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**FOOD GARDENS, HOUSEHOLD FOOD SECURITY STATUS, SOCIO-ECONOMIC
STATUS AND PERCEIVED BARRIERS TO CULTIVATING:
EMBO COMMUNITY, KWAZULU-NATAL.**

By

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ABSTRACT

Aim: To determine whether food gardens have an impact on household food security status in the Embo community, whether there is a relationship between socio-economic status and cultivating a food garden as well as barriers experienced by members of the community that cultivate food gardens or perceived barriers that prevent them from cultivating food gardens.

Objectives: To investigate the impact of food gardens on household food security status by comparing households with food gardens to households without; to determine whether socio-economic status is related to cultivating a food garden; and to investigate why some households cultivate food gardens while others do not, in order to determine the perceived barriers to cultivating food gardens in the Embo community.

Method: A cross sectional descriptive survey involving 190 households with and without food gardens was conducted in the Embo community. Data was collected by means of a questionnaire consisting of three sections in order to assess the socio economic status, cultivation of food gardens and Household Food Insecurity Access Scale. Five trained community facilitators employed by The Valley Trust served as field workers for data collection after the survey questionnaire was piloted.

Results: Sixty-three percent of households did not have a food garden, while the remaining 37% did. Women were the main cultivators of food gardens, while the main source of household income was the child support grant. Irrespective of whether households had a food garden, electricity was the main source of cooking fuel, while tap water was the main source of water. Government toilets were the ablution facility used by the majority of households, while most households had household appliances such as a cell phone, television, radio and fridge/freezer combination. This was especially prevalent in households without food gardens. The majority of households without food gardens were either moderately food insecure (29%) or severely food insecure (23%) when compared to households with food gardens who were moderately (14%) and severely (12%) food insecure. Most were anxious and uncertain about having sufficient food supply and eating a limited variety of foods.

Discussion: Cultivation of food gardens should be encouraged as nearly two thirds (63%) of the 190 households surveyed did not cultivate a food garden. Also, based on socio-economic indicators such as employment status, income, type of household and household appliances, households with a higher socio-economic status did not cultivate a food garden. Households with food gardens had a lower prevalence of food insecurity while households with and without food gardens faced similar challenges related to the cultivation of food gardens.

Conclusion: In conclusion, food gardens did have an impact on food security status in Embo as there were more food insecure households without food gardens as compared to households with food gardens. Households with a higher socio economic status tend to not grow their own food. Most of the households that had food gardens experienced the same cultivation barriers and those who did not have gardens had similar reasons. Thus, the cultivation of food gardens should be encouraged by educating households and the community at large regarding the benefits of having a food garden.

PREFACE

The work in this dissertation was carried out by Faith Asangha Akob under supervision of Suna Kassier and the co-supervision of Prof Frederick Veldman from Dietetics and Human Nutrition, School of Agricultural, Earth and Environmental Sciences at the University of KwaZulu-Natal in Pietermaritzburg, South Africa.

The entirety of the work contained in this document is my own original work and it has not been submitted in any form for any degree or diploma to any other university. Where other sources have been used, they have been properly acknowledged.

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DEDICATION

This thesis is dedicated to my dad Dr Christopher Akob and my mum Mrs Jane Akob for encouraging, supporting and inspiring me to always follow my dreams, namely nutrition, the wellbeing of people and communities, knowing that with God nothing is impossible and that the sky is just my starting point.

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CHAPTER 1: INTRODUCTION, THE PROBLEM AND ITS SETTING

1.1 IMPORTANCE OF THE PROBLEM

Food gardens are considered to be a community's most adaptable and accessible land resource. It is also important in reducing the prevalence of food insecurity, improving nutritional status of households and reducing vulnerability to hunger (Galhena & Maredia, 2013). In addition, food gardens are important not only because they are a source of food, but can also serve as a source of income generation (Kirsten, May, Hendricks, Lyne, Machete & Punts, 2003). According to Musotsi, Sigot & Oyango (2008), for the majority of people living in developing countries, food gardens remain, especially for the poor, the most important method of food production for household use in order to meet some of their daily dietary requirements. Local research conducted on food insecurity found that household food production plays a major role in improving household food security in rural areas (Adekunle, 2013). Adekunle (2013), conducted a study on the effect that food gardens have on household food security status in the Eastern Cape, involving three villages situated in the Nkonkobe municipality. The latter author concluded that home gardens play an important role in improving food security status of rural households. Another local study conducted by Faber, Phungula, Venter, Dhansay, Benadé (2002), aimed to determine whether the dietary intake of yellow and dark green leafy vegetables and the serum retinol concentrations of children improve with a food gardening intervention. The findings were that in a community where food gardens were encouraged, the vitamin A status of two to five year old children improved significantly. This finding was attributed to the food gardening programme and nutrition education received by members of the community.

1.2 THE PROBLEM

Despite the fact that food gardens have been used for many years to help alleviate food insecurity of the South African rural poor, malnutrition including both over- and under nutrition, is still a problem in many rural areas including the Northern Cape, North West province and KwaZulu-Natal (KZN) (Taylor, Taylor & Kini, 2012). Research conducted by The Valley Trust (TVT) in the Embo community, Botha's Hill, found that malnutrition and micronutrient deficiencies are significant problems, especially among vulnerable members of the community such as children, pregnant

women and the elderly. The results also indicated that many households were food insecure (Valley Trust, 2012). It is therefore evident that the rural poor are still subject to health problems as a result of food insecurity that can be alleviated by food gardens. As a result, it is clear that food insecurity, concomitant malnutrition and food gardens as a potential solution requires further investigation.

Thus the current study aimed to investigate whether nutritionally vulnerable communities such as the Embo community are cultivating food gardens and if so, whether the households that cultivate vegetables produce them for home use or sell them. In addition, it was viewed as being of primary importance to determine what the barriers to cultivating food gardens in the community under investigation are, and whether there is a relationship between socio-economic status, food security and cultivating a food garden. The above will facilitate a better understanding of how food gardens can be promoted in nutritionally vulnerable communities.

1.3 PURPOSE AND OBJECTIVE OF STUDY

The purpose of this study was to determine whether food gardens have an impact on household food security status in the Embo community, whether there is a relationship between socio-economic status and cultivating a food garden as well as the perceived barriers experienced by members of the community that prevent them from cultivating food gardens. As a result, the objectives of the study were as follows:

- (i) To investigate the impact of food gardens on household food security status by comparing households with food gardens to households without food gardens;
- (ii) To determine whether socio-economic status is related to cultivating a food garden or not;
- (iii) To investigate the reasons why some households cultivate food gardens and others do not in order to determine the perceived barriers to cultivating food gardens in the Embo Community;

- (iv) To determine the following regarding households that cultivate food gardens: the origin of seeds used, the origin and use of fertilizers, the origin of water used to irrigate the gardens.

1.4 HYPOTHESES

- (i) Food gardens do not have an impact on household food security status.
- (ii) There is no relationship between socio-economic status and cultivating a food garden.
- (iii) There are no barriers to the cultivation of food gardens in the Embo community.

1.5 TYPE OF STUDY

A cross sectional descriptive study was conducted as it was deemed as the most suitable way of providing The Valley Trust with baseline data regarding the community under investigation before a food gardening promotion project is implemented.

1.6 STUDY DELIMITATIONS

1.6.1 Inclusion criteria

All households in the Embo community (N=200) that were willing to participate, were eligible for inclusion in the study sample.

1.6.2 Exclusion criteria

For the purpose of this study, no households forming part of the study population were excluded unless they were not willing to participate.

1.7 ASSUMPTIONS

For the purpose of this study, it was assumed that all subjects interviewed by the community facilitators (serving as fieldworkers), by means of a structured questionnaire, were truthful in their responses.

1.8 DEFINITION OF TERMS

For the purpose of the study, the following definitions were used:

1.8.1 Gardening practices

A collection of agricultural practices applied to home garden production or post-production that often results in safe and healthy food (FAO, 2000).

1.8.2 Household

A household consists of one or more people who live in the same dwelling and also share meals. It may consist of one or more families in the same unit (USAID, 2010).

1.8.3 Household Food Insecurity Access Scale

The Household Food Insecurity Access Scale (HFIAS) is a set of pre-formulated questions developed by the Food and Nutrition Technical Assistance (FANTA). It is a tool used to assess whether households in a particular area have experienced problems with food access in the past month or 30 days (Coates, Swindale, Bilinsky, 2006). The scale is aimed at identifying families at risk of chronic, severe and subclinical under nutrition and food insecurity (Coates *et al*, 2006).

1.8.4 Home Garden

A home garden refers to a piece of land, usually close to the house for growing vegetables, fruits, flowers, shrubs, trees or other foods. For the purpose of this study, the term home garden will be used to denote food gardens, vegetable gardens and door gardens interchangeably (Musotsi *et al*, 2008).

1.8.5 Socio-economic status

Socio-economic status is a measure of a family or individual's economic and social position based on certain factors (Santrock, 2004). The factors that are usually considered in establishing a family or an individual's socio economic status are income, occupation, education and dwelling.

1.8.6 Food security status

State of a person's ability to have physical and economic access to sufficient, safe, nutritious food to meet their dietary needs and food preferences for an active life (Adekunle, 2013).

1.9 ABBREVIATIONS

CCHIP	Community Childhood Hunger Identification Project
DOA	Department of Agriculture
DOH	Department of Health
FANTA	Food and Nutrition Technical Assistance
FAO	Food and Agriculture Organization
FBDG	Food Based Dietary Guideline
FBDGs	Food Based Dietary Guidelines
HSRC	Human Sciences Research Council
HFIAS	Household Food Insecurity Access Scale
KZN	KwaZulu-Natal
MRC	Medical Research Council
NFCS	National Food Consumption Survey
NGO	Non-Governmental Organization
SA	South Africa
SASAS	South African Social Attitudes Survey
SANHANES	South African National Health and Nutrition Examination Survey
TVT	The Valley Trust
UKZN	University of KwaZulu-Natal

UNICEF	United Nations Children Fund
USAID	United States Agency International Development
WHO	World Health Organization

1.10 SUMMARY

Home gardening is considered to be a community's most adaptable and accessible land resource. In addition, it is a very important contributor to reducing the prevalence of food insecurity and improving the nutritional status of households. Many studies have been conducted on the positive effect that home gardening has on a household's food security status (Adekunle, 2013 and Faber *et al*, 2002). However, despite the fact that home gardens have been used for many years to help alleviate food insecurity among South African rural poor communities, malnutrition remains a problem in many rural areas of KZN as well as other parts of South Africa (SA). Research conducted by TVT in the Embo community, found a high prevalence of malnutrition and micronutrient deficiencies among vulnerable members of the community. As a result, an investigation was deemed important, in order to determine the relationship between food gardens, food security status, socio-economic status and the barriers that prevent vulnerable communities from cultivating them. This is a baseline study prior to an intervention that will be implemented in the community that fosters entrepreneurial skills and promotes gardening. The next chapter will cover the literature reviewed around this topic.

CHAPTER 2: REVIEW OF RELATED LITERATURE.

In chapter two, a review of the literature will be presented to serve as background information regarding the research problem under investigation, as well as literature related to the study objectives presented in chapter one. In addition, chapter two will facilitate discussion of the study findings in chapter five.

2.1 PREVALENCE AND CAUSES OF FOOD INSECURITY IN SOUTH AFRICA AND KWAZULU-NATAL

2.1.1 South Africa

In the 2004 report of the Food and Agricultural Organisation (FAO) on the state of global food insecurity, it was reported that more than 814 million people in developing countries are undernourished and of these, 204 million live in Sub-Saharan Africa, including South Africa (SA) (FAO, 2004). The World Food Summit defines food security as “when all people at all times have physical and economic access to sufficient, safe, nutritious food to meet their dietary needs and food preferences for an active life” (Labadarios, Mchiza, Steyn, Gericke, Maunder, Davis & Parker 2011).

Food security has four main dimensions namely availability, access, utilization and stability (FAO, 2008). SA is considered to be food secure at a national level but is not food secure at a household level (Department of Agriculture DOA, 2002). The Human Sciences Research Council (HSRC) (2009) classifies food security at a national-, community- and household level. Anderson (1990) defines national food security as “a condition whereby the nation is able to manufacture, import, retain and sustain food needed to support its population with minimum per capita nutritional standards”. The above author defines food security at community level as “a condition whereby the residents in a community can obtain a safe, culturally acceptable and nutritionally adequate diet through a sustainable food system that maximises community self-reliance and social justice”. Food security at a household level is defined as “the availability of food in one’s home which one has access to” (Anderson 1990, Pg 3). A household is considered food insecure if it has limited or uncertain physical and economic access to enough nutritious and safe food on a

sustainable basis for a healthy and active life (Osei, Pandey, Spiro, Nielson, Shrestha, Talukder, Quinn & Haselow, 2010).

From the above definition of food insecurity, the implications are that food insecurity has two main components, namely limited or insufficient access to sufficient food that is nutritionally safe at household level and inadequate utilization of available food by the household. The term food security is multidimensional and the measurement of food security is very complex (Maxwell, Watkinson, Wheeler & Collins, 2003). The HSRC (2004) stated that more than 14 million people or about 35% of SAs population were vulnerable to food insecurity and that more than a quarter of children younger than six years of age were stunted due to malnutrition. Labadarios, Steyn & Nel (2011), stress the importance of investigating access to food, along with the availability component amongst South Africans. The prevalence of food insecurity in SA has decreased, but the proportion of the population at risk of food insecurity has remained the same. Yet, food insecurity is more prevalent in rural- than urban areas (Labadarios *et al*, 2011). Figure 2.1 illustrates the food insecurity status of South Africa at a provincial level.

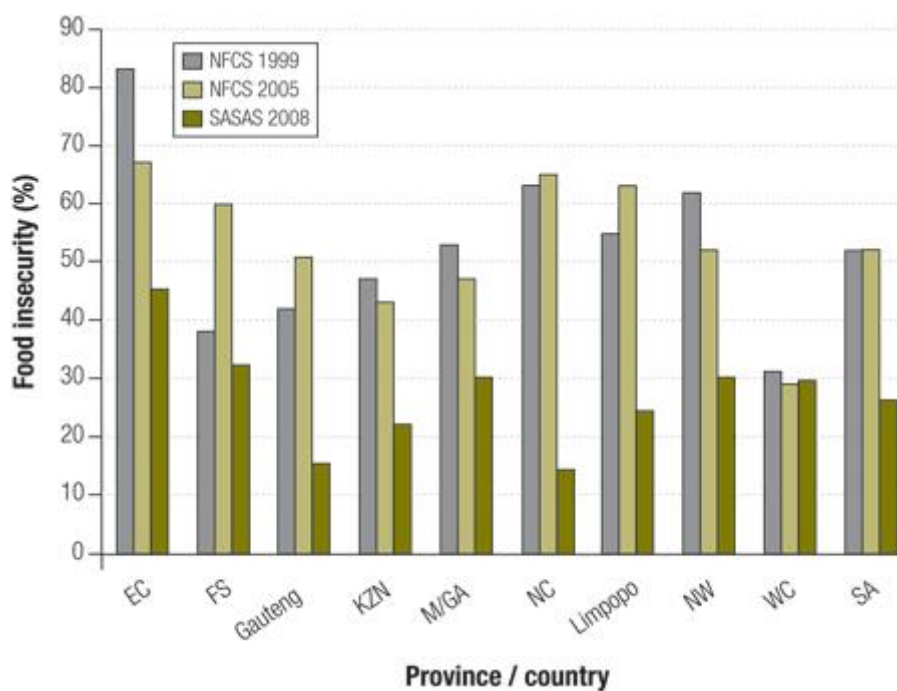


Figure 2.1: Prevalence of food insecurity in SA per province

Source: WHO (2011)

The above figure illustrates that the prevalence of food insecurity decreased in South Africa as a whole according to the studies conducted by NFCS (1999), NFCS (2000) and SASAS (2008). The Eastern Cape had the highest prevalence of food insecurity, while in the Northern Cape it decreased the most (SASAS 2008).

Table 2.1 shows the state of South African household food security using the CCHIP hunger scale by locality, province and race. The table was compiled by the HSRC (2013).

Table 2.1: South African household food security using the CCHIP hunger scale by locality, province and race

Background characteristics	Food Secure		At risk of hunger		Experience hunger		Total n
	Score of 0		Score of 1-4		Score of 5 or more		
	%	95%CI	%	95%CI	%	95%CI	
Locality							
Urban formal	55.4	[51.2-59.6]	25.6	[22.6-28.9]	19	[16.0-22.4]	3411
Urban informal	31.5	[26.0-37.5]	36.1	[31.0-41.5]	32.4	[27.1-38.3]	754
Rural formal	50.9	[41.0-60.8]	20.3	[15.6-25.8]	28.8	[22.2-36.5]	634
Rural informal	30.2	[26.7-33.8]	32.4	[29.5-36.3]	37	[33.3-40.9]	1316
Total	45.6	[42.9-48.3]	28.3	[26.3-30.5]	26	[23.9-28.3]	6115
Province							
Western Cape	57.9	[48.7-66.6]	25.6	[20.4-31.7]	16.4	[11.8-22.5]	813
Eastern Cape	31.4	[25.3-38.2]	32.4	[27.2-38.0]	36.2	[29.8-43.3]	788
Northern Cape	56.5	[40.8-71.0]	22.8	[15.4-32.3]	20.7	[13.0-31.3]	398
Free State	39.3	[32.5-46.5]	31.9	[25.4-39.3]	28.8	[23.9-34.2]	419
KwaZulu-Natal	37.3	[30.8-44.3]	34.4	[29.6-39.6]	28.3	[22.9-34.4]	1209
North West	40.4	[34.4-46.8]	30.0	[25.3-35.2]	29.5	[22.9-37.1]	583
Gauteng	56.0	[49.5-62.2]	24.8	[20.1-30.3]	19.2	[14.6-24.9]	882
Mpumalanga	55.0	[44.7-64.9]	15.5	[10.4-22.3]	29.5	[22.0-38.4]	535
Limpopo	41.9	[35.9-48.2]	27.3	[23.1-32.0]	30.8	[26.2-35.7]	491
Total	45.6	[42.9-48.3]	28.3	[26.3-30.5]	26.0	[23.9-28.3]	6115
Race of household head							
African	39.3	[36.6-42.2]	30.3	[28.1-32.7]	30.3	[27.8-33.0]	4002
White	89.3	[81.3-94.1]	9.4	[4.8-17.6]	1.3	[0.5-3.3]	365
Coloured	61.8	[56.0-67.2]	25.1	[21.1-29.7]	13.1	[9.9-17.1]	1046
Asian/Indian	62.9	[41.8-80.1]	28.5	[15.4-46.6]	8.6	[4.8-14.7]	611
Total	45.5	[42.8-48.2]	28.4	[26.3-30.5]	26.1	[23.9-28.4]	6024
Total	45.6	[42.9-48.3]	28.3	[26.3-30.5]	26.0	[23.9-28.3]	6115

*95% CI: 95% confidence interval

Source: HSRC (2013)

From the above statistics it is evident that 45.6% of the South African population were food secure, while 26.6% experienced hunger and hence were classified as being food insecure (Shisana, Labadarios, Rehle, Simbayi, Zuma, Dhansay, Reddy, Parkey, Hoosain, Naidoo, Hongoro, Mchiza, Steyn, Dwane, Makoe, Maluleke, Ramlagan, Zungu, Evans, Jacobs, Faber & SANHANES-1 Team, 2013). The largest percentage of participants who were food insecure lived in rural formal (37%) and urban informal (32.4%) areas. Blacks had the highest prevalence of food insecurity (30.3%). In addition, Blacks participants also had the lowest dietary diversity scores and represented the highest number of participants with low dietary diversity (44.9%). The SANHANES report also indicates that nearly a quarter of the South African population is at risk of hunger and food insecurity and that a quarter experience hunger and food insecurity (Shisana *et al*, 2013).

Table 2.2 shows the South African scores for food security, risk of hunger and experience of hunger (food insecurity) using data from four national surveys.

