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**INYUVESI
YAKWAZULU-NATALI**

**Food Sovereignty and the Challenges of Agro-ecological Farming: A Case Study of
Hammarisdale, Durban.**

By

Njabulo Happiness Mncwabe

Student Number: 213535096

Supervised by: Professor Oliver Mtapuri

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DECLARATION

I, Njabulo Happiness Mncwabe hereby declare that the work on which this dissertation is founded on is my original work (apart from where acknowledgements specify otherwise) and that neither the whole work nor a portion of it has been, is being, or is to be submitted for another degree in this or any other University. It is hereby presented in partial fulfilment of the requirements for the award of the Degree of Master of Development Studies.

Njabulo Happiness Mncwabe (213535096)

Signature

Date

Abstract

The purpose of this study is to contribute to the debate on one of the Food Sovereignty principles; agro-ecology. Agro-ecological farming which is primarily practiced by small-scale farmers is used as an example to explore how viable and sustainable it is as a method of farming in small communities. There is very limited data on food sovereignty and the nature of agro-ecology being practised as a method of farming in small communities. Consequently, with Food Sovereignty being a framework on its own, it was adopted as a theoretical foundation for this study, for its relevance. The aim of this study is to assess the nature and potential of agro-ecological farming methods and their implications (consequences, effects) for food sovereignty in Mpumalanga Township, Hammarsdale. This aim was achieved by commissioning in-depth interviews and focus group discussions as a qualitative data collection method, which was appropriate to deliver the perceptions and understandings of the farmers who farm using the principal of food sovereignty being agro-ecology. The objectives of the study are to understand the history, motivations, knowledge and practices of agro-ecological farmers in Mpumalanga Township, Hammarsdale. To investigate the reasons why farmers participate in agro-ecological farming. To examine the opportunities and barriers of agro-ecological farming. To assess the barriers of agro-ecological farming experienced by small-scale farmers in that area. To examine the different knowledge's that farmers use for agro-ecological farming purposes (indigenous, western, and others).

The findings suggest small-scale farmers who use the method of farming agro-ecologically are burdened by the barriers and challenges of farming agro-ecologically. These barriers and challenges include not having sufficient water for their food plants, lack of resources such as tools, access to land and the market to trade their produce. Although the farmers received assistance from local Non-Governmental Organizations (NGOs) such as LIMA and Food Tree's, it was not enough to sustain them throughout every season of sowing and harvesting. The study also found out that the farmers who participated in this study had sentimental associations with agro-ecological farming. This is because from an early age, the farmers and their families practiced agro-ecological farming. Therefore, to them agro-ecological farming simply meant farming organically and only using natural constituents and not chemicals; while also ensuring that the environment is taken care of and the food produced does not pose any health hazards to the consumers.

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First and Foremost, I Surrender All My Gratitude To The Almighty Jesus Christ My Saviour.

I dedicate this study to my parents Linda and Nonhlanhla Mncwabe, whose many sacrifices and support have moulded me into the woman I am today. Ngiyabonga Ngakho Konke
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Acronyms

AoA- Agreement on Agriculture

CSO- Civil Society Organization

FAO- Food and Agriculture Organization

FDI- Foreign Direct Investment

GATS-The General Agreement on Trade in Services

GATT- The General Agreement on Tariffs and Trade

GMOs- Genetically Modified Organisms

IFIs- International Financial Institutions

IMF- International Monetary Fund

MC- Multinational Cooperation

NGO- Non-Governmental Organization

SA- PPA -South African Participatory Poverty Assessment

SCM- The agreement on Subsidies and Countervailing Measures

TBT- Technical Barriers to Trade

TNC- Transnational Cooperation's

TRIPs -The Agreement on Trade-Related Aspects of Intellectual Property Rights

UN - United Nations

USNFU -US National Farmers Union

WSSD - World Summit in Sustainable Development

WTO- World Trade Organization

CHAPTER 1: INTRODUCTION AND BACKGROUND

1.1. Introduction and background

Global forces are perplexing the capacity of developing countries to feed themselves. A great number of countries have organised their economies around a competitive export-oriented agricultural sector, which is mainly based on monocultures (Altieri, 2009). Although in some other countries, it may be argued that agricultural exports of their crops make substantial contributions to the national economies by passing on in strong currencies, which inevitably could be used to purchase other goods from abroad (Altieri, 2009). However, Méndez (2013) agrees with Altieri (2009) that this type of industrial agriculture also tends to bring quite a diversity of economic, environmental, and social problems; also including negative impacts on public health, ecosystems integrity, food quality, and further disruption of traditional rural livelihoods in most cases; while accelerating indebtedness among thousands of farmers (Méndez, 2013) and (Altieri, 2009).

Moreover, globally, Altieri mentions that the Green Revolution, while enhancing crop production, proved to be unsustainable as it damaged the environment inevitably causing dramatic loss of biodiversity and associated traditional knowledge, while continually favouring wealthier farmers, consequently leaving out many poor farmers deeper in debt (Altieri, 2009). The global food crisis of 2007/ 2008 manifested into skyrocketing food price increases, urban food riots and continued marginalization and displacement of rural poor, thus giving indication that the prevailing method of agricultural development had not succeeded in eradicating poverty or world hunger (Wittman, 2010).

Clinton (2009 cited in Mc Donald, 2010:62) emphasises that the impacts of the rising food prices were somewhat extensive and included rapid and dramatic increases in the number of hungry people globally while changing consumption behaviours as people tried to cope at individual and family levels. Accordingly, the tenuous rising food prices contributed to rioting and unrest in over sixty countries, including Burkina Faso, Cameroon, Egypt, Ethiopia, India, Italy, Philippines and many other countries (Clinton 2009 cited in Mc Donald, 2010:62).

In the aspect of such global movements and developments, the concepts of food sovereignty and ecologically based production systems have gained much attention in the last two decades (Altieri, 2009). As one of the principles of food sovereignty, agro-ecology has been recognised as part of the new approaches and technologies which involve the application of combined

modern agro-ecological science and indigenous knowledge systems. Spearheaded by thousands of farmers, Non-Governmental Organisations (NGOs), and some government and academic institutions who have become aware and shown interest into enhancing food sovereignty, while conserving natural resources, biodiversity, and soil and water throughout hundreds of rural communities in several regions (Altieri, 2009).

Abruptly, many people around the world; especially the world's poor still face higher food prices; as there has also been a convergence of factors that magnify the impact of these price increases. Mounting food prices have also had considerable knock-on effects, including reducing aid flows, and making lawlessness and piracy more lucrative (Headey, 2008).

The past half-century has been marked growth in food production, allowing for a dramatic decrease in the proportion of the world's people that are hungry despite a doubling of the total population. Nevertheless, more than one in seven people today still do not have access to enough protein and energy from their diet; and even more suffer from some form of micronutrient malnourishment (Godfray *et al.*, 2010). The world is now facing a new set of interesting challenges. The global population will continue to grow, until now it is likely to plateau at some 9 billion people by roughly the middle of this century (Brown, 2012). A major correlate of this declaration in population growth is increased wealth, and with higher purchasing power comes higher consumption and a greater demand for processed food, meat, dairy, and fish, all of which add pressure to the food supply system (Brown, 2012).

At the same time, food producers are experiencing greater competition for land, water, and energy, and the need to curb the many negative effects of food production on the environment which has become increasingly clear (Godfray *et al.*, 2010). Overarching all these issues is the threat of the effects of substantial climate change and concerns about how mitigation and adaptation measures may affect the food system. Patterns in global food prices are indicators of trends in the availability of food, at least for those who can afford it and have access to world markets. In mid-2008, with the unexpected rapid rise in food prices, the cause of which is still being debated that subsidized when the world economy went into recession (Godfray *et al.*, 2010).

However, many (but not all) commentators have predicted that this spike heralds a period of rising and more volatile food prices driven primarily by increased demand from rapidly developing countries, as well as by competition for resources from first-generation biofuels production (Brown, 2012). Increased food prices will help stimulate greater investment in food

production. But, the critical importance of food to human well-being and to social and political stability; makes it likely that governments and other organizations will want to encourage food production beyond that driven by simple market mechanisms. The long-term nature of returns on investment for many aspects of food production and the importance of policies that promote sustainability and equity also argue against purely relying on market solutions. (Godfray *et al*, 2010).

Headey (2011) states that although global food prices have eased somewhat from their highest levels in 2008, they remain substantially above pre-crisis levels in many parts of the world. The continuation of high food prices may be explained by nothing that many of the long-term drivers which have been identified as contributing to rising food prices such as global population growth, changing patterns of food demand and consumption, and global environmental change – remain unabated (M^cMichael, 2012). The complex causes of a rise in food prices and the trends are related to those causes meaning that food prices are unlikely to fall significantly in the near term (Godgray *et al.*, 2010).

1.2. Agro-ecology

According to Francis *et al.*, (2011), agro-ecology involves quite a range of approaches into solving the concrete challenges of agricultural production; although in the past it dealt with crop production and protection aspects. In recent decade's new aspects such as environmental, social, economic, ethical and developmental issues have become relevant within the scope of agro-ecology (Francis *et al.*, 2011). The use of agro-ecology can be traced back to the 1930s. However, during the 1960s; agro-ecology referred only to a scientific discipline. Subsequently, different divisions of agro-ecology developed. Following the environmental movements of the 1960s which were against industrial agriculture, agro-ecology then evolved and fostered agro-ecological movements of the 1960s (Francis *et al*, 2011).

1.3. Problem Statement

Jansen (2015) states that the principles of ecology which are associated with agro-ecology, are farming methods that are practiced globally. Although varying to ensemble a context in which they are being practiced under due to various aspects (such as climate, geology and culture) and available resources at each of the farmers own ability to produce as applied in the science of making agriculture more sustainable (Jansen, 2015). The core ecological principles revolve around the ability of being able to balance and optimise nutrient flows within agro-ecological farming by enhancing the recycling of biomass while also securing

favourable soil conditions for plant growth by managing soil organic matter and raising the activity of soil organisms (Biowatch South Africa, 2015).

Moreover, Ngcoya and Kumarakulasingam (2016) discuss the paucity of research on food sovereignty in South Africa where agriculture has wide base of producers. However, one key feature of small-scale farming in the country is the evident shortage of reliable and detailed empirical data on the records of their trade and the value of their production (Ngcoya and Kumarakulasingam, 2016). The actual meaning of small-scale production is disputed. Despite this, Ngcoya and Kumarakulasingam (2016) mention that there are general trends that are evident about this sector and the fact that there are challenges posed by the racialized and gendered character of small-scale farming in South Africa.

Subsequently, interest in food sovereignty has focused on the study of transnational agrarian movements, national coalitions and social movements (as defined in its definition). Ngcoya and Kumarakulasingam (2016) however state that it has not successfully resonated everywhere. Ngcoya and Kumarakulasingam (2016) further define the fact that ecologically inclined farmers cannot possibly emerge on their own naturally by using an example based on research in Sulawesi, Indonesia, (Li 2015). This is due to the struggles faced by these to farmers to make ends meet on small poor-quality land, where farmers opted to switching from diverse food production to monocropping cacao (Ngcoya and Kumarakulasingam, 2016). These studies are especially relevant to South Africa, given that food sovereignty as a movement is emerging in the country (Ngcoya and Kumarakulasingam, 2016).

Nonetheless, there is a promising food sovereignty movement in the country, with the growing cost of seeds, and the importance of environmentally friendly farming methods, this could be a turning point to lowering poverty levels in the country. This study offers an important starting point for further studies to be done on assessing principles soon of food sovereignty and agro-ecological farming whether they can be achieved. As defined by La Via Campesina (1996), food sovereignty is pursued as the right of each nation to help maintain and develop its own capacity to produce basic foods while respecting cultural and productive diversity. Considering the global prominence of principles of food sovereignty, the primary purpose of this study is to assess the nature and feasibility of agro-ecological farming as a principle of food sovereignty in Mpumalanga Township, Hammarsdale. This study will evaluate whether agro-ecological farming can be practiced and how it may

promote the defined goals of food sovereignty. My problem is that small-scale farmers in South Africa are not being recognized and supported enough to enter the trade market in order to trade their healthy and nutritious food to the people. Consequently, the perpetuation of this problem will result into a greater number of people being infected with illnesses promoted by GMOs in the food they consume. This will then lead to greater impairment to society and the ability for people to feed themselves without facing repercussions of illnesses that lead to early adulthood mortality.

1.4. Purpose of study

The main goal of the study was to contribute to the debate on one of the Food Sovereignty principles; agro-ecology. Agro-ecological farming which is primarily practiced by small-scale farmers is used as an example to explore how viable and sustainable it is as a method of farming in small communities.

1.5. Aim of the Study

To assess the nature and potential of agro-ecological farming methods and their implications for food sovereignty in Mpumalanga Township, Hammarsdale.

1.6. Objectives of the study

To understand the history, motivations, knowledge and practices of agro-ecological farmers in Mpumalanga Township, Hammarsdale.

To investigate the reasons why farmers participate in agro-ecological farming.

To examine the opportunities and barriers of agro-ecological farming.

To assess the barriers of agro-ecological farming experienced by small-scale farmers in that area

To examine the different knowledges that farmers use for agro-ecological farming purposes (indigenous, western, and others).

1.7. Main Research Question

What is the nature and potential of agro-ecological farming methods and their implications for food sovereignty in Mpumalanga Township, Hammarsdale?

The following are the subsidiary questions:

What is the history, motivations, knowledge and practices of agro-ecological farming in Hammarsdale?

Why do farmers participate in agro-ecological farming?

What are the barriers of agro-ecological farming and how do farmers overcome the obstacles?

What are the opportunities available for agro-ecological farming to small-scale farmers in Durban?

How do farmers use different knowledge's for agro-ecological farming purposes (indigenous, western and other)?

1.8. Significance of the Study

Considering the global prominence of principles of food sovereignty, the primary purpose of this study is to assess the nature and feasibility of agro-ecological farming as a principle of food sovereignty in Hammarsdale, Mpumalanga Township. This study will evaluate whether agro-ecological farming can be practiced and how it may promote the defined goals of food sovereignty.

Ngcoya (2016) states that small-scale farmers typically grow crops to supplement purchased food on postage stamp size plots of land, especially in the rural areas as a food source and source of income. With the current premium on organic produce, such an approach might allow these rural communities to engage with the modern economy, while at the same time maintaining their way of life (Machen, 2012).

Engel (2010) stresses that what was/is required for effective development, was/is the freeing up of markets and removal of state controls and interference. Increasingly these views are being challenged from both the perspectives of neo-classical economics and political economy (Engels, 2010).

As defined by La Via Campesina (1996), food sovereignty is pursued as the right of each nation to help maintain and develop its own capacity to produce basic foods while respecting cultural and productive diversity. Considering the global prominence of principles of food sovereignty, the primary purpose of this study is to assess the nature and

feasibility of agro-ecological farming as a principle of food sovereignty in Hammarsdale, Mpumalanga Township. This study offers an important starting point for further studies to be done on assessing principles soon of food sovereignty and agro-ecological farming whether they can be achieved; which in recent years have been fatally discontinued due to lack and paucity of research, while also adding more knowledge to the existing information that is available. Further, this study will also evaluate whether agro-ecological farming can be used as a mechanism of promoting the defined goals of food sovereignty. Subsequently, the study will also help create the benefits of making sustainable decisions on farming without using harmful substances to the environment and individuals consuming the farmed foods who are not knowledgeable on such methods of farming in other communities.

1.9 Chapter outline

Chapter 1: This chapter introduces the topic of the dissertation; which is further defined in the background of the study, aim and objectives, research questions, rational and briefly which includes a theoretical framework.

Chapter 2: Chapter 2 presents the Literature Review

Chapter 2 presents the literature review. The literature review has observed various scholars and literature that cite relevant discussions on the concept of food sovereignty and its respective principle agro-ecology in the context of small-scale farming. It defined the terms food sovereignty and agro-ecology in relation to food security for a clear understanding of what the two terms mean in context of development and sustainability. It has also discussed some of the motives behind small-scale farmers using agro-ecology as a method of farming. This chapter is related to the concept of Agro-ecology as a principle of Food Sovereignty.

