Role of women in achieving food security in South Africa: a case of rural Mbashe Local Municipality

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By

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DEDICATIONS

This work is dedicated to my late father "Ntutuzelo Moses Mgwali", lala ngoxolo mkhumbeni, buy cash no credit. Thank you very much for laying a good foundation for me throughout my childhood years. I will always cherish the time I spent with you.

"I LOVE YOU"

DECLARATION

I the undersigned declare that the work contained in this study is my own work and has not previously in its entirely or in part been submitted at any University for a degree. Where use has been made of the work of others, it was duly acknowledged in the text.

Signature…… **Date……../……/…..……**

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ABSTRACT

This dissertation has attempted to investigate the involvement of women in rural areas of the Mbashe local municipality. This was investigated to find out if the government food security programs in rural areas have been designed to address the issue of women empowerment in irrigated farming, how involved women are in terms of farm decision making and management. A structured questionnaire was used to collect information on demographic parameters, Irrigation and water use information, production information and market and marketing information. A total of 69 structured questionnaires were administered to identify gender roles in irrigated farming with special emphasis to the roles played by women in farm decision making and management in Ngxakaxha Administrative Area of Mbashe local municipality of the Eastern Cape, South Africa. Own food production has been found to be the main food acquisition strategy in rural areas; people involved in it farm for their own consumption and then sell the remaining produce. About 80 % of the farmers practise irrigated agriculture with or without the use of a formal irrigation system provided and managed by government departments. Descriptive statistics were generated using the Statistical Package for Social sciences (SPSS). Subsequently, the data were subjected to inferential analysis using the binomial logistic regression model. The perceptions influencing the predictor variable were defined and tested using the binomial logistic regression model. The statistically significant independent variables, at the level 5% significant level are as follows; area and the number of years in farming. At the 10% significant level; the total number of bags sold and the total amount received (revenue). Basically the area is negatively correlated with irrigation and own production in rural areas. The household head is the one that determines household own production. The number of years involvement in farming determine their experience in farming and the amount of yield he / she will get. Major constraints to sustainable irrigation, as revealed by the analysis, were lack of funding for the projects in terms of an irrigation system, lack of a source of water, lack of new information and workshops. Women were found to be fully involved in irrigated

farming nowadays, but training is needed for both men and women in rural areas for their production and irrigation to be sustainable over time.

It has been concluded that there are programmes which have been designed and are driven by the women and a number of these programmes are also addressing the issues of gender equality in rural areas.

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LIST OF ACRONYMS

Agri	Agriculture
AgriBEE	Agriculture Black Economic Empowerment
AgriSA	Agriculture South Africa
ASGISA- EC	Accelerated and Shared Growth Initiative of South Africa-Eastern Cape
AIDS	Acquired Immune Deficiency Syndrome
BC	Before Christ
BLR	Binary Logistic Regression
GDP	Gross Domestic Product
ECDOA	Eastern Cape Department of Agriculture
ECSECC	Eastern Cape Socio-Economic Consultative Council
HIV	Human Immunodeficiency Virus
IFSS	Integrated Food Security Strategy
ISDS	Intra-Seasonal Dry Spells
KWANULU	Kwazulu- Natal Agricultural Union
LRAD	Land Reform for Agricultural Development
MAFISA	Micro- Agricultural Finance Initiative of South Africa
NAFU	National African Farmers Union
NDA	National Department of Agriculture
NGO	Non-Governmental Organisation
PGDP	Provincial Growth and Development Plan
SAR	Semi-arid regions
SIS	Settlement and Implementation Support
SLAG	Settlement Land Acquisition Grant
SPSS	Statistical Package for Social Sciences
TB	Tuberculosis

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CHAPTER 1

INTRODUCTION

1.1. Background to the study

Food security is defined as the access to sufficient and affordable food. It can relate to a single household or to the global population. It also means people being able to get the food they need to be healthy, active and productive, wherever they get it from and however it is provided (Saunders 1993). Food security refers to the adequacy of the food supply to meet the needs of individual consumer and that is determined by availability (production plus imports), accessibility (buying power), and utilization (nutrition) this is noted by May (2006).

Saunders (1993) notes that the adequacy is determined by making sure sufficient resources are available to produce sufficient food to meet basic nutrition needs and that families can earn enough income to buy food for all family members. So, in their view, food security refers to the availability of food and one's access to it. A household is considered food-secure when its occupants do not live in hunger or fear of starvation. The United Nations Food and Agriculture organisation defines food security for a household as access by all members at all times to enough food for an active, healthy life agrees with this viewpoint and our intuition (Food and Agriculture Organisation 2005) Food security includes at a minimum; the ready availability of nutritionally adequate and safe foods, and an assured ability to acquire acceptable foods in socially acceptable ways (that is, without resorting to emergency food supplies, scavenging, stealing, or other coping strategies) (Carter & May 1999).

Commission on Legal Empowerment for the Poor (2008) mentioned that in South Africa, the cause of hunger and malnutrition is not the shortage of food but rather an inadequate access to food by certain categories of individuals and households in the population. Statistics South Africa has shown that food insecurity in not an exceptional, short-term event, but rather a continuous threat for more than a third of the population (Statistics South Africa 1998). The vast majority of South Africans buy their staple foods from commercial suppliers, rather than growing it themselves, and are therefore dependent on having (direct or indirect) access to cash (CLEP 2008).

Among the poor, who by definition suffer the brunt of the lack of jobs in the South African economy, the main sources of cash are insecure piece jobs with low remuneration, the governmentôs social welfare which is in the form of old age pensions and child support grants and private donations from working relatives and neighbours (CLEP, 2008).

STANLIB (2012) notes that South Africaôs unemployment rate remains far too high by historical and international standards, and clearly contributes too much of the social tension and anguish experienced in South Africa on a daily basis. The official unemployment rate in South Africa is now back above 25% at 25, 2%. This is extremely high by global standards. Using the expanded definition, the unemployment rate is around 38%, reflecting the high level of discouraged workers (CIA 2012). In addition to cash, the bundle of entitlements which enables individuals and households to feed themselves also includes access to land which in many rural areas is still a challenge and getting access to land is still a problem (Kehler 2001).

CLEP (2008) defined poverty as an economic condition of lacking both money and basic necessities needed to live successfully. Living successfully implies having access to the basic needs of life which are food, water, education and shelter. For all these necessities to be acquired there has to be money involved, and one has to work in order to acquire money. Therefore, the biggest cause of poverty can be said to be unemployment. In South Africa poverty is one of the main causes of food insecurity in rural areas and

people are said to be living in poverty when they lack resources or money needed to satisfy basic needs. How these two are linked is perhaps demonstrated by the fact that unemployment rates are estimated at about 26% while poverty is said to affect about 50% of the population (Statistics SA 1998).

CLEP (2008) noted that poverty undermines the ability of people to develop livelihood strategies, adaptive behaviours and coping strategies which help to ensure long-term food security. Areas with more than 80% of households being in a state of poverty are likely to be food insecurity ñhotspotsò of South Africa. Those vulnerable to food insecurity are found in two, broadly defined, marginalized groups; the first group refers to the economically marginalized- i.e. those who lack land, capital and tools, livestock, literacy and other formal skills and makes up the ñworking poorò or the ñunder-employed poorò. The second group refers to the socially marginalized who are vulnerable because of gender (women and girls); their age (children and the elderly) or by virtue of illness or disability. This group usually has fewer coping options at their disposal (World Bank 1986).

The World Bank (2003) mentioned that there are groups of people who are more vulnerable to food insecurity than others, and these are: remote rural populations (vulnerable due to excessive reliance on a single livelihood source, lack of diversification options, high transport costs or poor information); families with members who are chronically ill due to HIV/AIDS, tuberculosis or malaria (vulnerable due to a lack of labour, higher rates of unemployment, disposal of assets to cover medical costs and who rely on non employment (transfers) income like social grants); people with disabilities (vulnerable due to a lack of access to production or earning opportunities and social exclusion); the elderly (vulnerable due to loss of assets, an inability to use their assets productively, taking care of the young and the ill); children under the age of five (vulnerable especially due to under-nutrition, malnutrition and infectious diseases); widows and divorced women (vulnerable due to loss of previous spouse or partnerôs contribution to household livelihood, loss of access rights to assets such as land, low levels of paid employment among women, the responsibility of having to look after

children after the spouse is gone); female-headed households, women and girl children (vulnerable for the same reasons as the preceding group, the widowed and the divorced, also they are vulnerable because of gender roles that assign them most of the responsibilities for household reproduction) (Carter & May 1999) also noted this in their study.

These factors leading to vulnerability differ across groups. Some of them have to do with household demographics and food distribution issues within households; others with social and institutional access rights; yet others have to do with the depletion of available household labour or a lack of livelihood options (May 2006). Some groups may be chronically vulnerable, requiring support on a routine basis; others may experience transitory vulnerability (CLEP 2008).

1.2. Problem statement

According to the Food and Agriculture Organisation (2004) in South Africa the number of people without enough food to eat on a regular basis remains stubbornly high, and is not falling significantly. Of a population of 46 million people in South Africa, 48, 5 % of people were living in poverty in 2002 according to the national poverty line of R354 per month adult equivalent (1995 value). In 2002, 23.8 % of people were living on less than two US dollars a day, and 10,5 % on less than one US dollar a day (FAO 2004). Over 60% of the worldôs undernourished people live in Asia, and a quarter in Africa (FAO 2005). The proportion of people who are hungry, however, is greater in Africa (33%) than Asia (16%) (May 2006).

Food and Agriculture Organisation (2012) notes the significant differences in gender roles exist between women and men in securing food security and agricultural production in Africa. On average, women comprise 43% of the labour force in developing countries; this figure ranges from around 20% in Latin America to 50% in parts of Africa and Asia, and exceeds 60% in a few countries. In most developing country regions, women who are employed are just likely, or even more likely, than men to be in agriculture. Almost 70%

of employed women in Southern Asia and more than 60% of employed women in sub-Saharan Africa work in agriculture (FAO 2012).

Africa is the only region where per capita agricultural production has fallen over the past forty years (FAO 2005). The number of mal-nourished people has significantly increased. The country has turned from being a key exporter of agricultural commodities to a net importer of food; in addition to that Africa is currently the largest single recipient of food aid (FAO 2005). In South Africa, 22 million of the population is in poverty (70% of this is in rural areas). This population does not have the means to secure adequate or long term food security, the livelihoods are insecure/ risk averse, they do not have the means to acquire food products for their livelihood, . Rural communities are dependent on State grants/ remittances with little potential to provide themselves (FAO 2004).

It has been convincingly argued that the current Southern African food crisis is inextricably linked to the widespread HIV epidemic which has exacerbated the crisis (FAO 2004). Availability, stability, access and use of food are all affected where the prevalence of HIV/AIDS is high. Those living with or affected by this chronic illness find it difficult to work, spend time caring for others, have less energy to do things like cultivating fields, interacting socially and pursing different livelihood strategies.

Women are the dominant agricultural producers, traders and nutrition providers in most countries (Kehler 2001). Women are involved in all the three pillars of food security that include food production, food access and food utilization. They work on small farms, the informal sector and in urban gardens to produce cash crops. In terms of access to food, women ensure that each family member receives an adequate share of food, and they are primarily responsible for providing food, to which they devote their time and their incomes (FAO 2004).