Table 2.2: South African scores for food security, risk of hunger and experience of hunger (food insecurity) using data from four national surveys

Variable	NFCS 1999 (n=2735)(%)	NFCS 2005 (n=2413) (%)	SASAS 2008 (n=1150)(%)	SANHANES 2012 (n=6306) (%)
Food security	25.0	19.8	48.0	45.6
At risk of hunger	23.0	27.9	25.0	28.3
Experiencing hunger	52.3	52.0	25.9	26.0

Source: HSRC (2013)

NFCS (National Food Consumption Survey); SASAS (South African Social Attitudes Survey); SANHANES-1 (South African National Health and Nutrition Examination Survey)

Due to the above findings, Shisana *et al* (2013) recommended that food insecurity in all its dimensions should be a government priority whereby all sectors should play a role in improving the availability and access to food for all South Africans. Results from four national surveys (see Table 2.2) using the Community Childhood Hunger Identification Project (CCHIP) index as a food security indicator, showed that the percentage of food insecure households halved from 1999-2008 (from 52.3% to

25.9%), whereas the percentage of households at risk of being food insecure varied between 23.0% and 27.9% (HSRC, 2013). In addition, the results from the SANHANES-1 report (HSRC, 2013) suggest that in 2008, household food security status was maintained but not improved. This implies that food was still not available and accessible to many South Africans. As a result of the high levels of food insecurity in SA, especially among rural households, the government decided to state in its constitution that “every citizen has the right to access sufficient food and water and that the state by legislation and other measures, within its available resources, avail to progressive realization of the right to sufficient food” [National Development Agency (NDA) 2002:5]. As was previously mentioned, the cause of food insecurity among many South Africans is the result of many interrelated factors. The risk for becoming food insecure increases with a lack of availability and access to resources that include money, land and transport, as these factors all contribute to a household’s ability to access food (Shisanya, 2008).

Oxfam (2007) reported that most parts of Southern Africa, including SA, are food insecure as a result of poor agricultural policies, poverty and unemployment, climate change and the impact of HIV/AIDS. In addition, the NDA (2002) listed the following factors as causes of food insecurity in SA: impact of apartheid which stripped some South Africans of their assets, particularly land; unstable household food production and lack of purchasing power; and weak disaster management systems that resulted in food insecurity, especially in rural parts of SA.

When a household is food insecure, the development of malnutrition is inevitable (Iversen, Du Plessis, Marais & Morseth 2011). Malnutrition consists of both under and over nutrition, including micronutrient deficiencies (Iversen *et al*, 2011). The majority of rural communities in SA, experience both forms of malnutrition as the majority of South Africans consume energy dense and low nutrient dense foods due to a lack of dietary diversity (Shisana *et al*, 2013). According to the National Food Consumption Survey (NFCS) (2000), only one in four SA households appears to be food secure. In addition, the NFCS (1999) found that 23% of children aged one to nine, particularly those living in rural areas, were stunted (i.e. height-for-age below -2 standard deviations), 10% of the population were underweight and 4% of children between one and nine years of age were wasted. In addition, the South African Vitamin A Consultative Group (SAVACG) (1994) found that the prevalence of

malnutrition was the highest in rural and informal areas. Micronutrient deficiencies, particularly vitamin A and Iron, were prevalent in rural areas. Therefore the above implies that if a household is food insecure, household members are likely to be at risk of developing malnutrition.

2.1.2 KwaZulu-Natal

Despite being the second smallest province in SA, KZN has the second largest population in SA with about 10.3 million inhabitants (Census, 2011). It is therefore not surprising that D'Haese, Vink, Nkunzimana, Van Damme, Van Rooyen, Remant, Staelens, D'Haese (2013) refers to KZN as SAs most densely populated province. However, the latter authors also mention that 60% of the provinces' population is estimated to be living in poverty. This in turn, accounts for 25% of the national poverty and food insecurity statistics as poverty and food insecurity is particularly rife among those who live in rural areas of Northern KZN, Durban and Pietermaritzburg. A study conducted by Shisanya (2008) on the level of food insecurity among subjects cultivating community food gardens, found that although the prevalence of food insecurity was high among those cultivating food gardens in KZN, food gardens had a positive effect on increasing food production.

The findings of a study conducted by D'haese *et al*, (2013) on improving food security in rural areas of KZN, found that only 5.6% of the study sample were food secure, while 55.4% were severely food insecure, 30.5% moderately food insecure and 6.9% mildly food insecure. The district most affected was Umgungundlovu, where 70% of respondents experienced food insecurity according to Household Food Insecurity Access Scale (HFIAS). In addition, it was found that 72% to 80% of households in the area were reliant on social grants like old age pensions, disability grants, foster care grants and child support grants as their main source of income. Farming contributed to 20% of the household income but was the main source of income for only 3% of the study sample in the Umgungundlovu and Zululand districts (D'haese *et al*, 2013).

A member of a the Imbali community, Msunduzi municipality, that participated in a project called the Zenzele project², reported that her food garden is a source of pride as it was transformed from a refuse site into a productive food garden, serving as a source of food for home use as well as a source of income that generates about

R3000 per season. Hence, there is no longer a need to purchase vegetables for home use as the garden yields cabbage, spinach, onions, beetroot, potatoes and lettuce (Food Security Success Stories, 2013).

2.2 FOOD GARDENS AS A FORM OF AGRICULTURE IN SOUTH AFRICA

The majority of available literature on food gardens is based on experiences in developing countries in Africa, Asia and Latin America (Galhena, Freed & Maredia 2013). For most developing countries, agriculture is an essential sector and is said to be the backbone in rural areas, as many countries rely on it for survival (Musotsi, Sigot & Onyango 2008). The World Development Report (2008), estimate that 75% of the world's poor live in rural areas of developing countries and that the majority rely on subsistence farming for survival, despite facing problems such as limited access to production resources like land, water and technology inputs like fertilizers . In addition, as a result of the increase in population growth, the majority of developing countries face an increasing demand for food. Thus the agricultural sector is of great importance to curb food insecurity and enhance rural economic development.

South African agriculture is made up of a subsistence agricultural sector and a commercial sector (Chikazunga, 2013). The subsistence agricultural sector in turn, consists of mostly black farmers, while the commercial sector is made up of mostly white farmers (Adekunle, 2013). According to Aliber & Hart (2009), the commercial sector makes a larger contribution to agricultural outputs when compared to that of the subsistence sector.

Moyo (2003), stated that South African agriculture is considered to be a main role player in its contribution to food security as it does not only provide food, but also serves as a source of income generation and employment as well as other resources for economic development. However, even though agriculture plays an important role in improving the food security status of many households, there are many obstacles associated with this sector. These include climate change, perceived barriers, gender discrimination related to land ownership and many more (Chikazunga, 2013).

In the past, rural households produced the majority of their food. In addition, women are considered to be the main food producers in South African rural areas (Kehler, 2001). However, recent studies have shown that the majority of rural and urban households are now dependant on market purchases (Baiphethi & Jacobs, 2009). Subsistence farming (see Figure 2.2), is often practiced by rural households as in the past, it served as a source of sustenance for families, meaning that they did not have to worry about escalating food prices or additional expenses as there was sufficient food for home use as well as enough to share with those in need (Baiphethi & Jacobs, 2009). Food expenditure usually represents 60% to 80% of the total household income of low income households in certain parts of Sub-Saharan Africa including SA, thereby making it difficult to survive on the remaining income (Baiphethi & Jacobs, 2009). The implication of this phenomenon is that should subsistence farming be practised widely, many households will be able to spend less of their monthly income on food (Baiphethi & Jacobs, 2009). Baiphethi & Jacobs, (2009) also confirmed that having a food garden could reduce the risk of households, particularly those in rural areas, from contracting diseases such as kwashiorkor and other forms of malnutrition. It would also benefit those who have HIV/AIDS, as they require a healthy diet to complement the antiretroviral treatment they are treated with. Subsistence farming can therefore play an important role in improving households' livelihoods and reduce their risk of vulnerability to hunger and food insecurity (Baiphethi & Jacobs, 2009).



Figure 2.2: Small scale farmer practicing subsistence farming

Source: Gaia Foundation (2014).

2.3 CHARACTERISTICS OF A FOOD GARDEN

Galhena *et al*, (2013) stated that there are five main characteristics of food gardens namely:

- Located near the house;
- Occupies a small area;
- Contains a diversity of plants;
- Production of crops is used for supplementary purposes and it's not the main source of family consumption and income; and
- Entails a good production system from planting, harvesting and consumption so that the poor can easily enter at some level.

Table 2.3 below provides an overview of the key characteristics of a typical food garden according to Ninez (1987).

Table 2.3: Key characteristics of a typical food garden

Characteristics
Specie density: High
Specie type: Staples, vegetables, fruits, medicinal plants.
Production objective: Home consumption
Labour source: Family (women, elderly, children)
Labour requirements: Part-time
Harvesting frequency: Daily, seasonal
Space utilization: Horizontal and vertical (trees and shrubs)
Location: Near dwelling
Cropping pattern: Irregular and row
Technology: Simple hand tools
Input-cost: Low
Distribution: Rural and urban areas
Skills: Gardening and horticultural skills
Assistance: None or minor

Source: Ninez (1987)

2.4 ROLE OF FOOD GARDENS IN ALLEVIATING FOOD INSECURITY

A home garden or otherwise known as a food garden is a small area of land, usually close to the home where families and households can grow subsistence produce (Monde, Fraser, Botha & Anderson 2004). They are also sometimes referred to as backyard, kitchen or door gardens (FAO, 2012). Nell, Wessel, Mokoka, Machedi (2000) defines a food garden as a “± 150m² piece of land at a resident’s home used for production of vegetables, fruits, chickens and small animals such as rabbits, mainly for personal consumption. However, the surplus can be sold. The majority of individuals, especially in rural communities, are being encouraged to grow their own food by having a food garden at their home. In addition, they are encouraged to plant foods that are high in vitamin A and at least a staple that includes carrots, spinach, beetroot, sweet potatoes, pumpkin, beans, maize and potatoes (Faber *et al*, 2011).

In addition, the majority of people who reside in rural areas do not have access to clinics for Vitamin A supplementation because clinics are often located far from where people reside when compared to urban areas where access to vitamin A supplementation is easier (Labadarios, Steyn, Mgijima, Dladla, 2005). In rural areas,

access to food is difficult as shops are not necessarily located in close proximity of residential areas (Labadarios *et al*, 2005). This necessitates the storage of food for extended periods of time, resulting in the deterioration of nutritional value (Labadarios *et al*, 2005). By growing their own vegetables, these problems can be overcome (Labadarios *et al*, 2005). Where people lack the skills or infrastructure to produce their own food, members of the community can be taught how to produce their own food (Labadarios *et al*, 2005). The government and/or non-governmental organizations (NGOs) such as The Valley Trust (TVT), often train members of the community and provide them with the necessary tools and seeds to facilitate cultivation of their own crops. As a result, there are many on-going projects that involve home gardens and educating households on how to produce their own food (Valley Trust, 2012).

2.5 POTENTIAL BENEFITS OF FOOD GARDENS

In the section that follows, the potential benefits of home gardens will be discussed in more detail.

2.5.1 Increased access to nutritious food by food insecure households

Healthy, nutritious food sources are available in supermarkets. However, many towns have small food stores with a limited selection of healthy foods (Temple, Steyn, Fourie, Phil, Villers, 2009). A study conducted by Temple, Steyn, Fourie, Phil, Villers (2009) found that a healthy diet is unaffordable for the majority of the local low income population. Therefore, home gardens can contribute to household food security by providing direct access to food that can be harvested, prepared and fed to household members on a daily basis (Temple *et al*, 2009). For example, following the civil war in Uganda, urban agriculture in Kampala provided food for the city in the form of non-cereal produce, while in Baghdad and Iraq in the 90s, residents relied on home gardening to meet their nutritional needs (UNDP, 1996).

Machete (2004) reported that home grown food improves the nutritional status of many households. In this context, nutritional status can be defined as the state of a person's health in terms of the nutrients in his or her diet (Machete, 2004). Having a food garden means cultivating a variety of foods that can include spinach, carrots, beetroot, pumpkin, sweet potatoes, maize and cabbage, thereby resulting in the

consumption of a variety of nutrients (Machete, 2004). The regular consumption of vegetables and fruit is associated with a reduced risk of developing disease, especially those that are nutrition-related (Chazovachii & Mutami 2013).

Unfortunately available data regarding vegetable and fruit consumption among South Africans at a national, household and individual level, indicates that intakes are much lower than the recommended amount i.e. <400g/day (Naude, 2013). Low vegetable and fruit consumption is recognized as a key contributor to micronutrient deficiencies in most developing countries (Naude, 2013). According to Naude (2013), vegetables and fruits are rich in micronutrients (vitamins and minerals) and low in energy. By increasing vegetable and fruit consumption among South Africans across the life cycle, the risk of micronutrient deficiencies will be reduced and dietary diversity will be improved (Naude, 2013).

Maunder & Meaker's (2007), analysis of the 1999 NFC survey data showed that children from households that engaged in agriculture had better intakes of several nutrients, including Vitamin A, folate, Vitamin B6, Vitamin C, Calcium and Iron as opposed to those from households that did not produce food. A study conducted by Faber *et al*, (2002) is a typical example of how home gardens increases a household's access to nutritious foods and the effect it has on their nutritional status. The aim of the above study was to determine whether the dietary intake of yellow and dark green leafy vegetables and the serum retinol concentrations of children improve with a home gardening intervention. Findings were that in the community where food gardens were encouraged, the vitamin A status of two to five year old children improved significantly. This finding was attributed to the home gardening programme and nutrition education implemented in the target community.

Faber, Witten & Drimie (2011) provide insight as to how home gardens facilitate the "access" dimension of food security and contribute to the improvement of nutritional status. Community gardens were established in Lesotho in the 1960s to provide fresh vegetables to combat chronic malnutrition and decrease the prevalence of diseases like leprosy and pellagra (Mashinini 2001). A study conducted by Makhotla & Hendricks (2004) in Lesotho where five villages in five districts were included to render a sample of 538 children, found that in households with home gardens, 49% of the children were stunted, 29% were underweight and 24% wasted, thereby

indicating that in that particular study sample, home gardens were not adequate in terms of curbing acute and chronic malnutrition. However, it is possible that maybe did not receive the produce or that the parents and guardians possibly lacked the necessary knowledge. However, the reason/s for the study findings was not stated in the study.



Figure 2.3 A woman tending to her vegetable garden in a small village outside Port Shepstone, KZN, SA

Source: Wos (2012)

2.5.2 Dietary diversification

Dietary diversity refers to the “number of food groups or foods which are consumed over a specific period” (Steyn, 2013). Eating a diverse diet is globally accepted as a recommendation for a healthy diet (Blair, 2009). The South African Food Based Dietary Guideline (FBDG) “Enjoy a variety of foods” aims to encourage people to increase dietary variety by eating different kinds of foods from the various food

groups, preparing foods in different ways and consuming mixed meals (Steyn, 2013). Home gardens can contribute to dietary diversity by improving the quality and quantity of nutrients available to the household (Steyn, 2013). However, in many areas of South Africa, diets lack variety (Faber, Laurie, Ball & Andrade 2013). According to Shisana *et al*, (2013) Black participants had the lowest dietary diversity score and represented the highest number of participants with low dietary diversity (44.9%), thereby implying that a lack of dietary diversity is a problem that affects many South Africans.

In addition to the FBDGs, the Department of Health has recently introduced the food guide in order to promote dietary diversity (Steyn, 2013). However many rural South African diets still lack variety. One of the main factors that contribute to a lack of dietary diversity among South Africans is poverty, as the poor may lack resources to obtain a variety of foods (Kortright *et al*, 2011). Vegetable gardens are encouraged in many parts of South Africa, particularly in rural areas because they help to ensure that a variety of foods are consumed (Faber *et al*, 2013). A study conducted by Aliber & Modiselle (2002), found that the benefits of food gardens include the promotion of dietary diversity in rural households in KZN.

2.5.3 Income generation

Home gardening is considered to be an important source of additional income for poor rural and urban households in some parts of Africa (Adekunle, 2013). During periods of emotional stress related to financial hardship as a result of prolonged unemployment and death of a bread winner, home gardens can become the major source of food and income in some households (Adekunle, 2013). Altman, Hart & Jacobs (2009) explain that South African rural households spent a larger percentage of their total household income on food than urban ones, but less per person. In East Timor a study including women from 121 families who worked in community gardens that produced tomatoes, eggplant and mustard, reported that the produce did not only serve as a source of food for their families, but that the surplus was sold to generate additional income for household use, thereby addressing household food insecurity (Shisanya, 2008). A study conducted by the United Nations (2006) in Gambia, found that the surplus generated by community gardens was sold and that the income enabled women to pay for their children's school fees, stationery and

helped them to obtain other household essentials. As a result, these gardens promoted employment, income generation, empowerment of women and landless households. Growing crops automatically helps households to save money as it negates the need spend money on food that would otherwise be purchased under normal circumstances (Altman *et al*, 2009).

2.5.4 Female empowerment

A study conducted by Lekganyane (2008) on the role of food gardens in mitigating the vulnerability to HIV/AIDS of rural women living in Limpopo, South Africa, states that food gardens “sets in motion a chain reaction that eventually leads to emancipation and female empowerment”. Food production and the sale of produce enable women to become financially independent. In addition, the management and marketing of their produce enables them to gain confidence in order to have a say in both their personal and public lives (Lekganyane 2008). The author also reported that, the women also gained respect from other members of the community and even their male counterparts. One of the subject interviewed explained that since their involvement in food gardens, they are no longer dependent on their partners’ income (Lekganyane 2008).

2.6 INDICATORS OF SOCIO-ECONOMIC STATUS

Socio-economic status is defined as a measure of an individual’s or family’s economic and social position based on education, income, occupation and type of dwelling (Santrock 2004). It is also defined as the measure of influence that the social environment has on individuals, families, communities and schools (Doocy & Burnham 2006). Socio-economic status is therefore an economic and sociological combined total measure of a person’s work experience and of an individual or family’s economic and social position in relation to others, based on income, education and occupation (Woolfolk, 2007).

Socio-economic status is classified into three categories namely high-; middle-; and low socio-economic status. These categories in turn, describe which group the household or individual falls into (Woolfolk, 2007). Indicators often used to measure socio-economic status include level of education, occupation, type of housing and income (Woolfolk, 2007). Low socio-economic status refers to a poor education,

unemployment, job insecurity, poor working and living conditions and unsafe neighbourhoods which in turn impacts on family life and results in very little or no income generated (Woolfolk, 2007). Middle socio-economic status implies having some level of education, that the person could be employed but earning just enough to make a living, a job might be secured with average to good working conditions, average to good standard of living and the neighbourhood they live in could be safe (Woolfolk, 2007). A high socio-economic status refers to the affluent which implies a high level of education which is also a strong predictor of access to economic and health resources i.e. good jobs, job security, high living standards, neighbourhood safety and very often a high income (Woolfolk, 2007).

It is believed that the more educated a person is, the more knowledge they will have regarding the benefits of cultivating a food garden. This includes knowing when to plant, what to plant when, when to harvest and how to deal with pests and diseases (Garcia, 2012). In addition, people tend not to want food gardens if they have very good jobs, live in a well-established house and earn a good income. Poverty and poor living conditions, often force people to start producing their own food due to a lack of money to purchase food as a result of unemployment (Galhena *et al*, 2013). Individuals of a high socio-economic status often already have everything they need so they tend to not see the advantages of owning and cultivating a food garden (Galhena *et al*, 2013).

2.7 BARRIERS TO CULTIVATING FOOD GARDENS

2.7.1 Developing countries outside Africa

Despite the fact that food gardens have been and is still being used as a strategy for improving food security status, many farmers experience challenges when it comes to managing their food gardens (Galhena *et al*, 2012). However, some households prefer not having a food garden because of the problems they face in cultivating it (Galhena *et al*, 2012).

Miller (2013) conducted a study regarding the barriers to home fruit and vegetable cultivation in Ohio State, America. Findings were that the potential barriers to cultivating food gardens were interest, space, knowledge, cost and time. It was also found that some people, who were renting their homes, wanted to have a fruit and

vegetable garden but could not, because the houses they lived in did not belong to them. In addition, some did not have the skills and knowledge required to cultivate a fruit and vegetable garden and were not aware of the benefits and disadvantages of having one. On the other hand, those that had the skills and tools required to have a successful fruit and vegetable garden, did not have the time and interest to cultivate them. Grayson & Campbell (2002) confirmed that one of the main challenges faced by individuals who want to cultivate a food garden is finding the right space. An additional constraint was an insecure lease of land space for most food gardeners in South East Toronto.

In Bangladesh, some of the small-scale farmers faced problems such as infertile soil or a lack of cultivable soil, lack of access to land because of gender inequality, a lack of water supply or floods that destroy their produce (Marsh, 1998). Some farmers also faced the problem of domestic animal interference like goats eating their crops (Marsh, 1998). Even if their food gardens are fenced, animals still seemed to gain access to their gardens (Marsh, 1998).

2.7.2 Africa, Sub-Saharan Africa and South Africa

In countries like Somalia and other North African countries such as Sudan, the major challenge to cultivating food gardens is the fact that there is always civil unrest, war and conflict that are associated with food insecurity (FAO, 2000). These conflicts and war often destroy agricultural land and other resources for food production. As a result, household food production becomes virtually impossible (FAO, 2000).

Countries like Ethiopia often experience drought (FAO, 2000). It is therefore problematic to cultivate a food garden because the soil is not fertile enough and obtaining water for irrigation is very difficult (FAO, 2000). In many other areas of South Africa such as communities in the Eastern Cape and KZN, some small-scale farmers do not know when to plant specific crops and during which season. Climate change and changes in weather patterns also make it difficult to know when to plant (Adekunle, Ellis-Jones, Ajibefun, Nyikal, Bangali, Fatunbi & Ange, 2012).