Chapter 3: The chapter describes the methodology used in this study. It also comprehensively discussed the research instruments used for gathering data to fully demonstrate how they were used in this study. These included interviews focus group discussions and research questions. Further this chapter also presents information about the respective participants and the location of where the interviews were held. The interview guide outline is also found in this chapter. The study used a qualitative method of collecting data and then analysed the data thematically.

Chapter 4: This chapter presents the data and interpretation therefore the data was drawn from the interviews conducted with the respondents who participated. This chapter also includes and presents the limitations of interpretation and implications for further research.

Chapter 5: The discussion chapter is where the results of the data collected have been interpreted bearing in mind the research questions and discusses in conjunction with other literature. It also includes the summary of the results briefly, while also discussing the data in non-statistical terms. The chapter also includes the conclusions and recommendations of the major themes discussed.

CHAPTER 2: THEORETICAL FRAMEWORK AND LITERATURE REVIEW

2.1 Introduction

Among many other attributes to ending poverty and inequality in Sub-Saharan Africa; agriculture has taken the fore front entranceway in poverty alleviation and self-sustenance among many poor households. Evidently, this has encouraged an exponential growth of small-scale farmers within households to not only provide food for their families, but also for their surrounding communities for investment.

According to the United Nations (UN) (2018), continuous research has proven that the number of hungry people in the world is inevitably growing, reaching an alarming 821 million in 2017 in ratio of one is to nine people. Evidently, hunger has been on the rise in the past three years, returning to levels from decades ago. Where South America and most regions of Africa have experienced the most casualties of hunger with enough food to feed everyone on the planet, the question why people still remain hungry rests (United Nations, 2018)

Consequently, as part of the Sustainable Development Goals (SDG) vision 2030, goal number 2: zero hunger; the UN has devised a plan to help eradicate hunger and encourage self-sufficiency among the world's poor communities. Successively, this has led to many countries that used to suffer from food scarcity and hunger to now meet the nutritional needs of their most vulnerable people (United Nations, 2018). The second SDG aims towards eradicating hunger, achieving food security and improving nutrition while also promoting sustainable agriculture (United Nations, 2018).

Moreover, it also positions itself at accomplishing its objectives due to the constant increase of world hunger where globally, one in nine people in the world today are malnourished; as a result of those people majority live in developing countries. Consequently, this creates a barrier to sustainable development from which people cannot escape easily from (United Nations, 2018). Hunger and malnutrition ultimately mean less productive individuals, who thereafter are prone to disease thus being unable to earn and improve their livelihood. Nonetheless, agriculture is the single largest employer to the poor in the world, providing livelihoods for 40 percent of today's global population. It is also the largest source of income and jobs for the poor rural households (Banerjee, 2007).

2.2 Theoretical Framework

Although Food Sovereignty has been innumerably defined, according to Gliessman (1998 cited in Francis et al, 2003) it is rather defined as the application of ecological concepts and principles to suit the design and management of sustainable agro-ecosystems. Accordingly, the study of the ecology of food systems can offer understanding on how to deal with demands at the systems level and contribute to development and sustainable societies. Our societies are open systems that result from human actions and are based on demands, wishes and visions.

Consequently, the integration of human behaviour is of high regard in the importance of driving force in the system. Currently, our food systems isolate most people from their sources of food and from the production environment. Thus, in contemporary urban culture, food may be the only enduring connection to nature (Altieri, 2009). Further, the global food system does not currently provide adequate food to the tables of most people on the planet. With increasing global human population, there is growing awareness of the need to increase food production while protecting biodiversity and the natural environment (Francis, 2003)

The policy framework starts by placing the perspective and needs of the majority at the heart of the global food policy agenda and embraces not only the control of production and markets, but also the Right to Food; people's access to and control over land, water and genetic resources, and the use of environmentally sustainable approaches to productions. What emerges is a persuasive and highly political argument for refocusing the control of food production and consumption within democratic processes rooted in localized food systems (Lang, 1999).

Beuchelt (2012) further elaborates that when there is intense debate about how the world will halve poverty and eradicate hunger, the policies that govern the way food is produced, consumed and distributed, how it is processed and traded, and who controls the food chain, need to be looked at comprehensively. Moreover, Mghenyi (2010) states that by promoting greater involvement in agro-ecological farming among subsistence farmers; who in most cases account for impoverished households' in context of Sub-Saharan Africa increases the advantage of sustaining people's livelihoods without depending on the state for assistance and resources (Mghenyi, 2010: 1384-1398).

2.2.1 Conceptual Framework

The study claims to evaluate whether agro-ecological farming can be practiced and how it may promote the defined goals of food sovereignty. Ngcoya and Kumarakulasingam (2016) state that the contemporary movement for food sovereignty is a request for an unconventional food system based on economically viable, ecologically sustainable, farmer-driven agriculture which is grounded in the theoretical and social worlds of the individuals who work the soil (Ngcoya and Kumarakulasingam, 2016). The food sovereignty movement is the response of peasants, indigenous people and small-scale farmers to the various demonstrations of violence and marginalization released against their lives and social fabrics. Through the deepening of processes of neoliberal globalization, particularly those related to trade and liberalization, Structural Adjustment Programs and Trade Related Intellectual Property Rights as well their exclusion from international decision-making about food-related issues (La Via Campesina, 1996; Besmarais, 2002 cited in Ngcoya and Kumarakulasingam, 2016).

According to Fairbarin (2012) cited in Ngcoya and Kumarakulasingam (2016), the food sovereignty concept features democratic control of food by smallholder producers, collective rights and responsibility of resources by identifying the power dimensions inherent in food and agriculture and foregrounds agro-ecological practices, subsistence, self-sufficiency, and the protection of community values and practice (Holt-Giménez and Altieri, 2013; La Via Campesina, 2013; Martinez-Torres and Rosset, 2014 cited in Ngcoya and Kumarakulasingam, 2016). Consequently, small-scale producers are not all like corporate agriculture however, they are concerned with balancing a number of priorities, rather than with capitalizing yields and fields alone. Importantly, agriculture for smallholders is not simply a way of making a living, but also a way of life embedded with larger conceptions of good living (Radcliffe, 2012 cited in Ngcoya and Kumarakulasingam, 2016) that are not generally organized around income generation and profit expansion.

Further, over time food sovereignty has captured the imagination of a wide variety of groups, it has become a 'big tent' (Patel, 2009 cited in Ngcoya and Kumarakulasingam, 2016), encompassing concerns beyond those of its initial rural-agricultural producer consistency. While this has facilitated social movement building, it has also surfaced challenges such as promoting family farming on the one hand while creating equitable gender relations on the other and harmonizing the interests of socially differentiated producers (Bernstein, 2014 cited in Ngcoya and Kumarakulasingam, 2016).

2.2.2 History of Food Sovereignty Framework

Tambi et al., (2014) states that the term Food Sovereignty was first coined and used in 1996 by an activist group La Via Campesina (The Way of Peasants). La Via Campesina is an international farming and peasant movement that was formed in the year 1992 at the Congress of the National Union of Farmers and Livestock Owners (Tambi et al, 2014). The movement was largely in response to the inclusion of agriculture within the world trading system through the Agreement on Agriculture (AoA). Relatively, the AoA is an international acclaimed treaty negotiated during the Uruguay Round of the General Agreement on Tariffs and Trade (GATT), inevitably becoming the World Trade Organization (WTO) on the 1st of January 1995 (Tambi et al., 2014).

Hence, La Via Campesina is an autonomous, international, pluralist and multicultural movement which is also independent from any political, economic or any other type of ideology and affiliation. This movement aims at bringing together millions of peasants, small and medium-size farmers, landless people, women farmers, indigenous people, migrants and agricultural workers globally (Tambi et al, 2014). Furthermore, its purposes resonate with defending the small-scale sustainable agriculture as a means of promoting social justice and the dignity of the people (Altieri, 2009).

According to Patel (2009), the concept of food sovereignty has been developing rapidly since proposed a decade ago. It has become a reference point for discourse on food issues, particularly among social movements around the world. Food sovereignty has become the new policy framework for challenging current trends in rural development, food and agricultural policies that do not respect or support the interests and needs of smallholder farmers, pastoralists and fisher folk and the environment (Patel, 2009).

However, Windfuhr (2005) defines food sovereignty as a policy framework for the governance of food and agriculture, which addresses the imminent problems of poverty and hunger in an innovative way. Food sovereignty framework analyses how the framework relates to the current problems faced in rural and agricultural policies while also discussing possible policy limitations to implementation of the food sovereignty policy framework. Subsequently, the contemporary state of development of the food sovereignty framework cannot thus far provide a ready-made set of policies for national and international governance of rural and agricultural policies (Windfuhr, 2005). Consequently, authors have established that the overall concept and strategy needs further improvement, clarification and use of fitting terminology and definitions for the respective setting; particularly the rights-based language which needs to be more precise

and in addition, their access to food which has not been addressed. Agro-ecology principle has been proposed as a new scientific discipline that defines, classifies and studies agricultural systems from an ecological and socio-economic perspective (Altieri, 2009).

Subsequently, Windfuhr (2005) mentions that most of the food that is consumed globally is grown, collected and harvested by more than a billion small-scale farmers, pastoralists and artisanal fisher folk. The food is processed, resold and consumed locally, thereby providing the foundation of people's nutrition, incomes and economies across the world (Patel, 2009). At a time when halving world poverty and eradicating hunger are at the forefront of the international development agenda; reinforcing the diversity and vibrancy of local food systems should also be at the forefront of the international policy agenda (Windfuhr, 2005). Yet the rules that govern food and agriculture at all levels – local, national and international – are designed a priority to facilitate not local, but international trade. This reduces diversity and concentrates the wealth of the world's food economies in the hands of ever fewer multinational corporations, while most the world's small-scale food producers, processors, local traders and consumers including, crucially, the poor and malnourished, are marginalized (Windfuhr, 2005). Consequently, La Via Campesina strongly opposes corporate-driven agriculture and transnational companies who practice farming mechanisms that destroy nature and the people; which food sovereignty advocates for (Tambi et al., 2014).

According to Patel (2009), the conception of overlapping definitions is, however, a symptom of food sovereignty itself, woven into fabric of food sovereignty by necessity. As food sovereignty is a request for people's rights to shape and craft food policy, it can hardly be surprising that this right is not used to explore and expand the covering political philosophy (Patel, 2009). The result of this exploration has sometimes muddled and masked some difficult contradictions within the notion of food sovereignty, and these are contradictions worth exploring.

The Food and Agriculture Organization (FAO) of the United Nations (UN) has done an adequate job of tracking the evolution of food sovereignty (see FAO 2003), but it is useful to be reminded that the first official definition in 1974 of 'food security' was the accessibility at all times of sufficient world food provisions of basic foodstuffs to sustain a stable growth of food consumption and to balance instabilities in production and prices (United Nations 1975 cited in FAO 2003).

The utility of the term in 1974 derived from its political economic context, during the Sahelian famine, at the peak of demands for a New International Economic Order, and the peak of Third Worldist power, which had already succeeded in establishing the United Nations Conference on Trade and Development (UNCTAD) as a stronghold of commodity price stabilisation (Rajagopal, 2000). In such a context, when states were the sole authors of the definition, and when there was a technocratic faith in the ability of states to redistribute resources if the resources could only be made available, it made sense to talk about sufficient world supplies, and for the primary concern of the term's authors to lie in price stabilisation (Rajagopal, 2000). Comparing the language and priorities reflected in the early 1970's definition to this more recent one:

Food security is a state that exists when all people, always, have physical, social and economic access to enough, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life. (FAO 2001 cited in FAO 2003).

According to Patel (2009), the main source for this definition was *The State of Food Insecurity 2001*, and herein lies some of the tale in the widening gyre of 'food security'. The definition in 2001 was altogether a lot more comprehensive. While it marked the success of activists, Non-Governmental Organisations (NGOs) and policymaking communities to both enlarge the community of authors of such statements to include non-state actors to shift the discussion away from production issues, but rather toward broader social concerns. Additionally, this was also an intervention in a very different world and series of debates (Patel, 2009).

2.2.3 Critiques/ Motivations of Food Sovereignty

According to Crankshaw (2016), food sovereignty theorists are critically of the agro-industrial food system resulting "development". Consequently, in agro-industrial food systems, production increase and profit are the key objectives, assisted by the principle of comparative advantage. Further, Crankshaw (2016) states that produce is distributed internationally making use of the global markets and relying on market mechanisms and powers to regulate access to food and limiting state interventions. Consequently, food is an industrial product, like other inedible commodity and will therefore progress national development with increased exports. Synthetic technological advances are an important part of increasing productivity such as Genetically Modified Organisms (GMOs), fertiliser and pesticides (Wittman, 2011; Beardsworth and Keal, 1997).

The food sovereignty approach has deemed these food systems as unfavourable to developing countries agricultural sectors and unproductive as an approach system to decreasing hunger (Burchi, 2016). As a political economy critique, it undermines each structural element in order to promote an unconventional food system: local agricultural production and markets should be prioritised and secured from dumping and subsidised food imports; food is recognised as “a symbolic base of life” that should not be commoditised; sustainable agriculture, a varied economy and Fair Trade would improve national development and technology should be advanced in the direction of helping farmers upsurge competence through expanding production and inventive traditional and natural sustainable techniques such as agro-ecology (Wittman, 2011; Beardsworth and Keal 1997; Malassis and Ghersi, 1996).

Agro-ecology needs also to make the most of its potential as a social movement that can help build social capital and shape a new social and economic order behind more sustainable and just food production and consumption systems. Promoting agro-ecological practices may not be sufficient to achieve long-term resilience, unless local and global food systems undergo a more structural transformation; food value chains are reoriented towards increased efficiency and re-localisation with increased communication between producers and consumers; and consumers make more thoughtful and healthy choices (M^cMichael, 2013).

2.3 Literature Review

Since food sovereignty is explained as a call for people’s rights to help shape and craft food policy; unsurprisingly this right has not been fully used and explored into expanding and covering the political philosophy within. Consequently, these results sometimes tend to be disarrayed and concealed explorations with difficult contradictions worth exploring. According to Altieri (2009), in the face of global trends and concepts of food sovereignty and ecology, based production systems have gained much attention in the last two decades. However, these very global forces have evidently been challenging the ability of developing countries to feed themselves. Food sovereignty is embedded in larger questions of social justice and the rights of farmers; and indigenous communities has enabled farmers to take control in their own farms and make their own valid decisions in what they harvest and produce to the markets (Altieri, 2009).

Beyond individual countries, FAO 2011 Report has assessed that by decreasing the constraints faced by women farmers; it could possibly erase yields on their farms by 20 to 30 percent and

raise total agricultural output in developing countries by 2.5 to 4 percent, thus making a significant impact on national food availability (FAO, 2011). Consequently, Agarwal (2014) argues that there is a failure to bridge the gender gaps in access to inputs and services, however, it would not only confine a large proportion of farmers to low productivity agriculture, but it would also impact adversely on national efforts to attain food security (Agarwal, 2014).

Consequently, what does this imply for the food sovereignty discussion? First, Fraser (2009) states that in order to increase national food output based on small-agriculture, most developing countries will require serious efforts to enable small farmers (and especially the rising proportion of women farmers) to overcome their production constraints (Quisumbing et al., 2001). Consequently, the food sovereignty movement thus needs to focus more than it appears to have done on how these constraints which often vary by country and context can be overcome efficaciously. Second, Nyeleni declaration (2015) advocates for gender equality and a recognition of women's roles and rights in food production, as well as women's representation in decision-making. Agarwal (2014) puts emphasis on the fact that at the same time, recognition of women and gender in agriculture encourages and gives centre stage to the 'family farm'. However, the emphasis is problematic on several counts (Quisumbing et al., 2001). To begin with, given that male members have shifted disproportionately either to cities or to non-farm jobs within rural areas; many family farms are effectively managed by women, but most (as noted) have no direct rights over the land or other assets (Agarwal, 2014). More particularly, family farms do not provide autonomy to women workers or the means to realize their potential as farmers. Hence a nod toward gender equality is not enough (Quisumbing et al., 2008).