Despite the importance of women in agriculture and food security issues, little disaggregated information is available on their roles especially when we have to also consider the use of improved technologies such as irrigation. Where studies on womenôs

economic participation has been done, it has been mainly at the broad aggregate level at the national and regional levels an d nothing is available for small rural areas and producers. This is particularly important for the former homelands that remain at the margin and still suffer the disadvantage imposed by years of apartheid, neglect and gender inequality. This has led to many women in rural areas to lose access to their land and other resources because of gender inequality and illiteracy. The government is now committed to changing all those by being actively involved with rural people in the form of workshops and meetings; this is a tool to counteract the issues of gender inequality, unemployment and poverty (FAO 2005). The government is by all means trying to reach out to people in rural areas by designing programs to accommodate all parties involved, and of land redistribution and restitution programs.

South African Government Information (2012) remarks that the National Development Plan aims to eliminate poverty and reduce inequality by 2030. According to the plan, South Africa can realise these goals by drawing on the energies of its people, growing an inclusive economy, building capabilities, enhancing the capacity of the state, end promoting leadership and partnerships throughout the society (SAGI 2012).

1.3. Research Objectives

The broad objective of this study is to assess the impact of gender roles in rural irrigated farming. More specifically, the study aims:

- To assess and profile the food security situation in the province and the project area
- To assess the availability of resources such as land, labour and capital for the implementation of the food security programs.
- To identify the challenges encountered by women in small scale farming and in the implementation of the food security programs.
- To assess the roles women play in farm decision making and farming as a whole.
- To assess the relative contribution of irrigation to household food security.

1.4. Motivation for the study

The study will come up with ways in which women in rural areas are given empowerment through the government food security programs. The first is that the study will lead to deeper understanding of the role of women in the application if thus technology and food security and livelihood strategies. Because some of the households are being headed by single women, it is therefore a womanôs duty whether married, widowed or married to provide food for her family.

Between 40 and 50 % of South Africaôs population can be classified as living in poverty, while 25 % of the population can be categorized as ultra-poor. Although the country is self-sufficient in food production, about 14 million people are said to be vulnerable to food insecurity and 43 percent of households suffer from food poverty (FAO 2005). Poverty is more pervasive in rural areas particularly in the former homelands. The majority (65 %) of the poor are found in rural areas and 78 % of those likely to be chronically poor are also in rural areas (FAO 2004).

Saunders (1993) suggested that in rural development, agriculture is considered as the best vehicle to reduce rural poverty. In most developing countries, agriculture and agriculture-related activities provide most of the employment in rural areas. The implication is that agricultural workers are poorly paid and that most of the employees in the agricultural sector are unskilled. This also means ñthat increasing agricultural growth may have a large positive impact on poverty. Sapa (2013) remarks that one of the most important labour issues today in South Africa is the protests by farmers in the Western Cape, who are asking for an increased wages of R150 per day of which farmers are offering R105 a day and in many instances this has turned violent and has led to the destruction of farm property and loss of revenue. This has caused many farmers to lose resources and inputs which will make production more difficult when the matter has been resolved. The growing pauperization that has also led to mine workers strikes that culminated in the Marikana massacre, which had led to the death of many mine workers during the strike (Platinum Industry 2012). All these go to make the case for policy actions to address growing poverty and to show that it is widespread and potentially

explosive and needs to be addressed as aggressively as possible. Out task is to contribute from the agricultural side and from an equity perspective to keep the problem at a minimum. South Africa, 42 % of the total population were in rural areas in 2001.

Small holder agriculture is simply too important to employment, human welfare, and political stability in Sub-Saharan Africa. Agriculture contributes to poverty alleviation at rural, urban and national levels in three ways: reducing food prices, employment creation, increasing real wages; and improving farm income (Kehler 2001).

The study will come up with ways in which people in rural areas will be able to eradicate or to keep poverty at a minimum level. People in rural areas will be given ways in which they can use their available natural resources in the best profitable and feasible way.

1.5. Research Questions

The main research question is ñWhat is the impact of gender roles in rural irrigated farming?ò The specific research questions are:

- How to profile the food security situation in the province and project area?
- What is the availability of resources such as land, labour and capital for the implementation of the food security programs?
- How to identify the challenges encountered by women in small scale farming and in the implementation of the food security programs?
- What are the roles played by women in farm decision making and in farming as a whole?
- What is the relative contribution of irrigation to household food security?

1.6. Hypothesis

Food security programmes are the sources of food in the rural communities; many households depend on them only. The study will test the following hypothesis:

- Women roles increase with increasing implementation of the government food security programs.

- Roles increase with more food security programs implemented and with the availability of the proper infrastructure in terms of resources (land, labour and capital).

- Sustainable irrigated farming increases with more women involved in farm management and decision making.

1.7. Outline of the study

The paper consists of six chapters. Chapter one presents the introduction which introduces the whole project document and entails the background of the study, problem statement, research objectives, research questions, and hypothesis. The second chapter reviews literature on the government food security programs as a tool for poverty alleviation, rural development through women empowerment and the economic development of the country as a whole, examining the possible factors that affect poverty alleviation and the implementation of the government food security programmes Literature review is also reviewing theoretical and conceptual issues relevant to the topic. The review further addresses the three pillars of food security, as well as the types of food security programmes that the government has made available to the rural communities. The third chapter describes the selection and description of the study area. The location, main language used and the number of villages in the study area are also presented in this chapter. Chapter four presents the methodology, specifically describing the questionnaire design, sampling of respondents, sample size and procedure used in interviewing the respondents. In the fifth chapter results analysis and interpretation of the

results collected from respondents will be presented while the conclusion and recommendations will be presented in chapter six.

CHAPTER 2

LITERATURE REVIEW

2.1. Introduction

This chapter reviews the literature in an attempt to discover the current debates surrounding poverty alleviation and food security and the role of women. The study also goes on to examine concepts which are linked with food security i.e. the land reform concept and women empowerment through government programmes which dwells more on the three programmes that the government has designed more specifically for rural women. Strategies used by women in agriculture and rural development in job creation, poverty alleviation and challenges are also reviewed.

2.2. Overview of food security research and associated problems

Food and Agriculture Organisation (2001b) notes that; in order to achieve food security, it is important to understand what the term constitutes. Food security is defined as physical, social and economic access to sufficient, safe and nutritious food by all South African at all times to meet their dietary and food preferences for an active and healthy life. The Right to Food (2010) acknowledges food security as part of the section 27 Constitutional rights in South Africa. On these rights, the Constitution states that every citizen has the right to have access to sufficient food and water, and that ñthe state must by legislation and other measures, within its available resources, avail to progressive realisation of the right to sufficient food (FAO 2001b).

2.3. Gender issues and effects on development

According to the Food and Agriculture Organisation (2003) gender inequality is a major cause and effect of hunger and poverty; it is estimated that 60 % of the worldôs chronically hungry people are women and girls; 20 % are children under 5. Achieving gender equality remains crucial to reach the poverty and hunger goals of the Millennium Declaration. Women shoulder the primary responsibility for food security in Africa yet development agencies have devoted minimal resources to researching the impact of their agricultural policies and new techniques on the wellbeing of Africaôs women farmers

(FAO 2005). The position of women meeting the challenges of agricultural development cannot be overemphasized. Women make significant contributions to food production and processing, but men seem to take more of the farm decisions and control the productive resources (FAO 2003).

Yemis, Ogunlela & Mukhtar (2009) indicate that in Nigeria, women play a dominant role in agricultural production; their active participation in African agriculture is also not new. Women make up 60-90% of the agricultural labour; depending on the region and that they produce two-thirds of crops. Women in Africa have generally been known to play an important role in small-scale traditional agricultural production (FAO 2003).

2.4. Strategies in the literature for addressing the multi-faceted problems

There are many strategies that the government has employed in order to address the problems of food insecurity in the world. The government is trying by all means to create and fund projects which are the main sources of contributors to poverty alleviation. Below is what the government does in order to keep food insecurity at a minimum level to be discussed in a more detailed way.

2.4.1. Household food supply and food access

Assess the gender-specific food insecurity situation in emergency settings. Is it due to; loss of own production or stocks, loss of income and/or tradable assets; difficult economic access to food (i.e. price increase); breakdown of traditional support systems etc. Ensure that women and men have equal access to food and other productive resources (FAO 2005).

2.4.2. Emergency livelihood analysis

Assess constraints, productive capacity and capabilities of household food securers of different socio-economic groups, including female - and child-headed households and families with disabled and HIV/AIDS-affected people. Identify with the population the priority problems and development opportunities for each socio-economic group (FAO 2005).

2.4.3. Gender-sensitive targeting

Establish mechanisms to reach the specific target groups of women, girls, boys and men. Ensure enough flexibility for programmes to be adjusted if particular target groups of women, girls, boys and men are being adversely affected, using a participatory approach (FAO 2005).

2.4.4 Capacity building

Raise awareness of decision-makers and extension workers on the importance of gender issues in emergency programmes. Assess what support women and men need to increase their capacities and skills and if both will benefit from new skills introduced by the food security programme. Promote equal access to training, extension and information to women and most vulnerable groups (FAO 2005).

2.4.5. Measurement issues

According to the Economic Commission for Africa (2007) to analyse the concept of food security and the related concepts ,the study has to employ four approaches; a review of relevant existing literature on the impact of food security and developed country subsidies on food security; a synthesis of national reports on detailed case studies from the countries in the world with a similar level of development countries; a synthesis of a sub-regional questionnaire administered with all the relevant information an empirical estimation of the impact of food security on food production using an econometric model (ECA 2007).

2.5. The overview of poverty in the literature

Carter & May (1999) point out that poverty and food insecurity in South Africa is the result of several centuries of colonial and apartheid policies, designed specifically to create general conditions unfavourable to the well-being of black people in all its aspects, especially in the former homelands. In order to design effective policy interventions to redress the injustices of the past, it is important to better understand these historical processes (Saunders 1993).

Contemporary South Africa evolved at the turn of the 20th century from an agrarian setting through the rapid growth of commodity markets that sprung around major industrial mining, urban population and commercial agriculture centres. Initially, African farmers and entrepreneurs had successfully participated in the growing commodity markets under conditions of relative land abundance, low population size, low production, processing and distribution technologies, weak government interventions and relatively undistorted markets (World Bank 2003).

According to May (2006) Food insecurity and poverty among the majority of African population, which at the time was largely constituted of independent producers and entrepreneurs, was almost non-existent.1 With political and economic forces that led blacks to become the expected providers of wage labour to mining, industry and large scale agriculture, this situation of relative food security in South Africa among the majority population was to change (Heidi 2011).

2.6. The integrated food security strategy

Kehler (2001) points out that South Africaôs inability to meet basic needs has a variety of causes but, in contrast to most other countries, poverty and hunger are particularly shaped by the legacy of apartheid.

One aspect of that system was the deliberate dispossession of assets, such as land and livestock, from members of the black majority, while denying them opportunities to develop, access to markets, infrastructure and human capital (Saunders 1993). In addition, until 1985 agricultural policies pursued self-sufficiency, thus protecting domestic commercial farm production, often at the cost of consumers, resulting in a total welfare loss for the country as a whole. Post-apartheid policies, including the Integrated Food Security Strategy (IFSS), all aim to address the adverse impact of apartheid and move the country forward as a unity (Department of Agriculture 2004).