Baiphethi & Jacobs (2009) reported that the majority of local small scale farmers in rural areas face similar problems within the same area but the problems vary slightly across different communities. Problems encountered include a lack of access to

water, limited access to production resources such as land, production tools, seeds and lack of knowledge and skills to produce their own food, laziness, animal interference, theft and jealousy, pests and diseases that they do not know how to control and a lack of time. In addition, people prefer purchasing food from supermarkets and do not want to work in order to produce their own food (Baiphethi & Jacobs 2009).

In addition to the above perceived barriers, OXFAM (2002) states that another major challenge to cultivating food gardens is related to HIV/AIDS as globally, Southern Africa has the highest prevalence of HIV/AIDS (OXFAM, 2002). As the disease weakens the immune system, those affected become very weak and are unable to work. Hence they are physically unable to produce their own food due to a lack of strength to till the soil, plant or irrigate (OXFAM, 2002).

2.7.3 KwaZulu-Natal

A study conducted by Swaans, Broerse, Meincke, Mudhara & Bunders (2009), involving community members in Msinga KZN, a traditional Zulu area with a HIV prevalence of more than 20%, face problems related to limited or a lack of access to water for irrigating crops. In addition, HIV/AIDS could be seen as a challenge to cultivating food gardens or maintaining it.

The “One Home One Garden Project”, a community-based agricultural intervention aimed at fighting hunger and poverty and ensuring food security at household level originated from Malawi and was launched in Nkandla, South Africa (KZN Department of Community Safety and Liaison, 2010). Food parcels, seeds and fertilizers were given to members of the community with the aim that agricultural land would be cultivated, child labour among farming communities is prevented and women and orphans are assisted to produce food for their families. Unfortunately the project was not successful in the majority of communities where it was implemented, due to the fact that the organizers did not assess the communities to determine what they wanted. In addition, it was not determined beforehand whether members of the community had the necessary production resources and if they had access to water to irrigate their crops. Moreover, community members who lacked access to the above resources either ate the seeds and sold the fertilizer or they just left it to rot.

Some communities however, were able to grow their own crops through this project and feed their families (KZN Department of Community Safety and Liaison, 2010).

2.8 CONCLUSION

From the literature review it is evident that many studies have been conducted on food insecurity and the impact of home gardens in alleviating the problem in different parts of the world, especially in developing countries. It is evident from the literature that food gardens are beneficial to households and they have an impact on the nutritional status of households. Despite the fact that food gardens have been used as a strategy to combat food insecurity, many farmers experience challenges when it comes to managing their food gardens. Hence, in order to assist communities who are willing to cultivate food gardens, these challenges need to be addressed as it will empower community members to grow their own food and possibly use it as a source of income.

Chapter three will discuss the methods used to attain the results needed for the current study.

CHAPTER 3: METHODOLOGY

This chapter will describe the methods and materials that were used to pilot the study, collect and analyse data. In addition, aspects related to data quality control and ethics approval will also be covered.

3.1 RESEARCH DESIGN

A cross sectional descriptive study was chosen in order to document the food garden-related practices of 200 households residing in the Embo community, Bothas Hill, KwaZulu-Natal.

This study design was deemed appropriate, as it is used to determine a single, cross-sectional examination of a population at one point in time (Barnett, Mercer, Norbury, Watt, Wyke & Guthrie, 2012).

3.2 STUDY POPULATION

3.2.1 Study population

The Embo community in Botha's Hill is situated in a very mountainous area with steep land and dry soil. Parts of the community can be described as peri-urban, while the remainder is rural. This community was selected for the current study due to the fact that a high prevalence of malnutrition and micronutrient deficiencies within the community has been documented (Garcia, 2012). In addition, cultivating food crops in this area is fraught with obstacles due to its geographic features according to members of the community who stated so during the planning stages of the study. The above is evident from the photographs forming part of Figure 3.1 below.



Figure 3.1: Embo Community from a distance.

The study population included 190 low-income rural and peri-urban households. As there were five community facilitators working in the five districts within Embo, namely Ekhabazela, Protea Area, Ethafeni, Godhintaba and Nsimbini Phoshan and each facilitator was responsible for overseeing 40 households in each district, it was decided to survey 190 households (piloted 5% of 200 households facilitators were working with), irrespective of whether they cultivated a food garden at the time of the study.

3.2.2 Sample selection

As all households in the community (N=190) were surveyed, formal sampling was not applicable to the study.

3.3 STUDY METHODS AND MATERIALS

3.3.1 Questionnaire development

Data was collected by means of a questionnaire (See Annexure1) that consisted of three sections namely: (i) Household Food Insecurity Access Scale (HFIAS) developed by FANTA (Coates *et al*, 2006); (ii) a food garden section developed for

the purpose of the study in conjunction with staff from The Valley Trust (TVT) who have experience in dealing with members of the Embo community in relation to food gardens; and (iii) a section to assess the socio-economic status of the households surveyed that was developed for the purpose of this study.

The questionnaire was developed in English (See Annexure 1) and translated into isiZulu (See Annexure 2) through the back translation technique to allow participants to choose whether they would like the questionnaire to be administered in English or isiZulu. According to Susan, Douglas & Craig (2007), the most common reason for translating questionnaires is “to be able to field an instrument not available in the language required for fielding”. The back translation technique is a technique whereby the translated questionnaire or document is translated back into its original language (Susan *et al*, 2007). It is a technique used to determine whether there are any loopholes in the questionnaire and to double check for any possible errors that were not evident in the first place, as well as to confirm the suitability of the measuring instrument (Susan *et al*, 2007).

The questionnaire consisted of closed-, open ended- and multiple choice questions. In order to avoid respondent fatigue, the questionnaire was developed in such a way that it took a maximum of 20 minutes to be completed. Community facilitators employed by TVT who work in the Embo community served as fieldworkers and hence interviewed participants. Questionnaires were not self-administered as it was assumed that not all of the participants were literate. The field workers and TVT staff alluded to this. Below is a description of each section in the questionnaire, how it was developed and what it measured.

The first section that assessed socio-economic status of the household included socio-demographic characteristics as well. Questions included the number of adults and children living in the household, the primary breadwinner in the household, main source of income, type of housing, predominant implement used for cooking, main source of cooking fuel, main source of water supply, type of toilet and household appliances. This section was developed for the purpose of this study in order to obtain a brief overview of the socio-demographic characteristics of the households, as well as the available resources and to determine the reasons for cultivating/not cultivating a food garden.

The second section was developed to gather data on food gardens and was subdivided into two sections: (i) households with food gardens; and (ii) households without food gardens. The first sub section regarding households with food gardens consisted of questions related to the type of food garden; who cultivates the food garden; the reason/s for cultivating a food garden; types of crops grown; reason/s for cultivating chosen crops; type of fertilizer, fencing and irrigation of crops; benefit of crops to the household; income generated from crops grown and challenges faced during the cultivation process. The second sub section aimed at households without food gardens, consisted of questions related to reasons why the household does not cultivate a food garden; whether they have access to water for irrigation purposes; where food purchases are made and potential challenges the household will face if they decide to cultivate a food garden. The second section was developed in conjunction with staff from TVT who had experience in dealing with members of the Embo community in relation to food gardens. In addition, the community facilitators and the researcher brain stormed and collectively decided on the questions that were best suited for the purpose of this study during the initial meeting with them.

The third section of the questionnaire consisted of the Household Food Insecurity Access Scale (HFIAS) (Coates *et al*, 2006), a standardized questionnaire developed by the Food and Nutrition Technical Assistance (FANTA) (Coates *et al*, 2006). It is a tool that is used to assess whether households in a particular area have experienced problems with food access in the past month or 30 days. The HFIAS was originally developed, based on the idea that when determining household food insecurity, the access component is measurable and the experience can be described and analysed to categorise households according to different levels of food insecurity, prevalence of food insecurity and detect changes in household food insecurity over time (Coates *et al*, 2006).

According to Coates *et al*, (2006) food insecurity studies were conducted in Bangladesh and Burkina Faso with the aim of developing a HFIAS specifically based on the local's experiences. Hence, the study identified four important characteristics of food insecurity experiences across countries and cultures. These characteristics include anxiety and uncertainty about of household food supply not being enough, poor quality of food and insufficient food quantity leading to household behaviours in relation to the severity of food insecurity such as going without food for a whole day.

These characteristics were used to assess the food security status of households surveyed in the current study.

The HFIAS is the most recently developed tool used for measuring household food insecurity (Coates *et al*, 2006). The tool is being used in many different countries like Kenya, Malawi, Mozambique, Somalia, Gaza including Burkina Faso and Bangladesh to provide information on food and nutrition insecurity and hence to enable easy decision making if households and families are food insecure (Dop, Ballard, Solal-Celigny & Kennedy 2006). The nine HFIAS questions are structured to address three food insecurity conditions i.e. Q1 addresses anxiety and uncertainty of household food supply; Q2-Q4 addresses food quantity and food quality (variety and food preference); and Q5-Q9 addresses the severity of the food insecurity (Coates *et al*, 2006).

3.4 FIELD WORKER TRAINING

Data collection was conducted by five community facilitators employed by the TVT who work amongst members of the Embo community, Botha's Hill. Hence, community facilitators served as field workers after they were trained by the researcher on how to administer the research questionnaire. The format of the training was conducted as a workshop with duration of one hour. The training material in the form of a PowerPoint presentation can be found in Annexure 3. Aspects covered included how to read and explain the questions to prospective study participants.

The training session (see Figure 3.2), focused on an explanation of the purpose of the study; how data will be collected; protocols to be observed before, during and after data collection; familiarizing community facilitators with the content of the questionnaire; importance of study participants (representing the household surveyed) signing the informed consent form after it was explained to them, prior to being interviewed by the fieldworker. TVT also made available a translator who was present during the training, as the primary researcher is not fluent in IsiZulu.



Figure 3.2: Researcher, field workers and some TVT staff when training took place

3.5 PILOT STUDY

A pilot study was conducted on 5% (n=10) of the study population (total number of households in Embo community = 200). Hence, two households representing each of the five districts were randomly sampled to ensure that both peri-urban and rural households were included in the pilot study. Therefore 190 households were surveyed. The purpose of the pilot study was to determine whether the questionnaires were understood by the study participants, whether any questions were ambiguous and required rephrasing, whether the data was in line with the study's objectives, to determine the time it took to administer the questionnaire and whether there were signs of respondent fatigue.

From the pilot study it was evident that questions related to the cultivation of food gardens were not understood by study participants. Especially questions that were

related to challenges faced in cultivating food gardens and the type of food garden cultivated. As a result, these questions were re explained to field workers to enable them to clarify it for study participants.

3.6 DATA COLLECTION

Data collection spanning over a period of three weeks (See Annexure 4) and involving the remaining 190 households in the five districts within the Embo community, took place using a modified version of the original questionnaire (see Annexure 5). Fieldworkers were only allowed to interview any adult household member residing in the districts they were responsible for if they agreed to participate in the study. To facilitate data collection, fieldworkers had to walk from home to home as all households the fieldworker was responsible for, were situated in the same district. Study participants were interviewed inside or outside the house, depending on whether they wanted privacy during the interview process and/or weather permitting. Participants were all willing to participate and signed an informed consent form before fieldworkers interviewed them. All questions were all asked in isiZulu because all participants had isiZulu as their mother tongue. All questionnaires were checked by the researcher for completeness, following which fieldworkers were thanked and it was explained that after the data was analysed and the research was written up, the researcher would present the study findings to them as well as to the study participants.

3.7 STUDY VARIABLES, DATA CAPTURING AND STATISTICAL ANALYSIS

Table 3.1 provides an overview of the study objectives, related variables and statistical analysis thereof.

Table 3.1: Study objectives, related variables and statistical analysis

Objective	Variables	Statistical analysis
To investigate the impact of food gardens on household food security status by comparing households with food gardens to households without.	HFIAS Score: HFIAS conditions, HFIAS domains (anxiety and uncertainty, insufficient quantity, insufficient quality), HFIAS prevalence.	Descriptive statistics: Frequency distributions. Pearson’s chi-square test with categorical variables being households with food gardens and those without.
To determine whether socio-economic status is related to cultivating a food garden or not.	Socio-economic status: Gender and age distribution of household members, employment status of household members, main source of household income, type of housing, main source of water supply, type of toilet and household appliances	Descriptive statistics: Frequency distributions, Pearson’s chi-square test with categorical variables being households with food gardens and those without.
To investigate the reason/s why some households cultivate food gardens and others do not, in order to determine the perceived barriers to cultivating food gardens in the Embo community.	Perceived barriers: Lack/shortage of water, lack of money to purchase seeds, domestic animals eating crops, lack of fencing, cost of fencing, pests and diseases, lack of knowledge and skill regarding gardening practices, hard soil, infertile soil and lack of gardening implements.	Descriptive statistics: Frequency distributions, Pearson’s chi-square test with categorical variables being households with food gardens and those without.

3.7.1 Data capturing, analysis and interpretation

Data was entered into a spreadsheet of the Statistical Package for Social Sciences (SPSS) version 21 for statistical analysis. Descriptive statistics such as frequency distributions and Pearson chi-square tests were performed. Significance was measured at the 0.05 level (two-tailed).

The HFIAS data was interpreted by means of the HFIAS guidelines that were developed by FANTA (Coates *et al*, 2007). Four indices were calculated, namely the HFIAS score, the HFIAS condition, HFIAS related domains and HFIAS prevalence. Calculated HFIAS scores indicates the degree of household food security within the past month/30days. HFIAS condition refer to information on household behaviours

and perceptions, HFIAS related domains is summary of one or more behaviours experienced within the household in each of the three domains (anxiety and uncertainty of food supply, poor quality and insufficient quantity of food). HFIAS prevalence classifies households into four levels of food security (food secure, mildly food insecure, moderately food insecure and severely food insecure).

A mildly food insecure household worried about not having enough food 'sometimes' or 'often' and/or 'rarely' ate less preferred foods. They did not have to reduce their quantity of food consumed and did not experience conditions like going without food for a whole day, running out of food or going to bed hungry (Coates *et al*, 2007). A moderately food insecure household 'sometimes' or 'often' ate less preferred and poor quality foods and/or 'rarely' or 'sometimes' reduced the quantity and size of meals (Coates *et al*, 2007). A severely food insecure household 'often' cut back on meal sizes and number of meals and/or experienced going without food for a whole day, going to bed hungry or running out of food. Any household that experienced any of the above even once in the past 30 days, was considered severely food insecure (Coates *et al*, 2007).

Before the indices were calculated, each response option (indicating the frequency of experience within the household) to each HFIAS question was coded. Rarely was coded as "1", sometimes was coded as "2" and often was coded as "3" (see Annexure 1). Subsequently the HFIAS score was calculated for each household by summing the responses for each HFIAS question (Coates *et al*, 2007:17) and interpreting the total score on a scale of 0 to 27 to determine the level of food insecurity of each household surveyed. The maximum score was 27 and the minimum score was 1. The higher the score, the greater the level of food insecurity experienced by the household (see Annexure 5). Hence a household's level of food insecurity can be calculated as follows: $Q1+Q2+Q3+Q4+Q5+Q6+Q7+Q8+Q9$ with a total score ranging from zero to 27. The higher the score obtained, the greater the level of household food insecurity experienced.

Table 3.2: HFIAS score classification

Food insecure (0-6.75)	Mildly food insecure (6.75-13.5)	Moderately food insecure (13.5-20.5)	Severely food insecure (20.5-27)
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The HFIAS prevalence of food insecurity in the different districts was determined by summing the number of households that fall into each HFIAS category (food secure, mildly food insecure, moderately food insecure or severely food insecure).

Socio economic status data was determined based on level of education, income, occupation, type of dwelling and access to basic resources (Woolfolk, 2007). A high socio-economic status implied having a high level of education and access to economic, health and basic resources (Woolfolk, 2007). A middle socio-economic status meant having some education and some access to economic, health and basic resources (Woolfolk, 2007). A low socio-economic status meant poor education, unemployment, lack of or very little access to economic, health and basic resources (Woolfolk, 2007).

3.8 DATA QUALITY CONTROL

3.8.1 Reliability and validity of data

3.8.1.1 Reliability

According to Cha, Kim & Erlen (2007), a reliable questionnaire is one that produces more or less the same results every time it is applied. Even when different persons use the questionnaire or instrument, it is expected to produce the same results (Morse, Barrett, Mayan, Olson & Spiers 2002). Babbie & Mouton (2008) and Katzenellebogen & Joubert (2007) state that reliability and accuracy are related in that if a measurement is not accurate, then it is not reliable.

In the current study, reliability was assured through development of the research questionnaire based on a review of the literature and expert input, as well as administering the questionnaire in participant's language of choice by trained field workers. The English version of the questionnaire that was developed for the purpose of the study was translated into isiZulu (see Annexure 2) by a Zulu dietetic

intern. Subsequently it was translated into English by another individual who is fluent in isiZulu. The two English versions were then compared to ensure that they had the same content and meaning. This is known as the back translation technique where the translated questionnaire or document is translated back to its original language (Susan *et al*, 2007). Reliability was also ensured through pilot testing of the questionnaire and the researcher checking through all questions for any omissions after completion.

3.8.1.2 Validity

Validity is defined as the effectiveness or soundness of a measuring instrument (Leedy & Ormrod 2009, p27). Validity looks at the end result to determine whether the researcher is measuring what is supposed to be measured (Morse *et al*, 2002).

In the current study, validity was ensured by conducting a pilot study on study participants similar to that of the main study. The questionnaire was then adapted based on the outcome of the pilot study to ensure that the results obtained were in line with that of the study objectives and were valid.

The four types of validity that can be assessed include construct validity, content validity, face validity and criterion validity (Goodwin, 2002). Construct validity is applicable to developing a questionnaire and is based on the initial stages of questionnaire development (Goodwin, 2002). To be able to ensure construct validity, the researcher needs to develop a questionnaire that will cover all related concepts. Discussion, corrections and recommendations by experts on these issues, will therefore ensure construct validity of a questionnaire (Goodwin, 2002). This was done when the questions for the research questionnaire were being developed. Content validity's effectiveness is determined by using an expert panel. It refers to the appropriateness and effectiveness of the questions in the questionnaire (Morse *et al*, 2002). Face validity refers to whether the questions in a questionnaire are reasonable for the target group i.e. the format, language and layout. To ensure face validity, the questions in a questionnaire should be assessed by an expert panel and also by members of the group being assessed during a pilot study. This will allow for the necessary further adjustments to be made in order to improve face validity of the questionnaire (Morse *et al*, 2002). Criterion validity can be determined by comparing the outcome of the questionnaire to the main study

variable. For example, the criterion validity of a tool meant to assess food security status can be assessed using the HFIAS. Criterion validity then, is the correlation and relationship between the research outcome and its tool. The higher the correlation, the better the validity (Morse *et al*, 2002).

3.8.2 Reduction of bias

To reduce bias, field workers were trained on how to administer the questionnaire before the pilot study was conducted and again before data collection for the actual study commenced. Questionnaires were structured in such a way that it took up to a maximum of 20 minutes to complete in order to prevent respondent fatigue. As all questions were asked according to a structured questionnaire, all questions were phrased the same way and were administered in the same sequence in order to standardize the interview process.

3.9 CONSENT AND ETHICAL CONSIDERATIONS

3.9.1 Consent and ethical approval

Prior to writing the research proposal and developing the questionnaire that was used for data collection, the researcher met with the management of TVT, a Non-governmental Organisation, in order to discuss the proposed study and the research question it would address. Subsequently, verbal consent was obtained from TVT. This was followed up by a moratorium of understanding that was signed by UKZN and TVT (Annexure 6). The community facilitators of TVT also agreed to serve as fieldworkers in the districts they were responsible for and for photographs to be taken of them. All study participants were required to sign an informed consent form in isiZulu (Annexure 7) before participating in the study.

In order to conduct the study, ethical clearance was obtained from the Humanities and Social Science Ethics Research Committee of UKZN. The ethical clearance approval letter reference number was HSS/1168/014M (see Annexure 8).

3.10 SUMMARY

This cross sectional descriptive study obtained data from 190 households with and without food gardens residing in the Embo Community, Bothas Hill. Data was collected by means of a questionnaire consisting of three sections to assess socio-demographic variables, the cultivation of food gardens and household food security in the households surveyed. Five community facilitators employed by TVT were responsible for administering the research questionnaire in isiZulu to 40 households each in the five districts the Embo community is divided into.

In chapter four, the results generated by the study in accordance with the methods and materials described in chapter three, will be reported.

CHAPTER 4: RESULTS

This chapter provides an overview of the results generated by the study after surveying 190 households with and without food gardens that were located in five districts in the Embo community, Botha's Hill in KwaZulu-Natal.