The problems women face as farmers are structural and deep-rooted and would need to be addressed specifically (Quisumbing et al., 2008). This would include redistributing productive assets such as land and inputs within peasant households in gender-equal ways and directing state services to cater better to the needs of women farmers, such as services relating to credit, extension, training, and information on new technology, field trials, input supply, storage and marketing (Agarwal, 2014). Institutional innovations involving only women rather than entire families could also hold potential gains, both in terms of productivity and equity (Quisumbing, 2001). But, in order to achieve this would require a much more complex approach to production, gender and the state than is to be found so far in La Via Campesina's elaborations. Moreover, achieving national self-reliance in food availability depends not only on overcoming

small farmer production constraints. It also depends on what the farmers choose to do (Agarwal, 2014).

La Via Campesina's vision of food sovereignty, with its emphasis on food self-sufficiency at the national level, for instance, has resonance as a means of reducing vulnerabilities arising from the over-dependency of food importing countries on food exporting ones. Altieri (2012) states that much of the developing world depends on food imports from the developed world and a few developing countries for fulfilling its food needs. Given the uncertainties arising from such dependence, rising and volatile food prices, and the effects of climate change, national efforts to achieve some degree of food sufficiency and move towards low chemical, environmentally sustainable agriculture; both important cornerstones of the food sovereignty argument clearly appear desirable, although not all countries can or may want to aim at full sufficiency (Altieri, 2012). On the other hand, Borras et al., (2008) states that national self-sufficiency goals cannot translate simply into local or household self-sufficiency goals. Nations must provide for all citizens, many of whom are in no-farm or urban jobs, and farmers may not make choices that move a country towards food self-sufficiency (Borras et al., 2008). It is of course legitimate to argue that the choices farmers make are subject to the constraints they face and the alternatives before them. It is therefore important to identify those constraints – economic, institutional, technical, informational and political – and to reflect on alternatives, on little discussed alternatives based on small farmer cooperation (Lockie, 2006).

However, it is equally important to recognize that the valuable rights of voice and choice, exercised by the disadvantaged in local contexts, cannot always fall in line with pre-conceived trajectories defined by global movements on behalf of the disadvantaged. Therein lies the paradox (Siegen, 2016). Accordingly, Agarwal (2014) mentions that within the contemporary agrarian transitions being witnessed, an increasing proportion of small farmers (more men than women) are leaving agriculture; many others (of both genders) would like to do so; and most hope their children will find a future in another occupation. Among those who choose to stay, many would like to opt for commercially viable crops rather than subsistence crops; to use some chemicals rather than none; and to connect with a range of marketing outlets depending on the crops grown, the prices offered, and the transaction costs incurred, rather than depend solely on local markets (Agarwal, 2014). In addition, Agarwal states that increasingly as countries urbanize, food security for millions will depend on their ability to buy food, rather than producing it themselves.

Agarwal (2014) dissimilarly argues that all this raises critical questions about realistic nature of food sovereignty vision. Undeniably, the vision is an important reminder of the environmental and other risks following the excesses of green revolution technology, and the need to build diversity, ecology and community, but the framework for this is far from clear (Agarwal, 2014). Group approaches based on voluntary cooperation and democratic principles. However, these approaches are markedly different from former socialist collectives and are not built on Paul Nicholson's La Via Campesina's idea of collective land ownership (Agarwal, 2014). In addition, they necessitate a shift away from the individual family farming model emphasized in the food sovereignty vision. Group approaches require adaptation to context and support from governments and civil society (Agarwal, 2014). The importance of contextual adaptation of any global vision raises issues of individual choice and democratic freedoms, which cannot simply be set aside. Agarwal (2014) further states that significant challenges arise from questions such as: who represents the many? By what processes are decisions taken? And can institutions that promote voice and choice lead to convergence of individual and collective priorities or promote individual freedoms while defining collective responsibilities (Agarwal, 2014).

2.3.1 Core Elements of Food Sovereignty

According to Pimbert (2009) behind the development of food sovereignty, framework policy rests a global network of non-governmental and civil society organizations, together with social movements, and several conferences, forums, declarations; which have resulted in several significant statements on 'food sovereignty' (Pimbert, 2009). Consequently, the Food Sovereignty policy framework includes a set of principles that protect the policy space for peoples and countries to be able to define their agricultural and food policies, and their models of production and food consumption patterns (Altieri, 2009). For many groups the right to produce and the right to food are mutually linked since most of the hungry and malnourished in the world are smallholders and landless farmers. During the World Summit, La Via Campesina presented a set of requirements that would offer an alternative to the world trade policies and realize the human right to food. In the statement 'Food Sovereignty: A Future without Hunger' (1996), it declared that 'food sovereignty' is a precondition to genuine food security', and the right to food can therefore be the tool to achieve it (Pimbert; 2009).

From this initial platform the NGOs /Civil Society Organisation (CSOs), and social movements launched two more concrete policy proposals during the World Food Summit in 1996. Agreed

upon in the final document of the similar forum, 'profit for new or food for all', CSO's demanded that the development of two new international legal instruments include; first, a code of conduct on the right to Adequate Food; and second, a global Convention on Food Security (Claeys, 2014).

While the first instrument has been followed up since 1996, the second was ignored for several years. Since 2001, however, several important events have taken place in which the Food Sovereignty policy framework was discussed and developed further (Bernstein, 2016). The discussion about Global Conventional was invigorated in Havana in September 2001, where it was discussed under the term 'Food Sovereignty' rather than food security. According to Wittman (2010), the forum on Food Sovereignty in 2002 debated the elements of Food Sovereignty and subsequently, these were summarised by the International Planning Committee (IPC) for Food Sovereignty into four priority areas for action.

2.3.2 Agro-ecology.

Since food sovereignty is a call for people's rights to help shape and craft food policy, unsurprisingly this right has not been fully used and explored into expanding and covering the political philosophy within. However, Biowatch South Africa (2015) describes agro-ecology as a sustainable alternative to industrial monoculture farming methods and systems. Consequently, it has adapted to local conditions, is inexpensive, works in harmony with nature, and preserves biodiversity (Magdoff, 2007). Food produced using the method of farming agro-ecologically is free of artificial chemicals and GMOs, is healthy, and has balanced nutrients from the soil, plant and water. It can also feed the entire world.

Conversely it is more than just this. Agro-ecological farming also succeeds in promoting social movements that ensure that farmers are in full control of all aspects of their food production (Biowatch South Africa, 2015). Further, it builds on traditional agricultural practices using research, technology and existing indigenous knowledge. Agro-ecology is about justice; justice for the environment and ecosystems, and the people living within (Magdoff, 2007). It is also based on co-operation from nurturing functional variety in agro-ecosystems, to constructing relationships of consistency between producer collectives, producers and consumers, and between actions resisting the corporate control of food (Biowatch South Africa, 2015). In essence, agro-ecology encourages food sovereignty, which is the right of peoples to access and control food and resources needed (including water, seeds, land, biodiversity, markets and

technical support) in order to be able to make their own informed decisions about the kind of food they consume, produce and purchase (Magdoff, 2007). Consequently, these practices are beneficial as they promote and build healthy soils, conserve water and nurture diversity. In an agro-ecological farming method, not only is more produced per hectare, but greater variety of products are produced, including building materials, medicines, fibres, fuels and foods. Local markets make affordable and culturally responsive food accessible, hence contributing towards ensuring food security (Sullivan, 2002).

2.3.3 Why focus on Agro-ecology.

The right of peoples to define their own agriculture policies. To protect and regulate domestic agricultural production and trade to attain their objectives of sustainable development, to determine in what measure and to limit the dumping of products on their markets (Ilieva, 2016). To promote family and community-based agro-ecological models of food production, in practice and through policy research and development, in order to help ensure peoples' food security, especially those who are vulnerable to hunger and malnutrition, through the sustainable management of local agro-ecosystems to produce food for predominately local markets (Charlton, 2016). Accordingly, Altieri (2002) defines agro-ecology as: 'the application of ecological concepts and principles to the design and management of sustainable agro-ecosystems' and continues 'agro-ecology as the discipline that provides the basic ecological principles for how to study, design and manage agro-ecosystems that are both productive and natural resource conserving, and that are also culturally sensitive, socially just and economically viable. Agro-ecology goes beyond a one-dimensional view of agro-ecosystems to embrace an understanding of ecological and social levels of co-evolution, structure and function Ilieva (2016). Agro-ecology is the holistic study of agro-ecosystems, including all environmental and human elements' (Gomiero: 2006).

A genuine agrarian reform is necessary which gives landless and farming people – especially women – ownership and control of the land they work and returns territories to indigenous peoples. The right to land must be free of discrimination based on gender, religion, race, social class or ideology; the land belongs to those who work it (Altieri, 2002). The agro-ecological approach to agricultural production is increasingly recognized and promoted among NGOs and CSOs as an effective response to the pressing need for food and livelihood security, mainly but not exclusively, for family and community farmers worldwide and especially those living in complex, diverse and risk-prone environments with limited available resources (McCarthy,

2013). Several comprehensive studies have been published in recent years (Pretty and Koohafkan, 2002; Scialabba and Hattam, 2002, pp.135 and 144; FAO, 2002 cited in Windfuhr and Jonsen, 2005).

A study published by the FAO and others before the World Summit in Sustainable Development (WSSD) in Johannesburg in 2002 reports yield increases averaging 94 percent with best results attaining 600 percent (Pretty and Koohafkan cited in Windfuhr and Jonsen, 2005).

Narula (2005) argues that in order to promote the adoption of a rights-based approach to food and agricultural policies that will lead to an end to violations of the right to adequate food. This would be carried through by ultimately reducing and progressively eliminating hunger and malnutrition which is now recognized as an individual's right (Narula, 2005). Further, Patel (2009) mentions the fact that; the right to adequate food is foremost a right of each person to safe, nutritious and culturally acceptable food. To fully implement the right to adequate food; all people need to have physical and economic access to enough quantities of safe, nutritious, and culturally appropriate food and food-producing resources, including access to land, water, and seeds (Patel, 2009).

Everyone must have the access to safe, nutritious and culturally appropriate food in enough quantity and quality to sustain a healthy life with full human dignity. Each nation should declare that access to food is a constitutional right and guarantee the development of the primary sector to ensure the concrete realization of this fundamental right (Altieri, 2002).

2.3.4 History of Agro-ecological farming

Blad (2010) states that knowingly from economic history, farming has never been the only occupation of rural people, until the mid- 20th century where people relied mostly on agricultural farming methods. Inevitably, the lifestyle changed with the start of industrialisation and urbanisation in the 19th century. Industries and development damaged the foundations for the existence of many small rural workshops (Quisumbing, 2008). Rural areas became more agricultural in nature; while peasants had to turn to narrow specialists; producing agricultural raw materials and living a very different life. During this time, rural people had to have acquired skills in order to produce everything they needed in their daily lives in order to sustain their livelihoods. For centuries, agricultures of developing countries were built upon local resources

of land, water and other resources as well as local varieties and indigenous knowledge (Blad, 2010).

Furthermore, Altieri (2009) suggests that; with the emergence of food sovereignty, emphasis has been based on the ability of farmers to access land, seeds and water while also focusing on local autonomy (Altieri, 2009). Further, extensive focus on local markets, local production, consumption cycles, energy and technological sovereignty and farmer- to-farmer networks could possibly assist in keeping local farmers and their produce in the market.

Fortunately, thousands of small traditional farmers are still in existence in most rural landscapes of the third world. The productivity and sustainability of such agro-ecosystems could be enhanced with agro-ecological approaches, thus informing and including basis of food sovereignty as a defined right for each nation or region to maintain and develop their capacity to produce basic food crops with corresponding productive and cultural diversity (Blad, 2010). Bernstein (2015) further states that at the very core of current debates about land reform; are diverging ideas about productivity and productivity growth in farming. Rural poverty and its reduction; employment generation in the country side and the possible links between these concerns as well as to varying degrees (inter-social) links with accumulation and growth in the wider economy (Berstein: 2015).

McMichael (2012) agrees with Berstein (2015) on the basis that a merging ideology would be that lands occupied (farms) or accessed (commons) by smallholder farmers and pastoralists are low-yield and underutilized lands that, with capitalization, can improve rural economies and address the global food security problem underscored by the current 'food crisis' (McMichael, 2012).

2.3.5 Builds knowledge and Skills

Food sovereignty values the sharing of local knowledge and skills that have been passed down over generations for sustainable food production free from technologies that undermine health and the well-being of people and nature (Altieri, 2002). Ultimately, Food sovereignty puts the right to enough, healthy and culturally appropriate food for all at the centre of food, agriculture, livestock and fisheries policies. However, the control of knowledge and of the forms of representing reality (technical or comprehensive) is an important source of power (Gliessman, 1998). Martinez-Alier (2002) states that power is not only exercised at the realm of concepts and dialogues. Powerful 'valuation languages', often the techno-economic discourses

priviledged by elites in power, suppress alternative forms of values, expressed often by local communities and indigenous groups in environmental conflicts (Matinez-Alier, 2002).

2.3.6 Access to productive Resources

The problem of marginalization is often caused or aggravated by other problems linked to the lack of, or insecure access to, productive resources. Access problems are particularly highlighted in the food sovereignty framework and cover issues such as access to land, water, agricultural biodiversity and traditional technology (Francis *et al.*, 2003). The current process of concentration of these assets, both inputs and markets, has had a huge detrimental impact on a family-farm-based model of agriculture. This is most evident in Europe and the US where the economic concentration process in the input and output side of agriculture has been most pronounced, but it is being replicated the world over (Cohen *et al.*, 2013).

The quantity of development assistance and national budget allocation for the agricultural sector and to rural development has been decreasing for years, although this trend now seems to be reversing (Pimbert, 2005). This reflected a policy orientation that concentrated on overall poverty reduction measures, linked with the hope that the general poverty orientation of national policies would also reduce poverty in rural areas. Between 1986 and 1996, the budget allocation in most developing countries for rural development and for agriculture policies dropped by more than 50 percent in all developing countries, as well as in bi- and multi-lateral aid. Thus, the support for the already marginalized groups living in rural areas decreased considerably. The money that still goes into these areas predominantly supports commercial agriculture and competitive export sectors (Pimbert, 2005). The food sovereignty framework recognizes this neglect of smallholder farmers and other groups living in rural areas, such as pastoralists, fisherfolk and indigenous communities – who seldom get support from government policies – as a central issue (Windfuhr, 2005). Consequently, the framework fails adequately to address this issue as an important element for future change or suggest how to include effective demands directed to national governments in Food Sovereignty strategies (Windfuhr, 2005).

Subsequently, approximately 22 percent of the hungry and malnourished are families and communities without access to productive resources, including landless and rural labourers (Chambers, 1992). The food sovereignty framework highlights the difficulties of these groups, predominantly the lack of access to land, water and other productive resources. The policy

recommendations, however, do not address in detail the situation of rural labourers. Necessary policy recommendations would have to cover effective labour regulations as well as positive action to support rural employment, including employment guarantee schemes (Anseeuw, 2013).

Several policy areas are particularly relevant to the causes of hunger, malnutrition and rural poverty, such as the active search for Foreign Direct Investment (FDIs) (Liu, 2014). In many developing countries FDIs lead to investment particularly in two sectors that are important for marginal groups living in rural areas. One is the investment in extractive industries that often have an extreme impact on changing land-use patterns, particularly where surface mining is concerned. Extractive industries also have huge environmental impacts on water streams, soil quality and pollution (Bond *et al.*, 2008). The other sector is the privatization of essential services, such as water supply. Even if most of the food sovereignty literature does not address these problems directly, it does in principle insist on the right of peoples and nations to determine their own policies (Borras, 2010). One of the essential arguments of food sovereignty is that there is a need to rebuild capacity and policy spaces to control policies that affect the lives of rural populations. On the other hand, there is not enough discussion about whether the national policy level is huge conflicts between local autonomy and national centralized power. This is the ‘internal’ risk of much local sovereignty strategy.

