in indigenous vegetable farming.

Conclusion

The chapter provided a brief background on the cultivation of indigenous vegetables in Africa. It also highlighted a number of factors that hampered indigenous vegetable cultivation in most African countries in the past. These factors included African governments' failure to adequately provide farmer-friendly and sustainable production skills to indigenous vegetable cultivators. Lack of knowledge on the perceived nutritional and medicinal values of indigenous vegetables also contributed to low utilization and cultivation of these vegetables. Secondly, I examined three approaches, that is, food security approach, SLA and agroecological approach to indigenous vegetable cultivation. Thirdly, the chapter also engaged the food sovereignty framework in analysing indigenous vegetable cultivation and rural women's access to local, national and international markets. The chapter further discussed the food sovereignty framework and its applicability to the study objectives which are further discussed in qualitative research instruments that were used to collect data.

Chapter Three: Methodology

3.0. Introduction

This section presents and describes the agricultural set-up of Zambia and gives a brief overview of the study area. I discuss the sampling technique, data collection and data analysis methods that were employed in the study. Lastly, I examine ethical requirements and the challenges that I encountered during data collection.

3.1. Agriculture in Zambia

The Zambian agriculture sector contributes between 19 and 22 percent to the country's Gross Domestic Product (GDP). The sector also absorbs approximately 67 percent of the labour force and it is a source of livelihood for more than 50 percent of the country's population (UNDP 2014). It has potential to increase food security and contribute to economic growth given the vast natural resources such as water, land and fertile soils that the country possesses (Ministry of Agriculture and Livestock 2004).⁹ However, the performance of the Zambian agriculture sector regarding job creation and poverty reduction is not as desired even though the sector's contribution to formal jobs increased from 77,932 in 2011 to 79,490 in 2012 (Ministry of Finance 2014, 66). Poor performance of the sector has also increased food insecurity and poverty levels in rural areas.¹⁰ Kuteya (2012) argues that there are a number of factors that constrain the performance of the Zambian agriculture sector.

The service provision of government support programmes such as Farmers Input Support Programme (FISP) and Food Reserve Agency (FRA) are among some of factors that constrain the sector. For instance, FISP's services fail to target most small-scale farmers.¹¹

⁹ The country has a number of dams, lakes and dams for agriculture production. It is also divided into three major agro-ecological regions, namely region I, II and III. These regions have different rainfall patterns and quality of soil. For instance, region I receives 800mm of annual rainfall, region II receives 800mm to 1000mm rainfall and region III receives approximately 1000mm to 1500mm rainfall per year respectively. They are all suitable for production of both food crops, cash crops and livestock (Ministry of Agriculture and Livestock 2004).

¹⁰ Approximately 80 percent of the people in rural areas are poor (Sitko et al. 2012).

¹¹ There are three categories of farmers in Zambia; 85 per cent of small-scale farmers, 13 per cent of medium-scale farmers and 2 per cent of commercial farmers. Small-scale farmers cultivate an average of 2 hectares of land using hand tools. They also grow crops mainly for consumption and they also sale the little surplus. medium-scale farmers cultivate an average of 2 to 10 hectares of land and commercial farmers cultivate between 30 and 600 hectares of land using intensive agriculture technologies (Kuteya et al. 2012).

Seed and fertilizers provided by FISP are mainly for commercial crops and not for food crops such as vegetables that are cultivated by small-scale farmers (Kuteya et al. 2012). Thus, small-scale farmers are forced to utilize saved seeds than purchased seeds to cultivate their crops. In addition, out of the 1,417,992 small-scale farmers countrywide in 2010/2011 farming season only 423,487 (29.9 per cent) purchased subsided inputs from FISP and the rest of the inputs were purchased by commercial farmers who met the requirements to purchase these inputs from FISP (Kuteya et al. 2012).¹² Thus, FISP has been criticised for discouraging crop diversification because the programme only provides inputs for maize, sorghum and rice. Farmers also fail to plant their crops early because FISP does not deliver inputs to farmers in time (Ministry of Finance 2014).

Similarly, FRA as an output market and credit provider has also been biased towards crops which are mainly cultivated by commercial farmers than small-scale farmers. The agency only buys commercial crops than local crops such as indigenous vegetables that are cultivated by small-scale farmers (Kuteya 2012). This has undermined the production of subsistence crops and reduced household income because most small-scale farmers lack access to ready markets for their produce (ibid). For example, in the 2013/2014 farming season, only 21 per cent of 85 per cent small-scale farmers sold their maize to FRA compared to large-scale farmers who cultivate more hectares of land and sold their crops both to FRA and other markets (Ministry of Agriculture and Livestock 2013). Therefore, FRA has also been criticised for delaying in making payments to farmers who sell their crops to the agency. It has also crowded out the private sector's investment in agricultural markets. This has increased the number of farmers who face challenges in finding private markets for their produce (ibid).

In addition, inadequate funding for agricultural research and extension services has also contributed to poor performance of the sector. Sitko et al. (2012) argue that the Zambian agriculture research and development sub-sector has not adequately carried out research on how to improve different varieties of indigenous vegetables; instead it has focused on improving different varieties of maize and rice. This has hampered production of indigenous vegetables in the country. The agriculture sector has also not adequately trained and recruited

¹² Requirements for farmers to purchase FISP include, farmers should be members of a cooperative and should pay group membership fees, able to cultivate at least one hectare land and have the capacity to purchase the FISP's inputs. However, a number of small-scale farmers fail meet all these requirements (Kuteya et al. 2012).

more agriculture extension officers to extend knowledge on proper agriculture practices to farmers in rural areas. For example, the ratio of an extension officer to farmers is approximately 1 to 300. This is owing to the increase in the number of farmers over time. As a result, production of crops and livestock in rural areas has been poor because most farmers do not have access to extension services (Farnworth and Munachonga 2010).

Other limiting factors that have contributed to the poor performance of the sector include government's failure to adequately utilize research and development, agriculture and market information (Kuteya 2012). Similarly, the government has not sufficiently provided land to rural women or even adequately constructed infrastructure such as roads, markets and irrigation facilities in rural areas (Ministry of Agriculture and livestock 2013).¹³ It is only in recent years that the Zambian government has embarked on improving the performance of the agriculture sector. It has aimed at promoting crop diversification among farmers and improving services provided by FISP and FRA so that they adequately target small-scale farmers. For instance, government scaled up distribution under FISP and as a result, farmers receiving inputs for maize increased from 891,000 in 2010/2011 farming season to 900,000 farmers in 2012/2013 season. Furthermore, the government also distributed inputs for crops such as rice, sorghum and groundnuts in order to support crop diversification and cater for small-scale farmers who cultivate these crops (Ministry of Finance 2014). The Zambian government also aims at providing a conducive environment for increased participation of the private sector and NGOs in the provision of credit, markets, seeds and fertilizers countrywide (ibid).

3.2. Study area

The study was carried out in Senanga district which is located in the Western part of Zambia. The district covers a total surface area of 14,954 square kilometres and consists of both upland and wetlands of the Barotse plains and Zambezi River. Which despite the fact that Senanga is covered by sandy and infertile, the inhabitants who make up a total population of 126,974 of which 60,072 are males and 66,902 are females have made good use of the fertile plains for agriculture (Central Statistics Office 2010). This has made agriculture production,

¹³ Most rural women in Zambia lack access to land, this is partly due to the Zambian customary laws and land polices that discriminate against women's ownership of land. This makes it difficult for women to access credit because they do not have collateral such as land to access these loans (Machina 2002).
fishing and small business enterprises the main economic activities in the district. However, the district faces various economic and social challenges. For instance, it is among the districts in Zambia with the highest poverty levels, in that, about 80 per cent of the people in Senanga are regarded as poor and their livelihoods are centred on fishing and subsistence farming (Central Statistics Office 2010). This is because they live under a dollar per day and it is challenging for most of the people to access social services such as water, sanitation, health and education (ibid).

The district also records relatively high unemployment rates because of lack of industries in the area. For instance, Western province where Senanga district is located, unemployment rate stood at 3.3 per cent which was higher than that of Eastern province which stood at 3 per cent (Labour Force Report 2014). As a result, people in Senanga either own small business enterprises or they are small-scale farmers. In addition, lack of good transport and market infrastructure has also hampered economic growth in the district. This has made it so difficult for investors or government to deliver goods and services to the district (Ministry of Finance 2013).

The above mentioned challenges compelled me to select the four farming areas of Kaeya, Seeyi, Nande and Lui-Mweemba that are within Senanga district for my study. The farming areas also have a number of women involved in the production of both commercial crops and indigenous vegetables. They also have poor road network and transport system to markets. As a result, farmers have to walk 12 to 20 kilometres to access the nearest market. In addition, the distance to the nearest supermarkets is about 80 kilometres and it is also approximately 543 kilometres from Senanga to the capital city's main market. Therefore, including these areas in my study helped me achieve my research objectives. Figure 3.2 below is a map of Senanga and the location of the four farming areas.



Source: Google Maps 2012

KEY Farms

Template 3.2. Location of the four farming areas in the study

3.3. Sampling Procedure

This study employed a stratified purposeful sampling procedure. According to Patton (1990) stratified purposeful sampling involves the selection of participants who will provide rich information on a particular topic and help the researcher achieve his/her study's set objectives. To select appropriate respondents for the study, a researcher should already have information on what participants know about the topic before including them in a study (Patton 2002). Although the sampling technique is time consuming and prone to researcher's personal bias, it assists in capturing major differences and similarities among the different strata (ibid). Likewise, the stratified purposeful sampling technique helped me to objectively select participants who were able to provide in-depth information on my research topic. Having worked in Senanga for six years, I was able to request agriculture extension officers to assist me select the 11 small-scale farmers who grow indigenous vegetables specifically for consumption and for sale. Key informants including five agricultural officers, five traders, an agricultural marketing officer, an agricultural programme officer from an NGO and three agricultural extension officers were also selected and contributed to this study. The strata for agricultural officers provided information on the cultivation of indigenous vegetables in

Senanga and the services the officers provide to farmers. In addition to in-depth interviews, the sampling method also helped me select two fields for participant observation purposes. I was able to select community members who were knowledgeable about community resources to participate in the transect walk. Lastly, I utilized the sampling method to select five traders who operate from the markets in Senanga.

3.4. Data collection methods

The study employed in-depth interviews, participation observation and a transect walk to collect data. I discuss each of these below.

3.4.1. In-depth interviews

In-depth interviews are open-ended interviews that obtain participants' comprehensive perspectives on a topic (Minichiello et al. 1995). These interviews also help a researcher to collect in-depth responses and insights from participants (Boyce 2006). With the aid of various interview guides (see appendix 1A to 3A for the three interview guides) I was able to conduct a total of 20 in-depth interviews with 11women farmers, five traders and five agriculture officers. The interviews lasted approximately 30 minutes to an hour and were conducted on different days. According to literature in-depth interviews are time-consuming and information that is collected is usually bulky and therefore, it is difficult to transcribe and analyse data (ibid). They are also very expensive because interviewers have to be trained in various interviewing skills (Frechtling and Sharp 1997). Nonetheless, in this study I was able to overcome these pitfalls by creating a rapport with the respondents and this made them provide satisfactory responses. I was also able to minimize research bias by employing other data collection methods such as transect walk and participant observation.

3.4.2. Participant observation

Participant observation is a data collection tool that requires the researcher to participate, observe and interrogate the participants' day to day activities and thereafter write detailed accounts of their lives from an outsider's viewpoint (Bernard 1994). It is also a method that helps researchers learn about the activities of people in the natural setting (DeWalt and DeWalt 2002). Therefore, researchers are required to create rapport within the community so that community members behave in a natural manner even though they are being observed (Kawulich 2005). The method also provides insights into participants' behaviour and new information that the researcher was not aware of (DeWalt and DeWalt 2002).

However, Spradley (1980) argues that even though the data collection method provides indepth information of participants that are being observed, the technique is time consuming, it is also difficult to record information while participating and observing people's activities. It is also prone to researcher's personal bias that is, researchers might write what they think should be the ideal situation instead of what they observe (DeWalt and DeWalt 1998). Schensul et al. (1999) also argue that researchers might impose preconceived ideas from their theoretical perspective.