4.1 HOUSEHOLD PROFILE OF STUDY PARTICIPANTS

In the current section, results related to the socio-demographic characteristics of the households surveyed, will be reported.

4.1.1 Households with and without food gardens

In the following table, the households surveyed, are depicted in terms of the district in which they were located, as well as cultivation of food gardens.

Table 4.1: Number of households with and without food gardens per district (N=190)

All households	D1* (n = 38)	D2* (n = 38)	D3 *(n = 38)	D4* (n=38)	D5* (n=38)	Total % (n)	P-value#
Households with food gardens	5% (n=10)	8% (n=16)	11% (n=21)	6% (n=11)	6% (n=12)	37%(n=70)	0.00¶
Households without food gardens	15% (n=28)	12% (n=22)	9% (n=17)	14% (n=27)	14%(n=26)	63%(n=120)	0.00¶

*Districts in Embo Community: D1-Nsimbini Poshan, D2-Godhintaba, D3-Protea Area, D4-Ethafeni, D5-Ekhabezela.

Pearson Chi-square

¶ P < 0.05

From the above table it is evident that an equal number of households per district were surveyed and that the majority, i.e. nearly two thirds of the households, did not cultivate a food garden.

4.1.2 Household characteristics

An overview of the household socio-demographic characteristics is presented in the following table.

Table 4.2: Household socio-demographic characteristics (N=190)

Variable	Households with FG*	Households without FG*	Total	P-value#
Gender of person cultivating food garden:				
• Male	1% (n=2)	0% (n=0)	1% (n=2)	0.00¶
• Female	20% (n=38)	0% (n=0)	20% (n=38)	
• Both male and female	16% (n=30)	0% (n=0)	16% (n=30)	
Profile of household inhabitants:				
Adults ≥ 60 years	40% (n=76)	23% (n=44)	63% (n=120)	0.38
Adults ≤ 59 years	24% (n=45)	13% (n=25)	37% (n=70)	
Children ≤1 year of age	5% (n=10)	9% (n=17)	14% (n=27)	
Children 1-5 years of age	13% (n=24)	18% (n=34)	31% (n=58)	
Children 6-12 years of age	6% (n=12)	15% (n=28)	21% (n=40)	
Children 13-18 years of age	8% (n=16)	13% (n=25)	22% (n=41)	
Employment status:				
Adults ≤ 60 years with employment	22% (n=41)	35% (n=67)	57% (n=108)	0.48
Major bread winner:				
• Father	8% (n=15)	18% (n=34)	26% (n=49)	0.35
• Mother	3% (n=6)	6% (n=11)	9% (n=17)	
• Grandmother	1% (n=1)	0% (n=0)	1% (n=1)	
• Uncle	0% (n=0)	1% (n=2)	2% (n=2)	
• Daughter	1% (n=2)	2% (n=4)	3% (n=6)	
• Brother	2% (n=4)	1% (n=2)	3% (n=6)	
• Sister	1% (n=1)	0% (n=0)	1% (n=1)	
Main source of income:				
Social grants:				
• Old age pension	3% (n=6)	10% (n=19)	13% (n=25)	0.49
• Child support grant	15% (n=29)	24% (n=45)	39% (n=74)	
• Foster grant	2% (n=4)	1% (n=2)	3% (n=6)	
• Disability grant	1% (n=2)	1% (n=2)	2% (n=4)	
• Unemployment grant	0% (n=0)	1% (n=2)	1% (n=2)	
Full time employment	5% (n=10)	9% (n=18)	15% (n=28)	
Part time employment	5% (n=10)	7% (n=13)	12% (n=23)	
Self employed	5% (n=9)	10% (n=19)	15% (n=28)	
Household facilities				

Type of household:				
Formal brick	6% (n=11)	11% (n=20)	16% (n=31)	0.32
Clay rondavel with thatched roof	1% (n=1)	0% (n=0)	1% (n=1)	
Clay rondavel with corrugated roof	5% (n=10)	14% (n=26)	19% (n=36)	
Self-constructed home built with corrugated iron	15% (n=29)	24% (n=46)	39% (n=75)	
Self-constructed home built with wood	0% (n=0)	2% (n=3)	2% (n=3)	
Concrete brick	1% (n=1)	0% (n=0)	1% (n=1)	
Brick walls with grass roof	9% (n=18)	13% (n=25)	23% (n=43)	
Main source of cooking fuel:				
Electricity	26% (n=49)	36% (n=69)	62% (n=118)	0.15
Gas	1% (n=1)	1% (n=1)	1% (n=2)	
Wood	7% (n=13)	22% (n=41)	28% (n=54)	
Paraffin	4% (n=7)	5% (n=9)	8% (n=16)	
Main source of water supply:				
Running water in house	33% (n=63)	53% (n=101)	86% (n=164)	0.53
Communal tap outside house	1% (n=1)	2% (n=3)	2% (n=4)	
River/Stream	0% (n=0)	0% (n=0)	0% (n=0)	
Borehole/Well	0% (n=0)	0% (n=0)	0% (n=0)	
Neighbours tap outside	3% (n=6)	8% (n=16)	12% (n=22)	
Abution facilities:				
Flush toilet	2% (n=3)	5% (n=9)	6% (n=12)	0.04¶
Government toilet –both brick and portable	19% (n=36)	42% (n=80)	61%(n=116)	
Pit toilet	16% (n=30)	16% (n=31)	32% (n=61)	
Bucket/Pot	0% (n=0)	0% (n=0)	0% (n=0)	
Open veld	1% (n=1)	0% (n=0)	1% (n=1)	
Household appliances:				
Free standing electric stove	8% (n=16)	11% (n=20)	19% (n=36)	0.15
Two plate electric stove	17% (n=32)	25% (n=47)	42% (n=79)	
Two plate gas stove	1% (n=2)	5% (n=9)	6% (n=11)	
Microwave	9% (n=18)	12% (n=23)	22% (n=41)	
Fridge	9% (n=18)	11% (n=20)	20% (n=38)	
Freezer	7% (n=13)	6% (n=11)	13% (n=24)	
Fridge/Freezer combo	24% (n=46)	40% (n=76)	64% (n=122)	
Cell phone	32% (n=60)	49% (n=94)	81% (n=154)	
Radio	32% (n=60)	49%(n=94)	81% (n=154)	
Television	34% (n=64)	53% (n=101)	87% (n=165)	
Mode of transport: Car	1% (n=2)	3% (n=5)	4% (n=7)	

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* FG: Food gardens
 # Pearson Chi-square
 ¶ P < 0.05

∞ Government toilets are made according to specifications as per the Department of Human Settlement to ensure basic sanitation for all South Africans (www.dhs.gov.za/content/Housing%20Programmes/Programmes.htm)

From above table, findings that were statistically significant in accordance with whether the household cultivated a food garden or not, was the gender of the individual who cultivates the food garden and the type of ablution facilities available. It was evident that women were more likely to cultivate food gardens than men, and that government toilets were the primary ablution facility available to members of the community. Although not statistically significant, almost half of the household inhabitants were adults ≥ 60 years in both households with gardens (40%) and households without gardens (23%). The major bread winner seemed to be the father in both households with and without food gardens, while the main source of income was the child support grant. Nearly one out of four (39%) of households lived in self-constructed homes built with corrugated iron. Electricity was the main source of cooking fuel in both groups, while the main source of water was running water in house. The presence of household appliances was common in both types of households, with the most common appliances being a television, radio, cellular telephone and fridge/freezer combination. Households without food gardens had the highest percentage of household appliances. It would seem however, that households without food gardens were of a higher socio economic status based on indicators such as employment status, income, type of home and household appliances.

4.2 HOUSEHOLDS WITH FOOD GARDENS

The following tables describe the types of food gardens found within each district, the type of crops grown, reasons why households cultivate food gardens, the types of fertilizers used and the reasons why, why food gardens are fenced or not, if income is generated from the food gardens and the challenges faced in cultivating food gardens.

Table 4.3: Study variables related to the cultivation of food gardens

Variable	D1* (n = 38)	D2* (n = 38)	D3* (n = 38)	D4* (n=38)	D5* (n=38)	Total	P-value#
Garden type:							
Door food garden	9% (n=6)	0% (n=0)	30% (n=21)	16% (n=11)	17%(n=12)	71% (n=50)	0.00¶
Community food garden	6% (n=4)	23% (n=16)	0% (n=0)	0% (n=0)	0% (n=0)	29% (n=20)	
Number of members caring for garden							
Members	6% (n=4)	23% (n=16)	0% (n=0)	0% (n=0)	0% (n=0)	29% (n=20)	∞
Reason for caring for community garden:							
Volunteer	6% (n=4)	23% (n=16)	0% (n=0)	0% (n=0)	0% (n=0)	29% (n=20)	0.00¶
No community garden	9% (n=6)	0% (n=0)	30% (n=21)	16% (n=11)	17%(n=12)	71% (n=50)	
Reason for involvement with community garden:							
Garden member	0% (n=0)	23% (n=16)	0% (n=0)	0% (n=0)	23%(n=16)	46% (n=32)	0.00¶
Good for family	1% (n=1)	0% (n=0)	0% (n=0)	0% (n=0)	1% (n=1)	3% (n=2)	
Member & good for family.	4% (n=3)	0% (n=0)	0% (n=0)	0% (n=0)	4% (n=3)	9% (n=6)	
Reasons for cultivating a food garden:							
Fresh + tasty + occupation as unemployed + healthy	0% (n=0)	11% (n=8)	6% (n=4)	4% (n=3)	7% (n=5)	29% (n=20)	0.15
Saves money + food source + healthy	14% (n=10)	11% (n=8)	23%(n=16)	10% (n=7)	9% (n=6)	67% (n=47)	
Food source + healthy	0% (n=0)	0% (n=0)	1% (n=1)	1% (n=1)	1% (n=1)	4% (n=3)	
Type of crops:							
Beans	0% (n=0)	0% (n=0)	0% (n=0)	0% (n=0)	3% (n=2)	3% (n=2)	0.00¶
Beetroot	13% (n=9)	33% (n=23)	1% (n=1)	0% (n=0)	14%(n=10)	61% (n=43)	
Brinjal	3% (n=2)	0% (n=0)	0% (n=0)	0% (n=0)	1% (n=1)	4% (n=3)	
Butternut	3% (n=2)	0% (n=0)	0% (n=0)	1% (n=1)	3% (n=2)	7% (n=5)	
Cabbage	14% (n=10)	9% (n=6)	10% (n=7)	0% (n=0)	16%(n=11)	49%(n=34)	
Carrots	10% (n=7)	33% (n=23)	7% (n=5)	0% (n=0)	16%(n=11)	66%(n=46)	
Cauli flower	3% (n=2)	0% (n=0)	0% (n=0)	0% (n=0)	1% (n=1)	4% (n=3)	
Lettuce	6% (n=4)	0% (n=0)	0% (n=0)	0% (n=0)	3% (n=2)	9% (n=6)	
Mangoes	1% (n=1)	0% (n=0)	0% (n=0)	0% (n=0)	0% (n=0)	1% (n=1)	
Maize	3% (n=2)	0% (n=0)	0% (n=0)	1% (n=1)	3% (n=2)	7% (n=5)	
Onions	4% (n=3)	23% (n=16)	0% (n=0)	0% (n=0)	1% (n=1)	29% (n=20)	
Paw paws	1% (n=1)	0% (n=0)	0% (n=0)	0% (n=0)	0% (n=0)	1% (n=1)	
Peppers	6% (n=4)	23% (n=16)	0% (n=0)	0% (n=0)	1% (n=1)	30% (n=21)	
Potatoes	3% (n=2)	1% (n=1)	0% (n=0)	0% (n=0)	4% (n=3)	9% (n=6)	
Spinach	14% (n=10)	23% (n=16)	10% (n=7)	14% (n=10)	11% (n=8)	73% (n=51)	

Sugar cane	1% (n=1)	0% (n=0)	0% (n=0)	0% (n=0)	0% (n=0)	1% (n=1)	
Sweet Potatoes	0% (n=0)	0% (n=0)	0% (n=0)	1% (n=1)	1% (n=1)	3% (n=2)	
Tomatoes	3% (n=2)	29% (n=20)	0% (n=0)	0% (n=0)	3% (n=2)	34% (n=24)	
Reasons for choice of crops:							
Seed obtained from workplace	3% (n=2)	0% (n=0)	0% (n=0)	0% (n=0)	0% (n=0)	3% (n=2)	
Culturally popular	1% (n=1)	0% (n=0)	6% (n=4)	1% (n=1)	0% (n=0)	9% (n=6)	
Seeds: Affordable + grows fast + healthy + saves money	10% (n=7)	23% (n=16)	21% (n=15)	14% (n=10)	17% (n=12)	86% (n=60)	0.03¶
No reason given	0% (n=0)	0% (n=0)	3% (n=2)	0% (n=0)	0% (n=0)	3% (n=2)	
Seed sources:							
Agric. extension officer β	1% (n=1)	21% (n=15)	0% (n=0)	0% (n=0)	6% (n=4)	29% (n=20)	
Shop/Super market	1% (n=1)	1% (n=1)	14% (n=10)	13% (n=9)	11% (n=8)	41% (n=29)	
Neighbour	0% (n=0)	0% (n=0)	16% (n=11)	3% (n=2)	0% (n=0)	19% (n=13)	0.00¶
Community nursery	0% (n=0)	0% (n=0)	0% (n=0)	0% (n=0)	0% (n=0)	0% (n=0)	
Obtained from workplace	3% (n=2)	0% (n=0)	0% (n=0)	0% (n=0)	0% (n=0)	3% (n=2)	
The Valley Trust (TVT)	4% (n=3)	0% (n=0)	0% (n=0)	0% (n=0)	0% (n=0)	4% (n=3)	
Fencing around the garden:							
Yes	13% (n=9)	23% (n=16)	11% (n=8)	10% (n=7)	9% (n=6)	66% (n=46)	
No	1% (n=1)	0% (n=0)	19% (n=13)	6% (n=4)	9% (n=6)	34% (n=24)	0.00¶
Reason why garden is fenced or not:							
No reason given	1% (n=1)	0% (n=0)	1% (n=1)	0% (n=0)	0% (n=0)	3% (n=2)	
Animals destroy crops‡	10% (n=7)	6% (n=4)	17% (n=12)	11% (n=8)	11% (n=8)	56% (n=39)	0.03¶
No money to erect a fence	3% (n=2)	1% (n=1)	10% (n=7)	3% (n=2)	3% (n=2)	20% (n=14)	
Thieves steal crops	0% (n=0)	16% (n=11)	0% (n=0)	0% (n=0)	0% (n=0)	16% (n=11)	
Too weak to put up fence	0% (n=0)	0% (n=0)	1% (n=1)	1% (n=1)	3% (n=2)	6% (n=4)	
Fertilize soil:							
Yes	13% (n=9)	23% (n=16)	21% (n=15)	9% (n=6)	10% (n=7)	76% (n=53)	
No	1% (n=1)	0% (n=0)	9% (n=6)	7% (n=5)	7% (n=5)	24% (n=17)	0.00¶
Type of fertilizer used:							
Dry grass	0% (n=0)	0% (n=0)	1% (n=1)	3% (n=2)	1% (n=1)	6% (n=4)	
Organic∞	14% (n=10)	23% (n=16)	19% (n=13)	6% (n=4)	9% (n=6)	70% (n=49)	

Inorganic€	0% (n=0)	0% (n=0)	0% (n=0)	0% (n=0)	1% (n=1)	1% (n=1)	0.02¶
Both organic and inorganic	0% (n=0)	0% (n=0)	1% (n=1)	0% (n=0)	0% (n=0)	1% (n=1)	
No fertilizer used	0% (n=0)	0% (n=0)	9% (n=6)	7% (n=5)	6% (n=4)	21% (n=15)	
Sources of water for irrigation:							
River	6% (n=4)	0% (n=0)	3% (n=2)	0% (n=0)	0% (n=0)	9% (n=6)	0.02¶
Dam	0% (n=0)	0% (n=0)	0% (n=0)	1% (n=1)	0% (n=0)	1% (n=1)	
Borehole/well	0% (n=0)	0% (n=0)	3% (n=2)	0% (n=0)	0% (n=0)	3% (n=2)	
Tap	6% (n=4)	23% (n=16)	23% (n=16)	13% (n=9)	17% (n=12)	81% (n=57)	
Harvested rain water	0% (n=0)	0% (n=0)	1% (n=1)	0% (n=0)	0% (n=0)	1% (n=1)	
Rain water	1% (n=1)	0% (n=0)	0% (n=0)	0% (n=0)	0% (n=0)	1% (n=1)	
Other: Laundry water	1% (n=1)	0% (n=0)	0% (n=0)	1% (n=1)	0% (n=0)	3% (n=2)	
Vegetables from the garden sold or eaten:							
Eat vegetables only	13% (n=9)	21% (n=15)	26% (n=18)	16% (n=11)	17% (n=12)	93% (n=65)	0.47
Sell vegetables only	0% (n=0)	0% (n=0)	0% (n=0)	0% (n=0)	0% (n=0)	0% (n=0)	
Eat and sell vegetables	1% (n=1)	1% (n=1)	4% (n=3)	0% (n=0)	0% (n=0)	7% (n=5)	
Is the garden of benefit:							
Yes	14% (n=10)	23% (n=16)	30% (n=21)	16% (n=11)	17% (n=12)	100% (n=70)	∞
No	0% (n=0)	0% (n=0)	0% (n=0)	0% (n=0)	0% (n=0)	0% (n=0)	
Benefits of garden to household:							
Provides food	10% (n=7)	13% (n=9)	21% (n=15)	13% (n=9)	9% (n=6)	66% (n=46)	0.00¶
Saves money	1% (n=1)	9% (n=6)	9% (n=6)	3% (n=2)	9% (n=6)	30% (n=21)	
Provides income	0% (n=0)	0% (n=0)	4% (n=3)	0% (n=0)	0% (n=0)	4% (n=3)	
Amount of money made per month from selling vegetables:							
R100-R200	0% (n=0)	1% (n=1)	0% (n=0)	0% (n=0)	0% (n=0)	1% (n=1)	0.01¶
R200-R300	0% (n=0)	0% (n=0)	0% (n=0)	1% (n=1)	0% (n=0)	1% (n=1)	
R300-R400	1% (n=1)	0% (n=0)	0% (n=0)	1% (n=1)	0% (n=0)	3% (n=2)	
R400-R500	0% (n=0)	0% (n=0)	0% (n=0)	3% (n=2)	0% (n=0)	3% (n=2)	
R500-R600	0% (n=0)	0% (n=0)	0% (n=0)	3% (n=2)	0% (n=0)	3% (n=2)	
R600-R700	0% (n=0)	0% (n=0)	0% (n=0)	0% (n=0)	0% (n=0)	0% (n=0)	
Did not know could sell	9% (n=6)	21% (n=15)	24% (n=17)	6% (n=4)	13% (n=9)	73% (n=51)	
Don't sell at all	4% (n=3)	0% (n=0)	6% (n=4)	1% (n=1)	4% (n=3)	16% (n=11)	

*Districts in Embo Community: D1-Nsimbini Poshan, D2-Godhintaba, D3-Protea Area, D4-Ethafeni, D5-Ekhabezela.

βDepartment of Agriculture

¥Cattle, goats, chickens and dogs

∞Cow dung, chicken droppings, dry grass, vegetable and food scraps

€Fertilizer that is bought from shops

Pearson Chi-square

¶ P < 0.05

∞ no statistics are computed because benefit is a constant

From Table 4.3 it is evident that when comparing variables across districts, results were statistically significant for the following categorical variables: (i) type of food garden cultivated; (ii) reason for caring and involvement with community garden; (iii) type of crops cultivated; (iv) reason for crop choices; (v) seed sources; (vi) fencing of garden and reason for fencing; (vii) fertilization of soil and type of fertilizer used; (viii) water source for irrigation; (ix) benefits of having a food garden; and (x) earnings from crop sales. Fifty households (71%) across all five districts had door gardens, while 20 households (29%) were involved in the cultivation of community gardens. Households that made use of community gardens all volunteered to take care of the community gardens because they thought it was good for their families. Over two thirds (67%) of households across all five districts stated that their main reason for cultivating food gardens was related the fact that it saves money, it is a source of food and it is healthy.

Spinach, carrots, beetroot, cabbage and tomatoes were the main crops cultivated. Nearly nine out of ten households (86%) indicated that their main reason for crop choice was affordability of seeds, seeds growing fast, the crops being healthy and saving money. The majority of households purchased seeds from a shop/supermarket, followed by obtaining them from agriculture extension officers that work in within the community. Two thirds of households (66%) had gardens that were fenced.

The main reason for having a fence was that animals like cattle, goats, chickens and dogs destroy crops (56%), while 20% reported that the reason why their garden was not fenced was due to a lack of finances. The majority of households (76%) used fertilizer with organic fertilizer being the most prevalent type of fertilizer used. The latter included cow dung, chicken droppings, dry grass, vegetable and food scraps. Tap water was the main source of irrigation (81%) for households across all districts.