Rosset (2013) argues that in order to promote continued access to smallholder farmers, pastoralists, fisher folk and indigenous peoples to and the equitable sharing of benefits from; the sustainable use of their land, water, genetic and other natural resources used for food and agricultural production (Pimbert, 2009). Desmarais (2002) elaborates that a genuine agrarian reform is necessary as it gives landless and farming people – especially women – ownership and control of the land they work and returns territories to indigenous peoples. Patel (2009) also states that in the case of genetic resources, this access is seen by civil society organizations as continues access in restricted intellectual property rights to seeds, livestock breeds, wider agricultural biodiversity; and that the integrity of these genetic resources is not compromised by the spread of GMOs and genetic engineering technologies (Desmarais, 2002).

Within a given agro-ecological environment, if land is unequally distributed, market failures occur, and institutional gaps and conditions of access to public goods vary systematically with farm size, then optimum farming systems will differ across farms (Altieri, 2009). Small-scale farmers will typically prefer farming systems that are less capital intensive and less risky

whereas large-scale farmers will prefer farming systems that are less intensive in labour and they can afford to assume risks (Altieri and Nicholls, 2008). In this case, unless lands were equally distributed, heterogeneity of farming systems prevails, and trade-offs typically occur between indirect and direct effects (Smit and Smithers, 1994). The more unequally land is distributed and the more market failures, institutional gaps, and access to public goods are farm-size specific (and in Latin America in general) the sharper the trade-off (Tschirley and Benfica, 2001).

2.3.7 Protection of Natural Resources

Food Sovereignty entails the sustainable care and use of natural resources, especially land, water, and seeds and livestock breeds (Godfray *et al.*, 2010). The people who work the land must have the right to practice sustainable management of natural resources and to conserve biodiversity free of restrictive intellectual property rights. This can only be done from sound economic basis with security of tenure, healthy soils and reduced use of agro-chemicals (Wittman, 2009). Food sovereignty focuses on production and harvesting methods that maximize the contribution of ecosystems, avoiding costly and toxic inputs and improve the resiliency of local food systems in the face of climate change. Food sovereignty respects the right of food providers to have control over their land, seeds and water; while rejecting the privatization of natural resources (Patel, 2009).

2.3.8 Trade and Local Markets

Maxwell (2003) argues that in order to promote equitable trade policies and strategies, which empower communities and nations which are often exposed to hunger and malnutrition to create adequate and enough quantities of harmless and secure nourished food supplies. Furthermore, this enables an affirmative influence against the negative impacts of subsidized exports, food dumping, falsely low prices and other comparable components portraying the contemporary model of agrarian exchange (Maxwell, 2003).

However, the dissimilarities of understanding appear when it comes to the measures needed to implement or realize the principles and work towards achieving food sovereignty (Kotze *et al.*, (2014). Social movements, NGOs and CBOs have speculated that all issues related to the agriculture and food needs of the majority should be detached from the World Trade Organization (WTO), and that prospectively new governance procedures outside the current

trading system should be developed. However, US National Farmers Union (USNFU) called for a separate treaty altogether (Kotze *et al.*, 2014).

Although such differences of interpretation exist, discussions relating to the food sovereignty policy framework within civil society are converging (Lang and Barling, 2012). Unsurprisingly, the concept of food sovereignty emanated from a political discourse focusing on the self-determination of local communities and allowing self-defined ways to seek solutions to local problems (Gupta, 1999). While food security is more of a technical concept, and the right to food and legal one, food sovereignty is essentially a political concept. Even though food sovereignty has gained some recognition outside civil society groups and social movements, and policies to achieve it have become more clearly defined, the question remains how advocates of food sovereignty could elaborate proposals that would achieve it (Patel, 2009). The comprehensive nature of the concept of food sovereignty implies that a strategy to achieve it will have to be highly complex (Gupta, 1999).

Consequently, for those involved in achieving the right to food, including national and international institutions as well as private actor's, such as Transnational Corporations (TNCs), a code of conduct on human rights to food has been thereof pioneered (Patel, 2009). Five years on ward since the World Food Summit, FAO and its relevant members have devised a set of voluntary guidelines for the progressive realization of the right to adequate food (Chambers, 2014). Moreover, the pressure given by civil societies to adopt a code of conduct influential in getting work started in voluntary guidelines in 2003. The voluntary guidelines were finally adopted by the FAO council in 2004 (Land and Barling, 2012).

An International Convention on food sovereignty that replaces the present-day Agreement on Agriculture (AoA) and applicable clauses from other WTO agreements. These consist of TRIPs, The General Agreement on Trade in Services (GATS), the Agreement on Sanitary and Phytosanitary Measures (SPS), Technical Barriers to Trade (TBT), and The Agreement on Subsidies and Countervailing Measures (SCM). It would put in force, within the worldwide policy framework, Food Sovereignty and the simple human rights of all peoples to safe and healthy food, respectable and complete rural employment, labour rights and safety, and a healthy, wealthy and diverse natural environment. It would additionally contain alternate rules on food and agricultural commodities. Such a conference has been affirmed by using several meetings which include the 'Draft Peoples' Convention on Food Sovereignty' held in July 2004 and also in Thailand, October 2003 (Martinez-Torres and Rosset, 2010).

A World Commission on Sustainable Agriculture and Food Sovereignty set up to undertake a complete evaluation of the impacts of change liberalization on Food Sovereignty and protection, and broaden proposals for exchange (Wittman and Desmatais, 2010). These could include the agreements and guidelines within the WTO and other regional and international change regimes, and economic guidelines promoted by way of International Financial Institutions (IFIs) and multilateral improvement banks. Such a commission could be made up of and directed by representatives from various social and cultural organizations, peoples' movements, expert institutions, democratically elected representatives and appropriate multilateral institutions (M^cMichael, 2012).

An international, legally binding agreement that defines the rights of small-holder farmers to the assets, resources, and legal protections they need to be able to exercise their right to produce. Such an agreement could be framed within the UN Human Rights framework and be linked to already existing relevant UN conventions (Cousins, 2009). La Via Campesina currently has been discussing the idea to demand the development of an 'International Peasant Rights Convention'. A first draft has been developed by the peasant organizations from Indonesia, which is currently being discussed worldwide in the Via Campesina network (Rosser, 2010). All proposals would require far-reaching changes in the current regulation of international agricultural and trade policies, as the scope of major international institutions and treaties would be changed (M^cMichael, 2012).

Food sovereignty is less a proposal for a single policy change in one of the international regimes. It is more a framework to change the broad range of agricultural policies worldwide. Under the umbrella of the food sovereignty, several new institutional frameworks are possible (Agarwal, 2017). Moreover, it is not surprising that NGOs, CSOs and social movements' positions still vary tremendously, since it is not an easy task to develop a new blueprint of institutions and conventions.

Food is first and foremost a source of nutrition and only secondarily an item of trade. National agricultural policies must prioritize production for domestic consumption and food self-sufficiency. Food imports must not displace local production nor depress prices (Agarwal, 2017).

According to Mitchel (2008), the intense increase of prices for basic food in 2008 was arguably related to farmers switching from food crops to biofuels. Altieri and Nicholls (2008) state that there has been significant expansion of agro-exports and biofuels unfolding in Latin America. Therefore, the concepts of food sovereignty and agro-ecologically based production systems inevitably gain increasing attention. Consequently, rural poverty in Latin America has declined over the last three decades. However, success has been uneven across countries and rural poverty within the regions remains huge.

According to Altieri and Nicholls (2008), both global and internal forces challenge the ability of Latin America to feed itself while redefining the significance and the role of this important sector that has historically been of a dual nature. Evidently, on the other hand, there is an export-oriented agricultural sector that makes a substantial contribution to the national economies but at a high cost in terms of impacts on public health, ecosystem integrity, food quality, and in many instances disrupting traditional rural livelihoods, while hastening indebtedness among thousands of farmers (Altieri and Nicholls, 2008). However, the concepts food sovereignty and agro-ecological based production systems advocate for and put public health, ecosystem integrity, food quality, and innovation of traditional rural livelihoods in the forefront regarding food access and security.

Conversely, there is a small-scale or peasant Latin American farm sector that includes about 75 million people who represent almost two-thirds of the Latin American total rural population (Altieri and Nicholls, 2008). Many of these small farms are traditional farming systems that represent miniature community-based agriculture that offers illustrations for promoting biodiversity, sustaining crop without agro-chemicals and conserving ecological integrity while ensuring local food security (Bisong, 2005). As these trends develop in the region of Latin America, the concepts of food sovereignty and agro-ecologically based production systems have ultimately gained much attention. de Janvry and Sadoulet (1991) identified four paths out of poverty practised in Latin America: exit, agricultural and pluriactive paths which requires a complete healthy new approach based on regional development, decentralization and participation. Consequently, within these two strategies, agricultural technology plays an important role. In Latin America, the majority of the benefits from technological change has rather been apprehended through indirect effects through the price of food, employment creation and contributions to combined growth (de Janvry and Sadoulet, 1991). Through the price of food, secondary effects benefited from a broad spectrum of national poor including the

landless farm workers, net labour selling smallholders and the rural non-agricultural and the urban poor.

Likewise, Altieri and Nicholls (2008) settle on the concept of involving farmers directly in the formulation of the research agenda and on their active participation in the process of technological innovation and dissemination through models that focus on sharing experiences, strengthening local research and problem-solving capacities (Altieri and Nicholls, 2008). New methods and technologies involving application of merged modern agricultural science and indigenous knowledge systems and spearheaded by thousands of farmers, NGO's and some government and academic institutions have enhanced food security while conserving natural resources, agro-biodiversity, and soil and water conservation throughout hundreds of rural communities in the region (Garrity *et al.*, 2010).

In Latin America, peasant production is responsible for producing, at regional level, 51 percent of maize, 77 percent of beans and 61 percent of potatoes (Altieri and Nicholls, 2008). Consequently, in Brazil alone, there are about 4.8 million family farmers (about 85 percent of the total agricultural land of the country). In Ecuador, the peasant sector occupies more than 50 percent of the area devoted to food crops such as maize, beans, barley and okra. Moreover, Mexico peasant farmers occupy at least 70 percent of the area assigned to maize and 60 percent of the area under beans. In addition to the peasant family farm sector, there are about 50 million individuals belonging to some 700 different ethnic indigenous groups who live and utilize the humid tropical regions of the world. Approximately two million of these live in the Amazon and southern Mexico. In Mexico, half of the humid tropics are utilized by indigenous communities and 'ejidos' featuring integrated agriculture-forestry systems with production aimed at subsistence and local-regional markets (Toledo *et al.*, 1985 cited in Altieri and Nicholls, 2008). Although conventional wisdom suggests that small family farms are backward and unproductive, research shows that small farms are much more productive than large farms if total output is considered rather than yield from a single. Small integrated farming systems that produce grains, fruits, vegetables, and fodder and animal products out-produce yield per unit of single crops such as corn (monocultures) on large-scale farms. Also, Altieri and Nicholls (2008) unwaveringly state that in Latin America, traditional farms are models of sustainability. This is mainly because the persistence of more than three million agricultural hectares under ancient traditional management in the form of raised fields, terraces, polycultures, agro-forestry systems which document successful indigenous sustainable agricultural strategy and

compromises a tribute to the 'creativity' of traditional farmers (Altieri 1999 cited in Altieri and Nicholls 2008).

2.5. Experiences in SADC and South Africa on agro-ecology

Within the Southern African Development Community (SADC) region, in Zambia the working population is engaged in agriculture, mostly subsistence farming. The agricultural sector accounts for 20 percent of the country's gross domestic product (FAO, 2006). Sustainable organic agriculture (agro-ecology) is a farming method that puts emphasis on environmental health, economic profitability, and social and economic equity (Smit and Smithers, 1994).

In the case study of Chongwe, Kazungula, Sesheke, Shangombo and Mongu districts; organic farming was sought to be the most prominent farming method that steadily improved food security, household incomes and climate change adaptation. The survey that was carried out in five districts revealed that the farmers reported highest yields for maize from organic agriculture (2 408kg per hectare). The average maize output recorded from conventional agriculture was 1 175 kg per hectare (Auerbach *et al.*, 2013). Evidently, there was increased yields even among those who were practising just one or two of the methods of agro-ecological farming. Subsequently, the number of farmers who reported an increase in production as a result of using organic practices for two years or more increased from 2.3 percent to 75 percent; giving a total number of 163 (Auerbach *et al.*, 2013). Although the time period of the case study was relatively short (32 months) to demonstrate the impact of sustainable farming techniques, a number of positive results were recorded. Steadily, the yields for the farmers using agro-ecological farming methods with little or no external inputs was seen to translate into increased household income with high number of households having surplus crops for sale.

As a result, the number of months in which the households had staple food from their own production increased significantly. Consequently, these findings come to an agreement with those of Kyalo *et al.*, (2009) that agro-ecological farming has positive effect on rural poverty reduction. Further, with the mentioned benefits of using agro-ecology as a method of farming, indirect benefits were also established although they were not measured. Successively, due to proper timely management practices, productivity has increased among the small-scale farmers (Auerbach *et al.*, 2013).

Moreover, most groups have improved their minimum total investments from a mere US\$1 to around US\$3 000. This was made possible by the social trust and interaction which enabled

the farmers to access better markets through group marketing their organically produced food. The increase in income has enabled farmers to improve their resource organization further. The practice and knowledge of agro-ecological farming in Zambia have been a manifestation of the role of social capital in organic ecological farming especially among small-scale farmers. The experience in addressing food sovereignty through the principle of agro-ecology depicts how practical application and participation of agro-ecological farming can lead to a wide range of improvements in the livelihoods of the people. The concluding remarks of Auerbach *et al.* (2013) pose a positive outlook to the approach of agro-ecological farming.

Further, Auerbach *et al.*, (2013) profoundly states that the only reason why Africa still suffers is due to its own doing by its very own technological innovations in agricultures and development fields. In assessing sustainability aspects of agro-ecological, economic and social sustainability while the institutional aspects were still weak. This calls for a great change in confidence and trust in Africa's social, natural and cultural values (Auerbach *et al.*, 2013).

Accordingly, coming back home in South Africa, Civil Society Organisations (CSOs) have been promoting and supporting the environmentally sound production practices within value-systems of social justice for the past three decades (Stewart, 2003). Additionally, there has been a rise of small-scale farmers producing environmentally sound ways that are somewhat not entirely supported by the government or Non-Governmental Organisations (NGOs) (Stewart, 2003). While an excess of well-intentioned policies in South Africa express uplifting small-scale farmers, often considerable financial resources are committed to implementing these policies (James, 2014).

A successful case of agro-ecological production was found in the peri-urban area of Abalimi Bezekhaya the Cape Flats of Cape Town, Western Cape. The climate and environment in Cape Town is notorious for vegetable production. However, the farmers soar in their crop production despite climate concerns. Consequently, the organisation provides training, permanent mentorship, subsidised and free inputs through its garden centres, and guaranteed markets for those that are able to sell surplus (Biowatch South Africa, 2015). The organisation has helped this approach to build more sustainable farming businesses, making them less vulnerable to collapse should the support of NGO disappear. The organisation chooses to trade to a guaranteed market that provides premium prices in order to bring the most money possible into the local economy, as opposed to selling the organic produce to the local community, which could increase its nutritional security and stability.

Abalimi Bezekhaya served as the inspiration for the Siyavuna project in KwaZulu-Natal. Siyavuna operates within the Ugu district of KwaZulu-Natal, trains and mentors emerging organic farmers with the aim of strengthening food security, helping develop livelihoods and enhancing local economies. Working with ten rural communities and supports micro-enterprises through farmers' associations and cooperatives that market under a brand called Kumnandi. Its organic produce is certified through participatory guaranteed system. Participating farmers deliver their goods each week to a cooperative-established collection point that is within a walking distance of their farms (Biowatch South Africa, 2015). Thereafter, the farmers are paid cash for their produce. This does not only encourage the farmers to continue produce organic food, but they are also able to feed their families with the little money they receive from being paid for their produce.