Despite the few weaknesses associated with participant observation method, in this study participant observations provided the researcher with more truthful and holistically perspective of how things realistically function. I participated and observed two farmers' daily activities using the observation guide that I developed beforehand (see appendix 1B for participant observation guide and my narratives on the activities that I participated in and observed at Mrs Njovu and Mrs Mbewe's farms).¹⁴

3.4.3. Transect walk

A transect walk is a systematic walk along a defined path across the community that the researcher undertakes together with the community members (Barton et al. 1997). It requires a researcher to discuss with the participants beforehand the information that needs to be collected before embarking on a transect walk (ibid). Participants have to pay attention to community members, activities, environmental features and local infrastructures in the community. Although a transect walk is time consuming and require artistic skills to draw community maps, the activity enhances local knowledge of the community being studied (ibid).

Therefore, with the aid of a guide I was able to conduct a transact walk. Firstly a meeting was held with the famers who participated in the transact walks with the purpose to explain the goal of these walks. During the transect walks I probed and took noted of the features and resources that were deemed to be of primary importance to the farmers and their activities. To synthesise and verify the data to strengthen the trustworthiness of the data as part of the output data, a map was drawn (see appendix 2B for the transect walk guide and a community map drawn by participants).

¹⁴ I have used pseudonyms throughout to protect the identity of my participants.

3.5. Data Analysis

Data was analysed using thematic analysis. According to Braun and Clarke (2006) thematic analysis is a data analysis tool that identifies recurring issues in the data sets. It also identifies the themes and summaries all the views of participants in the data that has been collected (Patton 2002). To analyse my data, a thematic data analysis was followed to identify themes and concepts.

The first step was to familiarize myself with the interviews by listening to the audio recordings and immediately transcribed the data. Secondly, I systematically coded all views that seemed important in transcripts and summarized the participants' responses. This involves understanding what the respondents meant in all responses (Boyatzis 1998). Thirdly, I identified themes from the coded transcripts and gathered information or codes to the relevant themes and sub- themes.

Fourthly, from the identified themes and sub-themes, I continued to refine and review them. According to Patton (1990) this involves merging two separate themes that seem to convey the same meaning. It also involves dividing a theme into two or more separate themes (ibid). Furthermore, it involves reviewing the codes or data extracts on each theme to ensure that they fall under the right themes and if they do not, codes are moved to appropriate themes (Braun and Clarke 2006). Hence, I had to read through the coded transcripts and themes to evaluate if the themes are a representation of the data set and codes were pressed under an appropriate theme. I also had to include codes that were not previously coded. Lastly, I analysed important data extract examples and codes by relating these to the research questions and literature review.

3.6. Ethical consideration

According to DeWalt and DeWalt (1998) qualitative data collection methods often present ethical challenges. These may include lack of participants' anonymity and confidentiality during and after data collection (ibid). Other data collection techniques might violate the participants' rights and also expose them to health risks (ibid). In order to avoid ethical challenges associated with qualitative research, I designed my study to conform to ethical requirements of the University of KwaZulu-Natal's Humanities and Social Science Research Ethnics Committee. The committee requires that an informed consent form enhances the participants' autonomy, anonymity and confidentiality. Therefore, I had to develop an informed consent form which included the title of the study, the data collection methods, and social benefits of the study (see appendix 1C the informed consent form both in English and iSiLozi).¹⁵ I also translated the informed consent form into iSiLozi and I explained to the participants that the interview procedures will be harmless and their participation in the research was voluntary. I also assured them that strict anonymity and confidentiality will be maintained throughout the interviews and in the final report. Their names, occupations and organisations will not be mentioned but pseudonyms will be used. Audio recordings will be stored in a locked cabinet for five years and then destroyed thereafter, per the policy of the University of KwaZulu-Natal.

After the explanation of the informed consent form, participants signed the forms to show that they understood the implications of participating in the study.¹⁶ Afterwards, I conducted the interviews and none of the participants were exposed to health risks or felt disrespected and embarrassed in any way. However, I encountered a few challenges while collecting data.

3.7. Data collection challenges

The collection of data presented a few challenges. For instance, accessing all farmers was a cumbersome undertaking. Most farmers reside in faraway places and transport is not easily available. This meant that I had to walk for many kilometres to conduct interviews. Equally, most farmers were unavailable for interviews because they were busy harvesting their crops. Nevertheless, I managed to conduct all interviews because I made appointments beforehand. Camp officers and Community Development Assistants in these farm areas also ensured that the farmers were available for the interviews.

Another challenge was finding skilled assistant researchers who could easily understand the study questions and conduct interviews in iSilozi without misinterpreting the questions. Hence, a number of research assistants were trained on how to conduct interviews over so many days and I also made sure that I was always present during interviews, so that I could ask the research assistants to probe or rephrase the questions. Although this process may be very expensive, time consuming and might make participant feel uncomfortable, I was able to

¹⁵ A local language spoken in Senanga.

¹⁶ Signed informed consents forms were included in the final report in order to protect the identity of the participants (Bornat 1994).

minimise these pitfalls. I created rapport with the farmers before the interviews and I also explained to them why I had to be present during interviews.

Moreover, recording observational notes while participating in the field activities was also quite challenging. Nevertheless, I managed to collect the data and I also participate in farm activities by using a recorder that was well placed in my pocket. This made it easier for me to transcribe the recordings objectively.

3.8. Conclusion

The chapter provided a brief description of the study area and the agriculture sector in Zambia. It also examined the different data collection methods and sampling technique employed in the study. Despite a number of pitfalls that are associated with using these methods, I was able to collect satisfactory information from the participants. The chapter also discussed how data was analysed using thematic data analysis technique and how ethical requirements that is participant's anonymity, autonomy and confidentiality were maintained throughout the interviews and during data analysis. It also examined the different challenges faced during data collection and how I was able to overcome them.

Chapter 4: Research findings and Discussion

4.0. Introduction

This chapter analyses and discusses the experiences and views of the research participants who engage in the cultivation and selling of indigenous vegetables in Senanga. As I stated in the previous chapter, my findings are drawn from interviews and participant observations with 20 participants. This chapter links research findings to the study objectives, questions, literature review and the food sovereignty framework. It further discusses major themes identified by research participants as factors that either increase or hamper production of indigenous vegetables and women's access to markets. These factors included socio-economic aspects, socio-cultural dynamics, gender biasness and limited recognition of indigenous vegetables by public and private sector. I also analyse respondents' perceptions of how to improve production of indigenous vegetables and farmers' access to markets in Senanga.

4.1. Motivating factors for increased indigenous vegetable production in Senanga

According to the last labour force survey report conducted in 2014 the unemployment rate for Western province stood at 3.3 per cent which was lower than the national rate which was approximately 7.4 per cent but the Western province rate was higher than that of Eastern province which stood at 3.0 per cent (Central Statistical Office 2014). Furthermore, unemployment rates for males in Western province was higher than that of females but my findings showed both were affected by the lack of industries in the area and the increasing unemployment levels. The table below shows the unemployment rate at national level, Western province and Eastern province.

	Percentage	Unemployment	Unemployment	Unemployment
	share of	rate	rate for males	rate for female
	the			
	population			
National		7.4 per cent	8.4 per cent	6.5 per cent
Western province	6.5	3.3 per cent	3.9 per cent	2.9 per cent
Eastern province	11.5	3.0 per cent	1.8 per cent	4.2 per cent

Therefore, in the study increasing unemployment rates in Senanga emerged as one of the socio-economic factors that motivate farmers to engage in farming and indigenous vegetable production. Research participants claimed that production of indigenous vegetables such as pumpkin leaves, cassava leaves, sweet potato leaves and *sindambi* have proved as an alternative strategy for majority of people in Senanga to generate income and improve their household food security. They further highlighted that access to some resources such as land, water, available local farming skills, intercropping and preservation techniques and the growing demand for indigenous vegetables also motivated farmers to increase production of these vegetables.

4.1.1. Unemployment as a motivating factor for engaging in indigenous vegetable farming.

High unemployment rates among the population in Senanga that are as a result of the absence of industries, lack of adequate skills and retirement from the labour force, motivate people to engage in farming. Research participants highlighted that the majority of the people resorted to farming, specifically indigenous vegetable production, as an alternative source of income and household food security:

When I dropped out of school because my parents could not afford to pay for my school fees, I decided to look for a job in the township. Unfortunately, I could not find employment because I did not have the right qualifications for most jobs that were available. Thereafter, I moved back to the village to start farming on my parents' farm. The first years were so tough because I was only able to grow enough crops for home consumption. Then I was encouraged by parents to start cultivating indigenous vegetables such as pumpkin leaves, amaranths, cassava leaves and *sindambi*. They told me that these vegetables were good because they require fewer inputs and start-up capital. In just a period of two months, I was able to sell and provide food for my family on a daily basis. I can also say that, the past 34 years that I have engaged in indigenous vegetables production, I have never lacked any food or money (Mary Mubita, 2 July 2015).¹⁷

¹⁷ The names of participants that have been changed to protect their identity.



Template 4.1.1: A field of pumpkin vegetable crops belonging to one of women farmers I interviewed

The above statement demonstrates how the inability to find employment has forced some people in Senanga to engage in indigenous vegetable farming. According to Mary Mubita, indigenous vegetable production proved the best alternative cost effective economic strategy to copy with unemployment because it requires minimum investment, improves household income and food security. Similarly, an agriculture extension officer, Theo Mwangana, whom I interviewed also pointed out that:

Some farmers in my attachment area that cultivate indigenous vegetables started farming after retiring from the labour force. Others also started farming after they could not find employment despite possessing the right skills. Hmm..... I would say it was easier for them to engage in indigenous vegetable farming because they only needed less money to buy inputs. Also, most of them have grown up cultivating these vegetables with their parents and so they can easily draw from a great deal of skills that helps them start cultivating their own fields. This I see every day, a number of farmers practise conservation farming, seed banking seeds, clear the land by cutting down trees and they also burn the residue after they harvest. They also intercrop pumpkin leaves and amaranths with maize in order to improve soil fertility. They are also able to preserve their vegetables, sell and consume them when commercial vegetables are unavailable. This has helped them generate income to purchase agricultural inputs for other crops, pay for their children's school fees and improve food security in their households (Theo Mwangana, 7 July 2015).



Template 4.1.1.1: Maize field intercropped with cassava and pumpkin vegetable crops

For Theo Mwangana, people's inability to find employment and retirement from the labour market motivates them to engage in indigenous vegetable farming as an alternative livelihood. The agriculture officer also argued that most farmers cultivate indigenous vegetables because they are able to utilize some indigenous farming skills that they inherited from their parents. He further pointed out that agricultural methods such as intercropping and conservation farming are utilized because they are cost effective and improve soil fertility. Both arguments provided by Theo Mwangana and Mary Mubita both tally with and also challenges the literature reviewed in chapters two and three.

According to Zambia's Sixth National Development Plan (2013) approximately 80 percent of population's livelihoods are centred on fishing and subsistence farming in Senanga. This is partly due to the lack of industries to provide employment. As a result, the majority of the population has resorted to farming in order to generate income and provide for their families (ibid). This is also confirmed by Abukutsa-Onyango (2010) and Lewis (1997) who argue that the majority of people engage in indigenous vegetable production because it is cost effective. It requires less manure and minimum amounts of water. Thus, resource constrained women farmers are able to generate income, contribute to the family budget and access social services. However, there is no evidence that farming in Senanga is a life style that the majority of people has chosen freely as it is stipulated in some of the food sovereignty literature (Aerni 2011). Women in Senanga only resorted to farming when they could not find employment and they specifically chose indigenous vegetable farming because it was cost effective.

On the other hand, Chweya and Eyzaguirre (1999) assert that most farmers utilize agricultural skills inherited from their parents that are cost effective. Agro-ecological methods such as intercropping, mixed farming, conservation farming and application of organic fertilizers are utilized to improve soil fertility and to prevent weed production (Abukutsa-Onyango 1999). Nevertheless, in as much as majority of farmers in Senanga utilize indigenous knowledge that been transmitted from one generation to another, the food sovereignty framework does not adequately acknowledge that this knowledge comprise of some methods that are agro-ecologically unacceptable. The research findings showed that these methods include the cutting down of trees, burning residues after harvest and utilization of seed banking using seeds from the previous harvest and therefore, farmers need to trained on agro-ecological farming techniques and encourage them on the utilization of only proper traditional farming methods. Other than the pull factors such as high unemployment rates and minimum capital required to engage in farming motivating the cultivation of indigenous vegetables, research participants cited the growing demand for indigenous vegetables as another factor that has encouraged farmers to increase their production of these vegetables.