As a consequence of the policy debates on agriculture and food security, the IFSS turned out to be a multidimensional strategy, structured mainly around household food security in rural areas (DoA 2004). The arrangements proposed in the strategy appear to be an innovative blend of mechanisms with clear programmes, coordinating units and multi-sectoral-fora to stimulate and support programmes that would engage creatively with food insecurity. Section 27 (1) of the South African Constitution, states clearly that ñeveryone has the right to access to sufficient food and waterò. The state must take reasonable legislative and other measures, within its available recourses, to achieve the progressive realisation of each of these rights (Saunders 1993).

The vision of the IFSS is ñto attain universal physical, social and economic access to sufficient, safe and nutritious food by all South Africans at all times to meet their dietary and food preferences for an active and healthy life.ò This vision is closely aligned with the definition of food security provided by the United Nations Food and Agriculture Organisation (FAO 2004).

2.6.1. The Siyazondla Homestead food production program

DoA (2004) acknowledges that the Siyazondla program is a homestead food production programme targeting the poor, vulnerable and food insecure households who have access to a small piece of land (garden) complimenting the food parcels. This programme helps poor households to produce their own food. It provides infrastructure, training, start up inputs, and follow-up support programmes for backyard gardens (DoA 2004).

2.6.2. The Siyakhula step-up commercial food production program

According to the Massive Food Production Report (2004) Siyakhula step-up commercial food production scheme is a rural economic development initiative that targets, developing from small scale operations, grain food production through subsidising input supplies, mechanisation, marketing and agro-processing by means of a conditional grant scheme.

2.6.3. The Massive food program

The Massive food programme is a rural economic development initiative that targets grain food production through subsidizing input supplies, mechanisation, marketing and agro-processing by means of a conditional grant scheme (Massive Food Production Programme Report 2004).

2.6.4. The food security challenges

According to Heidi (2011) South Africa faces a wide spectrum of food security challenges, conceptually ranging from national-level to household issues. At the national level, challenges undermining South Africaôs ability to achieve food security is inadequate safety nets and weak disaster management systems. These challenges have implications for vulnerable households, in addition to a range of other household level challenges.

2.6.4.1. Inadequate Safety Nets

Poor households are typically characterised by few income-earners, and many dependants. They are also often primarily dependent on migrant remittances and social security grants, making them vulnerable to food insecurity (ILO 1996). Rural households are particularly vulnerable because of their reliance on the remittances from the urban areas. In South Africa, they are also frequently constrained by a lack of economic activities in close proximity to their communities, inappropriate farmer support services, and face constraints to gaining access to employment elsewhere, such as a lack of information and transport (Heidi 2011).

According to ILO (1996) at the national level, the challenge is to create the economic conditions that favour poor, food-insecure households. This means establishing changes that actively encourage the participation of all in the mainstream economy, and thereby minimizing poor householdsô dependency on government assistance. In other words, social safety nets should be viewed as a policy of ñlast resortò, in helping those food insecure households that have not benefited from the enabling, pro-poor economic environment that the government has supported (Province of the Eastern Cape 2003).

2.6.4.2. Weak Support Networks and Disaster Management Systems

In order to develop new policies and implement food security programmes, policy-makers at all levels of government require considerable information on the conditions of food demand and supply in different parts of the country (Heidi 2011). This information can be used to identify risky and vulnerable areas, with respect to food access and use. Food security information is multi sourced and, when using existing data collection systems through established agencies, cooperation and coordination is a key to establishing efficient and cost-effective systems. One such example of weak institutional support networks relates to disaster management systems. South Africa does not yet have a structured system of dealing with food security disasters, such as droughts or floods. These disasters, which occur at regular intervals, can substantially threaten the food security position of agriculture-based households. With few reserves to draw on, these households are hit hard by crop failure and asset loss (CLEP 2008).

2.6.4.3. Inadequate and Unstable Household Food Production

Hunger and malnutrition in South Africa stem from insufficient, unstable food supplies, at the household or intra-household level (Saunders 1993).The majority of producers in the former homelands are unable to feed their families from their narrow production base. They are deficit producers, and hence, net consumers of purchased food, and rely on non-farm income to meet most of their household needs. Even non-catastrophic events such as seasonal, climatic variation are enough to push many of these households onto the verge of a food crisis. Government assistance is often a major source of income for many of these households, given the high level of rural unemployment and dwindling migrant income transfers. As a result, many rural areas experience periodic bouts of hunger (Heidi 2011).

2.6.4.4. Lack of purchasing power

The majority of households in South Africa lack cash to purchase food. Underlying the lack of purchasing power is the limited scope of income opportunities, especially in the rural areas. Unemployment rates have remained high at 38%, despite other decent economic indicators (Statistics SA 1998). Black households have the lowest standards of living and are much more vulnerable to poverty, and food insecurity. Although food

insecurity is highest among Africans, it also affects a significant number of Coloured and Indian households. There are also some pockets of food insecurity among urban whites. The HIV/AIDS epidemic and other communicable diseases have further undermined food-insecure households (Heidi 2011).

2.6.4.5. Poor Nutritional Status

According to the PoEC (2003) one child in four under the age of six years (which translates to approximately 1.5 million children) is stunted due to chronic malnutrition. These figures dramatically highlight the vulnerability of children in South Africa. Food insecurity and malnutrition are highest in provinces with large rural populations such as KwaZulu-Natal, Northern Province, Eastern Cape and the Free State.

2.7. The Land reform program in post-apartheid era

Griffin, Khan & Ickowitz (2002) mention that after 14 years of democracy in South Africa there is agreement across the political and social spectrum that the stateôs programme of land reform is in severe difficulties. Almost since its inception, the programme has been criticised for failing to reach its targets or deliver on its multiple objectives of historical redress, redistribution of wealth and opportunities, and economic growth (African Encyclopaedia 2010). Particular weaknesses are highlighted by its political supporters and opponents alike which include the slow pace of land redistribution, the failure to impact significantly on the land tenure systems prevailing on commercial farms and in the communal areas, and the widespread perception that what redistribution of land has taken place has not been translated into improvements in agricultural productivity or livelihood benefits for the majority of participants (Platteu 2002).

Ntsebeza (1999) notes debates around land reform since 1994 have been dominated by the extent of land redistributed from white to black owners (or occupiers), usually expressed as a proportion of the total area of agricultural land owned by white people at the end of apartheid. By March 2007, the land reform programme in all its forms had transferred somewhere in the order of four million hectares which is roughly 5% of white-owned land to historically disadvantaged South Africans (Moyo 1995). One of

this, approximately 45% came from restitution and 55% under various aspects of redistribution, including the Settlement Land Acquisition Grant (SLAG), Land Reform for Agricultural Development (LRAD), commonage, farm worker equity schemes, state land disposal and tenure reform (Ntsebeza 1999).

According to Moyo (2000), agriculture in Africa can be classified as bimodal which is divided into smallholder and large scale/ estate agriculture. The underdeveloped state of smallholder agriculture in most African countries has largely been shaped by economic and agricultural policies which disfavour this form but promotes the larger farmers (Estudillo, Quisumbing & Otsuka 2001). The relative decline of agricultural production for domestic food and industrial requirements is a major concern in Africa (eds. Van Zyl, Kirsten & Binswager 1996).

There has been increased food insecurity and impoverishment because of the increasing cost of food for the majority of the poor and the concentration of consumption among the relatively wealthier and better endowed countries, regions and social groups with access to land and incomes in and outside the agriculture sector. Most of the best agricultural land is used for the production of export, with little of the produce finding its way onto the local market. Most African countries are characterized by dependency on production of a small range of primary commodities and have traditionally been dependent on the export of a single commodity (Carter & May 1999).

FAO (2001a) points out that agricultural development, in which better productive land and resources are provided to the poor, is key to poverty reduction, but the State, in response to both internal and external pressure, is steadily withdrawing from active involvement. However, some development organizations and other grassroots organizations have played a critical role in supporting peasant economies through improving land tenure security and other general working conditions of communities (FAO 2001b). In most of Africa, land-use regulations and planning frameworks, inherited from the colonial era, have been ideological tools for maintaining the unequal distribution of land and inequitable security of tenure (Ellis 2000).

2.7.1. The Land Tenure program

Women are recognized as playing a pivotal role in maintaining and strategically using land and natural resources. Thus, in any debate on land tenure and livelihoods, gender requires special treatment, and any set of strategies for sustainable food security must address womenôs access to productive resources (African Encyclopaedia 2010). Typically, gender relations are governed by the prevailing socio-political structures and religion-ideological value systems. According to kehler (2001) in Africa, the predominance of traditional systems relegates women and children to minority positions, ensuring that women only have access to land and related natural resources through their spouse or male relatives. This division between primary (male) and secondary (female) access may have an impact on the way men and women manage natural resources in communal areas (May 2006).

Lunning (1965) suggests that one of the most serious obstacles to increasing the agricultural productivity and income of rural women is their insecurity of land tenure. Security of tenure is the key to having control over major decisions, such as what crop to grow, what techniques to use, what to consume and what to sell. Without this, women cannot access credit and membership of agricultural associations, particularly those responsible for processing and marketing (Weiner, Moyo, Munslow & Oôkeefe 1985). Their access to technological inputs is limited; they are frequently not reached by extension Services and are rarely members of cooperatives, which often distribute government subsidized inputs and vital market information to small farmers.

In addition, they lack the cash income needed to purchase inputs even when these are subsidized. Land reform and the forces of modernization have had a mixed effect on the status of women in Africa (Kehler 2001). Few agrarian reform or resettlement programmes have significant numbers of female beneficiaries or even pay attention to gender as a beneficiary category. In some cases, however, women have gained greater access to land through reform, generally where the participation of rural women is a well-defined state policy. In some countries, agrarian reforms have replaced the feudal system, where women traditionally held a subordinate role in family production. There are also

many instances where womenôs organisations have fought to gain access to land, which they farm collectively (Van Zyl *et al*. 1996).

2.7.2. The Land Redistribution programme

According to Ntsebeza (1999) Land redistribution is potentially the most important and far-reaching component of land reform in South Africa. In line with Section 25(5) of the Constitution, the objective of the land redistribution programme is ćto foster conditions which enable citizens to gain access to land on an equitable basisô. In practice, this is generally taken to imply the redistribution of land from white to black owners and occupiers.

Given the extreme racial imbalance in landholding at the end of apartheid, when close to 90% of agricultural land was controlled by the white minority; this has potential implications for most of the national territory and much of the population (Altman, Hart & Jacobs 2009).

According to Pinckney & Kimunya (1994), the aims of its combined Land Redistribution and Tenure Reform Programme are as follows; redistribution of 30% of white-owned agricultural land by 2014 for sustainable agricultural a development which was set in 1994 as an interim aim during the transition to democracy, provision of long-term tenure security for farm dwellers and other vulnerable groups; contribution to poverty reduction; contribution to economic growth; and promotion of social cohesion and economic inclusion (Agarwal 1997).