Another prominent NGO namely Biowatch that advocates for food sovereignty using agro-ecology as a method runs programmes with small-scale farmers in five project sites in KwaZulu-Natal. It approximately services 25 projects in Tshaneni, Pongolo, Mtubatuba, KwaNgwanase and Ingwavuma. Profoundly, Biowatch defines agro-ecology a sustainable alternative to industrial monoculture farming systems and as a system adapts to local conditions, it uses low levels of inputs and inexpensive, and works amicably with nature (Biowatch South Africa, 2015). As a result, this method of farming preserves biodiversity, and often enhances it. It results to healthy, nutritious and Genetically Modified-free food. Biowatch has proven that agro-ecological farming can be achieved on both small- and large-scale farming. Moreover, Biowatch leads work on seed saving in the country with great success in the communities within which they operate. The seed knowledge Initiative (SKI) which documents and creates platforms for experiential learning between farmers to create local and regional communities of practice around agro-ecology and seed saving and exchange and to shift policy as well as scientific discourse on agriculture (Biowatch South Africa, 2015).

Despite the many challenges faced within the practice of agro-ecology in promoting food sovereignty in South Africa; there are deep skills, knowledge and expertise in farming using this method of farming.

CHAPTER 3: REASERCH METHODOLOGY

3.1. Introduction

This chapter describes the context of the research site and its surroundings, and also describes some of the limitations which were encountered during the process of conducting research. The chapter will further describe the approaches used to collect data; while also clearly outlining how and why these approaches were used in an attempt to answer the key questions of the study. Finally, the chapter will include a summary of how the exploration of the results will be conducted using a qualitative approach will include some of the participatory action research tools used in this research.

3.2. Research Design

Once the research topic and questions were determined, methods of conducting the study were decided upon. After closely examining the research questions, a decision was taken that qualitative research method was best suited for this research. The distinction between qualitative and quantitative approaches can be made in different ways. Three such ways are: (1) to focus on one part of the research process that is then called qualitative or quantitative, (2) to describe specific research methods as either qualitative or quantitative, and (3) to distinguish between a qualitative and a quantitative research philosophy (Allwood 1999).

The goal of qualitative research is the development of concepts which help us to understand social phenomena in natural (rather than experimental) settings, giving due emphasis to the meanings, experiences, and views of all participants' (Pope & Mays, 1995:42). Unlike quantitative research which is about estimate and using numbers to prove or disprove a hypothesis. This method uses strict control of variables and the focus is on static reality, while being a grounded method in the positivist worldview, there is an assumption that there is only one truth or reality which is independent from the researchers own point of view (York, 1998 cited in Sonubi, 2011). Consequently, according to this worldview, these multiple realities and multiple truths are founded on construction of a social reality that is constantly changing (Aliyu, 2014). Consisting of a number of differently developed methods that are best suited to address predetermined questions of particular interest in numerical form which are collected from a representative sample; statistical methods are put in use to analyse data (Lazaro & Marcos, 2006 cited in Labaree, 2009). Moreover, qualitative research method is an umbrella

term covering a variety of social research. However, there are some common elements to the approaches of qualitative research, which begin to give some sense to the term 'qualitative research' (Al-Busaidi: 2008)

This study adopted a qualitative approach. Accordingly, Benard (2017) suggests that qualitative method is especially effective in obtaining specific information about values, opinions, behaviours, and social contexts of populations. Further, Benard (2017) mentions that qualitative design is flexible and adaptable. Where during collection of data, it can adjust to what is being learned. It also involves the mixing of various methodologies regarding data collection. Qualitative methods that are used widely in research include participant observation, in-depth interviews, and focus groups. Each of these is particularly suited for collecting a specific kind of data (Benard, 2017).

According to Kaplan (1988), although qualitative design tends to be complete, it is also motivated for an understanding of the 'whole', rather than just an understanding of a part of the occurrence to be studied. Consequently, this type of research approach requires for the researcher to become deeply involved in the research study; and this often can be for very long periods of time. Subsequently, qualitative research approach requires the researcher to become the research tool (Krefting, 1991). With the enduring required analysis of collection of data; in turn, this motivates both the collection of further data and the development of theories as the research progresses. Consequently, this forces the researcher to develop a model based upon the data collected as opposed to the quantitative researcher who will develop a theory or a hypothesis and only then collect the data to either support or contest the proposed hypothesis (Creswell: 2017).

Davies and Hughes (2014) state that there are at least two major differences between qualitative and quantitative methods that evidently stand out. The first consists of their degree of flexibility. Qualitative methods are more flexible in that they allow greater interaction between the researcher and the participant. While the relationship between the researcher and the participant in qualitative research is, to some extent, less formal, it is strictly formal in quantitative research (Berg, 2004).

Although the ideal in qualitative research is to get inside the perspective of the participants, full participation is not always possible. A researcher can never know exactly how it feels to be illiterate. The challenge is to combine participation and observation to become capable of

understanding the setting as an insider while describing it to and for outsiders (Daymon & Holloway, 2010:338).

Further, a qualitative approach was used because of the nature of the study. This is because a qualitative approach allows for in-depth understanding of a subject. This study aimed at getting elaborate personal views and perspectives on practised experiences and skills of the respondents on the subject; hence this could not be effectively achieved through applying statistical procedures or any other quantifying procedure, instead employing a qualitative approach was more appropriate. According to Strauss and Corbin (1998), “qualitative methods can be used to explore substantive areas about which little is known or about which much is known to gain novel understandings” (Corbin: 1998)

Hammarisdale is situated at about 18 kilometers from the city of Durban in the district namely Camperdown in the province of KwaZulu- Natal (figure) according to Mjwara (2014) the township was formally known for its history of political conflict between ruling chiefs in the 1960s. It was then during that time that the Mpumalanga Township, Hammarisdale was established and built on land that belonged to missionaries (Mjwara, 2014). In the late 1980s, the whole of Hammasdale was then, divided into sections including Georgedale, Woody Glen, Mophela, Sankontshe and Mpumalanga, meaning ‘sunrise’ (Moesetsa 2005 cited in Mjwara, 2014). Later the township was recognised as an industrial area producing products such as cotton and fibre. Presently called Mpumalanga Township, Hammarisdale is one of the most densely populated areas within the province of KwaZulu-Natal. Consequently, the township is divided into sections and units which mainly consist of four-bedroom houses while having enough space to fit a small garden in their backyard. Moreover, the Hammarisdale is still surrounded by communities which are still ruled by the traditional Induna and other traditional leaders (Mjwara, 2014). Moesetsa (2005 cited in Mjwara, 2014) affirms that there are high levels of unemployment and poverty which have an influence and impact on crime within the township. The township’s ethnic profile is predominantly African and constitutes mainly of isiZulu speakers. With approximately 172 503 inhabitants who reside in Mpumalanga Township, Hammarisdale, this headcount also includes informal dwellers from the surrounding areas (Oyeka, 2011:35 cited by Mjwara, 2014:39).

Figure 3.1: Map showing location of Hammarsdale



Image taken from: https://zh.weatherforecast.com/place_maps/ha/Hammarsdale.8.gif

Hammarsdale was chosen as the research area because of the evident success stories of agro-ecological farming through various co-operatives and NGOs among its small-scale farmers in the area. Philip (2003) states that Co-Operative Development Policy in South Africa was developed and approved in 2004; which included the mandate for co-operate development from the Department of Trade and Industry. Consequently, the eThekweni municipality devised its own policy for the future of agricultural development within its own municipality. The policy included the rural areas of the municipality, which are often marginalised, with the intended purpose of promoting an integrated, coordinated and sustainable agricultural development within these areas. Hammarsdale, Mpumalanga Township serves as an admirable example of residents in the rural areas using the method of agro-ecological farming with the assistance of co-operatives (administered by the municipality) and NGO's

The fact that Hammarsdale is an older industrial suburb (45km from Durban's CBD) in the heart of Durban's Outer West on the N3 Durban/JHB corridor - an area experiencing a surge of renewed interest due to its well-priced, zoned and serviced industrial land. It is located midway between Durban and Pietermaritzburg.

3.3. Study Population

The study sample comprised of sixteen participants. The participants were all black farmers, male and female, who were mostly aged between early 20's to late 50's and older. This was so that a diverse set of views and perspectives about agro-ecological farming methods within the selected study group could be obtained. All the respondents were black because of the location of the study. Most of the farmers who used agro-ecological methods of farming who had the set skills were mostly black. Consequently, this increased the chances of identifying appropriate study participants. The participants are part of a Co-operative under the Non-Governmental Organization (NGO) LIMA Rural Development. The participants are a minority of many other farmers who have envisioned the use of farming using agro-ecology and have successfully accomplished using this method of farming.

3.4. Sampling Method

Purposive sampling was adopted when respondents were recruited. This is partly because purposive sampling is the most appropriate method available since there was a limited number of primary data sources who could contribute to the study. The difficulties that were involved in identifying farmers using agro-ecological farming methods was due to the increase use of genetically modified foods and organics. Palys and Atchison (2008) state that purposive sampling is a technique in which researchers rely on their own judgement when selecting members of a population to participate in a study. Purposive sampling method may prove to be effective when only a limited number of people can serve as primary data sources due to the nature of research design (Palys and Atchison, 2008). Farmers who use agro-ecological-farming methods are not very visible within the urban areas of society and are also not easily to locate.

Participatory research is considered a collaborative approach that is designed to ensure and establish structures for participation by communities who have lived experiences of the study being conducted in that community (Bergold and Thomas, 2012). Further, participatory research requires great inclination on the part of participants to disclose their personal views of the study being conducted, their own opinions and experiences. Consequently, participation in the study was voluntary. Bergold and Thomas (2012) state that in order to facilitate sufficient

sincerity, a “safe space” is needed, in which the participants can be confident that their expressions will not be used against them, and that they will not by any means face repercussions if they chose to express critical or dissenting opinions.

3.5. Data Collection

In-depth interviews and focus group discussions were used in this study for data collection. This is because the study was based on knowledge of practices, experiences and set of skills acquired by the farmers using agro-ecological-farming methods. According to Greeff (2002: 298) in-depth interviews are sometimes referred to as “conversations with a purpose”; the purpose not being to get answers to questions nor to test hypotheses. At the very core of in-depth one-to-one interviews is “an interest in understanding the experience of other people and the meaning they make of that experience (Greeff, 2002:298). Furthermore, Greeff states that this method of interviewing is used “to determine individuals’ perceptions, opinions, facts and forecasts, and their reaction to initial findings and potential solutions” (Greeff, 2002: 298). Moreover, in-depth interviews are most suitable for collecting data on cultural norms of a group and on enlightening broader issues of concern to cultural groups or subgroups represented (Family Health International, 2008 cited in Benard (2017)

3.6. Data Analysis

According to de Vos (2002: 339), “data analysis is the process of bringing order, structure and meaning to the mass of collected data”. In analysis for this study, use was made of the Thematic Analysis. Thematic Analysis method is used for identifying, analysing and reporting themes within data, while minimally organizing and describing the data in detail. However, it goes further by interpreting various aspects of the research topic (Boyatzis, 1998). Further, Thematic Analysis data is usually collected using interview techniques using coding and categorizing system (Vaismoradi, Turunen, and Bondas, 2013).

Thematic Analysis is a process for encoding qualitative information. The encoding requires an explicit “code”. This may be a list of themes; a complex model with themes, indicators, and qualifications that are casually related; or something in between these two forms. In Thematic analysis, Bondas (2013) states that data is usually collected using interview techniques although not exclusively, and analysis of data begin as soon as the first bit of data has been

collected. It is necessary to do this in order to direct the next interview and observations, and to make sure that all the relevant data is included in the next set of interviews and observations (Bondas, 2013).

Thematic Analysis is appropriate for this study on agro-ecological-farming methods because it is used for identifying, analysing and reporting themes within data, while also organizing and describing it in detail. Boyatzis (1998) further states that it goes further into interpreting various aspects of the research topic. Therefore, in studying the method of agro-ecological farming, it identified what agro-ecological farming is, and analysed and reported the themes found in the data collected. Subsequently, using this tool of analysis allowed for the data to be described and organized in detail while it also interpreted the various aspects of the research topic.

The first interview was used as a yardstick and as a quality control for the subsequent interviews. Moreover, the themes that emerged from the first interview were further explored in the subsequent interviews and were also developed further if they required to. Likewise, thematic analysis utilizes open coding, axial coding and selective coding (de Vos, 2002). This allows for the breaking down, examining, categorizing, comparing, conceptualizing and repacking of data (de Vos, 2002). These were very important components, especially for a study as such, where new information on the subject was likely to surface.

3.7. Ethics

The invasion of one's privacy by asking confidential, classified activities and personal beliefs is of an unethical nature. Individuals and communities have the right and privilege to their own freedom, security and privacy. Consequently, in this study, respondents decided when and to whom they choose to converse to; whom they would like to disclose personal information to and whom they would like to access any other relevant information regarding the data collection. The respondents are likely to provide such information when it is asked for in a comfortable situation with mutual trust. However, when they believe serious answers are needed for legitimate research purposes, they can be rest assured that their answers and replies will remain confidential. This study treated all the respective respondents with respect and dignity and tried to reduce any form of anxiety and discomfort that may have occurred during the interview. The confidentiality of data was protected at all costs by transferring the recordings from the recorder to the researcher's personal laptop and kept safe. A clear

indication was made to the respondents regarding participation that was entirely voluntary and refuse to further participate was a given at any time the respondents felt the need of no longer being part of the interview. Informed consent was be given to the participants in the research. The study acknowledged that the research was dependent on the respondent's voluntary cooperation. Questions were well developed and asked in a sensitive manner, while also treating all the respondents with respect and adhering to their confidentiality. Subsequently, after the study had been conducted, all personal details of the respondents acquired during the study were kept in confidence and once the study was completed, the information will be destroyed after five years as per University requirements.

3.8. Credibility and Trustworthiness of Data

The reliability and validity of data collected during the focus groups discussions and in-depth interviews were safeguarded by using a digital audio recorder and transcribing the audio precisely as well as taking field notes. Because the researcher interviewed the participants in IsiZulu, the transcripts were translated into English, therefore grammar had to be corrected to ensure the analysis of the data makes sense and is consistent. Likewise, the interviews and focus group discussions were conducted by the major investigator in order to guarantee high quality of data and ensure that ethical considerations were observed throughout the study.

3.9. Challenges and Limitations

According to Saunders *et al.*, (2009), the procedure of how research is conducted demonstrates the essence of the study, thus recognized as the backbone of the research. The first challenge that was experienced in this study was the time span given to collect the data within the four municipal wards of Hammarsdale, Mpumalanga Township visited. Given the time span, the interviews had to be cut throat and precise without further elaboration and greater detail as anticipated. This was evident because the LIMA Co-op garden assistants were busy with their own work of evaluating the progress from their respective gardens, therefore time was limited to stay in one ward area for extensive interviewing. Notably, one of the other challenges was the misunderstanding of being regarded as a facilitator or bearer of change and development instead of just being a student collecting data and making an analysis on the participants'

method of farming. However, that was overcome by explaining to the participants that I was merely a student who had come to ask questions and learn from them as participants.

Sixteen participants were originally anticipated to be interviewed as part of the study, but only fourteen were available from all the wards visited. This was mainly because the research interviews were conducted during the beginning of week where some of the participants had other commitments to adhere to, and majority of the other participants had gone into the neighbouring town in Pietermaritzburg to purchase seedlings for their harvest. This may have affected the outcome of the study regarding extensive rapport, knowledge and material individuals have with regard to the importance and knowledge of farming using the method of agro-ecology.

In-depth interviews were initially anticipated. However, upon arrival of conducting interviews in two of the municipal wards at Hammarsdale; the researcher was informed to rather interview the participants as a focus group because the participants had to run a few errands later during that day. This limited the responses given by the participants as most of them shared the same responses as another, making the study reach saturation. Moreover, the interviews were conducted in IsiZulu. When the data collected was being translated to English for analysis, the meanings and significances were lost as IsiZulu cannot be directly translated.

3.10. Summary of Chapter

This chapter delivered information about the research methodology that was used to conduct this study. In nature, this study is qualitative and made use of focus group discussions as well as in-depth interview to collect information from the participants. Participants were given the right to take part in the study after the objectives and ethical considerations were discussed with them. Challenges and limitation of the study were also outlined in this chapter.