4.1.2. The growing demand for indigenous vegetables

According to Jansen van Rensburg et al. (2007), the production and consumption of indigenous vegetables has recently increased among both local and international communities. This may be partly due to the perceived nutritional and medicinal value of indigenous vegetables. For instance, Mensah et al. (2008) argue that amaranth, pumpkin leaves, sweet potato leaves and cowpea leaves contain high levels of calcium, iron, protein and vitamins than commercial or popular vegetables. They also contain alkaloids, fibres, insulins, anti-oxidants and amino acids that might assist in the curing of anaemia, malaria and typhoid. These nutrients are also professed to delay the advancement of the HIV virus to AIDS and prevent mother to child transmission (Kean et al. 2001). Both arguments raised by Mensah et al. (2008) and Kean et al. (2001) correspond with the research findings. The participants in this study were of opinion that the perceived nutritional value and medicinal properties of indigenous vegetables have increased both production and consumption of these vegetables. Farmers have also increased production of indigenous vegetables in order to satisfy the ever growing demand for these vegetables and they have generated income in the long run:

Unlike in the past when people preferred to eat commercial vegetables than indigenous ones, people nowadays favour cassava leaves and amaranth to cabbage or spinach. This is because of the perceived nutrients and medicinal properties found in indigenous vegetables. Communities also have increased knowledge on how these vegetables might help manage HIV/ AIDS and other diseases. This has not only resulted in the change of diet in some communities but it has also motivated farmers to increase production in order to supply different markets and communities (Phinias Phiri, 8 July 2015).

Another interviewee, James Lubasi an agricultural officer in one of the NGOs in Senanga, also concurred with Phinias Phiri and offered the following reasons:

With the shift in terms of preference for both fresh and dry indigenous vegetables by majority of town dwellers, I have seen that various markets for these vegetables have been established. This has motivated farmers to increase their production and preservation of indigenous vegetables. Farmers are able to sell to local markets, national markets such as Sylvia Food Solution that later supply local supermarkets and foreign markets in the Scandinavian countries and the United States of America. This has increased farmers' income and you would be amazed at how much they make when they sell these vegetables. For instance, some have even bought cows and they are also able to spend their money on day to day household needs. Farmers have not only enhanced food security but they have also reduced malnutrition in most of their households (20 July 2015).

The above narratives indicate that the increased demand for indigenous vegetables by both local and international markets have motivated farmers to cultivate more vegetables. Although, access to these markets has been a challenge for local farmers in Senanga as I will later discuss in this chapter, some farmers have been able to enhance their food security and income by selling these vegetables to few markets that they have access to. Conversely, the findings also confirmed that small-scale farmers participate in commodity markets and international trade in that they sell their vegetables to Sylvia food solutions which later resales them to foreign markets even though they are faced with various challenges. According to Lee (2007) these vegetables are subjected to stiff health and quality standards requirements that producers of local food fail to meet. This confirms the concerns raised by

food sovereignty framework that both trade and local markets should be reorganised. This means that developing countries should negotiate for fair terms of trade that is, developing countries should minimise the stiff health and quality standards required for food items that small-scale farmers cultivate (ibid). In addition, to the growing demand should for indigenous vegetables influencing vegetables production in Senanga, the research also established that access to productive resources is another factor that motivates farmers to engage in farming.

4.1.3. Utilization of available productive resources in the production of indigenous vegetables

A number of the respondents were of the view that access to productive resources such as human, social, financial, physical, natural assets and services provided by both private and public institutions enhanced production of vegetables. For example, Martha Nyambe who has been growing indigenous vegetables for many years highlighted that the farmers in Senanga have access to natural assets such as land, water and organic manure from their livestock. They have access to land that they either inherited from their parents or they obtained from traditional leaders. Others have access to land that belongs to their husbands or parents. Most of this land is allocated near waterbodies for farmers to access both fertile land and water for irrigation. She further highlighted that farmers generally utilize human capital such as agricultural skills that they learnt from their parents and institutions on how to cultivate indigenous vegetables. They are also able to weed, irrigate, plough the land and market the vegetables using cheap family labour.

Equally, respondents also pointed out that the use of social assets, physical resources and services provided by institutions in the area have also helped farmers increase their production of indigenous vegetable and improved their access to markets:

For the past 20 years that I have worked in Senanga, I am always encouraged to see farmers making use of resources such as local markets, assembly markets and nearby villages to sell their vegetables. Farmers also utilize social resources such as solar dryers that belong to the women clubs in the area. In addition, they also obtain saved seeds from other farmers. There are also a few farmers who make use of the trainings in proper planting methods, marketing skills, market linkages and preservation skills that are provided by both the private and public sector. For example, some women who grow *sindambi* have utilized these skills and they have made small business relationships with buyers. As a result, they have improved their vegetable yields and they have managed to sell some of the vegetables to local markets. They are also able to pay their children's school fees and meet their daily needs without relying on the government for handouts (Tina Banda, 2 August 2015).

Both the observations provided by Martha Nyambe and Tina Banda resonate with that of Ndinya (2003). She established that rural women utilize different resources as they engage in indigenous vegetable farming. They use traditional planting methods, seed banking using seeds from their previous harvest and from their neighbours. Additionally, they also use organic manure from small livestock and compost manure as fertilizer. Similarly, Macha (2003) also argues that women also use physical assets such as roads and markets. For example, in his study conducted on the consumption and sale of African eggplants in Tanzania, Macha established that African eggplants are sold at both retail and wholesale in various local markets in the country. This has increased vegetable production and the farmers' income in Tanzania (ibid). However, food sovereignty framework argues that most small-scale farmers lack access to various productive resources, this is because of factors such as limitation of freedom of choice and strategies, gender dynamics, traditional customs that might make it very difficult for women to access resources and markets as I will discuss later in the chapter (Gartaula et al. 2013).

4.2. Factors that hamper vegetable production and farmers' access to markets

My findings show that socio-economic factors, gender stereotypes and socio-cultural factors and gender bias and limited recognition of indigenous vegetables by private and public sector are among key factors that hamper vegetable production and farmers' access to markets in Senanga. A number of respondents were of the view that financial constraints to access resources for production and markets, lack of sustainable farming skills, cultural rigidity, gender dynamics and customary land law are among socio-economic and cultural factors that not only hamper the production of indigenous vegetables but also reduce household income and food security.

4.2.1. Financial constraints to access resources for production and markets

Respondents highlighted that the majority of female farmers in Senanga do not adequately access financial resources such as savings, credits, income from employment and trades to purchase agricultural inputs and equipment. They shared the view that this has not only contributed to poor production but it has also reduced farmers' access to markets. Dorcas

Poniso, a farmer I interviewed in July 2015 argued that most farmers do not have financial resources to purchase irrigation equipment such as treadle pumps and motorised pumps. Even though a number of farmers manage to irrigate vegetables using buckets, she complained that it is time consuming and it is not an effective way of watering vegetables cultivated on a big field. Dorcas Poniso's argument is similar to what I observed in Mrs Njovu's farm. Mrs Njovu's children watered the plants using buckets, which was tedious and time consuming. Lack of simple irrigation equipment also limited the field they cultivated because if they farmed large portion it would be difficult for them to irrigate the crops using buckets.

According to Mrs Njovu and Dorcas Poniso, the lack of financial resources to purchase irrigation equipment has hampered production of indigenous vegetables in Senanga. Reliance on buckets to irrigate their vegetables has forced farmers to cultivate a small portion of land. Other respondents also claimed that lack of financial resources makes it difficult for female farmers in the district to purchase farm implements such as hoes and ploughs, and preservation equipment. Agness Mwangala, a farmer in Seeyi area in Senanga said:

I always want to cultivate a large field of indigenous vegetables, but it is challenging because I have not bought ploughs to till the land. Although I am able to cultivate these vegetables using hoes, I found that it is very tedious and I am only able to produce small quantities of vegetables. I also find it very difficult to cultivate and preserve indigenous vegetables because I don't have money to purchase solar dryers and organic fertilizer. In as much as I use the traditional methods to preserve vegetables which involves boiling the vegetables and then drying them on an elevated rack, I am only able to dry small quantities of vegetables and they are usually of poor quality. On the other hand, the traditional pesticides that are made out of hot chilli are not very effective because my vegetables are always attacked by pests. I also do not generate enough money to buy fertilizer so I use manure, but what I have observed is that most of us farmers do not even have livestock to use for ploughing or for manure (Agness Mwangala, 17 July 2015).

Similarly, Namasiku Nalishebo a farmer from Nande area in Senanga, also highlighted that financial constraints also makes it so difficult for most farmers in the areas to access markets. She narrated that:

The first challenge I face is that I usually don't have money to transport my vegetables to the market in the township. It costs about K40.00 (\$5) to transport vegetables to and from the markets. This leaves me with less money even after selling all the vegetables. I have also failed to maintain business arrangements that I have initiated with traders because I do not have enough money to transport these vegetables to the market. Coupled with that, when I take vegetables to the market I also have to pay market levy which is very expensive. I also have to pay for accommodation if I fail to sell my vegetables in one day. With all these costs one has to incur, I have decided to sell my vegetables from the farm. However, this has reduced the income I generate from selling these vegetables (Namasiku Nalishabo, 15th July 2015).

The above narratives show that generally farmers in Senanga lack financial resources to purchase agricultural inputs, preservation equipment and access markets. Of the few farmers that access markets, Namasiku Nalishabo argued that they are usually faced with high transport costs to the market, market levy and problems of accommodation if the vegetables are not sold the same day. As a result, the majority of the farmers sell their vegetables from farm yards but this has reduced household income because vegetables are sold at lower prices at farm yards than at the market. These research findings correspond with observations provided by Abukutsa-Onyango (2003) and Abukutsa-Onyango et al. (2005). According to Abukutsa-Onyango et al. (2005) the lack of financial resources to purchase animal manure and preservation equipment contribute to poor production of indigenous vegetables in most rural areas. Similarly, a study conducted in the Arusha region of Tanzania showed that lack of funds to transport vegetables to markets and purchase animal manure are among the main constraining factors that have affected the production of vegetables and women's access to markets. According to Abukutsa-Onyango (2003, 25) "Most farmers cannot afford the transport costs of about \$30 per trip. This has forced farmers to sell their vegetables at the farm gates to exploitative middle men at cheaper prices than they could have sold them at the market."

Thus, the food sovereignty framework advocates for agrarian reforms in developing countries. These reforms include increased access to credit facilities, market infrastructure and resources. This includes changing social structures as leading proponents of food sovereignty have pointed out. In the words of Desmarais and Wittman (2014: 1169), food

sovereignty "is about fundamental transformation of existing structures, ways of thinking and being" (2014: 1169). Therefore, governments need to take into account the social differences, economic performance, political situation and gender dynamics that exist in developing countries that might make it difficult to implement these reforms or improve women's access to financial resources as the research findings have shown. Another key concern that my respondents also pointed out was the lack of agricultural skills among farmers in Senanga which has to a larger extend contributed to low yields and household income.

4.2.2. Lack of adequate agricultural skills to improve production of indigenous vegetables and farmers' access to markets

Although it is generally believed that indigenous knowledge is transmitted from one generation to another, my findings show that the farmers in Senanga are concerned about their lack of proper farming skills. Thanks to changing environments and loss of knowledge, the farmers worried that inadequate farming skills have contributed to poor yields and household income in the area. Diana Namulula captured this well when she complained that:

Even though I have been farming for the past 30 years, my yields have always been low and of poor quality. This is because I only have knowledge on how to grow maize and rice but I don't have skills on how to cultivate indigenous vegetables and manage pests (25 July 2015).

- Similarly, Mrs Mbewe a farmer whose field I observed for two days, also lamented that:
 - Most farmers in this area do not have adequate farming skills because only a few farmers have received extension services from the government on how to grow these vegetables. Hmmm.... we also do not have marketing skills and the government has not trained us on how to find markets for these vegetables. Only one NGO that came some years back to train us on how to dry our vegetables and they also gave us a solar dryer as a women's group. However, most of the women have even forgotten how to dry their vegetables in a proper way and also not everyone has the chance to use that solar dryer because it caters for 30 farmers (13 July 2015).

Both Diana Namulula and Mrs Mbewe made a strong connection between lack of adequate farming skills among farmers in Senanga and poor production of indigenous vegetables. They also claimed that the government and NGOs have not adequately trained them on how to preserve and cultivate these types of vegetables. Two agriculture extension officers that I interviewed also echoed this view: The majority of farmers in Senanga don't have skills on how to cultivate indigenous vegetables. They lack skills on how to cultivate these vegetables at different intervals and in sections. For instance, when one section of the vegetable has matured and ready for sale, the other section should also be nearing the maturity stage so that they can sell them after the other section of vegetables has been sold. However, the majority of the farmers in Senanga produce low yields and they fail to supply vegetables to the markets on a regular basis (Tina Banda, 2nd August 2015).