Although there was no significant difference between households that sold or consumed or sold and consumed their crops, it was evident that almost all households only consumed their crops while very few consumed and sold them as a source of income. The majority (73%) of households across all five districts were not aware of the fact that they could sell their crops.

In Table 4.4, the challenges that members of the community faced in cultivating food gardens, is reported.

Table 4.4: Challenges faced in cultivating food gardens

Variable	D1*(n=38)	D2*(n=38)	D3* (n=38)	D4*(n=38)	D5*(n=38)	Total	P-value#
Experience challenges in cultivating vegetables:							
Yes	14%(n=10)	23%(n=16)	30%(n=21)	16%(n=11)	17%(n=12)	100%(n=70)	∞
No	0% (n=0)	0% (n=0)	0% (n=0)	0% (n=0)	0% (n=0)	0% (n=0)	
Types of challenges faced:							
Water shortage	10% (n=7)	20%(n=14)	23%(n=16)	9% (n=6)	1% (n=1)	63%(n=44)	0.00¶
Lacks money to buy seeds	10% (n=7)	23%(n=16)	29%(n=20)	14%(n=10)	17%(n=12)	93%(n=65)	
Animals eat crops‡	14%(n=10)	23%(n=16)	30%(n=21)	13% (n=9)	13% (n=9)	93%(n=65)	
No fencing	10% (n=7)	23%(n=16)	27%(n=19)	10% (n=7)	11% (n=8)	81%(n=57)	
Cost of fencing	10% (n=7)	20%(n=14)	30%(n=21)	13% (n=9)	10% (n=7)	83%(n=58)	
Insects & diseases	3% (n=2)	10%(n=7)	3% (n=2)	7% (n=5)	6% (n=4)	29%(n=20)	
Lack of skill & knowledge regarding gardening	1% (n=1)	19%(n=13)	23%(n=16)	9% (n=6)	0% (n=0)	51%(n=36)	
Hard soil	6% (n=4)	11%(n=8)	23%(n=16)	4% (n=3)	9% (n=6)	49%(n=34)	
Infertile soil	7% (n=5)	14%(n=10)	23%(n=16)	3% (n=2)	1% (n=1)	49%(n=34)	
Lack of implements	13%(n=9)	14%(n=10)	23%(n=16)	4%(n=3)	11%(n=8)	66%(n=46)	

*Districts in Embo Community

Pearson Chi-square

‡Cattle, goats, chickens and dogs

¶ P < 0.05

∞ no statistics are computed because challenges is a constant

All households that cultivated food gardens reported that they experienced challenges related to the cultivation process. The main challenges were animals eating the crops (93%), a lack of money to buy seeds (93%), followed by the cost of fencing (83%), a lack of fencing (81%) and a lack of gardening implements (66%).

4.3 HOUSEHOLDS WITHOUT FOOD GARDENS

Households without food gardens were surveyed to determine the reasons why they do not cultivate food gardens, whether they have ever thought of cultivating one and the challenges they foresee, should they decide to cultivate a food garden. These results are reported in Table 4.5 below.

Table 4.5: Reasons for households not having a food garden

Variable	D1* (n=38)	D2* (n=38)	D3* (n=38)	D4* (n=38)	D5* (n=38)	Total	P-value#
Reason for no food garden							
No money to buy seeds	2% (n=2)	2% (n=2)	0% (n=0)	0% (n=0)	0% (n=0)	3% (n=4)	0.00¶
No money for fencing	17%(n=20)	10%(n=12)	5% (n=6)	10%(n=12)	8% (n=9)	49% (n=59)	
No one to look after garden	1% (n=1)	1% (n=1)	2% (n=2)	1% (n=1)	0% (n=0)	4% (n=5)	
No time	1% (n=1)	1% (n=1)	3% (n=4)	2% (n=2)	0% (n=0)	7% (n=8)	
About to start garden	1% (n=1)	0% (n=0)	1% (n=1)	3% (n=3)	0% (n=0)	4% (n=5)	
No space	1% (n=1)	3% (n=3)	0% (n=0)	0% (n=0)	0% (n=0)	3% (n=4)	
Lack of seasonal knowledge	1% (n=1)	1% (n=1)	1% (n=1)	2% (n=2)	0% (n=0)	4% (n=5)	
Shortage of water	1% (n=1)	0% (n=0)	2% (n=2)	1% (n=1)	1% (n=1)	4% (n=5)	
Shortage of water + no fencing	0% (n=0)	0% (n=0)	0% (n=0)	0% (n=0)	1% (n=1)	1% (n=1)	
Bad soil	0% (n=0)	0% (n=0)	0% (n=0)	0% (n=0)	6% (n=7)	6% (n=7)	
Lack of land	0% (n=0)	2% (n=2)	1% (n=1)	5% (n=6)	7% (n=8)	24% (n=17)	
Thoughts of having a food garden							
Yes	17% (n=20)	5% (n=6)	10%(n=12)	19%(n=23)	17%(n=20)	68%(n=81)	0.00¶
No	0% (n=0)	3% (n=3)	2% (n=2)	3% (n=4)	0% (n=0)	8% (n=9)	
Yes, fear of domestic animals eating crops	6% (n=7)	9% (n=11)	3% (n=3)	0% (n=0)	2% (n=2)	19%(n=23)	
Yes, soil not good	1% (n=1)	2% (n=2)	0% (n=0)	0% (n=0)	3% (n=4)	6% (n=7)	
Access to water							
Yes	21% (n=25)	18% (n=21)	12%(n=14)	16%(n=19)	18%(n=21)	83%(n=100)	0.17
No	3% (n=3)	1% (n=1)	3% (n=3)	7% (n=8)	4% (n=5)	17% (n=20)	
Where food is bought							
Shop/Supermarket	23%(n=28)	18%(n=22)	24%(n=17)	22%(n=26)	22%(n=26)	99%(n=119)	0.48
Farmers market	0% (n=0)	0% (n=0)	0% (n=0)	1% (n=1)	0% (n=0)	1% (n=1)	
Will household face challenges if they decide to cultivate							
Yes	23%(n=28)	18%(n=22)	24%(n=17)	22%(n=26)	22%(n=26)	99%(n=119)	0.48
No	0% (n=0)	0% (n=0)	0% (n=0)	0% (n=0)	0% (n=0)	0% (n=0)	
Challenges households would face							

Water shortage of water	9%(n=11)	18%(n=22)	7% (n=8)	13%(n=15)	13%(n=15)	59%(n=71)	0.00¶
No money to buy seeds	30%(n=36)	18%(n=21)	24%(n=17)	19%(n=23)	18%(n=22)	99%(n=119)	
Animals eating the crops	29%(n=35)	18%(n=21)	24%(n=17)	22%(n=26)	17%(n=20)	99%(n=119)	
No fencing	22%(n=26)	18%(n=21)	24%(n=17)	22%(n=26)	20%(n=24)	95%(n=114)	
Cost of fencing	21%(n=25)	18%(n=21)	24%(n=17)	22%(n=26)	20%(n=24)	94%(n=113)	
Insects & diseases	26%(n=31)	17%(n=20)	24%(n=17)	22%(n=26)	21%(n=25)	99%(n=119)	
Lack of skill & knowledge regarding gardening	5% (n=6)	9%(n=11)	7% (n=8)	18%(n=21)	9%(n=11)	48%(n=57)	
Hard soil	30%(n=36)	17%(n=20)	24%(n=17)	5% (n=6)	7%(n=8)	73%(n=87)	
Infertile soil	18%(n=22)	8% (n=10)	8% (n=9)	2% (n=2)	1%(n=1)	37%(n=44)	
Lack of implements	22%(n=26)	17%(n=20)	24%(n=17)	5% (n=6)	3% (n=3)	60%(n=72)	

*Districts in Embo Community: D1-Nsimbini Poshan, D2-Godhintaba, D3-Protea Area, D4-Ethafeni, D5-Ekhabezela.

Pearson Chi-square

¶ P < 0.05

A comparison of variables across districts yielded statistically significant results for the following categorical variables: (i) reason for not cultivating a food garden; (ii) whether participants have ever thought of cultivating a food garden; (iii) why they decided against it; and (iv).challenges they would face should they decide to cultivate a food garden. The major reason cited by nearly half of participants without a food garden (49%), was a lack of money for fencing. Of those participants without a garden, more than two thirds (68%) reported that they have thought about it but that major challenges they would face would include: (i) a lack of money to buy seeds (99%); (ii) animals eating the crops (99%); (iii) pests such as insects and diseases (99%); followed by (iv) a lack of fencing (95%); and (v) a lack of money to buy fencing (94%). Although not statistically significant, the majority of households surveyed, had access to water for irrigation (83%). In addition, nearly all of households surveyed (99%), reported that they purchase food from supermarkets in Pinetown and in Hillcrest and therefore not in Embo.

4.4 FOOD SECURITY STATUS

Table 4.6 provides an overview of responses to the HFIAS questionnaire, expressed as percentages of households with and without food gardens.

Table 4.6: Responses to the HFIAS questionnaire in relation to households with food gardens and those without food gardens

Questions	Access Category	Frequency of response options to HFIAS questions (N=190)								
		Rarely			Sometimes			Often		
		All	HHsφ	HHsφ	All	HHsφ	HHsφ	All	HHsφ	HHsφ
		HHsφ	WG§	NGβ	HHsφ	WG§	NGβ	HHsφ	WG§	NGβ
Anxious & uncertain insufficient food supply	Anxiety and uncertainty	32% (n=61)	17% (n=33)	15% (n=28)	32% (n=60)	11% (n=20)	21% (n=40)	36% (n=69)	9% (n=17)	27% (n=52)
Unable to eat preferred foods	Poor quality	22% (n=41)	11% (n=21)	11% (n=20)	41% (n=78)	14% (n=27)	27% (n=51)	37% (n=71)	12% (n=22)	26% (n=49)
Eating limited variety		23% (n=43)	12% (n=22)	11% (n=21)	38% (n=72)	14% (n=27)	24% (n=45)	39% (n=75)	11% (n=21)	28% (n=54)
Eating foods that are not preferred		18% (n=35)	9% (n=17)	9% (n=18)	37% (n=71)	14% (n=26)	24% (n=45)	44% (n=84)	14% (n=27)	30% (n=57)
Eating smaller meal	Insufficient quantity of food and household behaviours	29% (n=55)	12% (n=23)	17% (n=32)	31% (n=59)	11% (n=20)	21% (n=39)	40% (n=76)	14% (n=27)	26% (n=49)
Eating fewer daily meals		24% (n=45)	10% (n=19)	14% (n=26)	36% (n=68)	11% (n=21)	25% (n=47)	41% (n=77)	16% (n=30)	25% (n=47)
No food to eat due to lack of resources		37% (n=71)	12% (n=23)	25% (n=48)	31% (n=58)	13% (n=24)	18% (n=34)	32% (n=61)	12% (n=23)	20% (n=38)
Going to sleep at night hungry because of no food		56% (n=106)	19% (n=36)	37% (n=70)	25% (n=48)	12% (n=23)	13% (n=25)	19% (n=36)	6% (n=11)	13% (n=25)
Going a whole day without eating		62% (n=117)	23% (n=43)	39% (n=74)	22% (n=41)	9% (n=17)	13% (n=24)	17% (n=32)	5% (n=10)	12% (n=22)

HHφ: Households
 WG§ = with gardens
 NGβ = No gardens

The food insecurity access categories was adapted from the HFIAS prevalence indicator as classified by Coates *et al.* (2007).

Category 1: Anxiety and uncertainty

Over a third of households (36%) were “often” anxious and uncertain about food supply not being enough, while 32% were “sometimes” and 32% “rarely” anxious and uncertain. Of the 36% of households that were “often” anxious and uncertain about food supply, the majority were households without a food garden.

Category 2: Poor quality

The majority of households (37%) were often unable to eat their preferred foods, ate a limited variety of foods (39%), and ate foods that were not preferred (44%). This trend was especially evident in households without food gardens.

Category 3: Insufficient quantity of food

Four out of ten households surveyed (40%), often ate smaller meals and fewer meals per day (41%). These trends were more evident among households without food gardens. However, the majority of households surveyed reported that they rarely did not have any food to eat due to a lack of resources (37%) and rarely went to bed hungry due to a lack of food (56%). The latter trends were more evident among households without food gardens. Also, 62% rarely went without food a whole day. This trend was more evident amongst households without food gardens.

Table 4.7: Responses to HFIAS questionnaire for households with food gardens versus households without food gardens

Questions	Category	P-value#
Anxious & uncertain insufficient food supply	Anxiety and uncertainty	0.002¶
Unable to eat preferred foods	Poor quality	0.088
Eating limited variety		0.042¶
Eating foods that are not preferred		0.238
Eating smaller meal	Insufficient quantity	0.650
Eating fewer daily meals		0.418
No food to eat due to lack of resources		0.567
Going to sleep at night hungry because of no food		0.172
Going a whole day without eating		0.668

Pearson Chi-square

¶ P < 0.05

From the above table, the findings that were statistically significant were the questions that fell under the categories: Anxiety and uncertainty about having a sufficient food supply (p=0.002) and poor quality of food, specifically related to eating a limited variety of food (p=0.042).

Table 4.8: HFIAS score comparing households with food gardens to households without food gardens

Number of HHsϕ WG§	Number of HHsϕ NGβ	HFIAS Score
5	12	9 ^b
1	0	10 ^b
7	3	11 ^b
2	3	12 ^b
6	3	13 ^b
4	3	14 ^c
1	13	15 ^c
5	3	16 ^c
4	6	17 ^c
6	11	18 ^c
2	12	19 ^c
4	7	20 ^c
6	10	21 ^d
4	4	22 ^d
4	7	23 ^d
4	6	24 ^d
2	7	25 ^d
1	1	26 ^d
2	9	27 ^d

HHϕ: Households
 WG§ = With gardens
 NGβ = Without gardens
 b= Mildly food insecure
 c= Moderately food insecure
 d= Severely food insecure

Table 4.8 depicts how households with a higher HFIAS score, were more food insecure as opposed to those with lower scores. The general observed trend was that households with food gardens had a lower percentage of food insecurity in that 11% were mildly food insecure, 14% were moderately food insecure and 12% were severely food insecure. On the other hand, the percentages recorded for

households without food gardens were that 11% were mildly food insecure, 29% were moderately food insecure and 23% were severely food insecure. The latter percentage being nearly double that recorded for households with food gardens. It is therefore evident that food gardens have an impact on household food security status.

4.5 SUMMARY

This study had a response rate of 100% (N=190). Of the 190 households that participated, just over a third (37%) cultivated food gardens, while just under two thirds (63%) did not cultivate one. Women were the predominant cultivators of food gardens. The main source of income in the majority of households was the child support grant, while the primary breadwinner seemed to be the father in both households with and without food gardens. In both households with and without food gardens, the main source of cooking fuel was electricity, while running water in house was main source of water supply, government toilets were the ablution facility and most had household appliances that included a cellular telephone, television, radio and a fridge/freezer combination. These implements however, were more prominent in households without food gardens.

The major challenges faced in the cultivation of a food garden were a lack of fencing and the cost associated with fencing, as well as animals eating crops. The main significant differences found in households with food gardens were related to the type of crops grown ($p=0.00$), reason for crop choice ($p=0.03$), source of seeds ($p=0.00$), fencing around the garden ($p=0.00$), reason for fencing or not ($p=0.00$), fertilizing the soil ($p=0.03$), type of fertilizer used ($p=0.02$), source of irrigation water ($p=0.02$), benefits of garden to the household ($p=0.00$) and the amount of money earned per month from selling crops ($p=0.01$).

The major challenges cited by the majority of participants without food gardens were a lack of money to purchase seeds, animals eating crops, a lack of fencing and a lack of money to purchase fencing. The majority of households without food gardens were food insecure, particularly moderately (29%) and severely (23%) when compared to households with food gardens who were moderately (14%) and severely (12%) food insecure. There was a significant difference between HFIAS

categories for households with and without food gardens i.e. HFIAS question one (anxious and uncertain about insufficient food supply) and question three (eating a limited variety of food).

CHAPTER 5: DISCUSSION

This chapter will discuss the results that were reported in chapter four in relation to the literature that was discussed in chapter two.

The purpose of the study was to determine whether food gardens have an impact on household food security status in the Embo community, whether there was a relationship between socio-economic status and cultivating a food garden, as well as the perceived barriers experienced by members of the community that prevent them from cultivating food gardens. Hence the study objectives were: (i) to investigate the whether food gardens have an impact on household food security status by comparing households with food gardens to those without; (ii) to determine whether socio-economic status is related to cultivating a food garden or not; and (iii) to identify the reasons why some households cultivate food gardens and others do not in order to determine the perceived barriers to cultivating food gardens.

5.1 RELATIONSHIP BETWEEN SOCIO-ECONOMIC STATUS AND CULTIVATING A FOOD GARDEN

5.1.1 Households with and without food gardens

Nearly two thirds (63%) of the 190 households surveyed did not cultivate a food garden. Musotsi *et al*, (2008) stated that for most people living in developing countries, food gardens remain the most important source of obtaining vegetables for household use in order to meet some of their daily dietary requirements, especially for the poor. Faber *et al*, (2011) also stated that the majority of individuals, especially in rural communities, are being encouraged to grow their own food by having a home food garden. The World Development Report (2008), estimate that 75% of the world's poor live in rural areas of developing countries and that the majority rely on subsistence farming for survival, despite the fact that they face many cultivation-related challenges. It is therefore evident that the cultivation of food gardens should be encouraged among members of the Embo community.

5.1.2 Household socio-demographic characteristics

Of the households that cultivated food gardens, the primary cultivators were female. This finding is consistent with that of Kehler (2001) who reported that women are

considered to be the main food producers in rural parts of South African. In addition, nearly two thirds of household inhabitants (63%) were adults \geq 60 years of age in both households with and without food gardens. The major breadwinner in about a third of households surveyed was the father. It could therefore be postulated that older women are more likely to cultivate food gardens, while the men go to the cities in search of employment, as sections of the Embo community can be classified as rural while others are peri-urban. Hence it is possible that younger women also seek employment in the city.

The main source of household income was the child support grant in about a quarter of the households surveyed. However, it was higher in households without food gardens, although not significantly so. The above is therefore an indicator that households should be encouraged to cultivate food gardens because of their limited monthly income as well as the fact that 63% of households surveyed, did not cultivate a food garden. The finding regarding the child support grant is in accordance with that reported by Labadarios *et al*, (2011) who indicated that in South Africa, many poor rural households depend on income obtained from government grants. According to the South Africa Social Security Agency (SASSA), applying for and obtaining a child support grant, requires the applicant to be older than 16 years, be a South African citizen and is dependent on the child's residence and income of the primary care giver. A child support grant amounts to R290 per month for every child under the age of 15 years.

The majority of households with and without food gardens, lived in self-constructed homes made of corrugated iron and brick walls with grass roofs. This was especially applicable to households without food gardens (24%). The main source of cooking fuel was electricity, particularly amongst households without food gardens. In addition, the majority of households surveyed used government toilets as an ablution facility while almost all households had a television, radio, cellular telephone and fridge/freezer combo respectively. However, the latter held especially true for households without food gardens. The main source of household water in households with and without food gardens, was running water in house. The latter implied that it was possible for households to cultivate a food garden as access to water was not a limitation.

The results in this section results in the rejection of the null hypothesis stated in chapter one, namely that there is no relationship between socio economic status and cultivating a food garden. In the current study sample there was a relationship between the two variables because the households of a higher socio-economic status, based on indicators such as employment status, income, type of household and household appliances were the households without home gardens. This finding is in agreement with that of Galhena *et al*, (2013), namely that households of a higher socio-economic status tend not to cultivate food gardens. It can also be speculated that in the Embo community, having a food garden would result in stigmatization and hence labelling the household as being of a lower socio-economic status.

5.2 COMPARISON OF HOUSEHOLDS WITH AND WITHOUT FOOD GARDENS

5.2.1 Households with food gardens

Just over a third of the households surveyed (37%), cultivated food gardens with 50 households across all districts having a door garden (71%), while 20 households (29%) contributed towards the cultivation of community gardens. The majority of households that cultivated food gardens stated that their primary reason for doing so, was related to the fact that it saves money, is a source of food and is healthy (67%). These findings are in agreement with those of Temple *et al*, (2009) who stated that healthy diets are unaffordable by the majority of low-income households. Hence, home gardens can contribute to household food security by providing direct access to food, thereby saving money, serving as a source of food and being healthy as well as fresh.