CHAPTER 4: FINDINGS AND INTERPRETATION

4.1. Introduction

This chapter looks at and explains the research findings and provides a description of the main findings of the study. The initial themes observed that were in line with the objectives of this study have been used as sub-themes in order to assemble the data accordingly. These sub-themes included the subjective meanings of food sovereignty and agro-ecology, why focus on agro-ecology, history of agro-ecological farming in Hammarsdale, building knowledge and skills in agro-ecology, access to provide resources and land policy, protection of natural resources and trade and local markets. Actual quotes from the interviews with the respondents of the study are used in this chapter, however they were translated from IsiZulu and grammatical errors were changed in order to make sense of the translated data. The participants are part of a Co-operative under the Non-Governmental Organization (NGO) LIMA Rural Development. The participants are a minority of many other farmers who have envisioned the use of farming using agro-ecology and have successfully accomplished using this method of farming.

4.2. Subjective Meanings of Agro-ecology

Although Agro-ecology is not a term generally used by the public nor farmer's themselves, it is imperative that one understands in simpler terms what is meant by the phenomena. During the interviews with the respondents, the term agro-ecology was rather referred to as *organic farming* of which explains the broad term of agro-ecology; ultimately meaning reusing and recycling foods to make compost. The farmers were able to articulate their own understanding of what they believed agro-ecological farming was to them. The quotes below encapsulated their sentiments:

“...to use compost that is of natural material and not enhanced material such as your fertilizers and manure that contain chemicals. This is mainly because there are different types of plants and they need their own different kind of attention”. (FGD 1, MR1, aged 59)

“I’d say it is taking care of the soil and not degrading it. By doing that we are saving nature by keeping the soil in its original state”. (FGD 2, FR 9, aged 45)

As one of the principles of the food sovereignty framework, agro-ecology is better explained by the farmers that practice this method of farming through their own understanding of what is meant to farm *organically*. Consequently, the above perceptions coincided with the view which stated that the decision taken by farmers to use natural methods of farming was based on the right of peoples (Altieri, 2009). These perceptions implied that having the right to making their own informed decisions on producing their food as farmers; also enabled the balance and consistent flow of nutrients and energy in the ecosystem (Biowatch, 2015). Accordingly, the knowledge of farming agro-ecologically encouraged the Hammarsdale small-scale farmers into freely practising their method of farming which stimulated taking care of the environment in order for it to produce healthy food for them as farmers; and for the people consuming the food.

4.3. Why focus on Agro-ecology?

Often, the method of agro-ecological farming is misinterpreted and conceded together with the customary method of farming that uses fertilizers and Genetically Modified Organisms (GMO). This is mainly because most of the people with the diminutive access to land (small-scale farmers) are driven by the thought that farming can solely be for commercial reasons only. Consequently, the farmers with this impression take an easier way out into reaching the commercial target while compromising on the health of the people and ecosystem where they produce their food. However, the farmers at Hammarsdale had different reasons as to why they had chosen to focus on the method of farming agro-ecologically. Aspects of feeding their families and being able to provide necessities where they possibly would not have been able to; were most of the shared sentiments and insights they provided below. For example, two of the farmers said:

“First of all, I am able to feed my family. Second, it enables me to patch up where ever I need to in my household; whether it is bus fare money, or any other essentials needed by the children for school purposes”. (Grp2, FR9, aged 45)

“The healthy food that we produce, we are able to eat it together with our families. We are also able to get some little money from selling our produce”. (Grp1, MR1, aged 65)

When the farmers were asked what motivated them to continue using this method of farming, without hesitation, most of the farmers interviewed responded stating that their main priority

was to feed their families and create jobs for themselves. Some of these farmers were displaced from their jobs and could no longer support their families. LIMA stepped in together with The Department of Rural Development and Land Reform. The respondents explained that with the little money they receive from selling their produce to their neighbours and market interconnected by LIMA; they can buy more seeds to plant more food while also eating from the garden they plant in.

“I don’t want to lie I will tell the truth; it was because of the fact that I had lost my job then I remembered that growing up I once farmed while I was at school”. (MR12, aged 52)

“What motivated me to continue using this method of farming was LIMA. When LIMA arrives here with its big car to collect food we have produced to sell in the market, we know that it will not pass to be sold in that specific place if it is not organic. So, when LIMA takes the food, it takes it knowingly that it will pass through and actually sell, and we will be able to make money and feed our families. This has been a precedent for me and has kept me motivated to continue using this method of farming”. (FGD 1, FR4, aged 52)

While other farmers expressed aspects of health and not using fertilizers and GMO’s in farming as their motivation to using the method of agro-ecological farming; some of the other farmers disclosed to the interviewer that in the past they previously used fertilizers in order to grow their produce. However, they realized that it was a lot more expensive to farm using fertilizers and GMO’s in their produce than farming using organic material. One of the farmer respondents went as far as explaining the process of nutrient flow in the environment as a benefit of re-enriching the soil and producing food with revitalised nutrients. One of the farmers emphasized the importance of farming in season as it is also beneficial to the soil and food in the environment. Altieri (2009) states that everyone must have the access to safe, nutritious and culturally appropriate food in enough quantity and quality as it is a constitutional right entrenched in the food sovereignty framework and principle of agro-ecology.

“In the past we used fertilizers; but what we saw was that if we continued using these chemicals in our food, we would have to use them for good and that would kill the soil and its nutrients. We would end up not being able to reuse the space to continue producing food because the soil would be infertile to use”. (FGD 2, FR9, aged 45)

“We saw it fit and encouraging for us to farm our food in season” (FGD 2, FR7, aged 63)

Image 1 below illustrates an edged garden bed that has trench edging. It is a visible example of how the garden bed appears after the trench has been filled with compost, manure, dried grass and soil. On the top of the garden bed soil mixed with manure and saw dust is scattered in order to retain the nutrients in the soil from the ground (root of plant) to the top where the leaves of the plant appear.

Image 1: Trench edging Garden bed



Source: Researcher (2018)

The study found one respondent who, unlike the other farmers had a different attribute as to why they had chosen to focus on farming using the method of agro-ecology. The farmer stated that their main aim was to receive funding from the state. From the articulation of the respondent’s voice to the respondent’s hand gestures; the interviewer quickly noticed that whatever answer the respondent had, the voice came from within a place of expectation to the state with regard to assisting them as aspiring farmers. Since this was a focus group, after the respondent shared her own slightly confined opinion; the rest of the farmers in the group started mumbling among themselves that they felt the state did not care about them. This diverted the question and answer to a political discussion which concluded with same shared sentiments of the group as small-scale farmers making a difference in people’s lives; therefore, wanting to be known and assisted by the state.

“To receive funding from the state and also find land for us as upcoming farmers to farm their produce, however we have not yet come across such assistance here as, yet we are patiently waiting”. (FGD 2, FR7, aged 63)

As articulated by Patel (2009), what emerged in the discussion amongst the farmers regarding assistance from the state; was that although food sovereignty has become the new policy framework for challenging current trends in rural development of food and agricultural policies that do not respect or support the interests and needs of small-scale farmers; such still emanates within the community of Hammarsdale where the farmers feel they have and are not being supported on what they are contributing to the economy, health and agricultural sector.

4.4. History of Agro-ecological farming in Hammarsdale Township, Durban

When asked if the farmers had any knowledge of the history of Hammarsdale using the method of agro-ecology; none of the farmers had any information of the history of farming agro-ecologically in Hammarsdale. The only history some of the farmers knew and recalled came from their family members in the homelands where they grew up.

“At the moment I would not have any knowledge of the history with regard to farming organically here in Hammarsdale because I was not born in Hammarsdale”. (FGD 1, MR1, aged 59)

“I cannot say much on the history of farming here in Hammarsdale because I grew up in Ixopo”. (FGD 1, FR4, aged 47)

“I am not entirely sure, maybe there have been people before farming for themselves aside from the farms surrounding this area, I’m not sure” (MR 5, aged 29)

Although the respondents revealed that they did not have any knowledge of Hammarsdale and using agro-ecology as a method of farming; majority of the respondents however had knowledge on what they referred to as organic farming in discussion. One of the respondents recalled as far as her childhood using the method of agro-ecological farming. The respondent stated that she grew up in another community far from Hammarsdale with her grandmother who ultimately used this method of farming; which in retrospect encouraged her to go back into farming as she remembered that her grandmother practiced agro-ecological farming.

“I grew up with my grandmother who farmed using the organic method of planting using manure from cow, goat and chicken dung...when I grew up, I realized what my

grandmother was doing was beautiful, that is why I went back into farming the old way”. (FGD 1, FR3, aged 52)

This farmer’s situation may not only be attributable to her alone. There many other small-scale farmers who use the method of farming agro-ecologically from the knowledge of either their parents, grandparents or from observing in their communities while growing up. Likeminded, Blad (2010) mentions that dating back from economic history, agricultures and developing countries were mainly built upon resources of land, water and other resources as well as local varieties and indigenous knowledge. Hence, many of the interviewed farmers claimed that they already were aware of this method of farming; it was just that they had become lazy or did not find any interest before in farming agro-ecologically.

4.5. Builds knowledge and skills

Where food sovereignty values the sharing of local knowledge and skills that have been passed down over generations (Altieri, 2002); the study found that most of the farmers had some set of skills and knowledge regarding farming agro-ecologically. During the study when asked where the farmers had acquired the knowledge of farming agro-ecologically, it emerged that during the farmers early childhood; their knowledge was assimilated from either school or relatives who farmed agro-ecologically. It was from their practice that majority of the famers knew some aspects of farming using organic material.

“In other aspects of farming, we already had the knowledge and we knew that farming using organic compost which consisted of cow, chicken and goat dung together with vegetable peels and other foods mainly plants that have spoilt as well help the garden grow. Also, growing up we were taught that you do not add a lot of compost in your garden because it will eat away at your compost then cover the compost. After doing so, you lay your seeds on the soil bed. This encourages your plants to grow because it is already feeding off nutrients from its roots which are imbedded in the trench below the soil bed”. (FGD 2, FR9, aged 45)

“...I was able to rekindle the knowledge I received back in Primary school we had attained”. (MR 12, aged 52)

Although the farmers had some knowledge of farming agro-ecologically, it was not enough as it had changed over the course of time. As mentioned before, some of the farmers had lost their jobs; as a result, they went back into using the method of farming agro-ecologically in order to make a living for themselves. Therefore, when LIMA and Food Tree's stepped in to assist the farmers; the two organizations introduced the farmers to new knowledge and skills to utilize for their food to sustainably grow and reproduce. Before, the farmers used their indigenous knowledge received from their relatives and some from school; however, they found that their food would not grow and reproduce efficiently as they would have liked. With the knowledge of digging trenches and filling them with compost and manure for the plant to receive nutrients from deep within the root, was a new phenomenon to them as farmers. Some of the farmers mentioned that they had no knowledge of farming in the mode taught by LIMA and Food Tree's.

“Indigenously manure was also used, but the method of trenches and plots was not used because with trenches you ought not to mix certain plants with others because some other plants have strong odours, nutrients and diseases that are compatible with other plants which inevitably kill other plants without noticing”. (MR 12, aged 52)

“...our work was also recognized by the organization LIMA. They came in and further taught us efficient ways of maintaining our organic method of farming. There are some things that we didn't know but now we have been taught”. (FGD 2, FR 8, aged 58)

“Quite frankly, we learnt a great deal about organic farming from the people who work at Food Tree's for Africa and LIMA. They mainly taught us to use natural compost without any chemicals. So, before we plant our seeds, we were taught to first do digging which are trenches that we fill up with dried grass and our compost made of vegetables and fruit peels then we cover up with soil”. (FGD 1, FR 4, aged 47)

In terms of built knowledge and skills imparted by the two organizations, the interviewer learnt that the farmers had their own set of skills and knowledge's but, they were rather outdated as the farmers could no longer produce best quality food they aspired to. The farmers adamantly shared the learnt set of skills and knowledge gained regarding watering their food. Rainwater was preferred to than tap water. When one of the farmers elaborated, he stated that to a certain degree, tap water contains chemicals which can be harmful to the food plant. Farmers encouraged the usage of rainwater or ground water retrieved from bore holes to water the plants

as this water had nutrients and did not contain chemicals. Further, the farmers also shared that using pesticides and fertilizers in their gardens posed grievous danger not only to the food and soil but, to the people’s health who would consume the foods.

“We have been taught how to cultivate our plants and produce since we are using the organic method of farming. We were also taught various reasons as to why we should not use the pesticides and manure that are sold in agricultural shops since they kill the nutrients in the soil, but rather use organic manure”. (FGD 2, FR 7, aged 63)

“We were encouraged to use compost that is of natural material and not enhanced material such as your fertilizers and manure that contain chemicals”. (FGD 1, MR 1, aged 59)

Image 2 illustrates a farmer participant scattering dry grass as part of concluding the process of planting the seeds in the trench garden bed. The trench was filled up with soil that contained manure and dry grass. After filling the trench, seeds were lined and planted in the garden bed; then a mixture of soil and manure was added on top to cover the seeds. Finally, dry grass and a mixture of soil and manure was added on the top to provide and preserve nutrients for the seeds below as they had not yet rooted.

Image 2: Farmer scattering dry grass on garden bed



Source: Researcher (2018)

The study asked the respondents to elaborate on how as farmers they used the different knowledge's for agro-ecological farming purposes (indigenous, western and other). Most of the respondents indicated that they used the indigenous method; however, the method now had come with a few changes unlike in the past where there was only one style of farming where seeds were scattered or lined in the soil bed; without having nutrients below at root level. However, other farmers did not distinguish the differences in farming methods whether they were western or indigenously motivated. The farmers only answered to using the indigenous knowledge of farming.

“We use the indigenous method of farming although it now comes with a few changes unlike during the old times”. (MR 5, aged 29)

“We use the indigenous knowledge because we farm using chicken manure only, we do not use the western way of farming because we would have to also use chemicals since we do not use them” (FGD 2, FR 9, aged 45)

What some of the respondents understood by using western knowledges of farming encapsulated properties such as spraying foods with pesticides and using fertilizers that had components of chemicals. However, these ideas did not resonate with all the farmers. Two of the farmers rather had a different intake to what they conceded as to using western knowledge's for farming agro-ecologically.

“I would say the combination of the western facet of farming would be using the tractors for us to be able to do the digging that is required for the trenches. That would assist us as we would be able to plough greater hectares and areas, so we can start with our farming and not have difficulties or get tired easily. The new use of chilies, garlic and other plants with strong odours to make our own organic pesticides”. (FGD 1, FR 4, aged 47)

“... The western way of farming would be incorporating the method of using plots and trenches to farm the produce instead of just scattering the seed or placing them line by line...indigenously manure was also used, but the method of trenches and plots was not used because with trenches you ought not to mix certain plants with other because some other plants have strong odours, nutrients and diseases that are not compatible with other plants which would inevitably kill the other plants without noticing”. (Mr 12, aged 52)

Image 3 illustrates garden beds of carrots, spinach, cabbage and onion co-planted to one another. This is to repel insects and pests from eating away and destroying the plant. Since the onion has a strong odour, it works as a natural pesticide repelling the insects and pests away from the food plant.

Image 3: Co-planted vegetation



Source: Researcher (2018)

The two respondents understood that the western knowledge's of farming agro-ecologically did not only include harmful techniques of practising farming; instead it also included methods and skills of productivity regarding digging trenches to proceed with farming. The gesture of having western equipment to assist in the operation of the garden trenches to star farming came with ease for the farmer. One of the farmers stated that having to dig out their trenches with spades wasted quite some time for them, which prolonged the planting stage; and latter harvesting time. Furthermore, the farmers also mentioned that before, they had no knowledge of the different types of foods that had strong odours which worked as natural insect repellents (pesticides) and as exterminators of foods growing in the garden due to their strong odours given off. With this knowledge acquired, the farmers were then able to protect their plants and food. This was prepared by planting seeds that would grow into foods with strong odours which repel insects yet protecting the food plant.