In my catchment area, farmers marketing needs include market research, product research and price research. This has made it so difficult for farmers to schedule when they should sell their vegetables in the markets. You find that at times these farmers take their vegetables to markets when they are not on demand, so they end up selling them at lower prices. This is a huge loss on their part considering the costs involved in cultivating these vegetables. Furthermore, lack of marketing skills has made it so difficult for these farmers to create business relationships and maintain them. For example, farmers in the area fail to supply quality and right quantity of vegetables to Sylvia Food Solutions. This has somehow destroyed the business relationship that these farmers have with Sylvia Food Solutions and other markets. So there is great need for us to train them in different marketing skills (Theo Mwangana, 7 July 2015).



Template 4.2.2: Sindambi vegetables of poor quality being sold at the market in Senanga

The views provided by both farmers and agriculture extension officers resonate with the study on how to increase sustainable production of indigenous vegetables and market chain development that was conducted in Kenya, Tanzania, and Zambia by Weller et al. (2011). The study findings showed that most farmers lacked skills in proper post harvesting, production methods and marketing skills and this has resulted in huge losses during harvesting, farmers failed to sell their vegetables and maintain business relationships. Therefore, there is for agriculture extension officers to train in farmer-friendly approaches that are in line with food sovereignty and agro-ecological approaches (Mendez et al. 2013). This means that developing countries should reform their agriculture sectors in that small-scale farmers should have equitable access to resources and agricultural skills as the commercial farmers. In addition, countries should also minimise gender dynamics that impede rural women from accessing agricultural resources and increase provision of services by both the private and public sector which was also pointed out by the research participants.

4.2.3. Gender biasness and limited recognition of indigenous vegetables by both private and public sector

Research participants pointed out that both private and public sector have not adequately provided services to the farmers in Senanga. A number of people I interviewed argued that the public sector's national agricultural policy and land tenure policy have not adequately addressed the needs of the small-scale farmers in Senanga. As a result, these policies have hampered indigenous vegetable production and women's access to markets. Equally, respondents also claimed that the private sector that comprises of the NGOs and existing markets have not sufficiently provided services to the women in Senanga:

Cultivating and marketing our vegetables in Kaeya area has not been easy for us women. Government has failed us farmers in Kaeya, it has not provided a market in our location. I have to walk for 22 kilometres to access the nearest market. This has made it so difficult for me to make business arrangements with different traders. If I walk to the market, I usually get there late and only to find that my regular buyers have bought vegetables from someone else. It's a sad situation, I have even ended up selling my vegetables at my farm at a cheaper price than I could have sold them at the market. Hmmmm.... I even want to stop growing indigenous vegetables and start cultivating field crops such as maize and rice. This is because these crops have ready markets and farmers do not have to walk long distances to access markets, instead

buyers and Food Reserve Agency (FRA) buy directly from the farmers' homes (Diana Namulula, 25 July 2015).



Template 4.2.3: Community map drawn after the transect walk, illustrates the distance between the markets and Kaeya area

According to Diana Namulula and what the community map drawn after the transect walk illustrates the government's inability to construct adequate nearby markets and proper transport system has hampered farmers' access to markets and production of indigenous vegetables in the area. The government has also not adequately linked indigenous vegetable cultivators to ready markets; instead, it has provided markets such as FRA for commercial crops. Diana Namulula's argument is similar to arguments raised in chapters two and three.

According to Abukutsa-Onyango (2003) governments in most developing countries have not constructed infrastructure such as roads, markets and agriculture information structures in rural areas. Farmers have to walk for many hours to access the nearest markets and most roads that lead to the markets are impassable in the rainy season. This has affected the production of vegetables and women's access to markets. Similarly, Kuteya (2012) argues that despite the fact that the Zambian government has provided FRA as output markets, commercial farmers benefit more from services provided by FRA. For instance, the agency only buys commercial crops than most of the crops cultivated by small-scale farmers. This

has partly undermined the production of subsistence crops and reduced household income for a number of small-scale farmers.

Conversely, research participants also highlighted that the government has not provided sufficient farmer-friendly methods and agro-ecological farming techniques to farmers in Senanga. They shared a view that some of them have not been trained in proper production methods, traditional methods in the management of pests and marketing skills. Similarly, agriculture officers also argued that in as much as they have provided training in conservation farming, intercropping and marketing skills in Senanga, they have only provided these skills to few farmers. This is partly because agriculture extension officers have not received adequate funding to access all the farming areas in Senanga:

For the many years I have been farming, I have not received any inputs for indigenous vegetables. The only farmers that I have seen in my area accessing inputs from the government program under the Ministry of Agriculture and Livestock known as Farmers Input Support Programme (FISP) are those farmers that cultivate maize and rice. Also, I have never been trained on how to cultivate indigenous vegetables but I have been trained in maize production. Regarding training in marketing skills, I have never received any training. It is also very sad in this area that most of us farmers don't have money to purchase solar dryers, we have to share a solar dryer and a treadle pump among 30 women. This has been very challenging in that we can't even increase our yields or preserve more vegetables (Nawa Mulenga, 30 July 2015).

This farmer's sentiment was shared by an agriculture extension officer who decried the fact that her department does not provide enough support for her to reach far-flung areas:

As an agriculture extension officer I have provided training in marketing skills, cultivation and preservation methods. However, I have only trained a few farmers in the area. This is because our department receives fewer funds to reach the areas where these farmers cultivate their vegetables and I also fail to regularly monitor other farmers we have trained. There are times we visit some areas for the first time and only to find that the women have poor production, preservation and marketing skills or they have no skills at all. As a result, they usually have poor yields that they can't even sell these vegetables at the market. Furthermore, even though I have linked few

farmers to some markets, they always fail to maintain these linkages because their vegetables are of poor quality and they also fail to supply these vegetables on a regular basis (Emily Malambo, 7 July 2015).

The above narratives show that generally the government has not adequately provided resources and extension services to indigenous vegetable cultivators. Most of the Zambian agriculture programmes such as FRA and FISP provide services that are more targeted for commercial farmers than small-scale farmers. Both programmes provide inputs and markets for commercial crops than for indigenous crops. This has given commercial farmers more access to services provided by FRA and FISP than small-scale farmers (Ministry of Finance 2013). This has contributed to poor production of local foods, increased developing countries' dependence on food aid and cheap food imports that are often unavailable to rural people (Glipo and Pascual 2005). Conversely, Nguni (2005) argues that a number of Zambian women lack access to productive resources such as land, water and credit. For example, even though the Zambian land tenure policy has been revised, it still does not adequately address gender inequalities that exist in the distribution of land. Approximately, 90 per cent of Zambian women lack access to land than their male counterparts (Machina 2002). On the other hand, the Zambian customary law also impedes women from owning land. Access to land is only dependent on their relationship with the husbands, in cases of divorce and death of the husband, a number of women lose access to land (ibid).

Furthermore, inadequate funding for agricultural research and extension services have also contributed to low production of indigenous vegetables in Zambia. Sitko et al. (2012) argue that the Zambian agricultural research and development sub-sector has not adequately carried out research on how to improve different varieties of indigenous vegetables instead it has focused on improving different varieties of maize and rice. On the other hand, the agriculture sector has not adequately trained and recruited more agriculture extension officers to extend knowledge on proper agriculture practices to farmers in rural areas (Farnworth and Munachonga 2010). Only 36 extension officers are assigned to Senanga to cater for 2000 farmers. Thus, one extension officer is supposed to provide extension services to more than 150 farmers in one catchment area in Senanga and some areas do not even have extension officers because the government has not built houses for these officers (ibid). The ratio for extension officers to farmers has increased over time because more people each year resort to farming as an alternative livelihood (Ministry of Finance 2013). In addition, the research also found that NGOs have not adequately provided agriculture services to women farmers in

Senanga. James Lubasi an agriculture officer who works for one of the NGOs operating in Senanga district stated that:

I have only trained few female farmers on how to preserve vegetables with or without a solar dryer. For effective preservation of vegetables such as cassava leaves and pumpkin leaves, I have taught them that they have to boil them for a few minutes, pound and then dry them just for few days without the vegetables losing their green colour. As for sindambi, I always advise female farmers to rub these vegetables between their hands or pound them in a mortar and then dry them on either an elevated reed mat or a solar dryer. If they are drying in a solar dryer, farmers need to turn these vegetables from time to time so that the vegetables don't lose their colour and fail to attract customers. This has helped a few farmers generate some income when they sell these vegetables at different markets. I have also linked few farmers that dry vegetables to Sylvia Food Solution unfortunately, these women have failed to provide the right quality and quantity of vegetables that Sylvia Food Solution needs. This is because they don't have solar dryers and most of them do not dry their vegetables properly. Other than that, I have also trained some farmers in marketing skills, though majority of them are not trained because our organisation does not have adequate number of officers and funding to reach appropriately 900 women groups in Senanga. Although we have partnered with Concern Worldwide and Programme for Malnutrition (PAM) who have provided training on how to process vegetables in cakes, scones and conservation farming to farmers, a number of women still need to be trained in different agricultural skills (James Lubasi, 20 July 2015).

According to James Lubasi, although NGOs have provided some training to farmers in Senanga, the majority of female farmers have not received these trainings because most of the NGOs have erratic funding and few government extension officers are available to provide services to farmers. As a result, production of indigenous vegetables in Senanga has continued to decline. Therefore, my findings confirm the concerns raised by Sitko et al. (2012) that the agriculture sector has also not adequately trained and recruited more agriculture extension officers to extend knowledge on proper agriculture practices to farmers in rural areas. For example, the ratio of an extension officer to farmers is approximately one to 300. This is owing to the increase in the number of farmers over time.

Likewise, Zambian agricultural research and development sub-sector and NGOs that implement agriculture programmes both in colonial and post-colonial era have not adequately carried out research on how to improve different varieties of indigenous vegetables; instead they has focused on improving different varieties of maize and rice that the country can sale on the foreign markets. This has hampered production of indigenous vegetables and crops in the country. Windfuhr and Jonsen (2005) also argues that when developmental assistance and national budgets for the agriculture sector declined by 50 per cent between 1986 and 1996 in developing countries during the implementation of SAPs, small-scale farmers in rural areas were more affected than commercial farmers. Therefore, for various reasons, food sovereignty framework tries to reverse the above trends. It advocates for agrarian reforms in developing countries with increased resource provision to rural farmers. It also suggests that governments and NGOs should collaborate in the provision of resources to farmers (ibid).

Similarly, most respondents were of the view that market polices have also hampered production and farmers' access to markets. They argued that the determination of prices is not done by the farmers but the market. Farmers only take their vegetables to the market and whatever price the vegetables are being sold for is determined by market demand. For instance, when there are a lot of vegetables in the market, the price will be low and when there are fewer vegetables, the price will be high. However, in most cases vegetables are sold at lower prices because farmers are exploited by traders who want to buy them at cheaper prices and later sell them at higher prices in order to make more profits. On the other hand, most of the traders I interviewed were of the view that the majority of the farmers fail to maintain business relationships with them because of various reasons. The farmers do not have transport to the markets and they usually deliver their vegetables very late. This has forced traders to buy indigenous vegetables from other districts and other traders also buy commercial vegetables that are readily available. The traders' arguments echoed the observation provided by James Lubasi who earlier mentioned that farmers in Senanga have not adequately provided quality indigenous vegetables to Sylvia Food Solution and foreign countries to which the organization exports these vegetables.

The above observation shows that the market has undermined farmers' rights to determine the prices of the vegetables and this has always disadvantaged farmers. Also, the availability of commercial vegetables that are sold at a lower price as compared to the cost of indigenous vegetables, have crowded out indigenous vegetable cultivators from various markets. For example, cabbage costs K10 (\$1) per two kilograms and amaranth costs K20 (\$2) per two kilograms. Furthermore, standards required by both local and international markets have also hampered indigenous vegetable production and women's access to markets. These arguments correspond with observations provided by the Ministry of Agriculture and Livestock (2004) and Lee (2007). According to Lee (2007) international markets require that indigenous vegetables have appropriate weight, colour, grade, packaging and varieties. Indigenous vegetables also have to be cultivated in hygienic and safe areas. However, most farmers fail to meet these requirements as mentioned earlier. This is partly due to the farmers' lack of proper production skills and post-harvest handing procedures such as harvesting, grading, packaging, transporting and storage (Abukutsa-Onyango et al. 2005). Equally, trade negotiations rarely take into account that rural women's literacy levels, skills and also their lack of assets such as land might necessitate their inadequacy in meeting export markets' quality and sanitation standards (ibid).