2.7.3. The land Restitution program

Recent years have witnessed dramatic increases in the number of land restitution claims settled and, equally important, the amount of land actually restored to claimants. While earlier phases of the restitution process were dominated by cash compensation and the restoration of state owned land, restitution is now firmly focused on claims affecting privately owned land where claimant communities are demanding restoration (Griffin *et al*. 2002). Many of these claims are on relatively high-value agricultural land and face resistance from current owners, which has contributed to the slow pace of settlement.

Addressing these complex claims and the various deadlines for settlement of all restitution claims has seen much attention focused on the prospect of expropriation. Plattaeu (1996) acknowledges that another important recent development has been the attention given to the needs of claimants who have had their land restored to them and wish to use it productively.

This issue has been forced onto the public agenda by the multiple problems reported around high-profile restitution settlements, such as Khomani San, in the Nothern Cape, and Elandskloof, in the Western Cape, the growing awareness that beneficiaries across the spectrum of land reform are receiving little in the way of training, finance or support beyond the transfer of land, and the difficulties experienced by many successful claimants in launching productive enterprises (Mashiri 2007).

2.7.4. Land in South African economy and politics

Obi (ed. 2011) notes that in every fundamental sense, South Africaôs history has been more about land than much else. Although much of the recent discussion on the land question trace the discriminatory policies to the Land Act of 1913, the events that build up to it date back several centuries to the arrival on the South African shores of Jan Van Riebeeck.

Obi (ed. 2011) remarks that there is evidence that the increasing agricultural activities brought with them unexpected affluence among the Dutch settlers and, along with this development, increasing envy of the others of both within and without who were beginning to develop some interest in what was going on in the territory. The most outstanding such new entrants were the English who apparently saw themselves being marginalized by the new economic prosperity. According to Obi (ed. 2011) the war that is variously described as the South African War and the Anglo-Boer War fought over the period 1899-1902 was about land and brought devastating consequences on the territoryôs agricultural economy.

As the apartheid strange hold tightened around the black farming population there were signs of resilience and determination to make farming pay within the black homelands (ed. Obi 2011) draws attention to the struggle among the black farmers to produce some food for subsistence purposes as more Acts were enacted that reinforced their marginalization. Special mention is made of the 1968 Marketing Act which, while coming up with some new measures to improve the marketing system, still provided for treating different geographical areas differently.

2.7.5. The impact of land reform on food production

Pinckney & Kimunya (1994) point out that recent studies have revealed the limited impact of most land reform projects in terms of productive land use and household livelihoods. This has been attributed to many factors, but the most widely cited are inadequate or inappropriate planning, a general lack of capital and skills among intended beneficiaries, a lack of post-settlement support from state agencies, most notably local municipalities and provincial departments of agriculture, and poor dynamics within beneficiary groups (Moyo 2000a).

Griffin *et al.* (2002) mention that while various initiatives have been undertaken to address the challenge of post-settlement support, such as the introduction of the Comprehensive Agricultural Support Programme (which, despite its name, has effectively been limited to grants for farm infrastructure), the provision of micro-credit under the Micro-Agricultural Finance Initiative of South Africa (MAFISA) programme and the creation of post-settlement support units, it would appear that many, if not most, land reform projects remain without the support they need to use their land productively. Potentially the most significant initiative in this area is the recent Settlement and Implementation Support (SIS) strategy, developed by the Sustainable Development Consortium, which proposes a joint programme of government, spearheaded by the Ministry of Agriculture and Land Affairs in partnership with organised land reform beneficiaries, private sector role-players and Non Governmental Organisations (NGO)ôs to provide comprehensive support services to ensure sustainable land reform projects and the fulfilment of broader constitutional obligations (Government of South Africa 2010).

The projected acceleration of land transfers does not in itself address the ongoing challenge of post-settlement support indeed, it makes the need even greater and it remains to be seen whether the SIS or other strategies will be implemented on a significant scale and have the required impact (Griffin *et al*. 2002).

2.8. The issues of Agriculture black economic empowerment (AgriBEE)

AgriBEE refers to black economic empowerment (BEE) in agriculture. In January 2004 the Broad-Based Black Economic Empowerment Act was signed into law in South Africa. The rationale for governmentôs enactment of this law is to promote access for previously disadvantaged people to South Africaôs productive resources, and thus attempt to seek stability and growth of the economy, increased employment and more equitable income distribution (Standard Bank 2005). Various BEE charters, such as the Mining Sector Charter and the Financial Sector Charter, have already been launched. Following President Mbekiôs ñState of the Nationò address early in 2004, in which he requested that a concept document for the implementation of BEE in agriculture be compiled, the Minister of Agriculture and Land Affairs, Ms Thoko Didiza, released a draft AgriBEE document in July 2004 (Kwanalu, 2004a).

Amongst other proposals, this document recommended that 30% of commercial agricultural land be owned by blacks by 2014, an additional 20% be leased by blacks by 2014, 10% of existing farmland be set aside for farm workers for their own production, that farm workers achieve a 10% ownership stake in all farm enterprises by 2008, and that illiteracy among farm workers be eliminated by 2010 (Hlengani 2005). These proposals have attracted considerable criticism, particularly from organised agriculture in South Africa, due to the lack of clarity on definitions, the perceived ñimpossibleò targets set for transformation, and because the document was produced without consulting major stakeholders.

The ñStrategic Plan for South African Agricultureò, which was published by the National Department of Agriculture (NDA) in November 2001, clearly defined the vision for SA agriculture and the implementation of the strategic plan (National Department of

Agriculture 2001). This document was based on wide consultation among the major players in SA agriculture, namely AgriSA (representing commercial farmers), NAFU (National African Farmers Union ï representing emerging farmers), and the NDA, and they all supported this document (NDA 2001).

The contents of the concept AgriBEE document, however, were widely considered as a ñshifting of the goalpostsò by the Minister and they created considerable confusion and uncertainty, particularly amongst commercial farmers. The lack of transparency in drafting the AgriBEE document is a major concern. More uncertainty among farmers leads to reduced investment, lower productivity and, hence, reduced farm competitiveness. Following criticism of the AgriBEE document, the Minister formed a Steering Committee to promote consultation, and it was agreed that the consultative process would be finalised by 20 December 2004 (Kwanalu 2004a).

Provincial farmersô associations across South Africa met to discuss the draft AgriBEE proposals and have submitted their recommendations to this Committee. For example, the core message that emanated from a well attended farmer workshop organised by the KwaZulu-Natal Agricultural Union (KWANALU) in November 2004 was that AgriBEE must be attainable with regard to goals, targets and timetables; practical; economically feasible (in terms of government funding and economies of farm size); a productive and profitable agricultural sector must be sustained; and it must apply to SA citizens only (Kwanalu 2004b). The outcomes of numerous conferences and workshops held in the country indicate that there is still considerable uncertainty among stakeholders (such as commercial farmers, organised agriculture, commercial banks, NGOs, and even the government) about what AgriBEE entails and how to achieve its goals.

It seems that commercial farmers, who will bear the brunt of the AgriBEE challenge, are willing to find constructive solutions to the proposals. However, it needs a concerted effort from all stakeholders, strong and competent leadership and management among government officials and organised agriculture, and a transparent and consultative

process to find solutions that reduce uncertainty and which do not undermine the sectorôs competitiveness in the long term (Kwanalu 2004a).

2.9. Women active in agriculture and rural development

Kehler (2001) acknowledges that women play a pivotal role in both maintaining and strategically using land and natural resources. Besides being managers and providers of food in the family, they are also carriers of local knowledge, skills for survival, and cultural memory. Most poor people, particularly women, do not own land, but rely on common property resources i.e. forests, lakes and velds, which are owned by the community or the state, as vital means of survival. Women are often regarded as having stronger links with the environment than men, yet women do not control land and related natural resources such as forests (Van Zyl *et al*. 1996). Allocation, occupation and use of communal lands are generally obtained through government selected bodies, which grant occupation according to customary law, where an adult married man is allocated land for use by himself and his family. Thus, women only have access to land and related natural resources through their spouse or male relatives. This puts women at a disadvantage, as they remain subordinate within male-centred structures (Moyo 1995).

Many women in developing countries, including South Africa, experience the cumulative and interlinked burdens imposed by class, race and gender, making them particularly vulnerable to poverty. Kehler (2001) points out that 52% of South Africaôs population is female, and 47% of these women live in rural areas. Unemployment among rural women in South Africa is at 53%, as compared to 37% among rural men (ibid). Statistics show that the majority of black South African women in rural areas live under extremely poor conditions, with the general barriers facing people in rural areas exacerbated by their limited access to education and skills training. Women in rural areas also experience the burden of both productive and reproductive labour, and their work in this regard is often unremunerated and under-valued (May 2006).

The absence of a significant number of men in rural areas of South Africa (for example, due to high rates of migration to urban centres) often implies that many women become the factor heads of households and ôbreadwinnersô for their families. In addition, due to the gendered social norms around care, women tend to be those who care for and support children and the elderly (Kehler 2001; Van Zyl *et al*. 1996) agree on this. In Sub- Saharan Africa, 30% of rural households are headed by women, and are often the poorest.

According to the PoEC (2003) the Eastern Cape Department of Agriculture (ECDoA) in collaboration with the Accelerated and Shared Growth Initiative of South Africa- Eastern Cape (ASGISA-EC), and Eastern Cape Socio - Economic Consultative Council (ECSECC) have been engaged in a process of seeking to transform agriculture production systems, livelihood patterns and human development. This has also been made possible by support from various international donor organisations and support. ILO (1996) points out that; the approach has sought to tackle poverty from an agriculture development, employment creation and empowerment perspective. The approaches are broadly referred to as Agrarian Transformation and Food Security pillars of the Provincial Growth and Development Plan (PGDP), which encompasses programmes, such as Massive Food Production, Siyakhula step-up commercial food production, Siyazondla homestead Food Production, Comprehensive Nutrition Programme and Integrated Agricultural Infrastructure Programme. However, for the purpose of this paper the focus is on the three categories of food production; Siyazondla homestead food production, Siyakhula step-up commercial food production and Massive food production system (Saunders 1993).

The Siyazondla system of homestead production supports production of nutritional food within rural and urban homestead gardens, meeting immediate needs while strengthening household livelihoods and laying the foundation for livelihood diversification and enhanced economic exchange (Cabinet Lekgotla 2007). The aim is not only to improve nutrition levels (particularly for people living with HIV/AIDS and/or TB) and strengthen household food supply, but also to support surplus production where possible and feasible. Such surplus production already occurs on many a farm and needs to be

supported. The aim is not to turn every rural person in the former homelands into a farmer. Rather, it is to address food vulnerability at the household level and support the diversification and strengthening of household livelihood strategies, while also supporting surplus crop production where appropriate (CLEP 2008). The Siyazondla program assists with the establishment of food gardens at community level, at clinics and at schools. More than 10,000 vulnerable households benefit directly.

According to the PoEC (2003) food security is further provided by means of the PGDP's Comprehensive Nutrition Programme, which has several elements, one crucial leg of which is school nutrition. The Education Department provides meals to learners every day of the week, increased from three days a week in 2005. Schools are being encouraged to establish food gardens, and efforts are being made to organize local co-operatives to provide the school meals. As at 2006, the Education Department employed 5,800 meal servers of which 90% of those are women (ILO 1996). The programme has helped poor households to produce their own food. This has been possible through infrastructure, training, start-up inputs, and follow-up support programmes for backyard gardens that are upwards of 144 square metres in size. While the grant provides the most support in the first year, the magnitude of that supports tappers off in succeeding years (Cabinet Lekgotla 2007).