The majority of crops that were cultivated, were spinach (73%), carrots (66%), beetroot (61%), cabbage (49%) and tomatoes (34%) with the majority being good sources of Beta-carotene and vitamin C (Faber *et al*, 2013). Malnutrition and micronutrient deficiencies, particularly vitamin A deficiency, were documented as a public health problem among members of the Embo community (Garcia, 2012). Therefore the cultivation of specially Beta-carotene rich vegetables can play a role in curbing vitamin A deficiency amongst members of this community (Faber *et al*, 2013). However, cabbage is a traditional crop, (Jan Van Rensburg, Van Averbeke, Slabbert, Faber, Van Jaarsveld, Van Heerden, Wenhold & Oelofse 2007) grows

quickly, the seeds are affordable and it is a popular vegetable in the Embo community. However, the promotion of spinach cultivation would be more advantageous as a source of Beta-carotene (Garcia, 2012). According to Chazovachii *et al*, (2013), having a home garden enables the cultivation of a variety of vegetables such as spinach, carrots, beet root, pumpkin, sweet potatoes and maize. The latter in turn, would enable households to consume a variety of nutrients, thereby reducing the risk of micronutrient deficiencies and improving dietary diversity. This current study bears testimony to the fact that households with food gardens in the Embo community, cultivate a variety of crops. In addition, 86% of households with food gardens stated that their main reason for the choice of specific crops, was that the seeds were affordable, grew quickly, the produce is healthy and saves money. The majority of households that cultivated vegetables, purchased seeds from shops (41%) and also obtained them from agriculture extension officers that work in Embo (29%).

Manure was the primary fertilizer used (70%), while tap water was used for irrigation by 81% of households. Water is often perceived as a barrier to cultivating food gardens (Marsh, 2004). However, in the Embo community, water was freely available. Although there was no significant difference between households that consumed the crops they cultivated and households that consumed as well as sold their crops, the majority of households did not sell their crops. More than half of the households that cultivated food gardens, indicated that they did not know they could sell some of the crops they produced. Altman *et al*, (2009) and the UN (2006), emphasise the benefits of selling some of the crops cultivated, as it helps households to generate an income and save money on food purchases. Hence, households with food gardens in Embo need to be educated and encouraged to sell some of their produce, while those that do not cultivate food gardens should be encouraged to do so, not only as a source of food, but as a source of income generation. The photographs forming part of figure 5.1 below, shows a woman of the Embo community cultivating her food garden.



Figure 5.1: Community member of Embo, Nsimbini district, tilling the soil in her vegetable garden

5.2.2 Households without food gardens

Just over two thirds of households (67%), did not cultivate a food garden. Almost half (49%) indicated that the reason for not cultivating a food garden was because they did not have the financial means to purchase fencing, while others stated that they had thought of cultivating a food garden, but did not know how they would deal with the challenges related to cultivating one. The latter points towards the role that Agricultural extension officers can play in educating members of the community. Not only regarding the process of cultivating a food garden, but also on how to prevent and/or deal with the challenges related to cultivation.

The majority of households without food gardens had access to water for irrigation and almost all purchased food from supermarkets in the local town close to the Embo community. This finding echoes that of Baiphethi & Jacobs (2009), who stated that the majority of rural and urban households are now dependant on supermarket purchases. However, Temple *et al*, (2009) found that nutritious food sources are freely available in supermarkets, but are unaffordable for the majority of

the local low income population. Therefore cultivation of food gardens must be encouraged among long income communities.

5.2.3 Comparison of food security status of households with food gardens to those without

Food security status of the households was measured using the validated HFIAS questionnaire. Over a third of households surveyed (36%), were “often” anxious and uncertain about their food supply being sufficient, while 32% were “sometimes” and “rarely” anxious and uncertain. Of the 36% that were “often” anxious and uncertain, more than a quarter were households without food gardens (27%). Regarding the quality of food consumed, the majority of households were often unable to eat their preferred kinds of foods (37%), ate a limited variety of foods (39%) and ate foods that were not preferred (44%), especially among households without food gardens. There was also a significant difference between the variety of foods eaten in households with food gardens when compared to households without a food garden ($p=0.04$). In addition, the majority of households often ate smaller meals (40%), ate fewer daily meals (41%) and had no food to eat due to a lack of resources. The latter was again more prevalent among households without food gardens. However, when comparing the “often” and “rarely” response of households going to sleep hungry at night due to a lack of food, 37% of households without food gardens rarely did. Even though households without food gardens rarely went to sleep hungry at night, they still had a higher percentage for the “often” response. This implies that more households without food gardens “often” went to sleep hungry at night due to a lack of food. Just over six out of ten households (62%), rarely went without food for a day. When comparing the households that “often” went to sleep hungry, households without food gardens had a higher score. This finding was cause for concern, because the majority of households surveyed despite rarely going without food for a day. This implies that a primary problem amongst members of the Embo community was that their diets lacked variety. These findings agree with that of Faber *et al*, (2013) who indicated that in many areas of South Africa, diets lack variety. According to Kortright *et al*, (2011), one of the main factors that contribute to a lack of dietary diversity among South Africans is poverty, as the poor may lack the resources to obtain a variety of foods. This is the reason why food gardens are being

encouraged in many parts of South Africa, particularly in rural areas (Faber *et al*, 2013).

The above findings are in agreement with the literature reviewed, in the sense that food gardens increase household access to nutritious foods (Mathethe, 2004), enable households to eat a variety of foods (Aliber & Modiselle 2002) and thus improve the food security status of the households. The results generated by the HFIAS, showed that households with food gardens had a lower prevalence of food insecurity, as 11% were mildly food insecure, 14% were moderately food insecure and 12% were severely food insecure. When compared to households without food gardens, a higher prevalence of food insecurity was reported with 11% of households being mildly food insecure, 29% moderately food insecure and 23% severely food insecure. As a result, this finding indicates that the hypothesis “Food gardens do not have an impact on household food security status” is rejected as results generated by the current study provided the necessary evidence that food gardens do have an impact on certain dimensions of food security and therefore helps to improve household food security status.

5.3 PERCIEVED BARRIERS TO CULTIVATING FOOD GARDENS

All the households that cultivated food gardens across all five districts surveyed, indicated that they experienced challenges related to cultivation. The majority of households stated that the main challenges they faced, were domestic animals such as cattle, goats, chickens and dogs eating their crops, while some lacked money to purchase seeds. The majority of households had food gardens that were not fenced, and stated that fencing was costly. A lack of gardening implements also proved to be a barrier. In a study conducted by Marsh (1998) in Bangladesh, many small scale farmers also found domestic animal interference to be problematic, with goats eating crops, even if the garden was fenced. On the other hand, households in the current study that did not cultivate food gardens stated that the challenges they would face should they cultivate a food garden, would be a lack of money to purchase seeds, animals eating crops, pests such as insects and diseases, a lack of fencing and the cost of purchasing fencing. Hence, the challenges faced by those with and without food gardens were similar. It is therefore evident that there is a need to address the

barriers to food garden cultivation in order to increase the numbers of households that cultivate a food garden in the Embo community.

5.4 SUMMARY

There was a relationship between the cultivation of food gardens and socio-economic status. Households with food gardens had a lower prevalence of food insecurity, while households with and without food gardens faced similar challenges related to the cultivation of food gardens. The final chapter documents the conclusion of the study and proposes recommendations to address food insecurity in the Embo community as well recommendations for future studies of a similar nature.

CHAPTER 6: CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

The aim of this study was to determine whether food gardens have an impact on household food security status in the Embo community, whether there is a relationship between socio-economic status and cultivating food gardens as well as the perceived barriers experienced by members of the community that prevent them from cultivating food gardens.

Results generated by the study showed that food gardens have a positive impact on household food security status and their cultivation is related to socio-economic status. Households with food gardens were less food insecure when compared to households without food gardens. In addition, households without food gardens had a higher socio-economic status when compared to those without food gardens. Households with food gardens faced challenges related to the cost of fencing and the consequences of having a food garden that is not fenced, such as domestic animals eating the crops. Households without gardens stated that should they cultivate food gardens, the challenges that they are likely to face, would include a lack of seeds, cost of fencing and the consequences of a lack of fencing such as domestic animals eating the crops.

The above therefore that the cultivation of food gardens should be encouraged by educating households and the community at large on the benefits of having a food garden that does not only relate to enhance dietary diversity and an improvement in food security and therefore health, but the fact that surplus crops can be sold as a source of income generation. However, the above would require a multi-sectoral approach that involves members of the community, the Department of Agriculture through agriculture extension officers, NGOs through community facilitators and nutrition educators as well as the Department of Health through dietitians, nutritionists and nutrition advisors. .

6.2 Recommendations for improving food security status and cultivation barriers

6.2.1 Women who are the main cultivators of food gardens should be encouraged and supported by the government, NGOs and the community regarding barriers to the cultivation of food gardens that include fencing and lack of seeds as these were

the main barriers faced by households that cultivated food gardens as well as those that did not.

6.2.2 Households without food gardens should be encouraged and supported to cultivate a food garden as the findings of the current study show that there is a relationship between the cultivation of food gardens and food security status.

6.2.3 Appropriate agricultural and nutritional advice should be given to households with as well as without food gardens by nutrition educators, NGOs and the government through agriculture extension officers. Households should be educated on the benefits of cultivating a food garden. Education could be centred around the nutritional benefit of having a food garden, income generation, how to plant, when to plant and which crops to plant using a food garden seasonal calendar (see Annexure 9).

6.2.4 Households should be encouraged to practice a system of “trade by barter”. If one household grows spinach and tomatoes and the neighbour grows potatoes and onions, they can exchange crops. In so doing, households can improve their diversity of their diets.

6.2.5 Households should be made aware, either by nutrition educators, NGOs or agriculture extension officers that they can sell their produce to generate income as more than 50% of the households surveyed did not know they could sell their crops. In addition, a farmers market could be developed so that households can sell crops within the community.

6.2.6 Households that use manure as a fertilizer should practice good hygiene and wash the crops properly before consuming to avoid E.coli contamination.

6.2.7 Households can use scare crows in the gardens to scare off animals that eat and destroy crops.

6.2.8 Training and demonstrations should be provided to households and community members who want to cultivate food gardens but do not know how to go about it.

6.3 Recommendations for further studies

6.3.1 This study gave an understanding of food security dimensions: access and availability. If further research is done, it should be done on the utilization dimension i.e. how nutritional status is affected regarding households with and without food gardens.

6.4 Study Limitations

It was not feasible to measure anthropometry of household members due to the fact that the adult at home would primarily be the mother, grandmother and children of non-school going age and also considering the settings of the households.

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ANNEXURE 1: Household Questionnaire (English Version)

<p>NAME OF COMMUNITY</p> <p>FACILITATOR: _____</p> <p>DISTRICT: _____</p> <p>HOUSEHOLD ADDRESS/LOCATION/DESCRIPTION/CONTACT DETAILS SUCH AS CELL PHONE NUMBER:</p> <p>_____</p> <p>_____</p> <p>_____</p>

1	<p>QUESTIONNAIRE 1: Socio-economic status (Instruction: Circle the correct answer where you have various options)</p>
1.1	If the household has a food garden, is the person cultivating the garden male or female? _____
1.2	How many adults in the household are: Younger than 60 years of age? _____ Older than 60 years of age? _____
1.3	How many children in the household are: <ul style="list-style-type: none"> a. Younger than one year of age b. 1-5 years of age c. 6-12 years of age d. 13-18 years of age
1.4	How many adults younger than 60 years of age in the household are employed? _____
1.5	Of those adults that are employed, which member of the household earns biggest monthly salary? _____
1.6	What are the MAIN sources of income in the household: <ul style="list-style-type: none"> a. Full time employment b. Part time employment c. Child support grant d. Foster grant e. Disability grant f. Unemployment grant g. Pension

	<p>h. Other. Please specify:</p> <p>_____</p> <p>_____</p>
1.7	<p>What type of house do you live in:</p> <p>a. Formal brick</p> <p>b. Clay rondavel with thatched roof</p> <p>c. Clay rondavel with corrugated iron roof</p> <p>d. Self built home made of corrugated iron</p> <p>e. Self built home made out of wood</p> <p>f. Other: Please specify</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>
1.8	<p>What is the household's MAIN source of fuel for cooking?</p> <p>a. Electricity</p> <p>b. Gas</p> <p>c. Wood</p> <p>d. Paraffin</p>
1.9	<p>What is the household's MAIN source of water supply?</p> <p>a. Running water in house</p> <p>b. Communal tap outside house</p> <p>c. River/stream</p> <p>d. Borehole/Well</p> <p>e. Other: Please specify</p> <p>_____</p> <p>_____</p>
1.10	<p>What type of toilet does the household mainly use?</p> <p>a. Flush toilet</p> <p>b. Government toilet</p> <p>c. Pit toilet</p> <p>d. Bucket/pot</p> <p>e. Others specify _____</p>
1.10	<p>What type of household appliances and other forms of communication and transport does the household have ?</p> <p>a. Free standing electric stove</p>

	<ul style="list-style-type: none"> b. Two plate electric stove c. Two plate gas stove d. Microwave e. Fridge f. Freezer g. Fridge/ freezer combo h. Cell phone i. Radio j. Television k. Car
2	QUESTIONNAIRE 2: Food Gardens (Instruction: Circle the correct answer where you have various options)
	HOUSEHOLDS WITH FOOD GARDENS
2.1	<p>What type of garden do you have?</p> <ul style="list-style-type: none"> a. door garden b. community garden c. Other: Please specify <p>_____</p> <p>_____</p>
2.2	If you have a community garden, how many members of your community are responsible for taking care of it? _____
2.3	Were the members chosen or did they volunteer to take care of the garden? Please elaborate: _____ _____
2.4	If you have a community garden, what is your involvement with it? _____ _____
2.5	Why did you and/or your household decide to cultivate a food garden? _____ _____ _____
2.6	<p>What type of crops do you cultivate in your garden?</p> <ul style="list-style-type: none"> a. Spinach b. Carrots c. Cabbage d. Beetroot e. Sweet potatoes f. Butternut

	<ul style="list-style-type: none"> g. Maize h. Beans i. Potatoes j. tomatoes k. Other. Please specify: _____
2.7	Please explain the reason for your choice of the above crop/s _____ _____ _____
2.8	Where do you get your seeds from? <ul style="list-style-type: none"> a. Agriculture extension officer b. Shop/market c. Neighbour d. Community nursery e. Own seed f. Other. Please specify: _____ _____
2.9	Is your garden fenced? YES/NO
2.10	Please explain the reason for your answer to question 2.7. _____ _____ _____
2.11	Do you fertilize the soil? YES/ NO
2.12	Please explain the reason for your answer to question 2.9. _____ _____ _____
2.13	If the answer to question 2.9 was YES, what type of fertilizer do you use? <ul style="list-style-type: none"> a. Organic fertilizers, e.g. cow manure, vegetable and food scraps food b. Inorganic fertilizers, e.g. fertilizer that you buy c. Both organic and inorganic fertilizers d. Other. Please specify: _____
2.14	Where do you get water from to irrigate your crops? <ul style="list-style-type: none"> a. River

	<ul style="list-style-type: none"> b. Dam c. Borehole/well d. Tap e. Harvested rain water f. Rain water g. Other. Please specify. <hr/>
2.15	<p>Do you eat the vegetables you grow and/or do you sell them to generate additional income?</p> <ul style="list-style-type: none"> a. Eat vegetables only b. Sell vegetables only c. Eat and sell vegetables
2.16	<p>Do you face any challenges in growing vegetables? YES/NO</p>
2.17	<p>If YES, what are the challenges you face?</p> <ul style="list-style-type: none"> a. Lack/shortage of water b. Lack of money to buy seeds c. Animals eating the crops d. No fencing e. Cost of fencing f. Pests such as insects and diseases g. Lack of skill and knowledge on gardening practices h. Hard soil i. Infertile soil j. Lack of gardening implements k. Other. Please specify: <hr/> <hr/>
2.18	<p>Is the food garden of benefit to you?</p> <ul style="list-style-type: none"> a. YES b. NO
2.19	<p>If YES, what are the benefits?</p> <ul style="list-style-type: none"> a. Provides food for the household b. Saves money for the household c. Provides income for the household d. Other. Please specify: <hr/>
2.20	<p>If you are able to sell some of the vegetables you produce, please indicate how much extra money you make per month by selling them.</p>

	HOUSEHOLDS WITHOUT FOOD GARDENS
2.1	Why do you not have a food garden? _____ _____ _____
2.2	Have you ever thought of having a food garden? Please explain. _____ _____
2.3	Do you have access to water should you want to start a food garden? _____ _____
2.4	Where do you buy your food? _____ _____
2.5	Would you face any challenges if you decide to have a garden? YES/NO
2.6	If the answer to 2.5 was YES, what type of challenges would you face? <ul style="list-style-type: none"> a. Lack/shortage of water b. Lack of money to buy seeds c. Animals eating the crops d. No fencing e. Cost of fencing f. Pests such as insects and diseases g. Lack of skill and knowledge on gardening practices h. Hard soil i. Infertile soil j. Lack of gardening implements k. Other. Please specify: _____ _____

3	QUESTIONNAIRE 1: HFIAS – Household Food Insecurity Access Scale (Validated tool for measuring household food insecurity).		
Response Options			
1 = Rarely (once or twice in the past 1 month/30days)			
2 = Sometimes (three to ten times in the past 1 month/30days)			
3 = Often (more than 10 times in the past 1 month/30days)			
	Question	Response options	
Q1	In the past month (30/days), were you and your family worried that you would not have enough food?	1	2 3
Q2	In the past month (30/days), were you and your family members eating foods you did not like or prefer because of lack of money?	1	2 3
Q3	In the past month (30/days), did you or any family member have to eat a limited variety of foods due to lack of enough food or money?	1	2 3
Q4	In the past month (30/days), did you or a family member have to eat foods you did not want to eat because of lack of money or resources to obtain them?	1	2 3
Q5	In the past month (30/days), did you or a member of your family have to eat less food because there was not enough food or money to buy food?	1	2 3
Q6	In the past month (30/days), did you or a member of your family eat fewer meals a day because of lack of enough food?	1	2 3
Q7	In the past month (30/days), was there a time in your household that you or a member of your family had no food to eat because of lack of resources and money?	1	2 3
Q8	In the past month (30/days), did you or your family member go to bed hungry because there was not enough food?	1	2 3
Q9	In the past month (30/days), did you or a member of your family go without food for a whole day and night without eating anything because there was not enough food?	1	2 3

ANNEXURE 2: Household Questionnaire (Zulu version)

IGAMA LOMPHAKATHI
UMKHUTHAZI: _____
ISIFUNDA: _____
IKHELI LASEKHAYA/INCAZELO YENDAWO /IMINININGWANE YOKUXHUMANA NJENGE INOMBOLO YOCINGO: _____ _____ _____

1	UMBUZO 1: ISIMO SENHLALA NOMNOTHO (Phendula imibuzo, ufake indingiliza lapho idingakala khona)
1.1	Uma ekhaya kunengadi yezimifini, umuntu ofanele ukuyi hlakula ingadi owesilisa noma owesifazane? _____
1.2	Bangaki abantu abadala abahlala ekhaya?: Abangaphansi kwe minyaka ewu- 60? _____ Abanga phezu kweminyaka ewu- 60? _____
1.3	Zingaki izingane ezihlala ekhaya?: e. Ezingaphansi konyaka owodwa f. Eziphakathi kweminyaka owu-1 kuya kwe-5 g. Eziphakathi kweminyaka eyisi-6 kuya-12 h. Eziphakathi kweminyaka ewu-13 kuya-18
1.4	Bangaki abantu abadala abangaphansi kweminyaka ew-60 abasebenzayo? _____
1.5	Kulaba abasebenzayo, ubani uhola omhlo omkhulu kunabobonke? _____
1.6	Iyiphi imthombo EYINHLOKO yemali ekhaya: d. Umsebenzi wokuqashwa ngokugcwele e. Umsebenzi oyi-part time f. Isondlo se-grant yezingane

	<p>d. I-grant yezingane ezingenabo abazali</p> <p>e. I-grant yokukhubazeka</p> <p>f. I-grant yokuntuleka kwemisebenzi</p> <p>g. Impesheni</p> <p>h. Okunye, sicela ucacise:</p> <p>_____</p> <p>_____</p>
1.7	<p>Uhlobo luni lwendlu ohala kulo:</p> <p>g. Umuzi owakhiwe ngezitini ohlelekile</p> <p>h. Umuzi owu-rawondi, onophahla lotshani</p> <p>i. Umuzi owu-rawondi onophahla lukathayela</p> <p>j. Umuzi ozakhele wona onophahla luka thayela</p> <p>k. Umuzi ozakhele wona owakhiwe ngamapulangwe</p> <p>l. Okunye, sicela ucacise:</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>
1.8	<p>Ukuze nikwazi ukupheka, nisebenzisani ekhaya, khetha lokho okulandelayo?</p> <p>e. Ugesi</p> <p>f. Igesi (Gas)</p> <p>g. Nibasa umlilo</p> <p>h. Upharafini</p>
1.9	<p>Niwathola kuphi amanzi ekhaya?</p> <p>f. Amanzi asempompini osekhaya</p> <p>g. Umpompi ongaphandle owomphakathi</p> <p>h. Emfuleni</p> <p>i. Kwisiphethu</p> <p>j. Okunye, sicela ucacise:</p> <p>_____</p> <p>_____</p>
1.10	<p>Uhlobo lwendlu yangasese eniyisebenzisayo ekhaya?</p> <p>f. Indlu eflashekayo</p> <p>g. Izindlu zangasese zomxhaso zika-Hulumeni</p> <p>h. Indlu yangasese ewumgodi</p> <p>i. Ibhakede</p>