Furthermore, trade liberalization which is embedded in Zambia's National Agricultural Policy has also exposed indigenous vegetables to unfair competition on both international and local markets (Agriculture and Livestock 2014). Trade liberalization has increased food dumping in developing countries and this has displaced local women's agriculture products from markets and it reduced production of indigenous vegetables. For instance, 58 per cent of the onion, oranges, bananas, apples, carrots and commercial vegetables in Zambia are imported from South Africa. Then 27 per cent is supplied by medium farmers followed by small-scale farmers who supply 14 per cent and remaining two per cent is supplied by large farm areas (Hichaambwa and Tschirley 2010). On the other hand, the research findings showed that socio- cultural factors also contribute to the poor production of indigenous vegetables in Senanga.

4.2.4. *Gender stereotypes and socio-cultural factors that hamper production of indigenous vegetables*

The study established that discriminatory gender roles, customary land law and cultural rigidity are among the socio-cultural factors that hamper production of indigenous vegetables and farmers' access to markets in Senanga. The gendered nature of women in Senanga reveals inequities that afflict many agrarian societies in Africa. The gendered division of labour in both productive and reproductive resources marks differentiation between men and women. Men tend to control productive resources (land, labour, capital, for example) and

women are expected not only to work productively but to also be responsible for the care economy (Dancer and Tsikata 2015). For example, Emily Malambo an agriculture extension officer explained how discriminatory gender roles that exist in communities contributed to poor production of vegetables. She argued that in rural Senanga, husbands decide when to cultivate maize and how much land to use. On the other hand, their wives are only allowed to decide what vegetables to grow and when they can be sold. Coupled with that, women have the responsibility of taking care of their family and homes, which leaves them with less time to cultivate and take their vegetables to the market. It also makes it very difficult for them to attend extension meetings as compared to their male counterparts. As a result, women in the area have inadequate agriculture skills than male farmers. They also have poor yields and generate low income because they usually sell their vegetables locally, so that they can stay home to take care of their children.

The observation provided by Emily Malambo is also similar to the argument raised by Komm et al. (2011) in chapter two. They argue that discriminatory gender roles in the Zambian traditional society that regard women as caretaker of the house and men as planners, owners of physical capital and decision makers in the family have negative impacts on agriculture production. Women are overburdened with excessive housework that leaves them with less time to attend extension meetings and field days than their male counterparts. This has reduced women's participation and representation in community activities involving food production. Thus, the food sovereignty framework proposes that developing countries should decide their own food systems and agricultural polices than allowing MNCs to have an upper hand in developing economies' agriculture sectors. It suggests that local and national governments should collaborate in the formulation of agricultural policies. They should also create a platform for women to actively participate in decision making processes regarding food issues and also agricultural policies (Glipo and Pascual 2005). This means that communities should be sensitized on the importance of women's participation in agricultural extension meetings (Trauger 2013). However, as my research findings show, this is often easier said than done as patriarchal division of labour is deeply entrenched.

Other research participants pointed out that customary laws also hamper production of indigenous vegetables in Senanga. Phinias Phiri, an agriculture marketing officer argued that the majority of women in Senanga lack access to land. They are only given a small piece of land by their husbands but they lose access to the land when their husbands die. This is

because in most cultures land is given to the nephew instead of the widow. He further argued that traditional customs that only allow men to have access to farming implements have also disadvantaged women in a number of ways. For instance, the majority of women in Senanga lack access to farming implements such solar dryers, ploughs and irrigation equipment. He also highlighted that women do not have access to farming inputs such as organic fertilizers because the majority of the farmers do not own any livestock.

The observation provided by Phinias Phiri indicates that the Zambian customary law undermines women's access to productive assets and this has contributed to the poor production of indigenous vegetable in rural areas. Phinias Phiri's observation resonates with the argument by Machina (2002). He argues that in the Zambian traditional society, women's access to land, livestock and agricultural equipment is dependent on their relationship with the husbands. In cases of divorce and death of the husband, women lose access to land and productive resources. Lack of access to land does not only automatically disqualify women farmers as members of farmer's cooperatives but it also prevents them from accessing government support programmes and credits from financial institutions (Ngoma 2010).

Other respondents pointed out that cultural rigidity and dependence syndrome has also contributed to low production of indigenous vegetables. The following extract from the interview with Tina Banda an agriculture officer showed how cultural rigidity and dependence syndrome among farmers has contributed to low production of indigenous vegetables and women's access to markets:

Me: What, in your opinion, has been the impact of the training on indigenous vegetable production that you provided for the women farmers?

Tina Banda: Well, some of women that have been trained are now able to supply vegetables on a regular basis and generate some money. Still other women have managed to dry their vegetables and have sold them but these farmers still need to be constantly reminded on how to cultivate these vegetables. We have also trained some farmers in intercropping and conservation farming. We have also encouraged them to utilize some of the indigenous farming techniques. However, some of them have stuck to some poor indigenous agricultural practises such as cutting of trees and burning of crop residues and this has contributed to soil infertility and erosion. I have also

noticed that some farmers might apply these farming methods that we trained them in but the moment I stop monitoring these farmers on a regular basis, they stop applying the farming skills I have taught them. I am also afraid to say that these farmers have not put in place an alternative way on how to preserve these vegetables, there is a lot of dependence on someone else to do something for them, they usually wait for a saviour who will come to their door to give them solar dyers even when they can still preserve vegetables the traditional way without using solar dryers (Tina Banda, 2 August 2015).

For Tina Banda, cultural rigidity and dependence syndrome among the women farmers in Senanga has contributed to poor production of indigenous vegetables. In as much as the officers have trained some of farmers in agro ecological farming techniques and they have also encouraged them to utilize some of the indigenous farming techniques, some of them have stuck to some poor indigenous farming practises such as cutting of trees and burning of crop residues and this has contributed to soil infertility and erosion in some areas. Others are also dependent on the government or NGOs to provide productive assets such as solar dryers and treadle pumps. Therefore, there is need to change the farmers' mind-sets that is, they have be less dependent on government and NGOs' support but they should be encouraged to use local methods of preserving and irrigating vegetables. On the other hand, research participants also highlighted how indigenous vegetable production and women's access to markets can be improved in Senanga.

4.2.5. Perceptions on how to improve indigenous vegetable production and farmers' access to markets in Senanga

The food sovereignty framework advocates for agrarian reforms in developing countries in order to increase production of locally acceptable food. These reforms includes improving women's access to productive resources, reorganizing trade and creating a conducive environment for increased women participation in decision making activities regarding food production (Glipo and Pascual 2005). The above argument resonates with what respondents thought would improve production of indigenous vegetables in Senanga:

Me: How, in your opinion, can government and the private sector help rural women improve their production and access to markets for indigenous vegetables?

Nalucha Sepiso: NGOs and government should provide resources, training in intercropping, conservation farming and link us to markets that can be easily accessed by the community members and farmers. If this is done, it will increase production of indigenous vegetables and household income. It will also reduce poverty levels in our communities (Nalucha Sepiso, 11 July 2015).

The above extract indicates that the majority of the respondents were of the view that smallscale farmers should have access to resources in order to increase production of indigenous vegetables. In the case of Agness Mwangala, provision of marketing skills, enhancement of farmer-friendly preservation techniques and value addition methods will improve their incomes because they will be able to sale these vegetables on various markets. This argument is also echoed by proponents of the food sovereignty framework. The framework argues that major reforms must be made in agriculture policies to ensure agro-ecological farming methods are extensively adopted. Developing countries should also increase their support for small-scale farmers through the distribution of land, provision of sustainable farming technologies and training in agro-ecological production methods (Glipo and Pascual 2005). In addition, the following extract illustrates how preservation and marketing of indigenous vegetables can be improved in Senanga:

Me: What, in your opinion can help women improve the processing of indigenous vegetables?

Phinias Phiri: they should be trained on how to process these vegetables and they should be provided with individual solar dryers. The government should construct nearby markets so that they can be motivated to dry more indigenous vegetables. **Me:** What, in your opinion can help women improve the marketing of vegetables?

Phinias Phiri: I will still say that they need to be trained in marketing skills such as how to attract buyers, get market information on the price of these vegetables and the demand. Other than that, they need to be trained in proper cultivation and preservation methods. Furthermore, the government need to provide some inputs and tools that these farmers can use based on the training that we have provided. This is because we have a tendency of teaching people but we do not provide the inputs.

Me: How can you as government workers and NGO programme officers improve the production, processing and marketing of indigenous vegetables?

Phinias Phiri: As an agriculture department we need to provide market information and link farmers to markets. This will make them improve their production, processing and marketing of these vegetables and increase their household income. However, there are a lot of challenges that this department faces that make it's so difficult for us to provide adequate services to farmers. For instance, the department does not receive adequate funds for us to provide extension services to farmers. Therefore, government should provide sufficient funding to the department of Agriculture. Government should also construct infrastructure such as roads, markets and storage facilities for rural women in Senanga (Phinias Phiri, 8 July 2015).

The suggestion provided by Phinias Phiri is similar to recommendations by James Lubasi an agricultural officer. He argued that for farmers to improve the production of indigenous vegetables and access to markets, these farmers need to be turned into solid entities and groups that are functional. He asserted that if farmers are organised, they will be able to get into direct marketing arrangement with various markets because evidence shows that, most markets or traders prefer to work with groups than individuals. Traders are also willing to buy large quantities of vegetables from groups of farmers than individual farmers. He further argued that to achieve this, farmers need to be trained in different marketing skills. The government should negotiate for fair terms of trade for indigenous vegetables with international markets that is, these markets should minimise the stiff health and quality standards that foreign markets require in the production of indigenous vegetables

Both suggestions provided by James Lubasi and Phinias Phiri were also echoed by Pimbert (2009); Glipo and Pascual (2005) and Ngugi et al. (2006). Ngugi et al. (2006) argue that the Ministry of Agriculture, Department of Home Economics and the International Plant Genetic Research (IPGRI) in Kenya were able to create markets for indigenous vegetables. These institutions trained farmers in business management, administration, record keeping, invoicing, value chain, marketing, leadership skills and transformed into Business Support Units (BSUs). This improved indigenous vegetables production and access to markets. They were able to conduct formalized business transaction with supermarkets, wholesale and retail, open markets and hotels. Furthermore, farmers were able to access credits because credit

organisations and traders prefer to conduct business transactions with groups than individuals.

Similarly, the food sovereignty framework proposes that developing countries should also negotiate for better terms of trade and fair prices for their food products (Glipo and Pascual 2005, 18). This will protect farmers' local agriculture products from imports and also increase the production of local food (ibid). In addition, the framework advocates for countries to determine their agricultural system and this means that countries should improve their capacity to implement agricultural polices such as land tenure policy that support small-scale farmers especially women (Windfuhr and Jonsén 2005).

4.2.6. Conclusion

The chapter analysed research findings of a study that was conducted in Senanga linking them to the study objectives, literature review and the food sovereignty framework. Socioeconomic factors such as unemployment, farmers' access to resources and growing demand for indigenous vegetables were identified as factors that motivate farmers to engage in vegetable farming. It was also discussed that indigenous vegetables farming is not only an alternative strategy of coping unemployment but is also a source of household income and food. The chapter also discussed the different factors that hamper production and farmers' access to markets. These included financial constraints to access resources for production and markets, insufficient agricultural skills, gender stereotypes and socio-cultural factors, gender biasness and limited recognition of indigenous vegetables by public and private sector. It also discussed to markets in Senanga. Their views included improved provision of agricultural skills, inputs and market linkages to women farmers. These strategies will not only increase household income but they will also improve food security and reduce poverty levels in Senanga district.

Chapter 5: Summary of research findings and recommendations for further research

5.0. Introduction

In this chapter, I summarize research participants' views on the cultivation of indigenous vegetables and farmers' access to markets in Senanga. I also provide recommendations for further research. From the analysis, socio-economic factors such as high unemployment rates, access to resources and growing demand for indigenous vegetables emerged as factors that motivate women to engage in indigenous vegetable farming. My findings also uncovered that socio-economic factors, gender stereotypes and socio-cultural aspects, gender bias and limited recognition of indigenous vegetables by private and public sector are among factors that hamper indigenous vegetable production and farmers' access to markets in Senanga. Equally, increased provision of agro-ecological methods and market linkages to women farmers emerged as strategies that can improve indigenous vegetable production and women's access to markets in Senanga.