2.9.1. Employment creation

According to Saunders (1993) Agriculture supports more than 70% of Africaôs population. The sector employs the largest number of workers and generates a significant share of GDP in most countries. For example in 1990, the agricultural sector accounted for 68% of the workforce in sub-Saharan Africa and 37% of the workforce in northern Africa. The main purposes of agricultural production are to meet food security needs, supply inputs to the agricultural industry and earn foreign currency (World Bank 2003).

Cabinet Lekgotla (2007) acknowledges that; Siyazondla has had a positive impact, since it has given women of all ages to gain a sense of ownership and knowledge in terms of crop production not only for their own consumption but as their source of income as well.

This has served as a critical learning platform in terms of cooperation and organisation. Villages, communities, women and youth groups have successfully organised themselves into collective buying and marketing structures, which could be the cornerstone for agrarian transformation. In addition, the Siyazondla program has swelled the numbers of the employed most of who had never had this experience. This programme is currently the highest contributor to local sources of income, while the others individually contribute less than a quarter of the total local income. Carter & May (1999) mention that; apart from participants being able to produce to satisfy home consumption, significant numbers are producing surplus for the market thereby improving their potential to generate income for other household needs.

Further project benefits like gaining knowledge in producing different crops and the resultant increased production leading to self sufficiency is another positive impact of the programme (Kehler 2001). In addition, being part of the project has helped farmers to come together as a unit not only for farming but to use their groups for advancing developmental needs of their respective communities and to learn from each otherôs experiences. Incidences of diseases and pests have been observed to be lowering. To date even man have had a chance to join the Siyazondla project, this has been made possible because there are male headed home (Cabinet Lekgotla 2007).

The government also acknowledges that as the programmes were developed for and inspired by women therefore they shall remain under the ownership of women. Many women have found employment through their Siyazondla projects, because now and then they are able to grow crops and sell them to nearby outlets i.e. fruit and vegetable stores, and so on. In this the women have managed to set a trend for the young women of this country, as the level of unemployment remains shockingly high, the youth is now able to follow suit (Kehler 2001).

2.9.2. Poverty alleviation

Saunders (1993) points out that the obligation to respect the right to food requires the South African government to take no measures that could deprive people of their right to

food for example, measures that prevent people from having access to food as happened under the apartheid regime. The obligation to protect the right to food means that the government should enforce appropriate laws and take other relevant measures to prevent anyone violating the right to food of others furthermore, the obligation to fulfil the right to food entails that governments must pro-actively engage in activities intended to strengthen peopleôs access to and use of resources, in order to enable them to feed themselves. As a last resort, whenever an individual or group is unable to enjoy the right to adequate food for reasons beyond their control, states have the obligation to fulfil that right directly (DoA 2004).

In summary, the right to food means that governments must not take actions that result in increasing levels of hunger, food insecurity and malnutrition. It also means that governments must protect people from the actions of powerful others that might violate the right to food. Furthermore, governments must, to the maximum of their available resources, invest in the eradication of hunger (Right to Food 2010).

2.9.3. Challenges

May (2006) notes that in Africa, the need to increase food production to enable increased food consumption has become more desperate as the demands of an increasing population have not been met. As a result, marginal land has been brought into production, and commercial operations continue to use fertilizers and chemicals for increased productivity, while fallow periods have been reduced. Although such activities are designed to increase productivity, they can result in exhaustion of the production capacity of the land. Climatic variability and change and inappropriate land-use or land tenure policies add to the pressures and magnify the impact (World Bank, 1986). The inequitable distribution of land has contributed to the declining state of resources in Southern African countries, thereby creating the conditions that lead to food insecurity. These environmental security problems induce conflicts at the inter-state and intra-state levels: the class and racial levels; and at the local level (Plattaeu 1996). Environmental security is inextricably linked with human security, with some writers stressing environmental security as the capacity of humans to live harmoniously with nature or to

maintain a sustainable environment, while others stress the human security element of individuals and groups being able to meet their basic needs from a sustainable environment (Carter & May 1999).

According to Kehler (2001) the process of providing food security for all will not be fast. Despite strong government commitment, tremendous disparities in food security persist, many of them linked to inequality issues in terms of geographic location, gender and race. Statistics suggest that food insecurity is most severe in rural areas, where most of the poor live (70 %). Apart from that, most of the rural population are black Africans. Nearly a third of all South African households are female-headed, which are considerably poorer than male-headed households. Some 52 % of female-headed households spent less than US$140 per month in 1996, while the corresponding figure for male-headed households was 35 % (FAO 2004). Although the IFSS is recognised as an innovative strategy and a comprehensive approach to tackling food insecurity in South Africa, many argue that it has not achieved many of its goals. However, despite several challenges associated with the food-security policy framework, there have been notable and important achievements, and this is suggested by the FAO (2004).

2.10. Women and their roles in decision making

Food and Agriculture Organisation (1996) states that women have often been overlooked or excluded from many agricultural development efforts. As a consequence, women frequently lack access to new information, production methods and support services, and this has led to both project failures and inequitable and unsustainable development. It is now recognized that increasing womenôs participation in agricultural development efforts is essential if agricultural output and productivity is to be improved in Sub-Saharan Africa (Ali 2002). Newer approaches to agricultural research and development advocate specifically targeting disadvantaged groups such as women to ensure their participation in the process of agricultural technology design and delivery (Namara, Horowitz, Nyamadi & Barry 2011).

Gender often influences knowledge acquisition and on-farm decision making and these differences must be thoroughly understood if agricultural research and extension programs are to design appropriate technologies for small-scale farming systems. Gender based knowledge differentials occur because men and women have different roles and responsibilities and perform different agricultural activities. Failure to assess these knowledge differences can impact technology design and impede adoption (Barrett 1995).

2.10.1. Women's role in small holder irrigation

The World Bank (1996) emphasizes the need for farmer participation of what it terms ñsub groupsò such as women, poor people, and the landless. Recent research in African irrigation schemes has found women to be major contributors of agricultural work and of irrigation in particular. Present estimates for womenôs contribution are in the range between 60 % and 95 % of the total work. A number of factors contribute to meet this state of affairs. First, irrigation seldom provides enough food or cash to meet family needs. Thus income has to be derived from other farm enterprises or be supplemented through paid employment (Brown & Nooter 1992).

Irrigation is the sole source of income for many smallholder farmers. Men commonly take on extensive agricultural and livestock farming and are often better qualified to take paid employment. Women mainly stay at home because of their multiple roles in childcare, homecare and farming, while men migrate out. Women are left to take over menôs former contribution to cultivation, operation, and maintenance of the irrigation system. These women-headed households often lack not only ñmanò power but also may lack skills and capacities to participate effectively in operating, managing, and developing schemes to meet their needs (Hudson 1987).

This aspect of rural communities will not change significantly in the near future as it results from long-term disadvantages of women in access to education and technical training. Male out-migration, on the other hand, will increase as rural production continues to lag behind population growth, further swelling the number of women-headed

households in rural areas. Mainstream small-scale irrigation development, then, is a major ñwomanò issue and womenôs lack of capacity has to be addressed to promote sustainable development (Backeberg & Groenewald 1995).

Womenôs gardens are an important development in which women already demonstrate their ability to use water efficiently, market high-value crops, and maintain and repair equipment. The gardens are essentially commercial and are important to rural, peri-urban and urban women generate income over which they retain control (Brown & Nooter 1992).

2.11. Sustainable use of irrigation in small scale farming

FAO (1996) notes that irrigation expansion is important to the health of the agricultural industry; improving the viability of individual farming enterprises, increasing the efficiency and economic viability of irrigation districts, and contributing to the economic and social objectives of the farming area and the country as a whole. Intensification of irrigation, and the concomitant expansion of the irrigated area and increases in agri-food processing, will bring numerous direct and indirect benefits in the future (Barrett 1995).

Womenôs role in irrigation above field level is minimal. Although there are examples of women functioning effectively in water user groups and farmer committees, these are the exception rather than the rule. Newly developed systems may have evolved in a slightly more gender-aware way and include women in the management committees but, as irrigation investment in the region has been low in past decade, most schemes are male dominated at committee level (Moges 2004).

Itabari &Wamuongo (2003) suggest; unlike agriculture, irrigation has not attracted women professionals and few have chosen irrigation and engineering careers. Lack of young women entering scientific training is a major factor. Motivation to acquire relevant technical qualifications is reduced further for women by the lack of role models. At the policy level too there are a few women in the region. Qualified women are scarce and are recruited into work areas, which are regarded as appropriate to women, such as health,

community development, and education. Womenôs interests are not necessarily neglected but is a substantial risk that a paternalistic approach suffices and womenôs strategic needs are met (Rockstrom 2000).

Where irrigation performs poorly, failure is often attributed to poor commitment on the part of farmers, although clearly this is not always the case. Cost recovery is adopted as a policy in most African countries in the belief that farmers will respond by increasing participation and exercising keener economic judgement on construction and maintenance of irrigation infrastructure. Participation and commitment are closely linked and it is argued that participation has no meaning unless commitment is an integral part of the outcome (Mutekwa & Kusangaya 2006).

The majority of the population in sub-Saharan Africa make their living from rain-fed agriculture (FAO 1996), and largely depend on small-scale subsistence agriculture for their livelihood security. In semi-arid regions (SAR) the rainfall has extreme temporal and spatial variability and generally occurs as storms of high rainfall intensity, resulting in agricultural droughts and intra-seasonal dry spells (ISDS) that reduce the yield of rain-fed agriculture (Ali 2002).

The introduction of irrigation into areas where rainfall is insufficient and unreliable and where irrigation is not a traditional practice has been receiving high priority in recent years. It is a trend that will certainly continue. Generally speaking, however, irrigation schemes in such areas have been found to contribute little to rural development, notwithstanding and often in plain defiance of the original feasibility expectations (Barrett 1995).

Cousins (2013) remarks that the agricultural potential of most land in South Africa is limited, with over 60% of the country receiving less than 500mm of rain per annum on average, and with only 10 % receiving more than 750mm (World Bank 1994) Rainfall is unreliable, droughts are common and crop production in most of the country is inherently risky, making irrigation important for a range of field and tree crops. As noted above, it

is potentially a key focus of land and agrarian reform. About 1, 3 million hectares, or under 10% of all arable land, is under irrigation at present. In the past, distribution of irrigation water was as inequitable as the distribution of land, with white commercial farmers holding rights to over 90% of the water supply, supported by massive state investment in irrigation infrastructure. Little has changed since 1994, despite the laws that have separated land and water rights and declared water a national resource, and there has been no attempt to date to integrate land and water reform (Cousins 2013).

2.11.1. Socio-economic Characteristics of Irrigation Schemes

Small-scale irrigation is often only one of several sources of a household's income from agricultural activities besides rain-fed cropping and livestock activities (Brown & Nooter 1992). In most circumstances it is only a part of the total land and household has access to that is being irrigated. The asset structure and the entrepreneurial skill of the farmer will influence the resource allocation of a farm to its different enterprises. Experience from around the world shows that particularly small irrigators grow normally a variety of crops under irrigation (Brown & Nooter 1992)

Addressing household food security often has a high priority in the cropping schedule e.g. maize is being planted under irrigation, though, some cash crops could be grown which would achieve higher net margins. Only after that primary objective is accomplished irrigator households will diversify into other agricultural and horticultural enterprises, if from a farmer's perspective and the perceived risks are acceptable (Barrett 1995).