4.6. Access to productive resources.

Access problems are particularly highlighted in the food sovereignty framework which cover issues such as access to land, water. Agricultural biodiversity and traditional technology (Francis et al., 2003). The study found that the farmers relatively from different municipal wards in Hammarsdale experienced the same difficulties regarding accessing resources such as water. As water is one of the major resources needed for the food plants to cultivate, the farmers shared their sentiments of not being able to access enough rain water due to occasions of drought experienced in the area. However, with the rain being scarce; running tap water was also a prodigious problem and threat to their plants. Some of the farmers expressed the concern that the sun would beam down on their food plants for weeks with no sign of rain. Additionally, the municipality rendering the service of water would close the water and they would not be able to use water for drinking nor bathing; let alone watering their plants.

“...the problem of water shortage is one of our biggest since the water sometimes is not available maybe for an entire week for us as community members to use to bath and consume”. (Grp 2, FR 7, aged 63)

“I also carry the same sentiments because sometimes you find that there is a great shortage of water therefore, everything has to stop. We end up not doing much because we cannot access water sufficiently”. (FGD 2, FR 11, aged 62)

“Remember, rain water and tap water are totally different things. Although we prefer rain water, sometimes it does not rain much therefore we use tap water; which is also scarce in our community at times” (FGD 1, FR 2, aged 68)

Water emerged as a key factor with severe impacts for farmers. The importance of rain water was also expressed as shown in the following excerpts.

“I would say the issue of water really affects us because our plants end up being dehydrated and they wither away in the garden if we do not experience enough rainfall and also, we sometimes have a shortage of water anyway from the municipality” (FGD 1, FR 4, aged 47)

“... It would be the rain because we need the rain. Unlike tap water, rain water is organic and contains minerals from the trees during transpiration and of course the rivers and streams during evaporation”. (MR 5, aged 29)

The farmers expressed that even though they could be assisted with running tap water, it would still be a problem because tap water does not perform the same way as rain or stream water. This is mainly because the water from the rain carries nutrients from evaporation from rivers and streams; and transpiration from plants. Both these elements of rain creation carry nutrients from the soil from plants and the stream bed; which assists plants to grow well.

“Water is actually a problem because tap water does not perform the same way as rain water and stream water”. (MR 12, aged 52)

“...I don’t know but I’d like to think the soil under the stream water actually has nutrients that enrich the plant and help it grow”. (MR 12, aged 52)

However, although majority of the respondents had shared sentiments with regard to the issue of water; some of the farmers had different views as to what they perceived as a barrier in using the method of agro-ecological farming.

“One of the problems we do encounter is the fact that we do not have a tractor for digging the trenches to put our manure and compost in. So, the process of digging is not an easy process because it requires manual labour of which we do not have because we are now old and frail. We have to hire people to dig the trenches for us; which uses up the little money that we have to pay them for their work done”. (FGD 1, MR 1, aged 59)

“The tools that we have are not enough for us all as we are working as a community group which slows down the process of us planting on time because we all have to share. If we could maybe get a tractor for the digging which is a lot more efficient and faster, we would be able to plant on time together”. (FR 6, aged 27)

These two respondents felt that not having enough tools as resources to continue farming came as a hindrance in their progress. The food sovereignty framework highlights the problems of the groups and communities without access to productive resources, however the policy recommendations do not address in detail the situations and possible solutions of rural labourers (Anseeuw, 2013). The first farmer clarified that not having a tractor was a problem to them because they ended up being behind with planting on time as they had to hire people to do the digging for them. They no longer had the energy and ability to dig the deep trenches as they compromised of an older generation in their group as farmers. Not only did this slow

down the process, but the farmers ended up having to pay the trench diggers; which meant the little capital made ended up back in the garden and not into their savings.

However, the younger farmers concern with tools was that there were not enough for them as farmers to work with as they farmed individually within their community; but made use of the same resources and tools to farm. This then slowed down their process of farming, where they would first have to wait for one another for every farmer to use the tools. Food sovereignty framework recognizes the neglect of small-scale farmers and other groups living in the rural areas. Consequently, the framework fails adequately to address this issue as an important element for future change on how to include effective demands directed to national governments in food sovereignty strategies (Windfuhr, 20005). Therefore, the implications of the marginalization of the farmers encourages some to rather stop using the agro-ecological method of farming and others would rather prefer to use the unconventional way of farming because of the slow reaction regarding assistance of resources from the government.

However, some farmers work their way around regardless of the barriers they face. As of overcoming the barrier of resources and working around reaching the target of produced goods, theft in their gardens posed as a major concern to the respondents. This farmer shared that a group of street kids formally known as *amaphara* came and stole their produce. These group of street kids would then sell the food at a much cheaper price, so they could get easy and fast cash to satisfy their drug addiction.

“...Our greatest disadvantage here as farmers in the community is us not having a fence to protect our plants and produce. This is an issue because we get street kids *amaphara* who come into our garden and steal our produce. They then sell it at a cheaper price for them to purchase drugs. Maybe if we were in a bigger farm, we wouldn't have such issues of security”. (FGD 1, FR 4, aged 47)

Seemingly, the farmer was convinced that if they as farmers could possibly have larger hectares of land, the concern of security would not be present. Other farmers stressed the issue of pests and moles in their garden, however the natural repellents the farmers use take quite some time to work but end up working. The sentiments on land and pest control are discussed in the agro-ecology as a principle of the food sovereignty framework. It states that small-scale farmers typically prefer farming methods that are less capital intensive and less risk. That is why the farmers some of the farmers were continually motivated into using natural repellents although they took some time to be effective in their gardens. In the case of space and land, within a

given agro-ecological environment, if land is unequally distributed, market failures occur and institutional gaps and conditions of access to public goods. The more unequally land is distributed and the more market failures, institutional gaps, and access to public goods are farm size specific the sharper the trade-off (Tschirley and Benfica, 2001).

4.7. Protection of natural resources.

Agro-ecology practices the usage of natural materials; therefore, the protection of natural resources unfailingly comes easy. Not adhering to the protection of natural resources that contribute in producing strictly organic foods; would easily come short and fail the entire method of agro-ecology and what it stands for. One of the respondents was very knowledgeable when it came to explain the nutrient flow that is presently found in the environment when agro-ecological farming is practised with reference to the food sovereignty framework. He went on to clarify that using harmful materials in the environment cripple the whole ecological system of self-retainable energy flow of nutrients; which inevitably reaches the people and causes grievous harm to their health.

“...fertilizers are like a drug. If you put fertilizers in your garden it also has the same effect as a human taking drugs. So, if you take a certain drug, let’s say in quantities, maybe you take one then another next year you will have to take two because the dosage increases with time as it may not be as effective since it becomes immune to your system. Consequently, the same thing happens to the soil and the plants regarding fertilizers; the soil becomes addicted to what it’s being fed in order to help the plant grow, inevitably making the soil unable to produce without this fertilizer. Whereas, if I farm organically by planting different plants during their season in the soil, they are able to exchange nutrients from the plant and also from the compost of organic decomposing matter that help the process of organic farming progress and continue”. (MR 12, aged 52)

“I’d say it is taking care of the soil and degrading it. By doing that we are saving nature by keeping the soil in its original state. If we use chemicals in our soil for farming our foods, we are killing all the nutrients in the soil and we will end up not being able to re-use the soil for other plants because all the nutrients have been absorbed by the chemicals”. (FGD 2, FR 9, aged 45)

Image 4 illustrates a garden beds of newly sowed seeds. As stated by the farmer participants, it is important to exchange nutrients from one plant to another through the soil and not erode the soil from planting the same plant. The garden beds had been fully harvested a while back and new food plants were now seeded in the garden beds. This process ensures nutrient flow in the soil as each plant exchanges its nutrient into the soil for the next plants that are grow in the garden bed.

Image 4: Garden beds of newly sowed seeds



Source: Researcher (2018)

Although some of the farmers grew up in an environment where their relatives strictly used the method of farming agro-ecologically; many others sought to attempt the conventional method of farming which entailed using chemicals and harmful fertilizers to the plant and soil. However, in the later, the farmers came to their senses and went back into farming using the conventional method of farming. This was because the food in the garden could not endure the harsh sunlight rays together with the chemicals found in the fertilizers and pesticides. Ultimately, these conditions destroyed their food plants and left the farmers with nothing to sell to their consumers.

“However, there was a time when manure with chemicals was highly thought of and promoted, hence a great number of small farmers then opted to use that method of farming; and we were also part of them. Consequently. As time went by, we saw that

within a few months and years our gardens started to wither and die off because of the chemicals used in our gardens. The soil also lost nutrients sometimes not being arable to farm any other or the one farmed before”. (FGD 2, FR 9, aged 45)

This claim by this farmer alludes to the circumstance of small-scale farmers experiencing barriers and having limitations into accessing resources; inevitably leading the farmers inactively back to farming using harmful components in their farming since it presumably a lot easier to access.

4.8. Trade and local markets

The study found that the farmers had very little knowledge on the possible opportunities given to small-scale farmers in Hammarsdale. The farmer’s motivation to farm using agro-ecology as their sole method of farming stemmed from their future aspirations as farmers. When the respondents were asked what they would like to achieve in farming using the method of agro-ecology; majority of them shared the same feelings to one day owning a farm where they could practice farming using the method of agro-ecology. Moreover, the farmers also wished to be directly inclusive in trade and market shares when it came to sell their goods to a consistent direct market.

“Consequently, we would be aware of the process and regulations of the market, where we know that we directly grow and sell our produce to that specific place or area so that we do not end up with a surplus of our produce going to waste because we did not have an organic market to sell to. Even up until now, we sell some of our produce; but you will not say nor see that we sell and that it is something that is stable. This is because you farm certain foods, but they end up in the garden till they wither and decay”. (FGD 2, FR 9, aged 45)

“Our very main reason why we as farmers came together to farm using the organic method of farming was because we wanted to venture out into the business of farming and having a specific market where we are able to sell our goods”. (FGD 1, MR 1, aged 59)

So, when LIMA takes the food, it takes it knowingly that it will pass through and actually sell and we will be able to make money and feed our families”. (FGD 1, FR 3, aged 52)

The farmers said that they were not given access into selling their produce to a direct market by LIMA the organisation leading and assisting with maintaining farming agro-ecologically. Consequently, this discouraged many as they were confused as to what was needed at a certain time in order to sell. The underlying issue was that the farmers were told what to farm by LIMA because LIMA acts like the middle man by directly contacting their market and enquiring on the type and quantity of the food needed to be sold. Consequently, not all their produce would be taken to the market to be sold. This came as a loss to them because they would plant rows and rows of the same food, to be left in the garden.

“Consequently, you find that the people we sell to are not a great number, we actually sell to RCL foods who place an order for the produce that we had already farmed a month ago. Neglecting and no longer wanting the produce they had already harvested in the past month. We would really appreciate a sustainable market for our produce as small farmers, something that will give us money and know that if we give off a great quantity which is the best of our produce; it will actually go into the market to be sold instead of farming foods not knowing whether they will go into the market to be sold actually be bought or given to pigs as their food”. (FGD 2, FR 9, aged 45)

The farmers then decided that they would like to have a direct market for specific foods and not let everyone in the same community farm the same type of food because ultimately it goes to waste. When asked if the farmers knew of any opportunities within the eThekweni municipality that was specially catered for small-scale farmers, none of the farmers interviewed knew of any aside from the assistance they received from LIMA to equip them with knowledge; thereafter deliver their produce to the relevant market LIMA had designated for them.

“No there aren’t any opportunities that I know of. I’d be lying if I said there are any that I currently know of”. (FGD 1, FR 3, aged 52)

This farmer, like the rest of the farmers; was not aware of any opportunities that came with assistance as small-scale farmers using the method of agro-ecology. However, one of the farmers was aware of opportunities that were only set aside for commercial farmers only thus:

“Yes, I’d say there are opportunities for other farmers even though they do not use the method of farming organically. However, the municipality visits all the communities around here but, you find that there are certain opportunities shared with others where other communities are only given tools and then left all by themselves to try find a way with what they have. There isn’t a place where maybe everyone is trained, and everyone receives the same knowledge and opportunity; especially in business management and how to manage finances. Since the government also trains you as students, they also need such intervention, continued intervention because we cannot just be trained and then left out to not compete in the market”. (FGD 1, MR 1, aged 59)

The respondents felt that as aspiring farmers in their respective communities, they were not being given attention by the state which is capacitated to give equal opportunity to both large-scale commercial farmers and small-scale farmers. This farmer’s response is very important and shows that as a small-scale farmer together with other farmers; they would like to expand their farming given the equal opportunity to enter the trade and local market sphere. Consistency in the agricultural sector in producing healthy food for the people and environment to this farmer came in high regard. Literature agrees with the farmer’s aspect of consistency as the concept of food sovereignty framework emanated from political discourse focusing on the self-defined ways to seek solutions to local problems. Therefore, with the understanding of the differences of interpretation still existing, discussions relating to the food sovereignty policy framework within civil society are still converging.

Furthermore, another farmer alluded to the fact that the municipality also caused division among the youth and the elderly who farm agro-ecologically. This was because, previously, the youth in the community had been given opportunities to further their knowledge in agro-ecological farming. However, to the older farmer’s dismay, the youth came back and did not want to assist the older farmers with the expertise they had learnt.

“I’d also say there aren’t any opportunities we know of aside from the municipality saying that they help uplift the youth and work with the youth a lot more. There have been a few young people here in the community we tried to mentor and teach to farm using this method of farming. The municipality would come in and take them to teach to farm using this method of farming. The municipality would come in and take them to teach them, they have certificates of that certain course they attended. Consequently, as adults we were left out and we do not have those kinds of opportunities they are only

left for the youth...They came back and told us they no longer wanted to work with us but rather work with other young people". (FGD 1, FR 4, aged 47)

At a time when halving world poverty and eradicating hunger are at the paramount agenda of international development; reinforcing diversity and vibrancy of local food systems should also be at the forefront. However, it is not entirely evident or crucial for such due to the uncontested challenges faced within local government and distribution of resources through service delivery. This is mainly because the rules that govern food and agriculture at all levels- local national and international are designed a priority to facilitate not local, but international trade in large quantities without quality (Widfuhr, 2005). Consequently, if the challenges are not consulted with at grass root level with the farmers by local government; the farmers working towards food sovereignty and maintaining the principle of agro-ecology find themselves in the position of either not producing enough food due to lack of resources, or producing great quantities to be left to decompose due to the lack of effective communication and assistance from the government.

4.9. Summary of chapter

This chapter has presented the major findings of this study on agro-ecology as a method of farming used by small-scale farmers. This study found that all the farmers interviewed in this study participated in farming using the agro-ecological method of farming and were keen on continuing farming agro-ecologically and producing organic foods.

Furthermore, it was found that the farmers had comparable barriers and difficulties in farming agro-ecology; consequently, slowing the farmers productivity in producing their foods ultimately ending up in a loss for them. There were various reasons given for this arrangement, but the most dominant one was that it was because the farmers did not have enough resources for farming and direct market to sell their produce to consequently having the foods decay in the garden.

In addition, women in the township of Hammarsdale where agro-ecological farming was practised were the most who participated than males. However, males were present in each ward visited. The men in the farm groups were the leaders and negotiators in making sure the gardens were well taken care of (access to land from ward councillor) and the economic share among the farmers was administered fairly. Though there was one group of farmers comprising of only women. These women farmers garden was situated in the deep rural

area of the township. The space to farm their food was made available by the women rebuilding their houses closer to one another (unlike the typical dispersed geographical spatial plan of housing in the rural areas) for the vacant land from each of the women's yard to form part of the vast amount of land to farm their food. This was achieved because in the past, black people in the deep rural areas lived in dispersed mud houses. In the process of rebuilding their homes, the women sought to build their houses a lot more nucleated to make space for farming food for their families together in one big garden. This was well thought out and achieved successively.

Most of the farmers that participated in this study no longer had occupations, therefore, most relied on the money they received from selling their produce; if not from government grants. This study also found that contemporary knowledge of agro-ecological farming is high amongst the farmers. Subsequently, this study found that all the farmers were consistent in farming agro-ecologically and producing organic foods in their gardens.