5.1. Motivating factors for engaging in indigenous vegetable farming in Senanga

From the analysis, access to productive resources, the growing demand for vegetables and high unemployment rates emerged as factors that motivate people to engage in indigenous vegetable farming. Farmers engage in indigenous vegetable production as an alternative economic strategy to cope with high unemployment rates in Senanga and to improve household food security.

5.1.1. Socio-economic factors: high unemployment rates, growing demand for vegetables and farmers' access to productive resources

The study uncovered that the absence of industries, lack of adequate skills and early retirement from the labour force has contributed to high unemployment rates in Senanga. This has forced a number of people in Senanga to engage in indigenous vegetable farming because it requires minimum investment but improves household income and food security. I also discovered that the growing demand for indigenous vegetables by both local and international communities because of vegetables' perceived medicinal properties and nutrient contents has also motivated farmers to engage in indigenous vegetable farming in order to increase household income.

In addition, access to productive resources such as land, water bodies for irrigation, traditional agricultural skills inherited from their parents and cheap family labour was another factor that motivated people to increase vegetable production in Senanga. My findings

showed that a number of farmers have access to minimum extension services and physical assets such as markets and roads provided by the both private and public institutions. They also utilize social networks such as women groups and neighbour to access seed from seed banking, manure and solar dryers. These findings resonate with the argument provided by Ndinya (2003). She argues that rural women utilize different resources to cultivate indigenous vegetables. They use traditional planting methods, seed from seed banking using seeds from their neighbours. Organic manure from small livestock and compost are also utilized as fertilizer.

On the other hand, my study findings showed that people only resorted to farming when they could not find employment. This challenges some assumptions from the literature on food sovereignty literature which argues that farming is a lifestyle that people choose freely. Other than that, the research findings also showed that farmers were motivated to engage in indigenous vegetable farming in order to satisfy growing demand for vegetables by both local and international communities. Farmers also have a desire to sell their vegetables both on local and international markets in order generate some money. Thus, the food sovereignty framework suggests that countries should reorganize their trade and local markets. Developing countries should also negotiate for better terms of trade for food exports (Glipo and Pascual 2005, 18). This will to a certain degree protect farmers' produce from imports and in turn increase the production of local food (ibid). Apart from factors that motivate people to engage in indigenous vegetable farming, the study also uncovered a number of factors that hamper production of indigenous vegetables and women's access to markets in Senanga.

5.2. Factors that hamper vegetable production and farmers' access to market

The study findings showed that vegetable production and farmers' access to markets in Senanga is hampered by socio-economic factors, gender stereotypes and socio-cultural aspects, and gender bias and limited recognition of indigenous vegetables by the private and public sector.

5.2.1. Socio-economic factors: financial constraints to access resources for production and markets

I found that lack of financial resources to purchase agricultural inputs and preservation equipment have contributed to poor production of indigenous vegetables in Senanga. Similarly, lack of money to pay high transport costs to the market and market levy has not only increased the number of farmers who cannot access markets but it has contributed to the number of farmers who fail to generate profits and maintain business relationships with these markets.

On the other hand, my research findings showed that lack of agricultural skills have equally contributed to poor production of vegetables. This is partly due to the poor transmission of sustainable agricultural skills to farmers. Also, government and NGOs have not adequately provided training in conservation farming, farmer-friendly preservation methods and marketing skills to a number of women in Senanga. According to Weller et al. (2011) most farmers in Zambia and Malawi in marketing skills, proper post harvesting and sustainable production methods. As a result, they experience big losses during harvesting, produce vegetables of poor quality and farmers fail to both sale their vegetables on a regular basis and maintain business relationships with traders. Other than that, I also discovered that gender bias and limited recognition of indigenous vegetables by private and public sector have also contributed to low production of indigenous vegetables in Senanga.

5.2.2. Gender biasness and limited recognition of indigenous vegetables by private and public sector

The research findings showed that the public sector's national agricultural policy has not adequately addressed the needs of the small-scale farmers in Senanga. For example, government has not constructed nearby markets and proper transport system in Senanga. Farmers walk long distances of about 22 kilometres to access markets and most of the roads in Senanga are impassable. Government has also not adequately linked indigenous vegetable cultivators to ready markets, instead it has provided markets such as Food Reserve Agency (FRA) that mainly buys commercial crops and not indigenous vegetables.

Equally, the study discovered that the Zambian government has not provided adequate agricultural to small-scale farmers especially women. Majority of the farmers have not been trained in sustainable farming methods, proper management of pests and marketing skills. This is partly because the government has not adequately provided funds for extension officers to access all farming areas in Senanga (Ministry of Agriculture and livestock 2013). Similarly, Sitko et al. (2012) argue that the Zambian agricultural research and development sub-sector has not adequately carried out research on how to improve different varieties of indigenous vegetables and proper sustainable production methods for local crops; instead it has focused on improving different varieties of maize and rice. This has contributed to poor

production of indigenous crops in rural areas (ibid). Also, indigenous crop producers have not adequately benefited from the Farmers Inputs Support Programme (FISP) because it mainly provides inputs for commercial crops and not for indigenous crops.

Conversely, I also found that NGOs have not provided sufficient agriculture services to women farmers in Senanga. Only a number of farmers have received extension services and solar dryers from private institutions. This is because most of the NGOs that operate in Senanga have erratic funding and fewer officers to reach all farming areas. The study also found that both international and local markets' health and quality standard requirements of indigenous vegetables have undermined farmers' right to determine prices of their products. For instance, vegetables of poor quality are usually sold at a lower price and vice visa. Farmers that cannot meet these standards are forced to sell their vegetables at lower prices from their farm yards than the markets.

In similar vein, I also found that local markets are flooded with commercial crops that are sold at lower prices and thus they have crowded out indigenous vegetables from various markets. As a result, production of indigenous vegetables has been declining in Senanga because most of the farmers are demotivated because they are failing to access markets for their vegetables. These findings are similar to a report by Ministry of Agriculture and Livestock (2014). The report argues that trade liberalization which is embedded in Zambia's National Agriculture Policy has exposed indigenous vegetables to unfair competition on both international and local markets. It has also increased food dumping in developing countries and this has displaced local women's agriculture products from markets. For instance, 58 per cent of the onion, oranges, bananas, apples, carrots and commercial vegetables in Zambia are imported from South Africa. Then 27 per cent is supplied by medium-scale farmers followed by small-scale farmers who supply 14 per cent and remaining two per cent is supplied by large-scale farmers (Hichaambwa and Tschirley 2010). Apart from the poor provision of services by both the government and NGOs contributing to poor yields, the study also uncovered that gender stereotypes and socio-cultural factors hamper production of indigenous vegetables in Senanga.
5.2.4. Gender stereotypes and socio-cultural factors that hamper production of indigenous vegetables in Senanga

I found that discriminatory gender roles, customary land law and cultural rigidity have contributed to poor production of indigenous vegetables in Senanga. For instance, in traditional society men own the means of production and women are considered as workers at home. Access to land is only dependent on their relationship to the husband and in cases where the husband dies some women loses access to land. This has contributed to low production of indigenous vegetables because women lack control over land and the right to decide on what to cultivate on a piece of land is mostly made by their husbands.

On the other hand, the study findings showed that cultural rigidity and dependence syndrome among the women farmers in Senanga has also contributed to poor production of indigenous vegetables. In much as agricultural officers have trained farmers in conservation farming, incorporated some good indigenous farming methods and helped farmers discard some poor local farming techniques, some farmers have stuck to these poor techniques. These methods include the cutting down of trees to clear the land and also the burning of residues after harvest have contributed to soil degradation in the area. These findings therefore caution against treating traditional methods as uniform and superior without taking cognizance of the destructive effects of using traditional methods and knowledge such as cutting down trees and burning of residues after harvest (Bernstein 2013).

My study's findings also showed that a number of farmers are to a larger extent dependent on the government or NGOs to provide agricultural resources. These findings compliment the food sovereignty framework's argument that for governments to reform their agricultural sectors, the farmers' mind-sets need to be changed so that they are less rigid to their poor local farming methods such as burning of farm residues but they can be trained on how to incorporate good indigenous farming skills with agro ecological farming techniques. They also need to be taught on how to sustainable use resources and indigenous knowledge to cultivate crops so that they are less dependent on government and NGOs' support (Gatuala et al. 2013).

5.2.5. Perceptions on how to improve indigenous vegetable production and farmers' access to markets in Senanga

To improve indigenous vegetable production and farmers' access to markets, research respondents suggested that government should provide adequate resources such as land, credits and sustainable agriculture skills to farmers. For instance, FISP should improve its targeting so that the indigenous vegetable cultivators can also benefit from the services the programme provides to farmers. Equally, minimizing discriminatory gender roles and revising the Zambian customary land law in such a way that women have more control over land will also improve production of vegetables in Senanga. Other than that, both the public and private sector should adequately train framers in agro-ecological farming techniques and business skills. This should involve incorporating indigenous farming methods with agro-ecological farming methods. As for the provision of business skills, farmers should be turned into solid business entities that will produce and supply indigenous vegetables on a regular basis. Furthermore, government should fund research on indigenous vegetables' seed varieties, provide market linkages, deploy more extension officers in rural areas and support these officers with transport in order for them to reach all farming areas in Senanga.

Apart from that, study findings show that respondents also recommended that the government should construct roads and market infrastructure. It should also provide market linkages to farmers and negotiate fair prices of their produce from international markets. These recommendations resonates with most of the food sovereignty framework's concerns. It argues that developing countries should negotiate for better terms of trade on the global market. These terms of trade involve global markets minimising stiff health and quality standards and other high tariff barriers that developing countries' food crops are exposed to (Glipo and Pascual 2005). Furthermore, the food sovereignty framework advocates for countries to improve their capacity to implement these agrarian reforms and also create a conducive environment for women to fully participate in the formulation of agriculture policies (ibid). This involves revising discriminatory gender roles and customary land laws that make it very difficult for women to own the means of production and participate in the formulation of agriculture policies.

5.4. Conclusion and recommendations for further research

According to my research findings socio-economic factors such as unemployment, availability of resources and growing demand of indigenous vegetables motivate majority of farmers in Senanga to engage in vegetable production. It has proved as an alternative source of income and enhanced food security in most of the farmers' households. However, I found out that indigenous vegetable production in Senanga is hampered by the farmers' lack of adequate agricultural skills, financial resources and socio-cultural factors such as customary law, cultural rigidity and dependence syndrome. Equally, inadequate provision of agricultural services by both public and private sector, international markets' stiff quality requirement of agricultural products also contribute to poor vegetables yields and farmers' access to markets.

Nevertheless, the study findings showed that respondents suggested recommendations such as increased provision of productive resources to farmers by both the private and public sectors as a strategy that will improve indigenous vegetable farming in Senanga. Training farmers in marketing skills, production methods and turning them into business entities so that they can regularly supply vegetables to local supermarkets and international markets were also cited as strategies that will improve indigenous vegetable production. These suggestions also tallied with the food sovereignty framework which advocates for countries to reform their agriculture sectors by providing resources to farmers, negotiate for fair terms of trade on the global market and create a platform for governments and women to participate in formulation of agricultural policies (Glipo and Pascual 2005). However, countries such as Zambia are disadvantageously locked in the dominant global food regime and it is quite difficult to carve spaces of self-determination for the agriculture sector. Therefore, most developing countries' capacity and technical skills on the implementation of agrarian reforms should be improved to increase indigenous vegetable yields.

Other than that, further research should investigate the relationship between improving the country's capacity to change their agricultural sectors and increasing indigenous vegetable production. We also need to investigate ways in which female farmers operating in organised women groups can improve production of indigenous vegetables. This should include the interrogation of the idea of turning farmers into business entities. This is because traders and organisations prefer conducting business with groups than individuals as argued by Abukutsa-Onyango et al. (2005).

Appendix 1A Interview schedule

Rural women farmers' individual interview

Section A: Production of indigenous vegetables

- 1. How long have you been farming?
- 2. What crops do you grow?
- 3. Who decided which crops you would grow?
- 4. What was the reason for choosing to grow these crops?
- 5. Who is involved in growing the crops?
- 6. What role do they play or what do they do to help grow the crops?
- 7. Who markets the crops?
- 8. How do they market the crops?
- 9. How long have you been growing indigenous vegetables?
- 10. What are the main types of indigenous vegetables that you grow?
- 11. What were the reasons, you started cultivating these types of vegetables?
- 12. What reasons do you have for continuing to grow indigenous vegetables?
- 13. What farming methods do you use to cultivate these vegetables?
- 14. What challenges do you face in growing indigenous vegetables?
- 15. What do you do or have you done to overcome these challenges
- 16. What challenges do you face in the preservation of indigenous vegetables?
- 17. What do you do or have you done to overcome these challenges?