2.11.1.1. Livelihoods

Bembridge (2000) states that the proportion of plot holder homesteads living below the poverty line on smallholder irrigation schemes ranged between 50 % and 75 %, questioning the impact of small-scale irrigation on livelihood and poverty. The common trend by most agricultural economists regarding agriculture as the tool for alleviating poverty has led to the perception that most rural households should engage in farming to improve their livelihoods. Bembridge (2000) states that in the South African context agriculture in most rural households is the main rural livelihood activity to secure income

and household food security. Backeberg & Goenewald (1995) developed a comprehensive policy proposal aimed at assisting the development of the smallholder irrigation sector. This proposal recognized that smallholder irrigation and associated livelihoods are affected directly by three policy domains, namely irrigation policy, agricultural policy and rural development policy.

2.11.1.2. The Farming System and Marketing in General

According to Makhura (2001) the absence of an effective marketing system for their products and inputs, farmers do not have either the opportunity or the incentive to become productive as most of the farmers do not have their own means of transport, they rely on contractors, taxis or neighbours and some expensive hired transport because of relatively small quantities of produce. These means are sometimes inaccessible themselves because of the poor roads network in most rural areas (Makhura 2001). In some places the road infrastructure is poor, especially in provinces such as KwaZulu-Natal and the Eastern Cape. There is a lack of market information and the disseminating such information, which are critical for small farmerôs survival in the increasing competitive marketing environment.

Constraints related to market access are not unique to smallholder irrigation, market access is a challenge faced by all farming activities (Makhura 2001). There is general agreement that smallholders stand to benefit from cooperation in relation to markets, the creation of economies of scale being the primary reason. Generally, smallholders favour collaboration in relation to input markets, because they do not compete with each other on this market and because collaboration brings about more convenient or cheaper access to inputs. Collaboration among smallholders in relation to produce markets is less favoured, particularly when smallholders produce for local markets, because they compete with each other on these markets (Makhura 2001).

Makhura (2001) identify three types of markets which are tangible benefits for the smallholders. The first type consists of markets for bulk commodities to which comprehensive farmer support programs, in South Africa, the prime example of this type

of bulk commodity market is sugar cane. The second type of market where smallholder collaboration is advantageous is the production contracts and the third type is the produce markets of distance urban centres. Farming systems in South Africa have been developed under primarily arid and semi-arid climatic conditions where droughts are common. Adoption of agricultural practices by farmers maximizes precipitation utilization, ensure production, economic and social sustainability (Mutekwa & Kusangaya 2006).

2.11.2. Rain-water harvesting

Rainwater harvesting is broadly defined as the collection and concentration of runoff for productive purposes such as crop, fodder, pasture or trees production, livestock and domestic water supply in arid and semi-arid regions. For agriculture purposes, it is defined as a method for inducing, collecting, storing and conserving local surface runoff in arid and semi-arid regions (Mutekwa & Kusangaya 2006). It is an ancient practice and still forms an integral part of many farming systems worldwide. The first use of such techniques is believed to have originated in Iraq over 5000 years ago, in the Fertile Crescent, where agriculture once started some 8000 BC.

Itabari &Wamuongo (2003) note that rain water harvesting systems have the following characteristics: it is practiced in Arid and Semi-arid regions, where surface runoff often has an intermittent character; it is based on the utilization of runoff and requires a runoff producing area and a runoff receiving area; because of the intermittent nature of runoff events, water storage is an integral part of the system and it can be done directly in the soil profile or in small reservoirs, tanks and aquifers. The aim of the rainwater harvesting is to mitigate the effects of temporal shortages of rain to cover both household needs as well as for productive use (Bembridge 2000). It has been used to improve access to water and sanitation, improve agricultural production and health care thus contributing to poverty alleviation, reverse environmental degradation through reforestation and improved agriculture practice, aid groundwater recharge, empower women in the management of water and other natural resources and address floods and droughts by storing excess water.

In crop production systems, rainwater harvesting is composed of a runoff producing area normally called catchment area and a runoff utilization area usually called cropped basin. The major categories are classified according to the distance between catchment area and cropped basin as follow: In-situ rainwater harvesting, Internal (Micro) catchment rainwater harvesting and External (Macro) catchment rainwater harvesting (Backerberg & Groenewald 1995).

2.11.3. Use of grey water in small scale farming and gardens

The best land for agricultural production has been reducing by the time, due to high agricultural expansion. The population density is growing up, as a consequence the demand for land resources such as food, fuel and shelter has been increasing. There is a need for exploitation of land which is less suitable for agriculture, or land in less favourable climates (Rockstrom 2000). Arid and Semi-arid regions can be explored as a way of minimizing the land scarcity. There is a need of a more efficient capture and use of the scarce water resources in Arid and Semi-arid areas. An optimization of the rainfall management, through water harvesting in sustainable and integrated production systems can contribute for improving the small-scale farmersô livelihood by upgrading the rain-fed agriculture production (Hudson 1987).

In non-sewered areas of South Africa, the disposal of household wastewater arising from activities such as bathing, washing clothes and washing dishes (grey water) is commonly disposed off to the ground in the vicinity of the dwelling which can lead to the pooling of wastewater (Moges 2004). This in turn could lead to unpleasant odours, pollution of groundwater and surface runoff, soil erosion, health hazards and mosquito breeding. Grey water has been identified as a widespread problem in all categories of dense informal settlements in South Africa, exacerbated by poor or absent solid waste management (i). However, grey water contains nutrients that are beneficial to the growth of most plants, but could be harmful if it entered waterways (ii). Therefore one way to improve food security, and contribute to environmental improvement in poor communities served with dry sanitation, is to re-use grey water for irrigation of food crops in a small-scale urban agriculture (Namara *et al.* 2011).

Ali (2002) states that although grey water may contain grease, food particles, hair and other impurities, it does not normally contain human waste unless laundry tubs or basins are used to rinse soiled clothing or babyôs nappies/diapers. Grey water use in urban agriculture is potentially beneficial for a number of reasons, including: (a) Reducing the demand for potable water use for irrigation; (b) Environmental degradation, eutrophication and health hazards through pooling of wastewater can be resolved; (c) Potentially wasted nutrients can be reclaimed; (d) It contributes to poverty alleviation and food security; (e) could encourages people to use environmentally, friendly chemicals in their households. Thus although grey water reuse poses public health and environmental concerns, with adequate guidelines and education, issues around water saving, food shortage and malnutrition could be resolved (Namara *et al.* 2011).

CHAPTER 3

SELECTION AND DESCRIPTION OF THE STUDY AREA

3.1. Introduction

Methodology basically describes the methods which are used to conduct the research. Research methodology consist of research design, sample, sample procedure, data collection and data analysis which are used in the study and also guide the researcher on methods that are used in research process.

This chapter, therefore, includes the procedure of methods that are followed in order to conduct this research, it includes the study area and techniques that have been used in collecting data and the tools that have been used to determine and analyze women empowerment strategies, food security status and agricultural production practices that are being employed by Massive food production famers in Mbhashe local municipality, Eastern Cape.

3.2. Selection of the study area

The description of the study area is important because it familiarizes one with the area in which the study was carried out. The selected area for the study is Ngxakaxha Admin Area which is situated in Idutwa town at Mbashe local municipality in the Eastern Cape Province. Before the study area was chosen the researcher had a discussion with Mr Lusizi who is the Massive food co-ordinator at Mbashe Municipality. Mr Lusizi deals with the food security programmes under the Department of Rural Development and Agrarian Reform in Mbashe local municipality.

The researcher went to the Department of Rural Development and Agrarian Reform formerly known as the Department of Agriculture in Idutywa to get more information about the study area and the massive food programs located in Mbashe municipality. Ngxakaxha and was selected due to the fact that it is supported by the government and the project have been proven to be successful throughout the years since its implementation. Although other projects were mentioned other than this one, the

coordinator mentioned it as a very successful project due to the above reasons and also because it is operating on a large area which is 120 Ha. The members of the Ngxakaxha project were asked about the operation and the state of the project telephonically and through visits to the project site.

3.3. Description of the study area

The description of the study area familiarizes one with the area in which the study was carried out. Dutywa is a place that normally receives about 534mm of rain per year, with most rainfall occurring mainly during summer.

Dutywa as a whole is water scarce and so irrigation is highly practiced in many projects for successful farming. The Ngxakaxha Administrative Area is situated in the former Transkei region, Eastern Cape, South Africa; it can be classified as a rural community. Its geological coordinates are 32^0 7ô51ò S and 28^0 18ô46ò E. Ngxakaxha rural community is located outside Idutywa town; it is 10 km away from Idutywa town on the left hand side to Butterworth town. The area of Ngxakaxha is charecterized by poor infrastructure and high levels of unemployment. The population of area is made up of black South Africans; the Amaxhosa clan, who are mostly uneducated people who depend on both communal farming and social grants.Ngxakaxha Admin Area is comprised of five villages namely; Manfeneni, Lusizini, Good hope, Sheshegu and Zimpuku.