	<p>j. Okunye, sicela ucacise:</p> <p>_____</p>
1.10	<p>Yiluphi uhlobo lwemishini lwasekhaya enulusebenzisayo, uhlobo lokuxhumana noma uhlobo lwezithuthi?</p> <p>l. Isitofu sikagesi</p> <p>m. Isitofu sika gesi esiwu-2 pleti</p> <p>n. Isitofu segas esiwe 2 pleti</p> <p>o. I-Microwave</p> <p>p. Efrijini</p> <p>q. I-Freezer</p> <p>r. Ifriji elihlangene ne-freezer</p> <p>s. Umakhalekhukhwini</p> <p>t. Umsakazo</p> <p>u. Umabonakude</p> <p>v. Imoto</p>
2	<p>UMBUZO 2: NGEZINGADI (Phendula imibizo, ufake indingiliza lapho idingakala khona)</p>
	<p>AMAKHAYA ANEZINGADI</p>
2.1	<p>Iluphi uhlobo lwengadi onalo ekhaya?</p> <p>a. Ingadi esegcekeni</p> <p>b. Ingadi yomphakathi</p> <p>c. Okunye, sicela ucacise:</p> <p>_____</p> <p>_____</p>
2.2	<p>Uma unengadi kodwa emphakathini, bangaki emphakathini abamelwe ukuyinakekela ingadi?</p> <p>_____</p>
2.3	<p>Yingabe laba abanakekela ingadi bazicelela ngokwabo noma bakhethwa umphakathi ukuthi bayanakekele ingadi? Sicela uchaze:</p> <p>_____</p> <p>_____</p>
2.4	<p>Uma unengadi yomphakathi, ubandakanyeke kanjani kuyo?</p> <p>_____</p> <p>_____</p>
2.5	<p>Yini imbangela yokuthi niqale ukuhlawula lengadi emphakathini?</p> <p>_____</p> <p>_____</p> <p>_____</p>
2.6	<p>Iziphi izitshalo enizitshalile, kulezi ezilandelayo?</p>

	<p>l. Isipinashi</p> <p>m. Izaqathi</p> <p>n. Iklabishi</p> <p>o. U-Beetroot</p> <p>p. Ubhatata</p> <p>q. Ithanga</p> <p>r. Umbila</p> <p>s. Ubhontshisi</p> <p>t. Amazambane</p> <p>u. Utamatisi</p> <p>v. Okunye, sicela ucacise: _____</p>
2.7	<p>Sicela ucacise ukuthi yini imbangele yokuthi ukhethe ukutshala lezitshalo</p> <p>_____</p> <p>_____</p> <p>_____</p>
2.8	<p>Uyithathaphi imbewu yokutshala?</p> <p>g. Ehhovisi lwezolimo</p> <p>h. Esitolo</p> <p>i. Kumakhelwane</p> <p>j. Endaweni yomphakathi yokutshala</p> <p>k. Imbewu yakho</p> <p>l. Okunye, sicela ucacise:</p> <p>_____</p> <p>_____</p>
2.9	<p>Ingadi yakho ibiyelwe?</p> <p>YEBO/CHA</p>
2.10	<p>Sicela uchaze ngabanzi ngempendulo yakho yombuzo ongaphezulu (2.7).</p> <p>_____</p> <p>_____</p> <p>_____</p>
2.11	<p>Umhlabathi uyawuvundisa?</p> <p>YEBO/CHA</p>
2.12	<p>Sicela uchaze ngabanzi ngempendulo yakho yombuzo ongaphezulu (2.9).</p> <p>_____</p> <p>_____</p> <p>_____</p>
2.13	<p>Uma umbuzo ka 2.9 uphendule wathi- YEBO, usebenzisa nhloboni yokuvundisa?</p> <p>e. Umanyolo wezinto eziphilayo, njengo manyolo wezinkomo, imifino noma ukudla</p>

	<p>okulahliwe</p> <p>f. Umanyolo wezinto ezingaphili, njengo manyolo owuthenge estolo</p> <p>g. Uhlanganisa umanyolo wezinto eziphilayo nezingaphili ndawonye</p> <p>h. Okunye, sicela ucacise:</p> <p>_____</p>
2.14	<p>Uwathola kuphi amanzi okuchelela izitshalo zakho?</p> <p>h. Emfuleni</p> <p>i. Edamini</p> <p>j. Kwisiphethu</p> <p>k. Empompini</p> <p>l. Amanzi emvula abekeliwe</p> <p>m. Amanzi emvula</p> <p>n. Okunye, sicela ucacise:</p> <p>_____</p>
2.15	<p>Uyayidla imifino ozikhulisele yona noma uyayidayisa ukuze uthole imali?</p> <p>a. Nidla imifino yodwa</p> <p>b. Niyayidayisa imifini yodwa</p> <p>c. Niyayidla niphinde niyidayise</p>
2.16	<p>Uke ubhekane nezinselelo ekukhuliseni ingadi yakho?</p> <p>YEBO/CHA</p>
2.17	<p>Uma uphendule ngo YEBO, yiziphi lezo zinselelo obhekana nazo?</p> <p>l. Ukuntula noma ukushoda kwamanzi</p> <p>m. Ukuntuleka kwemali yokuthenga imbewu</p> <p>n. Izilwane ezidla ezitshalo</p> <p>o. Ukungabi khona kothango</p> <p>p. Izindleko zokufaka uthango</p> <p>q. Ukuba khona kwezinambuzane nezifo</p> <p>r. Ukungabi nolwazi lokuthi ingadi yenziwa kwanjani</p> <p>s. Umhlabathi oqinile</p> <p>t. Umhlabathi ongavundi</p> <p>u. Ukuntula izingadi zokusebenza</p> <p>v. Okunye, sicela ucacise:</p> <p>_____</p> <p>_____</p>
2.18	<p>Ngabe ukudla kwengadi kuyinzuzo kuwe?</p> <p>c. YEBO</p> <p>d. CHA</p>
2.19	<p>Uma YEBO, yiziphi izinzuzo?</p>

	<p>e. Wondla bonke abasekhaya</p> <p>f. Konga imali ekhaya</p> <p>g. Kuletha imali ekhaya</p> <p>h. Okunye, sicela ucacise:</p> <p>_____</p>
2.20	<p>Uma ungakwazi ukuthengisa eminye imifino, sicela ukhombise imalini imali owengeziwe ongayenza ngenyanga ngokuthengisa nje?</p> <p>_____</p>
	<p>AMAKHAYA ANGENAZO IZINGADI</p>
2.1	<p>Yini imbangela yokungabi nengadi?</p> <p>_____</p> <p>_____</p> <p>_____</p>
2.2	<p>Wake wacabanga ukuba nengadi? Sicela uchaze.</p> <p>_____</p> <p>_____</p>
2.3	<p>Ingabe ungakwazi ukuthola amanzi uma ngabe kuthiwa uqala ingadi?</p> <p>_____</p> <p>_____</p>
2.4	<p>Ukuthenga kuphi ukudla?</p> <p>_____</p> <p>_____</p>
2.5	<p>Ubungabhekana naziphi iziinselelo ukube bukhetha ukuba nengadi ?</p> <p>YEBO/CHA</p>
2.6	<p>Uma uphendule ngo YEBO, Yiziphi izinselelo obingabhekana nazo?</p> <p>l. Ukuntula noma ukushoda kwamanzi</p> <p>m. Ukuntuleka kwemali yokuthenga imbewu</p> <p>n. Izilwane ezidla ezitshalo</p> <p>o. Ukungabi khona kothango</p> <p>p. Izindleko zokufaka uthango</p> <p>q. Ukuba khona kwezinzambuzane nezifo</p> <p>r. Ukungabi nolwazi lokuthi ingadi yenziwa kwanjani</p> <p>s. Umhlabathi oqinile</p> <p>t. Umhlabathi ongavundi</p> <p>u. Ukuntula izingadi zokusebenza</p> <p>v. Okunye, sicela ucacise:</p> <p>_____</p>

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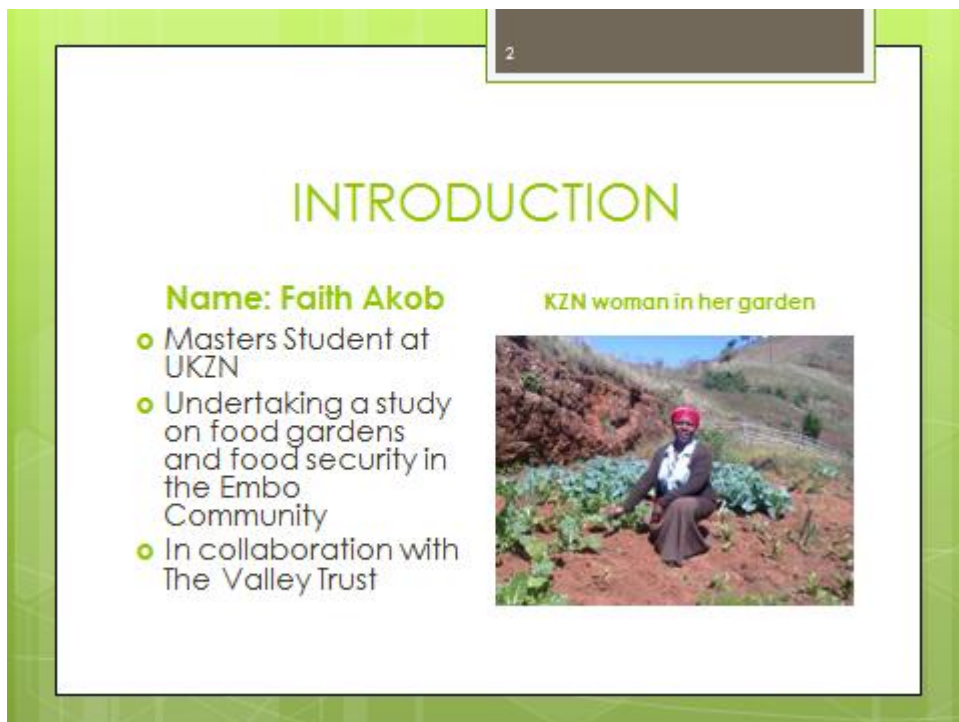
3	UMBUZO 1: HFIAS – Household Food Insecurity Access Scale (Ithuluzi elisetshenziswa ekulinganiseni ukuntuleka kokudla emakhaya).
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	Ukukhethwa kwezimpendulo
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- 1** = Akuvamile (kanye noma kabili enyangeni eyodwa edlulile)
2 =Ngezinye izikhathi (izikhathi ezintathu kuya enyangeni edluli)
3 = Ngokuvamile (ngaphezu kweyishumi kuya enyangeni edluli)

	Umbuzo	Khetha impendulo		
Q1	Enyangeni edlulile (30/izinsuku), Wena nomndeni wakho nanikhathazekile ngokuthi ngeke nibe nokudla okwanele?	1	2	3
Q2	Enyangeni edlulile (30/days), wena nomndeni wakho nanikhathazekile ngokuthi nidla ukudla eningakuthandanga ngenxa yokuntula kwemali?	1	2	3
Q3	Enyangeni edlulile (30/days), wena nomndeni wakho nake nadla uhlobo olulodwa lokudla ngenxa yokuntuleka kwemali?	1	2	3
Q4	Enyangeni edlulile (30/days), wena nomndeni wakho nake nadla ukudla eningakuthandisis ngenxa yokuntuleka kwemali noma imithombo la nithola khona ukudla?	1	2	3
Q5	Enyangeni edlulile (30/days), wena nomndeni wakho nake nadla ukudla okuncane ngenxa yokuntuleka kwemali noma ukudla kwakukuncane ekhaya?	1	2	3
Q6	Enyangeni edlulile (30/days), wena nomndeni wakho nake nadla ukudla okuncane ngenxa yokuthi niyonga ngoba kungekho kona ukudla?	1	2	3
Q7	Enyangeni edlulile (30/days), kwake kwaba khona iskhathi ekhaya lapho kungekho kwayikona ukudla ngenxa yokuthi imali yokukuthenga?	1	2	3
Q8	(Enyangeni edlulile 30/days), nake nalala ningadlile ekhaya ngenxa yokuthi ukudla kwakungekho ekhaya?	1	2	3
Q9	Enyangeni edlulile (30/days), lake laphela usuku lonke nobusuku ningakaze nidle lutho ekhaya ngenxa yokuthi kwakungekho ukudla okwanele ekhaya?	1	2	3

ANNEXURE 3: Power point presentation slides used for training of field workers



PURPOSE OF THE STUDY

- To determine whether food gardens have an impact on household food security status in the Embo community.
- Why some people cultivate and others don't?
- What can be done?

Data Collection Method

- Questionnaires
- Translated to Zulu
- 200 HHs
- Facilitators have 40HHs each
- All 40HHs each will be interviewed
- 20mins per questionnaire



Data Collection Method

- Pilot study-Friday to Monday
- Each facilitator will get 2Qs each to interview 2HHs
- R20 per questionnaire only when its completed with no blanks



Data Collection Method

- Pilot study complete,
- Real data will be collected 200HHs, 200Qs, R20 per completed Qs
- 1st-18th July
- Any problems with regards to pilot study addressed.



QUESTIONNAIRE

- Questionnaire is in Zulu
- Informed Consent
- What it is and why its important



QUESTIONNAIRE

- Questionnaire is divided into 3 sections
- 1 Socio economic status, 2 Food gardens and 3 HFAS.
- Food garden section is divided into 2
- With a garden and without a garden
- So if a HH has a garden, ask with garden questions
- HH without garden, ask without garden Qs

QUESTIONNAIRE 1

- Please go through, if any questions please ask- 10minutes



QUESTIONNAIRE 2/3

- Go through all questions-hard copy



SUMMARY

- Study on food gardens
- Questionnaires to be administered
- 20mins max per questionnaire
- Informed consent signed before HHs participate
- Pilot study-2Qs per facilitator
- Actual study-200HHs each facilitator 40HHs
- All interviewed
- All facilitators will get a Food garden book
- R20 per questionnaire **completed**
- **Pictures with a HH each while collecting data**

DATA COLLECTION PLAN FROM 1st -16th July

- 1st – 3rd July: Pilot study
- 3rd/4th July (Thursday or Friday): meeting with facilitators
- Monday: Give out questionnaires for actual study.

CONCLUSION

- Plans for next meeting after pilot study
- Word of thanks to facilitators, translators and TVT

Siyabonga/Thank you

ANNEXURE 4: Data collection plan

DATA COLLECTION PLAN FROM 1st -18th July

By Faith Akob (UKZN Master's Program Student Research Program with TVT)

DATE	DAY	PLAN
1st July	Tuesday	<ul style="list-style-type: none"> -Training of facilitators for data collection for both pilot study and the actual data collection. -Training will be for about 2hours or less from 10am-12pm including a 30minute break for tea/coffee. -Training will compose of the purpose for the study, number of households involved, who has to do what and the remuneration they will get. -Each facilitator will get R20 per questionnaire only when it has been completed and a book on food gardens each. -Each facilitator will get 2 questionnaires to conduct the pilot study between the 1st and the 3rd of July. -Actual data collection will begin on the 4th of July to the 17th of July.
3 rd July	Thursday	<ul style="list-style-type: none"> -Meeting with the facilitators again at 10am -Collect pilot study questionnaires -Sort out any challenges they faced. -Adjust questionnaire if need be
4 th July	Friday	-Give out 38 questionnaires to each facilitator for the ACTUAL study.
4 th – 16 th July	Friday - Wednesday	-ACTUAL DATA COLLECTION
17 th July	Thursday	/
18 th July	Friday	<ul style="list-style-type: none"> -Last meeting -Collect questionnaires -Pictures with TVT and the facilitators.
<p>-I plan to start on the 1st of July and finish by the 18th of July. -Please advise me on how much to give the translator (Siya). I only need him for the training on Tuesday. -I also have some books donated by my Supervisor for TVT Library and I will bring them on Tuesday</p>		

ANNEXURE 5: Modified version of original questionnaire

<p>IGAMA LOMPHAKATHI</p> <p>UMKHUTHAZI: _____</p> <p>ISIFUNDA: _____</p> <p>IKHELI LASEKHAYA/INCAZELO YENDAWO /IMINININGWANE YOKUXHUMANA NJENGE INOMBOLO YOCINGO:</p> <p>_____</p> <p>_____</p> <p>_____</p>
--

1	UMBUZO 1: ISIMO SENHLALA NOMNOTHO (Phendula imibuzo, ufake indingiliza lapho idingakala khona)
1.1	Uma ekhaya kunengadi yezimifini, umuntu ofanele ukuyi hlakula ingadi owesilisa noma owesifazane? _____
1.2	Bangaki abantu abadala abahlala ekhaya?: Abangaphansi kwe minyaka ewu- 60? _____ Abanga phezu kweminyaka ewu- 60? _____
1.3	Zingaki izingane ezihlala ekhaya?: i. Ezingaphansi konyaka owodwa j. Eziphakathi kweminyaka owu-1 kuya kwe-5 k. Eziphakathi kweminyaka eyisi-6 kuya-12 l. Eziphakathi kweminyaka ewu-13 kuya-18
1.4	Bangaki abantu abadala abangaphansi kweminyaka ew-60 abasebenzayo? _____
1.5	Kulaba abasebenzayo, ubani uholo omholo omkhulu kunabobonke? _____
1.6	Iyiphi imthombo EYINHLOKO yemali ekhaya: g. Umsebenzi wokuqashwa ngokugcwele h. Umsebenzi oyi-part time i. Isondlo se-grant yezingane d. I-grant yezingane ezingenabo abazali

	<p>e. I-grant yokukhubazeka</p> <p>f. I-grant yokuntuleka kwemisebenzi</p> <p>g. Impesheni</p> <p>h. Okunye, sicela ucacise:</p> <p>_____</p> <p>_____</p>
1.7	<p>Uhlobo luni lwendlu ohala kulo:</p> <p>m. Umuzi owakhiwe ngezitini ohlekile</p> <p>n. Umuzi owu-rawondi, onophahla lotshani</p> <p>o. Umuzi owu-rawondi onophahla lukathayela</p> <p>p. Umuzi ozakhele wona onophahla luka thayela</p> <p>q. Umuzi ozakhele wona owakhiwe ngamapulangwe</p> <p>r. Okunye, sicela ucacise:</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>
1.8	<p>Ukuze nikwazi ukupheka, nisebenzisani ekhaya, khetha lokho okulandelayo?</p> <p>i. Ugesi</p> <p>j. Igesi (Gas)</p> <p>k. Nibasa umlilo</p> <p>l. Upharafini</p>
1.9	<p>Niwathola kuphi amanzi ekhaya?</p> <p>k. Amanzi asempompini osekhaya</p> <p>l. Umpompi ongaphandle owomphakathi</p> <p>m. Emfuleni</p> <p>n. Kwisiphethu</p> <p>o. Okunye, sicela ucacise:</p> <p>_____</p> <p>_____</p>
1.10	<p>Uhlobo lwendlu yangasese eniyisebenzisayo ekhaya?</p> <p>k. Indlu eflashekayo</p> <p>l. Izindlu zangasese zomxhaso zika-Hulumeni</p> <p>m. Indlu yangasese ewumgodi</p> <p>n. Ibhakede</p> <p>o. Okunye, sicela ucacise:</p>

1.10	<p>Yiluphi uhlobo lwemishini lwasekhaya enulusebenzisayo, uhlobo lokuxhumana noma uhlobo lwezithuthi?</p> <p>w. Isitofu sikagesi</p> <p>x. Isitofu sika gesi esiwu-2 pleti</p> <p>y. Isitofu segas esiwe 2 pleti</p> <p>z. I-Microwave</p> <p>aa. Efrijini</p> <p>bb. I-Freezer</p> <p>cc. Ifriji elihlangene ne-freezer</p> <p>dd. Umakhalekhukhwini</p> <p>ee. Umsakazo</p> <p>ff. Umabonakude</p> <p>gg. Imoto</p>
2	<p>UMBUZO 2: NGEZINGADI (Phendula imibizo, ufake indingiliza lapho idingakala khona)</p>
	<p>AMAKHAYA ANEZINGADI</p>
2.1	<p>Iluphi uhlobo lwengadi onalo ekhaya?</p> <p>a. Ingadi esegcekeni</p> <p>b. Ingadi yomphakathi</p> <p>c. Okunye, sicela ucacise:</p> <p>_____</p> <p>_____</p>
2.2	<p>Uma unengadi kodwa emphakathini, bangaki emphakathini abamelwe ukuyinakekela ingadi?</p> <p>_____</p>
2.3	<p>Yingabe laba abanakekela ingadi bazicelela ngokwabo noma bakhethwa umphakathi ukuthi bayanakekele ingadi? Sicela uchaze:</p> <p>_____</p> <p>_____</p>
2.4	<p>Uma unengadi yomphakathi, ubandakanyeke kanjani kuyo?</p> <p>_____</p> <p>_____</p>
2.5	<p>Yini imbangela yokuthi niqale ukuhlawula lengadi emphakathini?</p> <p>_____</p> <p>_____</p> <p>_____</p>
2.6	<p>Iziphi izitshalo enizitshalile, kulezi ezilandelayo?</p> <p>w. Isipinashi</p>