Section B: Training in the production of indigenous vegetables

- 18. What training have you received to help you grow indigenous vegetables?
- 19. Who initiates these trainings?
- 20. Who conducted this training?
- 21. How many times are these trainings conducted?
- 22. How, in your opinion, have these trainings around the cultivation of indigenous vegetables been of help to you?
- 23. What, in your opinion, can be done to make these trainings more beneficial to you?

Section C: Farmers' access to markets

- 24. Where do you sell your indigenous vegetables?
- 25. Who are the main buyers?
- 26. How are prices for indigenous vegetables determined?
- 27. What challenges do you face in accessing markets (local, national and international) for these vegetables?
- 28. What strategies have you put in place to overcome the challenges you face in accessing these markets.
- 29. What business arrangements have you made with different markets or buyers?
- 30. How did these arrangements initially come about? OR How did these markets or buyers become aware of your indigenous vegetables?
- 31. How do you maintain these business relationships you have created with different buyers?

Section D: Training in marketing skills

- 32. What trainings in marketing skills have you received?
- 33. Who provides these trainings and the market linkages?
- 34. How, in your opinion, can government and the private sector help rural women improve their production and access to markets for indigenous vegetables?

Appendix 2A

Interview schedule

Key informants' individual interview (Agricultural marketing officers, agriculture extension officers and private organizations that collaborate with the Ministry of Agriculture)

Section A: production of indigenous vegetables

- What types of indigenous vegetables are produced by rural women farmers in Senanga?
- 2. What are their main reasons for cultivating these vegetables?
- 3. What farming systems do the farmers use in the cultivation of indigenous vegetables?
- 4. What challenges do these farmers face in the preservation of these vegetables?
- 5. What strategies have the farmers put in place to overcome these challenges?

Section B: Training in production of indigenous vegetables

- 1. What training services as regards the cultivation of indigenous vegetables have you provided to the rural women farmers?
- 2. What extension services as regards the processing of indigenous vegetables have you provided to the rural women farmers?
- 3. What, in your opinion, has been the impact of training on indigenous vegetable production that you provided for the women farmers?
- 4. What, in your opinion, has been the impact of these extension services for indigenous vegetable production that you provided for the women farmers

Section C: women's access to markets

- 5. What markets are available to rural women who cultivate indigenous vegetables?
- 6. For each market mentioned, that is the local market, restaurants, national and international – Who are the main organizers of each market? What networks does each market have with other markets? What are the market networks and the main players?
- 7. What challenges do farmers face in accessing markets for indigenous vegetables?
- 8. What business relationships do these farmers have with different buyers?

9. How are these business relationships maintained?

Section D: Training in marketing skills

- 10. What are the rural women farmers' marketing needs?
- 11. What training in marketing skills have you provided to these farmers?
- 12. What, in your opinion, has been the impact of the training you have provided?
- 13. What market linkages have you provided for these rural women farmers who cultivate indigenous vegetables?
- 14. What, in your opinion can help women improve their production of vegetables?
- 15. What, in your opinion can help women improve the processing of vegetables?
- 16. What, in your opinion can help women improve the marketing of vegetables?
- 17. How can you as government workers and NGO programme officers improve the production, processing and marketing of indigenous vegetables?

Appendix 3A

Interview schedule

Traders' individual interview

- 1. How do you access indigenous vegetables?
- 2. Who are the main suppliers?
- 3. For each supplier, what types of vegetables are you provided with?
- 4. What business relationships have you created with the women farmers?
- 5. How are these business relationships maintained?
- 6. How, in your opinion, can farmers improve the production, processing and the supply of these vegetables?

Appendix 1B

Guide for participant observation

- 1. What are the main types of indigenous vegetables grown?
- 2. What farming systems are used in the cultivation of these vegetables?
- 3. What challenges do farmers face in the production and processing of these vegetables?
- 4. What vegetables are sold in the markets
- 5. Who are the buyers?
- 6. Who determines the prices for the vegetables?
- 7. What challenges do farmers face in selling their vegetables, on their farms and to different markets (local, national and international)?
- 8. What has the government or private sector done or are doing to support producers of indigenous vegetables?

Mrs Njovu's farm

The 13th of July 2015 was a lovely sunny day to visit one of the farmers. So I decided to go with Mrs Njovu in her field where she cultivates her indigenous vegetables. Her children also joyfully tagged along, carrying hoes and buckets on their heads and happily singing songs as we walked to the field. Upon reaching the field, everyone got busy but I remained standing because I was astounded about how most of the vegetables had some grass covering the area around the plants. When I asked about that Mrs Njovu responded by saying, "Madam, it acts as manure when it rots and I can also tell you that, it is cheaper than applying inorganic fertilizers." I was so impressed with her initiative. As I assisted to water the vegetables with buckets I could see that her little children were doing this with so much ease, they kept running from the river to the field.

As I helped them water the vegetables, I was surprised to see that pumpkin leaves, *sindamb*i, were intercropped with maize while Cassava leaves and sweet potatoes were grown on standalone fields. I was curious as to why some vegetables were intercropped with maize and others were not. Before I could ask, one of kids about 10 years of age pulled me by the hand and said, "Aunty…we intercrop these vegetables so that they can provide nutrients for the other crops." As she explained, I could hear some kids trying to say something, so the other one who was busy weeding the crops screamed from one end of field "that it is also because mum does not have enough land to plant all these vegetables in stand-alone plots so we just have to intercrop them." I could not help but smile because all they had said made so much sense. As the day progressed, Mrs Njovu, her older kids and I were busy weeding, pruning, adding manure and spraying traditional pesticides to the vegetables. The other kids kept running to the river to draw water using buckets to irrigate the vegetables. They were using buckets because their mother could not afford to buy treadle pumps or motorised pumps. After all that hard work, everyone was exhausted and so we decided to sit under a tree as the older children made some fire to prepare Nshima and vegetables. The process of cooking the vegetables was not very different from the way it is done in the city. The vegetables were boiled for some time, then the water was drained from the vegetables and later salt and tomatoes were added. When the vegetables and the Nshima were ready, all the younger kids who were sleeping woke up to eat. As we ate Mrs Njovu apologized for not adding cooking oil to the vegetables because they did not have any. I just smiled back because the vegetables were nice even though they were not prepared with cooking oil.

After we finished eating, the kids were busying packing all hoes in a sack while their mother was plucking some vegetables. In my mind I wondered what the vegetables were for. As we were about to leave to go home, two women about the age of Mrs Njovu approached us and asked if they could buy some vegetables. When I looked at Mrs Njovu and her kids I could see smiles on their faces then I knew they were not going to refuse but sell the vegetables to these women. There was an exchange of glances between their mother and kids and in a split of a second all of them were back in the field and quickly started plucking the vegetables to sell to the women. I also went back to the field and helped them pluck the vegetables. After we had finished, we gave the women the vegetables and they gave Mrs Njovu some money and food stuff such as cooking oil and salt. With so much excitement, the kids carried the food stuff and we hurried back home because it was getting dark.

When we got home everyone got busy cleaning the surrounding and preparing the fire. I was shocked how these people continued working even though they were tired. As for their mother she was busy packing vegetables and to my surprised she gave them to me. I refused but she insisted that it was part of their tradition to give anyone who comes to their place, some food before they leave. I accepted the vegetables because after all I needed them but I promised that the following day I could also bring them something on my way to the next village. We exchanged handshakes with everyone and off I went back to my room.

Mrs Mbewe's farm

Before proceeding to Mrs Mbewe's place, I stopped by Mrs Njovu's home and upon arriving everyone came running towards me, I felt a sense of belonging. I greeted them and I left them some sugar and other food stuff as I had promised. They were happy and joyfully escorted me to Mrs Mbewe's farm.

When I reached Mrs Mbewe's house, all the children and their mother welcomed me to their home. Their father was not around for he had gone to the city to buy some inputs. Before I could get involved in their planned day's activities, I was made to wait in one of the shelters that was used as their cooking place. After I sat for some minutes, Mrs Mbewe came and briefed me that we were not going to work in the field because they had harvested all the vegetables the previous day so that they could dry them. I was surprised but I managed to peep through the window and I confirmed that it was true because their field was bare and the sacks of the harvested vegetables were right in the place where we sat. She also explained to me why they had to harvest the vegetables. "We decided to harvest them because they were ready for sale but when we took them to the markets we were unable to sell as they are a lot of vegetables during this season. So hmmmm..... we decide to dry them before they all get spoiled." I somehow understood because even Mrs Njovu's field had more vegetables ready for sale but there was no one to buy them and they also did not have transport to take them to the market. So after talking for some time, we carried the sacks of the vegetables out of the kitchen but to my surprise I could not see any solar dryer and I wondered how we were going to dry the vegetables, so I chose not to ask but to observe what was going to happen.

Then after a few minutes, her children also brought out a mortar so that we could pound the vegetables. There were also some pots and empty sacks that they brought out from the house but I did not know what they were supposed to be used for. Thereafter, each child was given one sack of vegetables and I was also given one, then Mrs Mbewe gave us instructions. I was told to rub the vegetables with hands and put them in the basin, which seemed to be an easy task. The other children were busy pounding the vegetables and they were so good at it. As for Mrs Mbewe, she was also busy boiling some of these vegetables on fire. With so much laughter and singing, all of them finished what they were doing but I was still struggling with my work, so I had to be assisted. I wondered why they were so much in a hurry when I thought that this was a whole day's work. Then as they all came to help me finish my work they explained that "we want to dry them before the sun sets and we also have to take some

vegetables to the solar dryer that an NGO gave the women club in the next village." In some ways I understood what the kids were trying to say but I wondered how we were going to dry the other vegetables. I also wondered why we had to go through the process of rubbing, boiling and also pounding the vegetables. So I asked Mrs Mbewe, at which she said "we have to do all that, for easy drying of vegetables and also retain the green colour of the vegetables." I somehow understood but the process was too tedious.

Thereafter, we had to put some vegetables on the reed mat and it was placed on a root top by the male children. This was done so that the sand from the ground could not blow on the vegetables. It was a cheaper way of drying these vegetables, however Mrs Mbewe said, "Madam..... this method somehow delays us because we can only dry small quantities of vegetables, it could have been better if we had a solar dryer." From the experience gain during this time period I spent with her, I could only agree with her.

Thereafter, we carried the other vegetables to the solar dryer and only to find that there was a woman who was just removing her dried vegetables from the dryer. Her vegetables caught my attention but something also made Mrs Mbewe smile and I wondered what it was. Then she explained to me that "most of the time when we come here, there is usually a long queue of women waiting to dry their vegetables, but today (smiling) there is only one woman and she has almost finished drying her vegetables." I also felt her joy but I still had to ask the other woman how long it took her to dry the vegetables. To my surprise she said "it took about a day and hmmm..... Madam it is a bit involving because you have to keep turning the vegetables so that they dry properly." I could see that she was telling the truth because her vegetables looked so good and they were ready for sale. I was so impressed with all her hard work and initiative. After she left, I returned to assist Mrs Mbewe put her vegetables in the solar dryer.

When we were done, we sat down to chat but each hour we kept turning the vegetables so that all the vegetables could dry properly. As we chatted, I asked her about how the government and NGOs have assisted her in the production of indigenous vegetables. She answered that "they have not really helped a lot of women in this area, for example we do not receive extension services from the government on how to grow these vegetables. Hmmm we have not been trained on how to find markets for these vegetables. It is only one NGO that came some time back and gave the women's club I belong to a solar dryer. The NGO also trained us on how to dry our vegetables but that was some years back that even most of the women have even forgotten how to dry their vegetables in a proper way." I was very touched as she explained and I could only imagine the other skills the rest of the women lack, because what she explained only seemed like a quarter of the resources they lack and problems that they face.

After chatting for some hours we went back home without the vegetables but wondered if her vegetables would be safe but she replied that they will be okay because no one steals in their area. When we got home, we found that they had prepared some vegetables that they had dried sometime back. The vegetables tasted so good and fresh. After the meal I decided to go home because it was getting dark.