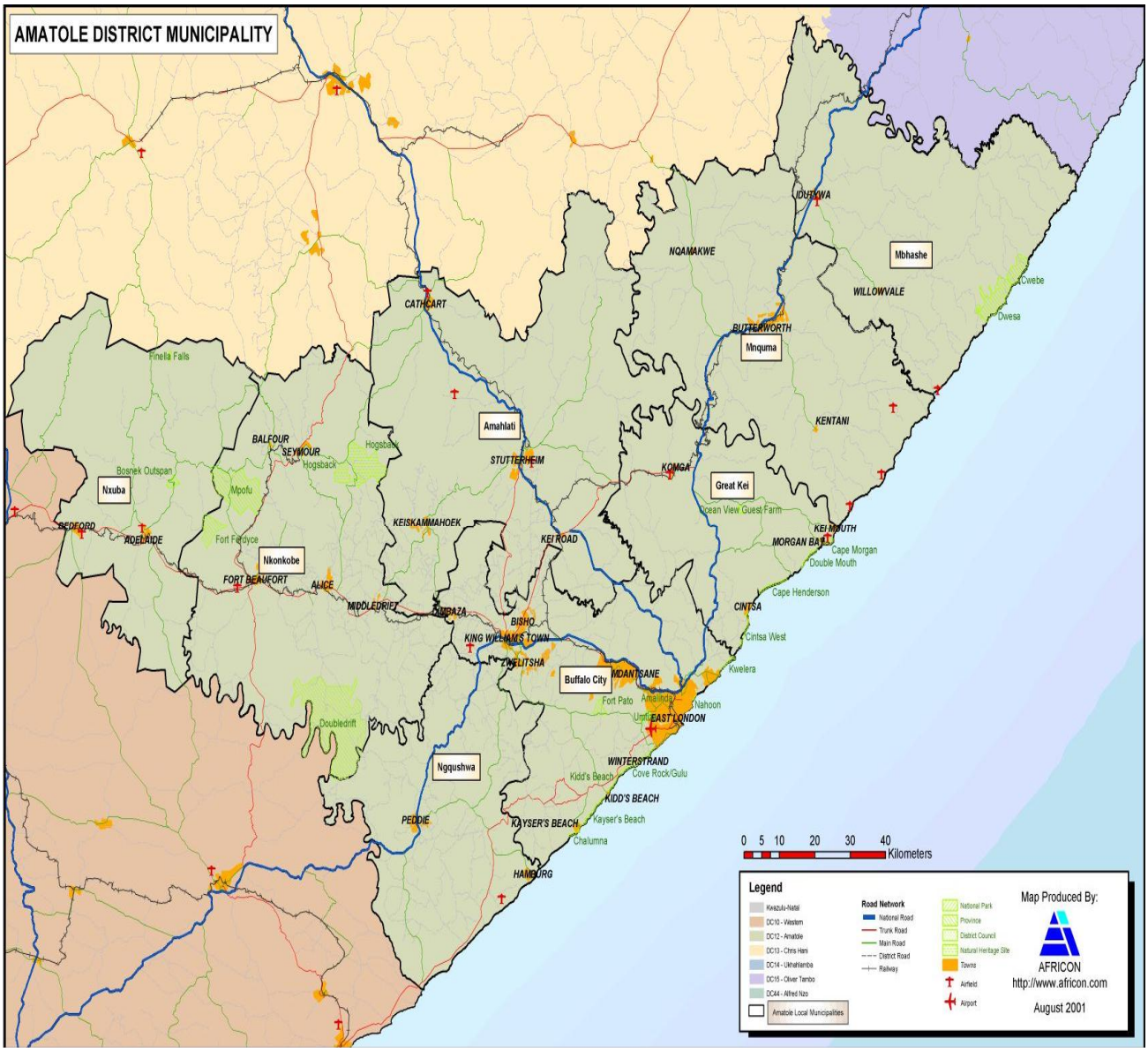

Figure 3.1: Showing the map of Amathole district municipality, with Mbashe local municipality.

Source; ECDC, 2010

CHAPTER 4

RESEARCH METHODOLOGY

4.1.Introduction

A methodology is usually a guideline system for solving a problem, with specific components such as phases, tasks, methods, techniques and tools. A methodology can be considered to include multiple methods, each as applied to various facets of the whole scope of the methodology (Berg 2009). This chapter is comprised of the sample procedure, methods of data collection, data analysis, interpretation and testing using the binary logistic model.

4.2. Sample procedure

There are quite a number of rural households in Ngxakaxha Admin Area of Idutywa who employ different food security strategies, however, only a few of them would be sampled. The unit of analysis for this study is rural households of Ngxakaxha Admin Area, Idutywa . The target population is about 669 rural households at Ngxakaxha Admin Area (N = 669). For the sample to best represent the whole population, a complete and correct sampling frame must or need to be used. The study consists of a sample size of 69 respondents for the survey (n = 69). The sample represents 10, 3% of the rural households at Ngxakaxha Admin Area. Rural households are selected based on interval or systematic sampling where only a certain or few number of houses per street will be randomly selected to ensure that the survey covers almost the whole or entire village.

The focus of this study is on rural households of Ngxakaxha Admin Area trying to find out about their food security strategies, focusing on own food production as the place is capable of producing own food crops. Interval or systematic sampling method which is a type of probability sampling, is a most suitable method which used, as it tries to cover the whole target population by selecting few respondents (rural households) per street trying to cover the entire area or population.

4.3. Methods of data collection

The study consists of a sample size of 69 respondents. Data is collected from individuals or respondents through interviews using interviewer-administered questionnaires. The questionnaires are interviewer-administered to alleviate the problem of misinterpretations or misunderstanding of words or questions by respondents. The respondents are presented with a series of questions that they respond directly on the questionnaire form itself with an aid of an interviewer. This questionnaire method of data collection is much quicker than formal interviews in terms of time. The interviewer reads questions to respondents and record their answers. The advantage of this data collection method is that an interviewer is in a position to probe for more information from respondents. These questionnaires also could ensure that all questions had been considered and respondents did not omit difficult questions. By having the questionnaires administered by the interviewer, it also means that information could also be obtained from respondents who could neither read nor write (Levy and Lemeshow 1991).

4.3.1. Questionnaire Design

Both primary and secondary data were used in this study. Primary data was collected using interviewer administered questionnaire which included household characteristics such as demographic questions (name, age, sex, education, area), availability and characteristics of resources or infrustructure found in the area (water sources, storage facilities, transport, marketing, extension services) and finally food security and gender eqiuty programs that are taking place in Ngxakaxha Admin Area.

Data is collected from individuals or respondents through interviews using structured questionnaires. The questionnaires are interviewer-administered to alleviate the problem of misinterpretations or misunderstandings of words or questions by respondents. This questionnaire method of data collection is much quicker than formal interviews in terms of time. The interviewer reads questions to respondents and record their answers. The advantage of this data collection method is that an interviewer is in a position to probe for more information when necessary. The questionnaire consists of both open ended and closed ended questions.

4.4. Data analysis and interpretation

Data collected from questionnaire already coded was entered into a spread sheet before being analyzed using Statistical Package for Social Sciences (SPSS) and Microsoft excel. Descriptive statistics analysis was used where frequencies and percentages of the variables were measured. The study uses graphs, tables (including cross-tables), descriptive statistics (mean, frequency, standard deviation and percentages) to analyze the data. Descriptive statistics is used in the analysis of personal and household information while graphs and tables are used to analyze other relevant information. Variables which are measured include demographic socio-economic profile of survey household heads where age, marital status, educational level, occupation other than farming, household size and gender of the household heads were meassured.

Resouces as well as the issues associated were also meassured. These resources include arable land, water and water sources, market and transport. Issues associated to these resources were also measured. Infrustructural needs as well as its associated issues were meassured. These infrustructures include fencing, irrigation equipment, processing and storage facilities. Food acquirement strategies are very much important in food security, which is why among others, some production management practices such involved in Massive food production system and access to markets to acquire food and as well as their frequencies were also meassured.

4.5. Testing using binary logistic regression model

The Binary Logistic Regression (BLR) model represents choices between two mutually exclusive options. The binary logistic regression is a logistic distribution bound between 0 and 1. Binomial Logistic Regression (BLR) model is useful in analysing the data where the researcher is interested in finding the likelihood of a certain event occuring. In other words, using data from relevant independent variables, binomial logistic regression is used to predict the propability of (p) of occurence, not necessarily getting a numerical value of the dependent variable (Gujarati 1992).

The binary choice model was employed to estimate a good measure of the success and the ability of a rural household to feed itself from own production, data was collected from 69 respondents and the information obtained was based on the farming season preceding the survey year. In this case, the basis for the analysis would be the reported quantity of own production that the respondents who participated in the survey have reported. Since only two options are available, namely ñable to feed themselves from own productionò or ñnot able to feed themselves from own productionò, a binary model is set up which defines Y=1 for situations where the farmer sold all produce, and Y=0 for situations where some or all produce was not sold. Assuming that *x* is a vector of explanatory variables and ɟ is the probability that Y=1, two probabilistic relationships can be considered as follows:

$$p(\mathrm{Y}=1)=\frac{e^{\beta' x}}{1+e^{\beta' x}} \quad \text{..... (1)}$$

$$p(\mathrm{Y}=0)=1-\frac{e^{\beta' x}}{1+e^{\beta' x}}=\frac{1}{1+e^{\beta' x}} \quad \text{..... (2)}$$

Since equation (2) is the lower response level, that is, the probability that some or all people would not be able feed themselves from own production, will be the probability to be modelled by the logistic procedure by convention. Both equations present the outcome of the logit transformation of the odd ratios, which can alternatively be represented as:

$$\text{logit } [\theta(x)]=\log\left[\frac{\theta(x)}{1-\theta(x)}\right]=\alpha+\beta_1\chi_1+\beta_2\chi_2+.....+\beta_1\chi_1 \quad \text{.....(3)}$$

thus allowing its estimation as a linear modelfor which the following definitions apply:

ɗ = logit transformation of the odds ratio

Ŭ = the intercept term of the model

ɓ = the regression coefficient or slope of the individual predictore (or explanatory) variables modelled

G_i = the explanatory or predictor variables.

4.6. The variables

The variables examined in the study are presented in table 4.1 below. Previous studies have shown that sustainable irrigation for own food production is strongly influenced by such factors as the physical conditions of the nature of production, access to production.

Area: The study was conducted in five rural areas which are situated under one administrative area.

Number of years in farming: This variable is expressed as the actual number of years of the respondent has been involved in farming. This determines the experience a farmer has, people with many years in farming will have more experience than those who have less years and will be producing more. People with many years in farming have more opportunities of acquiring resources more than people who are new in farming.

Household size: The number of people living together in one house influences the activities occuring in the house. Having a large household means more hand available to perform household duties including more people available for farm work. Thus. More labour will result to high agricultural production for the household with reduced lablour costs.

Education level (standard obtained): The highest level of education the respondent has or the standard obtained. When a person has a high level of education it easier for them to understand many things regarding new techniques of production, information in workshops, trainings especially new technology adoption. People who are illiterate have difficulties in understanding and so they need extra care.

Number of people bringing income in the family: This variable is expressed as the actual number of people bringing income a family has. This determines the amount of income the family has to survive, and thus the time the family devotes to own production If they have enough income to survive they will devote less time to mown production and vice versa.

The type of commodity: The type of commodity determines the amount of yield a farmer will have, it also has its own production characteristics and needs to follow a certain growth pattern. The type of commodity also determines the amount (revenue) thefarmer will get when it is sold.

The total number of bags sold: The actual number of 50 kg bags sold determines the amount of money the farmer will get (revenue), they also determine the amount of yield that the farmer produced.

The total amount received (revenue): The actual amount received by the farmer from produce sales is determined by the amount and quality of yield the farmer produced. If the farmer had produce of no good quality, he will have to sell locally at unreasonable prices but if he produced yield of good quality he will sell his yield in a fresh produce market where he will get reasonable prices.

Table 4.1: Model variables applied in the analyses

Variables	Unit	Type of variable	Expected sign (+/-)
Area	Rural areas in the municipality	Categorical	-
Number of years in farming	Actual number in years	Continuous	+
Household size	Actual number	Continuous	+
Education level (standard obtained)	Attended formal school or not	Categorical	+
Number of people bringing income in the family	Actual number	Continuous	_
Type of commodity	Whether Maize, cabbage or buttewrnut	Categorical	+
Total number of bags sold	Actual number	Continuous	+
Total amount received (revenue)	Actual amount	Continuous	+

CHAPTER 5

PRESENTATION OF RESEARCH FINDINGS

5.1. Introduction

This chapter represents the results of the research findings in the context of analysis of gender roles in smallholder irrigated farming. The data represented was collected from 69 smallholder farmers in Ngxakaxha Admin Area in Mbhashe Municipality; the area consists of five villages mentioned in the previous chapter. The aim of this chapter is to highlight womenôs participation in agricultural decision making and farm management. The chapter begins with a description of the demographic and socio-economic profile of the sampled households. It further goes on to discuss the institutional factors with special emphasis to gender role strategies in farming. The descriptive statistics such as the mean, maximum and minimum values, frequencies and standard deviations are employed.