Moreover, the study found that in the within the community of Hammarsdale, agro-ecology was being practised by very few people. Under the eThekweni municipal wards, the visited wards in Hammarsdale were neighbouring wards. Therefore, one could presume that the reason behind the farmers practising agro-ecological farming was because the people shared together their interests and different elements of fighting poverty while making a living for themselves. As you go further away from the city centre and deeper into the rural parts of the township; very few people practice agro-ecological farming for self-sufficiency and economic gain.

The study was able to investigate and understand all the other research objectives and questions except understanding the history of Hammarsdale township using agro-ecology as a method of farming. This was mainly because majority of the farmers interviewed were not originally from Hammarsdale Township. Some of the farmers had moved to the township because it was closer to their work place, therefore any historical knowledge of the township was unknown by the farmers.

The farmer's motivations, knowledge and practices of agro-ecological farming in Mpumalanga township were well understood and articulated. The study found that majority of the farmer's motivations to farming using agro-ecology as a method of farming were secured with wanting to provide for their families without having to have an occupation. The reason behind some of the farmer's not having jobs was because they had been retrenched from the factories neighbouring their community namely Rainbow Chicken. Consequently, they had to find

themselves jobs in order to continue living and providing for their families. Many of the farmer's opted to rather farm because some had very low literacy levels therefore finding a job currently meant that they would have to go back to school and attain qualification.

However, the farmers were fully equipped with the knowledge of using agro-ecology as a method of farming. Aside from the contemporary skills taught by LIMA and Food Tree's, the farmers were already equipped with their indigenous knowledge that encompassed using agro-ecology to produce food for themselves and their community. Having farming using elements of indigenous knowledge in the past, applying the practices of agro-ecology came with ease to the farmers. This is because there are mostly similarities than differences in the indigenous and agro-ecological practices. Moreover, agro-ecological practices encompass contemporary elements of farming which have contextual affiliates to contemporary farming.

Further, the study examined and assessed the opportunities and barriers of agro-ecological farming experienced by the farmers, and they all shared the same sentiments. The study found that the farmers were not aware or knowledgeable of any opportunities offered for farmers who use agro-ecology as a method of farming. However, they openly debated on their aspirations to be included by the government in programmes that would assist them as farmers to reach greater pinnacles with their farming and distribution of their produce to larger markets. Likewise, all the farmers interviewed shared the same sentiments with regard to barriers they face using the agro-ecological method of farming. The farmers expressed barriers of land access and not having enough space to farm in larger quantities and varieties. Water was also a major barrier to their farming objectives. The farmers expressed that rainfall was a problem especially during the dry seasons as their food would burn due to the sun's harmful rays. Moreover, there was a constant problem of water access within the township. The farmers voiced that sometimes there wouldn't be any water for them to drink, bath and cook with for weeks let alone water the plants. Inevitably, the food plants would burn and wither away; making a loss for the farmers.

Tools used for digging their trenches were not enough and some had none they had to purchase for themselves. This slowed down their work ethic and productivity, hence at times their farmers were not able to produce food on time to sell to their market because of the time it took to dig out the trenches as well as the sharing of tools that took up the time. To the farmers, having a backhoe loader would make life a lot easier for them as they would be able to produce in greater yields. Finally, the study also found that the farmers associate agro-ecology to good

health, taking care of the environment, not degrading the soil and creating job opportunities in their communities. However, there was a feeling of inadequacy and dissatisfaction amongst the farmers because of hindrances that prevent them from reaching their goals in entering stable markets and having enough land to farm in order to produce different foods in large quantities.

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

5.1. Introduction

This study has explored the perspectives and experiences of the farmers in Hammarsdale using agro-ecology as a method of farming in Durban. This was done by engaging small-scale farmers who farm using agro-ecology as the only method of farming. The study draws on seven in-depth interviews and two focus group respondents who are agro-ecological farmers at Hammarsdale Township under the eThekweni municipality

5.2. Key Findings, conclusions and recommendations

Food Sovereignty and the challenges of Agro-ecological farming: Case Study of Hammarsdale, Durban.

5.2.1 Key Finding

This study found out that 20 percent of the youth practice agro-ecological farming in their communities.

Conclusion

It can be concluded that the youth in this community do not farm agro-ecologically.

Recommendation

Processes of including and encouraging the youth (youth intervention) to practice farming agro-ecologically should be taken such as creating projects within the community that equip the youth with skills and knowledge of using agro-ecology as method of farming. Also, providing hubs within the youth's community that will facilitate ongoing mentoring and market support. Registering the cooperatives of the youth and creating business skill farming where the youth can be part of the Black Economic Empowerment (BEE) business

5.2.2 Key Finding

This study found out that 80 percent of the people were jobless.

Conclusion

It can be concluded that most of the people in Hammarsdale township do not have occupations.

Recommendation

Measures should be taken that assist people to get jobs or working for themselves such as owning their own their own farms for them to supply to large markets. People should also be assisted with starting up their own farms and knowing the regulations of producing and farming in large scale in order to create more jobs for those who do not have jobs within the community.

5.2.3 Key finding

This study found out that people did not have land to farm expansively.

Conclusion

It can be concluded that the people of Hammarsdale do not have access to land to farm.

Recommendation

Measures should be taken that assist people to make use of land such as the government declaring that land is vacant and should be used by the people if it has not been purchased. The government should also assist by opening space where the land is desolate and let the people farm expansively. This can be done by incorporating various departments such as Department of Rural Development and Land Reform (Deeds Office), Department of Agriculture, Forestry and Fisheries, Department of Environmental Affairs and Department of Trade and Industry; into creating integrated projects which are community-based orientated that assist the community in all aspects of their farming endeavour.

There was a great need to conduct this study at Hammarsdale Township in Durban for several reasons. First, there has been a paucity in the research of Food Sovereignty. Second, limited research exists on the challenges faced by farmers using agro-ecology as a method of farming; therefore, this study be a platform for the farmers to voice their concerns on agro-ecological farming. Third, the perceptions of the farmers on agro-ecology as a principle of food sovereignty in Hammarsdale, Durban. Last, this study may be an intellectual tool for the university and public domain policy makers.

5.3. Discussion

Evidently, there is diverse literature on food sovereignty and its core principles; with agro-ecology being one. However, there seems to be a gap in knowledge as there has presently been a paucity in research of food sovereignty and its principles. This study has therefore contributed to the prevailing body of research. Consequently, it has done this by addressing issues that have been partially addressed in literature without reference to examples to date. Even though Food Sovereignty has been broadly addressed in literature; there are however distinctive insights in every constituency and wide-ranging methods in every context. From the very diverse meanings and understandings within same region of what agro-ecology is amongst different farmers; therefore, another region cannot have the same meaning and understanding as of another.

The findings of the study revealed that small-scale farmers who use the method of farming agro-ecologically are burdened by the barriers and challenges of farming agro-ecologically. For the farmers that participated in this study, agro-ecological farming to them simply meant farming using only natural constituents and not chemicals, ensuring that the environment is taken care of and the food produced does not pose any health threats to the consumers. Accordingly, Ngcoya and Kumarakulasingam (2016) state that the contemporary movement for food sovereignty is an appeal for an alternative food system based on economically feasible, ecologically sustainable, farmer-driven agriculture which is grounded in the theoretical and social domains of those individuals who work the soil (Ngcoya and Kumarakulasingam, 2016). This framework promulgates three dimensions of agro-ecology namely; the right of peoples to healthy and culturally appropriate food produced through ecological sound and sustainable methods, their right to define their own food and agriculture systems and putting the producers, distributors and consumers of the food at the heart of the food systems and policies rather than the demand of markets and corporations (Biowatch, 2015).

Moreover, farmers who participated in this study gave an account of some of the difficulties that come with farming agro-ecologically whilst not having access to resources such as water and enough tools to work the garden. Water was the pressing common challenge in all the communities interviewed for the study. There are farmers that were fortunate enough not to experience the issue of not having enough tools to work with but still had the prevailing issue of water. Consequently, those who did not have difficulties with accessing resources were able to continue steadfastly with their farming aspirations plant and harvest on time without any

delays. These farmers happened to be the younger farmers; who still had the energy and ability to carry out their own field labour. The older farmers, however, did not have access to these reliable resources; which slowed down their productivity in producing and harvesting food for their market on time. This was mainly because they could not always afford to outsource labourers to dig trenches for them.

The farmers that participated in this study expressed a desire to own their personal farms, since they felt the space, they occupied in their gardens to farm their produce was too small. Consequently, the farmers felt that they lost out on producing greater quantities of foods to sell in their respective market. Moreover, the respondents emphasised on the fact that by them having their own farms, they would be able to create job opportunities for the people in their communities.

5.4. Realisation of Objectives

Based on the outcomes of this study, the objectives have been accomplished as follows:

Objective 1: To understand the history, motivations, knowledge and practices of agro-ecological farmers in Mpumalanga Township, Hammarsdale.

There were diverse subjective definitions of agro-ecology shared by the farmers in reference to food sovereignty. In most of the farmer's explanations of what constitutes agro-ecology; the farmers participating in the study familiarised with the term organic farming as it was used best to define what they thought agro-ecology meant; ultimately being correct. Although the farmers had knowledge of what farming agro-ecologically typically meant; they however did not have any information on the history of agro-ecological farming in Hammarsdale. This is because majority of the farmers are not originally from Hammarsdale, but they migrated from their respective homelands to Hammarsdale. Consequently, some of the farmers already had knowledge of agro-ecological farming attained from their relatives where they were raised. This encouraged them to further their knowledge and practise farming using agro-ecology as their only method of farming in their everyday lives.

Objective 2: To investigate the reasons why farmers participate in agro-ecological farming.

Although the respondents had different sentiments as to why they participated in agro-ecological farming; their feelings all corresponded in one way or another. First, the farmers participated in farming agro-ecologically because they were able to feed their families. Second was because some had lost their jobs and farming agro-ecologically kept them busy as they could earn an income to sustain themselves. Third, the farmers believed in living and eating healthily seeing as the food they produced was strictly organic and was not harmful to both the environment and people consuming the food. Last, their motivations stemmed from their future aspirations as farmers in owning their own farms and having direct market to sell their produce.

Objective 3: To examine the opportunities and barriers of agro-ecological farming.

Majority of the respondents revealed that they had little knowledge or none on opportunities available for small-scale farmers using the method of agro-ecology. Consequently, the farmers fully expressed that they were not given resolute access into selling their produce to a direct market. Also, the farmers experienced water as their main barrier in farming agro-ecologically. The farmers expressed this by mentioning shortage of rainfall as being a major threat to their gardens as the harsh sunlight burnt their food. They also could not rely on tap water because it did not work the same way as rain or stream water as it contained chemicals therefore they were reluctant in using tap water.

Objective 4: To assess the opportunities and barriers of agro-ecological farming experienced by small-scale farmers in that area.

Prominently, barriers of farming agro-ecologically rather than opportunities were identified by the farmers. There seemed to have been a division caused by the municipality regarding equal opportunities; and access to resources for both young and elderly farmers. According to the farmers, these resources comprised of tools and the opportunities as educative knowledge; which in return assisted the farmers in sustaining their gardens and producing foods ready for the organic market the farm for.

Consequently, the older generation of the farmers were not aware of any opportunities that came with assistance for small-scale farmers using the method of agro-ecology. On the other hand, commercial farmers had plentiful of opportunities as well as access to resources for

farming such as tractors and other garden tools which were provided for them. Then only a selected few of Hamarsdale communities in the different municipal wards received some sort of training and assistance. Thus, creating animosity amongst the farmers using the method of agro-ecological farming in Hammarsdale.

Objective 5: To examine the different knowledge's that farmers use for agro-ecological farming purposes (indigenous, western and others.)

Different knowledge's that farmers used for agro-ecological farming resonated from indigenous and western attributes. However, LIMA an organisation working with The Department of Rural Development and Land Reform added to the farmer's knowledge of agro-ecology by introducing the farmers to scientific ways of farming through using natural insect killers. All the farmers used the newly learned skill and knowledge of repelling insects in their gardens without compromising the environment and the food plant.

5.5. Conclusions

There were diverse subjective definitions of agro-ecology shared by the farmers in reference to food sovereignty. In most of the farmer's explanations of what constitutes agro-ecology; the farmers participating in the study concurrently familiarised with the term organic farming, as it was used best to define what they thought agro-ecology meant; ultimately being correct. Although the farmers had knowledge of what farming agro-ecologically typically meant; they, however, did not have any information on the history of agro-ecological farming ever being practised in Hammarsdale. This is because majority of the farmers are not originally from Hammarsdale but migrated from their respective homelands to Hammarsdale. Consequently, some of the farmers already had knowledge of agro-ecological farming attained from their relatives where they were raised. This encouraged them to further their knowledge and practise farming using agro-ecology as their only method of farming in their everyday lives.

Based on the outcomes of this study, it can be deduced that farmers know and define agro-ecology for themselves as proposed in the food sovereignty framework. Further, it can be believed that farmers using the method of agro-ecological farming have drawn some knowledge and set of skills from their relatives and community members where they were originally raised. Consequently, these set of skills and knowledge's which the farmers were already equipped with, have further been assimilated with the contemporary method of farming

agro-ecologically. Administered by LIMA, the attained requirements of agro-ecology have affirmed the agro-ecological farming practice in sustaining the environment, produce and health of their consumers.

Further, access to resources and opportunities in farming agro-ecologically continue to be detrimental to the farmers of Hammarsdale Township. This is mainly because of the lack of support and recognition given to the farmers using agro-ecology as a method of farming by the state. Preferably, the state supports farmers who farm extensively using Genetically Modified Organisms (GMO's) and fertilizers that help increase quantity and production trades for commercial endeavours. Whereas, using the method of farming agro-ecologically; sternly abides and encourages foods to be marketed in season, which simultaneously benefits the environment and the consumers.

5.6. Recommendations

Drawing from the above-mentioned conclusions, it can be understood that barriers of agro-ecological such as water, resource tools and artefacts used for farming are what hindered majority of the small-scale farmers at Hammarsdale Township from reaching their goals. To restrain these barriers that come as challenges to the farmers; since the municipality has come together with LIMA, Food Tree's and The Department of Rural Development and Land Reform; they all need to assist the farmers confidently by providing them with enough tools and tractors to make it easier for the farmers to dig out trenches as this takes up most of their time and energy. This will assist the farmers in being able to plant and harvest on time seeing as digging the trenches to fill with compost, dry grass and soil before planting took up their time. Because LIMA, Food Tree's and Department of Rural Development and Land decided to assist the farmers, they should be assisted rightfully till the end in all aspects of their farming.

Moreover, the farmers explained that water was a pressing issue in their community. Boreholes are recommended as groundwater is a vital part of the water cycle. It comes from rain, snow, sleet and hail that is soaked into the ground. This water is different from tap water as it contains nutrients from the soil. However, the water would first be analysed at a water lab if it is decent enough for consumption as it would water the food. Furthermore, rainwater (Jojo) tanks could be stationed near the garden for the farmers to be able to easily access the water tank. These rainwater tanks store rainwater which is prudent for watering the garden unlike tap water since the Hammarsdale area experiences very low levels of rainfall.

For small-scale farmers in Hammarsdale, opportunities to entering and remaining in the market are scarce. Consequently, the farmers find themselves competing with one another in producing their foods, thus creating animosity amongst them as aspiring farmers with the same goals and attributes. Instead of the farmers having a middle man dictating what needs to be farmed and produced competitively amongst each other; the farmers should rather be linked to a direct market that considers a variety of foods to be produced for all the farmers to participate without having to compete with one another. Therefore, farmers should have different foods they farm in their garden and not have one type of food they all farm because this results to only a few foods being taken to the market to be sold while the rest decays in the garden. This will also allow the farmers to attain knowledge and gain experience in handling their own business and money in order to see their progress as ambitious farmers.

5.7. Conclusion

This chapter has presented the discussion of the outcomes and how the objectives of the study were perceived. Furthermore, it also expressed the conclusions arising from this study and made recommendations for improvements. Subsequently, it is crucial to continue conducting studies on food sovereignty in context of agro-ecology throughout the country. Reason being, this encourages the practice of people's rights (both consumers and farmers) in making their own informed decisions on liberal production, trade market and consumerism.

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Appendices

Appendix 1 – Interview guide

Appendix 2 – Gate Keepers Letter