The following day we went back to the solar drier and to my surprise all the vegetables had dried and there were a lot of people waiting to dry their vegetables. I even recalled what Mrs Mbewe had explained the previous day. In some way I understood their plight and I saw how important it was for each farmer to have their own solar dryer. After we had taken the vegetables from the solar dryer, we went back home and we also found that the other vegetables on the roof top had dried. Then we started packing them so that they could sell them in the city. I also bought some of the dried vegetables for my family. But from the way the vegetables were packed, I could tell that Mrs Mbewe and her children had no idea how good packaging can attract customers and I saw how much they needed in marketing skills. After we had finished packing, we exchanged hugs and I left for home.

Appendix 2B

Guide for transect walk

1. Where are the community markets located and what type indigenous vegetables are sold there?

2. Where are the roads located?

3. Where are the health centres and water sources located?



Appendix 1C University of KwaZulu-Natal School of built Environment and Development studies Department of Development Studies Information sheet and Consent to participate in research

Date:

Dear respondent,

My name is Nancy Lwimba Mukupa, am a registered student in the school of Built Environment and Development Studies at Howard College Campus, University of KwaZulu-Natal, Private Bag X54001 Durban 4000, KwaZulu- Natal, South Africa. My email: <u>213571444@ stu. ukzn.ac.za</u> and cell number: +27(0) 786565892. My supervisor is Dr. Mvuselelo Ngcoya from the School of Built Environment and Development Studies at Howard College Campus, University of KwaZulu-Natal, Private Bag X54001 Durban 4000, KwaZulu-Natal, South Africa. Contact detail: <u>Ngcoyam2@ukzn.ac.za</u> and telephone number: +27 31- 260 2917.

You are being invited to consider participating in a research entitled 'Indigenous vegetables and access to markets: A study of rural women farmers in Senanga, Zambia'. The aim and the purpose of this research is to explore how rural women farmers grow indigenous vegetables, how business relationships with different types of markets are maintained and the role that the public and private sector play in indigenous vegetables farming'. The study is expected to enrol about 20 participants that is, 10 rural women farmers, four Agriculture extension officers, one marketing officer and two programme officers from two different Non- governmental organisations in Senanga Zambia. The study involves individual in-depth interview scheduled on a day and venue at your convenience and will last approximately 1 hour. The interview will be audio recorded and transcribed. Apart from that this study is not funded by any organisation, all costs relating to the study will be borne by the researcher.

The study does not involve any risk and it will not cause any harm to the respondent and should you experience any discomfort during the course of interviewing, you have the right to refuse to respond to certain questions, to discontinue or to withdraw from the interview process.

I hope that the study through your participation may assist policy makers in making policies that will improve your cultivation of indigenous vegetables.

In the event of any problems or concerns/ questions you are free to connect me, my supervisor or the University of KwaZulu-Natal, Humanities and Social Science Research Ethnics Committee. The contact details are as follows:

MS. Phumelele Ximba,

Humanities and Social Sciences Research Ethics Administration Research Office, Westville Campus Govan Mbeki Building Private Bag X54001 Durban 4000. KwaZulu- Natal, South Africa Tel: +27 31 260 3587 Email: ximbap@ukzn.ac.za

Contact of the supervisor

Dr. Mvuselelo Ngcoya School of Built Environment and Development Studies Department of Development studies, Howard College Campus, University of KwaZulu-Natal, Private Bag X54001 Durban 4000, KwaZulu- Natal, South Africa. Email: <u>Ngcoyam2@ukzn.ac.za</u> Telephone number: +27 31- 260 2917 **Contact of the researcher** Nancy Lwimba Mukupa School of Built Environment and Development Studies Department of Development studies Howard College Campus, University of KwaZulu-Natal, Private Bag X54001 Durban 4000, KwaZulu- Natal, South Africa. Email: 213571444@ stu. ukzn.ac.za Cell number: +27(0) 786565892.

Your participation in this study is voluntary and you may choice to withdraw from the study at any point and you will not incur any penalty or loss of treatment upon withdrawal from the study.

No costs might be incurred by the respondent as a result of participation in the study and no incentives for participating in the study are provided.

The interview will be kept strictly confidential. Your identity will be protected and anonymity will maintained through interview. Audio recordings and transcribed materials will be kept safe by the researcher for use in my dissertation and your identity will remain anonymous. After completion of the dissertation, audio recordings and transcripts will be kept with my supervisor in a locked cabinet during this period. After five years upon completion of the study and the awarding of the degree, audiotapes and transcripts and used questionnaires will be destroyed.

RESPONDENT'S DECLARATION

I.....have been informed about the study entitled 'Growing indigenous vegetables and access to market: A study of rural women farmers in Senanga, Zambia' by Nancy Lwimba Mukupa a registered student in the school of Built Environment and Development Studies at Howard College Campus, University of KwaZulu-Natal.

I understand the purpose and the procedures of the study that is, 'to explore how rural women farmers grow indigenous vegetables, how business relationships with different types of markets are maintained and the role that the public and private sector play in indigenous vegetables farming'. The procedures are harmless and will only involve an individual indepth interview that will last an hour.

I have been given an opportunity to answer questions about the study and have answered to my satisfaction.

I declare that my participation in this study is entirely voluntary and that I may withdraw at any time without incurring a penalty.

If I have any further questions/concerns or queries related to the study, I understand that I may contact the researcher and supervisor at the following contacts:

Contact of the supervisor

Dr. Mvuselelo Ngcoya

School of Built Environment and Development Studies

Department of Development studies,

Howard College Campus,

University of KwaZulu-Natal,

Private Bag X54001 Durban 4000,

KwaZulu- Natal, South Africa.

Email: <u>Ngcoyam2@ukzn.ac.za</u>

Telephone number: +27 31- 260 2917

Contact of the researcher

Nancy Lwimba Mukupa

School of Built Environment and Development Studies

Department of Development studies

Howard College Campus,

University of KwaZulu-Natal,

Private Bag X54001 Durban 4000,

KwaZulu- Natal, South Africa.

Email: 213571444@ stu. ukzn.ac.za

Cell number: +27(0) 786565892.

If I have any questions and concerns about my rights as a study participant, or if I am concerned about an aspect of the study or the researcher then I may contact:

Ms. Phumelele Ximba,

Humanities and Social Sciences Research Ethics Administration

Research Office, Westville Campus

Govan Mbeki Building

Private Bag X54001 Durban 4000.

KwaZulu- Natal, South Africa

Tel: +27 31 260 3587

I hereby provide consent to:

Audio-record my interview YES/NO

Signature of participant

Signature of witness

Signature of researcher

Date

Date

Date

Translated informed consent

Sikolo sesipahami kakufitisisa sa KwaZulu- Natal Sikolo sa Lilalanda ni Lituto za Zwelopili Likolo la Lituto za Zwelopili Pampili yazibiso yakuitumelela kufitisa maikuto mwa patisiso

Deiti:

Kumina babaitumelela kualaba lipuzo za patisiso,

Mabizo aka kakutala kina Nancy Lwimba Mukupa. Ni mwanaa sikolo yatezi mwa Sikolo sa Lilalanda ni Lituto za zwelopili kwa Howard College Campus, ili kalulo ya Sikolo sesipahami nikufita sa KwaZulu – Natal, keyala yasikolo ki X54001 Durban 4000, KwaZulu-Natal, ili mwanaha ya South Africa. Keyala ya Email: <u>213571444@stu.ukzn.ac.za</u> mi nombolo ya luwaile lwaka ki +27(0) 786565892. Libizo lamuluti waka mwa patisiso ye ki Dr. Mvuselelo Ngcoya ili muluti mwa liluko la Lilalanda ni Lituto za Zwelopili kwale kwa Howard College Campus, ili kalulo ya Sikolo sesipahami nikufita sa KwaZulu- Natal, Keyala ya X54001 Durban 4000, KwaZulu –Natal, South Africa. Keyala ya E-mail: <u>Ngcoyam2@ukzn.ac.za</u>, mi nombolo ya luwaile ki: +27 31 – 260 2917.

Mukupiwa kuli mubenikabelo yakufitisa maikuto amina mwa patisiso ya Njimo ya miloho yasintu ni tekiso yayona kwa misika : Patisiso yeama balimi ba basali babapila mwa matakanyani a sikiliti sa Sinanga ili mwa naha Zambia. Mulelo wa patisiso ye kikuutwisisa ni kunyakisisa moo miliho yasintu ilimelwa kibasali babapila mwa matakanyani, swalisano yeliteni mwahalaa misiska yeshutanashutana ni seo muuso ni tutengo tutusiyo mwa muuso batusa mwa njimo ya miloho yasintu.

Patisiso ye itokwa batu babafita fapalo yeeza mashumi ambeli (20) babaabilwe kamukwa wo: basali baalishumi (10) babalima miloho yasintu mwamatakanyani, babeleki banjimo babane (4) babasebeleza mwa matakanyani, Mubeleki alimunw'i yatalima za misika ya njimo ni babeleki bababeli babasebeza mwa tutengo tutuswalisana ni muuso kono inge tusiyo mwa muuso (NGOs) ili mwa sikiliti sa Sinanga. Patisiso ye itokwa lingamboolo ze tungile ni babaitakaleza kufa maikuto abona kakualaba lipuzo zelukisizwe ili zekona kuunga hora ilinw'i mwa lizazi lililinw'i, nako ni sibaka zelumelelanwi. Lingambolo za patisiso ye likalekodiwa nikun'olwa hasamulaho. Kwandaa zeo patisiso ye kiyeezahala kabuitomboli bwa muituti yo, kona kuli lisinyehelo zamashelen'i kaufela kiza kuiponela.

Patisiso ye haina kukenya mutu ufi kamba ufi mwa butata nibobukana baken'i sakufa maikuto abona mwa patisiso ye. Kamukwa o cwalo haiba muikutwa kuli mwahalaa patisiso ye mupalelwa kualaba lipuzo halinze lizwelapili, munanitukelo yakuhana kualaba lipuzo zenw'i, kutokolomoha kapa mane kutuhelela kufa maikuto amina fahali a ngambolo.

Nisepa kuli patisiso ye, katuso yamina neikatusa batomi ba milao kuli bahatise milao yekatahisa zwelopili mwahala njimo ya miloho ya sintu mwa Sinanga.

Haiba kuna ni lipuzo zemutokwa kubuza kuli muutwisise kapa mane sabo yemikenela baken'isa patisiso ye, mwakona kuni lizeza luwaile, kulizeza bo muluti baka kappa mane kulizeza Sikolo sa University ya KwaZulu- Natal ili katengo ka lituto za butu sakata ni milao ya lipatisiso. Mukona kulufumana fa likeyala zetatama:

Bo Mufumahali Phumelele Ximba.

Humanities and Social Sciences Research Ethics Administration Research Office, Westville Campus Govan Mbeki Building Private Bag X54001 Durban 4000. KwaZulu- Natal, South Africa Tel: +27 31 260 3587 Email: ximbap@ukzn.ac.za

Keyala ya Muluti yaokamezi Patisiso ye.

Dr. Mvuselelo Ngcoya School of Built Environment and Development Studies Department of Development studies, Howard College Campus, University of KwaZulu-Natal, Private Bag X54001 Durban 4000, KwaZulu- Natal, South Africa. Email: <u>Ngcoyam2@ukzn.ac.za</u> Telephone number: +2731- 260 2917

Keyala ya muituti yaeza patisiso

Nancy Lwimba Mukupa School of Built Environment and Development Studies Department of Development studies Howard College Campus, University of KwaZulu-Natal, Private Bag X54001 Durban 4000, KwaZulu- Natal, South Africa. Email: <u>213571444@ stu. ukzn.ac.za</u> Cell number: +27(0) 786565892.

Musebezi omukupiwa kueza mwa patisiso ye kiwabuitomboli mi mwa kona kuikambusa kufa maikuto kapa likalabo zamina nako ifi kamba ifi mi hakuna mulatu omukafiwa haiba muiketela kutokolomoha kufa liseli mwa patisiso ye.

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Ni utwisisize kuli hanikaba ni lipuzo kapa maikuto atokwa toloko yetezi nakona kubuza batu babatatama:

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Haiba niba ni lipuzo zeamana ni litukelo zaka kapa muinelo wa muituti kakuba mutu yaitombozi kufa maikuto, nikona kufitisa pilaelo yecwalo ku bo:

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Litaba zenifitisize li beiwa fa matapa kapa record YES/NO

Liswayo la mutu yafa likalabo

Liswayo la paki

Liswayo la muituti yaeza patisiso

Date

Date

Date

Reference

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