	<p>x. Izaqathi</p> <p>y. Iklabishi</p> <p>z. U-Beetroot</p> <p>aa. Ubhatata</p> <p>bb. Ithanga</p> <p>cc. Umbila</p> <p>dd. Ubhontshisi</p> <p>ee. Amazambane</p> <p>ff. Utamatisi</p> <p>gg. Okunye, sicela ucacise: _____</p>
2.7	<p>Sicela ucacise ukuthi yini imbangele yokuthi ukhethe ukutshala lezitshalo</p> <p>_____</p> <p>_____</p> <p>_____</p>
2.8	<p>Uyithathaphi imbewu yokutshala?</p> <p>m. Ehovisi lwezolimo</p> <p>n. Esitolo</p> <p>o. Kumakhelwane</p> <p>p. Endaweni yomphakathi yokutshala</p> <p>q. Imbewu yakho</p> <p>r. Okunye, sicela ucacise:</p> <p>_____</p> <p>_____</p>
2.9	<p>Ingadi yakho ibiyelwe?</p> <p>YEBO/CHA</p>
2.10	<p>Sicela uchaze ngabanzi ngempendulo yakho yombuzo ongaphezulu (2.7).</p> <p>_____</p> <p>_____</p> <p>_____</p>
2.11	<p>Umhlabathi uyawuvundisa?</p> <p>YEBO/CHA</p>
2.12	<p>Sicela uchaze ngabanzi ngempendulo yakho yombuzo ongaphezulu (2.9).</p> <p>_____</p> <p>_____</p> <p>_____</p>
2.13	<p>Uma umbuzo ka 2.9 uphendule wathi- YEBO, usebenzisa nhloboni yokuvundisa?</p> <p>i. Umanyolo wezinto eziphilayo, njengo manyolo wezinkomo, imifino noma ukudla okulahlwe</p>

	<p>j. Umanyolo wezinto ezingaphili, njengo manyolo owuthenge estolo</p> <p>k. Uhlanganisa umanyolo wezinto eziphilayo nezingaphili ndawonye</p> <p>l. Okunye, sicela ucacise:</p> <p>_____</p>
2.14	<p>Uwathola kuphi amanzi okuchelela izitshalo zakho?</p> <p>o. Emfuleni</p> <p>p. Edamini</p> <p>q. Kwisiphethu</p> <p>r. Empompini</p> <p>s. Amanzi emvula abekeliwe</p> <p>t. Amanzi emvula</p> <p>u. Okunye, sicela ucacise:</p> <p>_____</p>
2.15	<p>Uyayidla imifino ozikhulisele yona noma uyayidayisa ukuze uthole imali?</p> <p>a. Nidla imifino yodwa</p> <p>b. Niyayidayisa imifini yodwa</p> <p>c. Niyayidla niphinde niyidayise</p>
2.16	<p>Uke ubhekane nezinselelo ekukhuliseni ingadi yakho?</p> <p>YEBO/CHA</p>
2.17	<p>Uma uphendule ngo YEBO, yiziphi lezo zinselelo obhekana nazo?</p> <p>w. Ukuntula noma ukushoda kwamanzi</p> <p>x. Ukuntuleka kwemali yokuthenga imbewu</p> <p>y. Izilwane ezidla ezitshalo</p> <p>z. Ukungabi khona kothango</p> <p>aa. Izindleko zokufaka uthango</p> <p>bb. Ukuba khona kwezinzambuzane nezifo</p> <p>cc. Ukungabi nolwazi lokuthi ingadi yenziwa kwanjani</p> <p>dd. Umhlabathi oqinile</p> <p>ee. Umhlabathi ongavundi</p> <p>ff. Ukuntula izingadi zokusebenza</p> <p>gg. Okunye, sicela ucacise:</p> <p>_____</p> <p>_____</p>
2.18	<p>Ngabe ukudla kwengadi kuyinzuzo kuwe?</p> <p>e. YEBO</p> <p>f. CHA</p>
2.19	<p>Uma YEBO, yiziphi izinzuzo?</p> <p>i. Wondla bonke abasekhaya</p>

	<p>j. Konga imali ekhaya</p> <p>k. Kuletha imali ekhaya</p> <p>l. Okunye, sicela ucacise:</p> <p>_____</p>
2.20	<p>Uma ungakwazi ukuthengisa eminye imifino, sicela ukhombise imalini imali owengeziwe ongayenza ngenyanga ngokuthengisa nje?</p> <p>_____</p>
	<p>AMAKHAYA ANGENAZO IZINGADI</p>
2.1	<p>Yini imbangela yokungabi nengadi?</p> <p>_____</p> <p>_____</p> <p>_____</p>
2.2	<p>Wake wacabanga ukuba nengadi? Sicela uchaze.</p> <p>_____</p> <p>_____</p>
2.3	<p>Ingabe ungakwazi ukuthola amanzi uma ngabe kuthiwa uqala ingadi?</p> <p>_____</p> <p>_____</p>
2.4	<p>Ukuthenga kuphi ukudla?</p> <p>_____</p> <p>_____</p>
2.5	<p>Ubungabhekana naziphi iziinselelo ukube bukhetha ukuba nengadi ?</p> <p>YEBO/CHA</p>
2.6	<p>Uma uphendule ngo YEBO, Yiziphi izinselelo obingabhekana nazo?</p> <p>w. Ukuntula noma ukushoda kwamanzi</p> <p>x. Ukuntuleka kwemali yokuthenga imbewu</p> <p>y. Izilwane ezidla ezitshalo</p> <p>z. Ukungabi khona kothango</p> <p>aa. Izindleko zokufaka uthango</p> <p>bb. Ukuba khona kwezinzambuzane nezifo</p> <p>cc. Ukungabi nolwazi lokuthi ingadi yenziwa kwanjani</p> <p>dd. Umhlabathi oqinile</p> <p>ee. Umhlabathi ongavundi</p> <p>ff. Ukuntula izingadi zokusebenza</p> <p>gg. Okunye, sicela ucacise:</p> <p>_____</p> <p>_____</p>

3	UMBUZO 1: HFIAS – Household Food Insecurity Access Scale (Ithuluzi elisetshenziswa ekulinganiseni ukuntuleka kokudla emakhaya).		
Ukukhethwa kwezimpendulo			
1 = Akuvamile (kanye noma kabili enyangeni eyodwa edlulile)			
2 =Ngezinye izikhathi (izikhathi ezintathu kuya enyangeni edluli)			
3 = Ngokuvamile (ngaphezu kweyishumi kuya enyangeni edluli)			
	Umbuzo	Khetha impendulo	
Q1	Enyangeni edlulile (30/izinsuku), Wena nomndeni wakho nanikhathazekile ngokuthi ngeke nibe nokudla okwanele?	1	2 3
Q2	Enyangeni edlulile (30/days), wena nomndeni wakho nanikhathazekile ngokuthi nidla ukudla eningakuthandanga ngenxa yokuntula kwemali?	1	2 3
Q3	Enyangeni edlulile (30/days), wena nomndeni wakho nake nadla uhlobo olulodwa lokudla ngenxa yokuntuleka kwemali?	1	2 3
Q4	Enyangeni edlulile (30/days), wena nomndeni wakho nake nadla ukudla eningakuthandisis ngenxa yokuntuleka kwemali noma imithombo la nithola khona ukudla?	1	2 3
Q5	Enyangeni edlulile (30/days), wena nomndeni wakho nake nadla ukudla okuncane ngenxa yokuntuleka kwemali noma ukudla kwakuncane ekhaya?	1	2 3
Q6	Enyangeni edlulile (30/days), wena nomndeni wakho nake nadla ukudla okuncane ngenxa yokuthi niyonga ngoba kungekho kona ukudla?	1	2 3
Q7	Enyangeni edlulile (30/days), kwake kwaba khona iskhathi ekhaya lapho kungekho kwayikona ukudla ngenxa yokuthi imali yokukuthenga?	1	2 3
Q8	(Enyangeni edlulile 30/days), nake nalala ningadlile ekhaya ngenxa yokuthi ukudla kwakungekho ekhaya?	1	2 3
Q9	Enyangeni edlulile (30/days), lake laphela usuku lonke nobusuku ningakaze nidle lutho ekhaya ngenxa yokuthi kwakungekho ukudla okwanele ekhaya?	1	2 3

27 May

2014

UNIVERSITY OF KWAZULU-NATAL:

SCHOOL OF AGRICULTURAL, EARTH AND ENVIRONMENTAL SCIENCES

MEMORANDUM OF UNDERSTANDING

1. PROPOSAL FOR COLLABORATION BETWEEN UKZN DIETETICS AND HUMAN NUTRITION STUDENTS (NUTRITION 711) AND THE VALLEY TRUST.

As part of the Community Nutrition Module (NUTR711) for students enrolled in the Post Graduate Diploma in Dietetics and Post Graduate Diploma in Community Nutrition, the following three visits are proposed:

- **Visit 1 – Date to be identified by The Valley Trust (TVT) (dependent on Chris Gibson’s availability)**

Students attend update and follow-up on C-IMCI with Chris Gibson and Community Health Facilitators (CHFs). If possible, CHFs to describe mapping of area and main issues/challenges they face. Follow-up training needs of CHFs to be identified. Topics that would fit in with the child health focus of the CHFs include:

- Nutrition for pregnant women
- How to promote good growth in children e.g. breastfeeding, complementary feeding, deworming, vitamin A supplementation etc
- How to assess children’s growth- using MUAC and weight; interpreting growth charts;
when to refer
- Preventing overweight/obesity in young children

Dietetics and Human Nutrition (UKZN) are aware that a number of the above topics would have been covered in the training of the CHFs. As a result, feedback from TVT would be appreciated regarding the topics additional information is required on during information sharing session. It is felt that it might be useful as reinforcement for CHFs of what they have learnt, as they would have had a few weeks of working in the field after their training had taken place and in doing so, might well have

picked up problems or have queries that could be addressed by Dietetics and Human Nutrition, UKZN.

- **Visit 2 - Date: first 2 weeks in July**

Students to conduct training on identified needs from Visit 1 (if needed) and work together with CHF's to plan a Health Day for mothers, infants and children. The scope of topics for the Health Day will be discussed with Chris Gibson at first visit.

- **Visit 3 - Possible dates: before 24 July**

Students and CHF's to conduct Health Day.

- **Home Visits - Possible dates: first 2 weeks in August**

2 Human Nutrition students to accompany CHF's on home visits

- **Additional Projects**

During discussions at TVT, other potential projects were identified. In particular Early Childhood Development Centres; students (working with CHF's) could conduct anthropometric assessments of the children, write reports on their nutritional status i.e. the prevalence of stunting, overweight and underweight and wasting (referring malnourished children to the clinic). Students could also give guidance on menu planning, safe food preparation etc. This could be suitable for subsequent groups of students. Dietetics and Human Nutrition are also open to other suggestions.

2. PROPOSAL FOR FAITH AKOB TO CONDUCT RESEARCH AT THE VALLEY TRUST TOWARDS MSc HUMAN NUTRITION

Discussions between Faith Akob and one of her MSc supervisors Suna Kassier, Mr. Zigi Mngayi and Mr Clifford Gcwensa have already taken place to determine the possibility of TVT as a site for her Masters entitled:

“Relationship between food gardens, household food security status, socio-economic status and barriers to cultivating food gardens: Embo Community, Bothas Hill, KwaZulu-Natal”.

Mr S'bongiseni Vilakazi of the TVT has mentioned the possibility of the above masters to serve as baseline (pre-test) for an intervention for which the TVT has received funding. The possibility of the evaluation of the intervention (post-test) by Faith Akob at a time determined by the TVT was also discussed. As a result, TVT to kindly provide feedback on when data collection should commence and whether the proposed questionnaire meets their needs expectations and needs.

In addition, it was discussed that the five Community Health Facilitators (CHF's).employed by TVT in the five districts of the Embo Community will collect the

relevant data at the 200 households (5x40) assigned to each. As a result, the research questionnaire will be translated into isiZulu.

ANNEXURE 7: Informed consent (IsiZulu version)

I-Fomu Lokuvuma Ulwazi: nge-Projekthi Yezingadi Zokudla Zasemakhaya eMphakathini wase-Embo, Valley Trust

Mhlanganyeli othandekayo,

I-projekthi eyisihloko sithi: “Ubuhlobo obukhona phakathi kwezingadi kanye nesimo sokutholakala kokudla kanye nesimo senhlalo nezomnotho, Kubandakanya izingqinamba ekuhlawuleni Izingadi zokudla Emphakathini wase-Embo, Bothas Hill, Hillcrest, KwaZulu-Natal” izobanjelwa phakathi kwabahlali abahlala basemphakathini wase-Embo.

Ngenxa yalokho, wena nomndeni wakho niyamenywa ukuba nibambe iqhaza kwi-projekthi ebalulwe ngenhla. Ukuntuleka kokudla, ukungatholakali komsoco umphumela walokho, wenza izingane zingakhuli ngendlela efanele, ukuntuleka kwezithako ekudleni ezivikela ubuthaka bempilo, ukungakhuli ngendlela efanele nokugula kusayinkinga namanje emiphakathini ikakhulukazi emakhaya. Ngenxa yalokho, le projekthi ihlose ukuphenya kabanzi ngomthelela wezingadi wokuba nokudla okwanele emakhaya, kanye nokuba nohlobo lokudla olufanele ukuba kudliwe. Ngaphezu kwalokho, isizathu/izizathu zokuthi kungani kukhona abantu abanezingadi kodwa abanye bengenazo, nakho kuzophenywa.

Igama lami ngingu Faith Asangha Akob (inombolo yocingo: 0725282354). Ngingu mfundi owenza i-Masters kwi-Huma Nutrition eNyuvesi yaKwaZulu-Natal futhi ngizobe ngiqondiwa u Nkk Suna Kassier, inombolo yakhe: (033) 260 5431 kanye no Prof Frederick Veldman (033) 260 5597.

Abahlanganyeli kulolu ncwaningo balindeleke ukuphendula imibuzo emithathu ezokwazi ukungisiza ukuba ngikwazi ukuphendula imibuzo eyingxenye loncwaningo engiluhubayo. Abakhuthazi bomphathi base The Valley Trust bazongisiza ukuba bangiqoqele ulwazi engiludingayo emphakathini wase-Emb. Ulwazi engilutholile kubahlanganyeli bami abazobamba iqhazo kulolu cwano luzohlala luyimfihlo. Ngamanye amazwi, ngeke ngize ngifune umkhondo wokuthi ubani uphendule wathini ezimpendulweni enizobe ninginike zona njenga lunga lomphakathi wase-Embo. Ukubamba iqhaza kulolucwaningo kusho ukuthi uyazithandela ngokwakho, abazobe bebambe iqhaza bakhululekile ukuhoxa kulolucwaningo noma ini, nangoba isiphi isizathu. Imiphumela yocwaningo izotholakala inikwe amalunga omphakathi wase-Embo uma ucwaningo seliphelile.

Ozithobayo,

Faith Asangha Akob

Ifomu lesimemezelo

Mina.....(amagama aphelele omhlanganyeli) lapha ngiyaqinisekisa ukuthi mina ngiyaqonda ngokuchaziwe mayelana nalombhalo kanye nenhloso yalolucwaningo. Ngakho-ke, ngiyavuma ukubamba iqhaza kulolucwaningo ngokusayina kulombhalo. Ngaphezu kwalokho, ngiyaqonda ukuthi ngingahoxa noma nini, uma ngifisa ukwenza kanjalo.

SAYINA MHLANGANYELI

USUKU

SAYINA FAKAZI

USUKU

Informed consent (English version)

<p style="text-align: center;">Informed Consent Form: Home Garden Project in Embo Community, Valley Trust</p>
--

Dear participant,

A project entitled: “Relationship Between Food Gardens and Household Food Security Status and Socio-economic Status, Including Barriers to Cultivating Food Gardens in the Embo Community, Bothas Hill, Hillcrest, KwaZulu-Natal” will be conducted among 200 households living in the Embo Community.

As a result, you and your household are invited to participate in the above project. A lack of food, under nutrition which results in children not growing adequately and a lack of ingredients in the diet that protect against poor health, lack of growth and illness is still a major problem in most black rural communities. As a result, this project aims to investigate the impact of food gardens on having enough food in the house, as well as the right kind of food in the diet. In addition, the reason/s as to why some people have food gardens and others do not will be investigated.

My name is Faith Asangha Akob (cell number 0725282354). I am a masters student in Human Nutrition at the University of KwaZulu-Natal and I will be supervised by Mrs Suna Kassier (033) 260 5431 and Prof Frederick Veldman (033) 260 5597.

Participants in this study will be expected to answer three questionnaires which will help me to answer the research questions that form part of my study. Community Facilitators from The Valley Trust will help me to collect the information I need from the Embo community. Information given my individuals that participate in this study will be kept confidential. In other words, I will not be able to trace back the answers you will give to you as a member of the Embo community. Participation in this study is voluntary and participants are free to withdraw from the study at any stage and for any reason. The results of the study will be made available to members of the Embo community once the study is completed.

Kind regards

Faith Asangha Akob

Declaration form

I..... (full names of participant) hereby confirm that I understand what has been explained in this document as well as the purpose of the research project. I therefore agree to participate in the research project by signing this document. In addition, I also understand that I can withdraw from the project at any time, should I wish to do so.

SIGNATURE OF PARTICIPANT

DATE

SIGNATURE OF WITNESS

DATE

ANNEXURE 8: Ethical clearance approval letter



14 October 2014

Ms Faith Asongha Akob (210512267)
School of Agricultural, Earth & Environmental Sciences
Pietermaritzburg Campus

Protocol reference number: HSS/1168/014M

Project title: Relationship between food gardens, household food security status, socio-economic status and barriers to cultivating food gardens: Embo community, Bothas Hill, KwaZulu-Natal

Dear Ms Akob,

Full Approval – Expedited Application

In response to your application received on 01 August 2014, the Humanities & Social Sciences Research Ethics Committee has considered the abovementioned application and the protocol have been granted **FULL APPROVAL**.

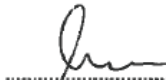
Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number.

PLEASE NOTE: Research data should be securely stored in the discipline/department for a period of 5 years.

The ethical clearance certificate is only valid for a period of 3 years from the date of issue. Thereafter Recertification must be applied for on an annual basis.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully


.....
Dr Shenuka Singh (Chair)

/ms

Cc Supervisor: Ms Suna Kassier and Dr Federick Veldman
Cc Academic Leader Research: Professor O Mutanga
Cc School Administrator: Ms Marsha Manjoo

Humanities & Social Sciences Research Ethics Committee

Dr Shenuka Singh (Chair)






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ANNEXURE 9: Food garden seasonal calendar



CALENDER FOR PLANTING COMMON FOODS

IKHALENDI YOKUTSHALA UKUDLA OKUJWAYELEKILLE

Food type	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Maturity time (months)	Nutritional Value
 Potatoes													3-4 months	Vitamin C Potassium
 Beet root													2 months	Vitamin A Vitamin C Fibre Some Iron
 Beans (broad)													2-3 months	Vitamin C Fibre
 Beans (Climbing)													2-3 months	Vitamin C Fibre
 Carrots													3-4 months	Vitamin A
 Cabbage													3-5 months	Vitamin C Calcium

																	Fibre
Mealies (corn) 															-		Fibre

Food type	Jan	Feb	Mar ch	Ap ril	M ay	Ju ne	Ju ly	A ug	Se p	O ct	N ov	D ec	Matu rity time (mont hs)	Nutri tional Value
Pumpkin 													4-6 months	Vitami n A Fibre
Lettuce 													2-3 months	Fibre Potassi um Folic acid
Spinach 													4-5 months	Vitami n A Calciu m Iron
Tomatoes 													3-4 months	Vitami n A Vitami n C Fibre
Onions 													6-8 months	Small amount s of vitamin s & mineral s

<p>Spring onion</p> 													-	Small amounts of vitamins & minerals
<p>Sweet potatoes</p> 													-	Vitamin A Fibre