5.2. Demographic and socio-economic profile of the sampled households

In this section, the respondentsô aspects such as gender, age, marital status and highest educational levels are discussed. These aspects are important because the main household activities are coordinated by the household head and the headôs decisions are most likely to be influenced by such demographic aspects (Makhura 2001). As the population continues to grow, increasing pressure on land, agricultural production, and rural householdôs behaviour under limited demographic conditions such as education would lead to a fall in agricultural productivity, food crises and increased rural poverty (Machingura 2007). The results of the demographic and socio-economic factors are presented in table 5.1; the factors are more discussed in detail on the following sub sections below.

Table 5.1: Summary statistics of the household demographic (continuous) variables

Variable	Minimum	Maximum	Mean	
	Statistic	Statistic	Statistic	Std. Error
Age	17	20	45.80	1.748
H/H size	4	14	8.71	0.271
No. of adults (>20)	2	8	3.83	0.188
No. of children (<20)	2	8	4.86	0.191
No. of people generating income	1	5	2.07	0.114

Source: Survey 2012

Table 5.1 represents the personal information of the household respondents. Demographic characteristics presented in the table include the age, household size, number of adults (Ó20), number of children (Ò20) and the number of people generating income.

Table 5.2: Summary statistics of the demographic (categorical) variables and socio-economic situation.

Variable	Gender	Category	Frequency	Percentage
Gender	Male	-	32	46, 5
	Female	-	37	53, 6
Marital status	Male	Single	7	10,1
	Female		5	7,2
	Male	Married	14	20,3
	Female		11	15,9
	Male	Divorced	5	7,2
	Female		3	4,3
	Male	Widowed	5	7,2
	Female		19	27,5
Education level	Male	No education	11	15,9
	Female		10	14,5
	Male	Primary	16	23,2
	Female		15	21,7
	Male	Secondary	5	7,2
	Female		6	8,7
	Male	Tertiary	4	5,8
	Female		2	2,9
Employment status	Male	Unemployed	14	20,3
	Female		23	33,3
	Male	Self-employed	4	5,8
	Female		6	8,7
	Male	Employed	4	5,8
	Female		3	4,3
	Male	Student	3	4,3
	Female		0	0
	Male	Farmer	7	10,1
	Female		5	7,2

Source: Survey 2012

Table 5.2 represents the personal information of the household respondents. Demographic characteristics presented in the table include the gender of the household head, marital status, education level, the employment status and the gender of the person who brings income.

5.2.1. Gender distribution

The household head may be a female or a male depending on cultural, social and economic circumstances. The household head is the one who makes decisions and coordinates the activities of the household (Pote 2008).The household head characteristics are very much important as they define how the whole household operates, most decisions in the household are being taken by the household head and so the head holds more responsibilities than the other members of the family and so it was important to investigate the characteristics of the household head.

It is greatly believed that men are the ones who should be involved in farming more than women and that women should do house work as they have many responsibilities at home which include taking care of the members of the family. The information on gender of household respondent is presented on the Figure 5.1.

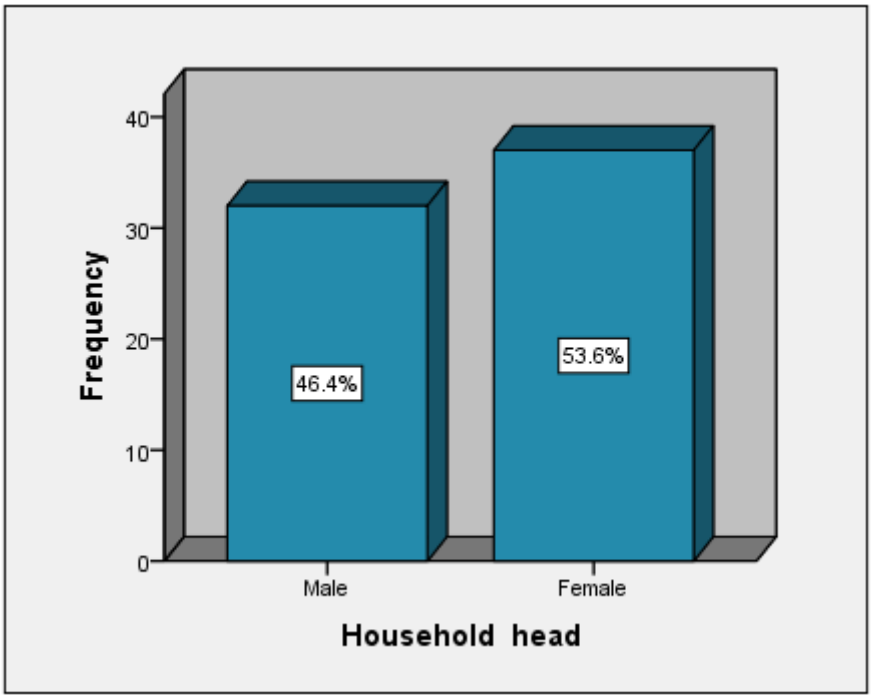

Figure 5.1: Distribution of the gender of the household head

Source: Field survey, 2010

Figure 5.1 shows the data that was collected from 69 respondents of which out of the 69; 53,6 % is women and the remaining 46,4 % are men. This clearly shows that women

have now become more actively involved in agriculture than before, women have taken control of the situation of agricultural production. It is widely believed that man headed homes are respected, their decisions should also be taken into account it is further noticed that men set rules to be followed by the members of the house and they should not be broken at any point. While women headed homes are not given much respect by the members of the community and worse for child headed homes. As we also know that agriculture was well known as a field of men, nowadays women have also taken stand and are very much involved in farming. The big difference in the number of males and females quite means that any development strategy in the area will definitely benefit women more than men.

5.2.2. Age of respondent

Age is one of the most important factors pertaining to the individualôs personality make up, since the needs and the way in which an individual thinks are closely related to the number of years a person lived. According to Romuld & Sandham (1996) young people are more adaptable and willing than older people to try out new innovations since old people believe in their old cultural way of doing things. However, Hofferth (2003) argues that older people have better experiences in agricultural activities than younger people in that they know the social and physical environments better than younger people. The respective ages of the respondents is displayed in Table 5.2.

Table 5.3: Distribution of respondents by age of household head.

Age of respondent	No. Of farmers	% of total
17-35	**20**	**29,0**
36-45	**16**	**23,2**
46-55	**9**	**13,0**
56 and over	**24**	**34,8**
Total	**69**	**100**

Source: Field Survey, 2012

Table 5.3 displays the respective ages of the respondents, specific ages were recorded but due to clear representation and analysis of age it had to be grouped into four groups. The first group consisted of people who are 17-35 and the number of farmers from that group was 20, the second group consisted of 16 farmers in the ages of 36-45, the third group had 9 farmers from the ages 46-55, the last group had the most farmers which were 24 in their group in the ages 56 and over. According to the above information it can be concluded that young people from the ages 17-35 do engage much in farming in one way or the other, they are now busy learning and helping out in the household they occupied 29, 0 % of the sample, but some leave rural areas for urban areas in search of jobs. Also from the above information it can be concluded that old people are more involved in farming and agriculture and most of them depend on agriculture for their livelihood, their distribution is 34, 8 % which is above any other category of age in the area.

5.2.3. Marital status of respondent

The marital status clearly defines a personôs livelihood; a married person cannot behave as a single one in terms of household responsibilities and commitments (Pote, 2008). Married people especially wives in rural areas tend to depend on their husbands for their livelihood including food and shelter. The information about the marital status of the respondents is presented in Figure 5.2.

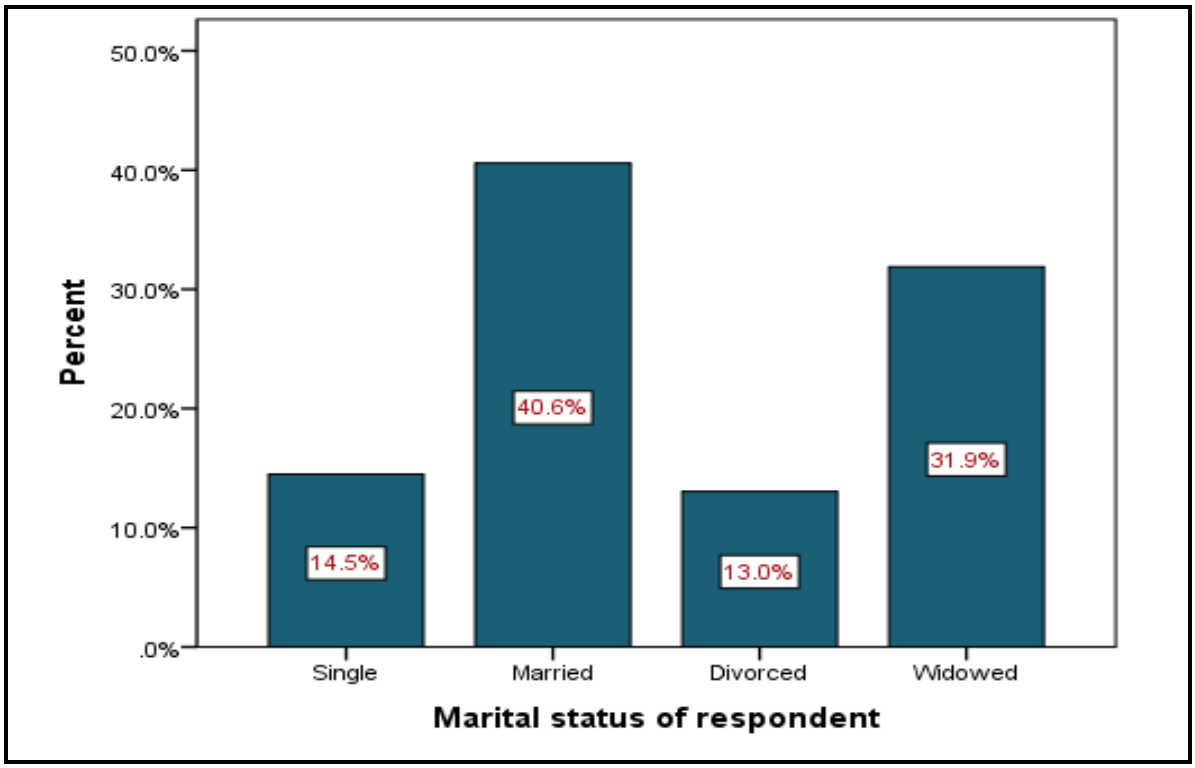

Figure 5.2: Distribution of the respondent by marital status

Source: Field survey, 2010

Marital status was considered in this study because it was important in accessing the time devoted to household activities and agricultural production in communal areas. 40,6 % of the respondents are married in which it makes easy for them to divide household responsibilities among the couple including farming. From the information above it can be concluded that 40,6 % of the respondents have time for farming. The highest number of married people was then followed by widowed people, which are those who have lost their partners and are now alone with all the household responsibilities, and followed by single people who only depend on their children to help them with the other duties of the house.

5.2.4. Household size of respondents

Household size refers to the members of the family living in one house; the household size is made up of both adults and children. The household size determines the number of people involved in farming activities, having a large household size means having

more people in the house and thus the household responsibilities are shared among all members of the house. The information on the household size of the respondents is displayed in Figure 5.3.

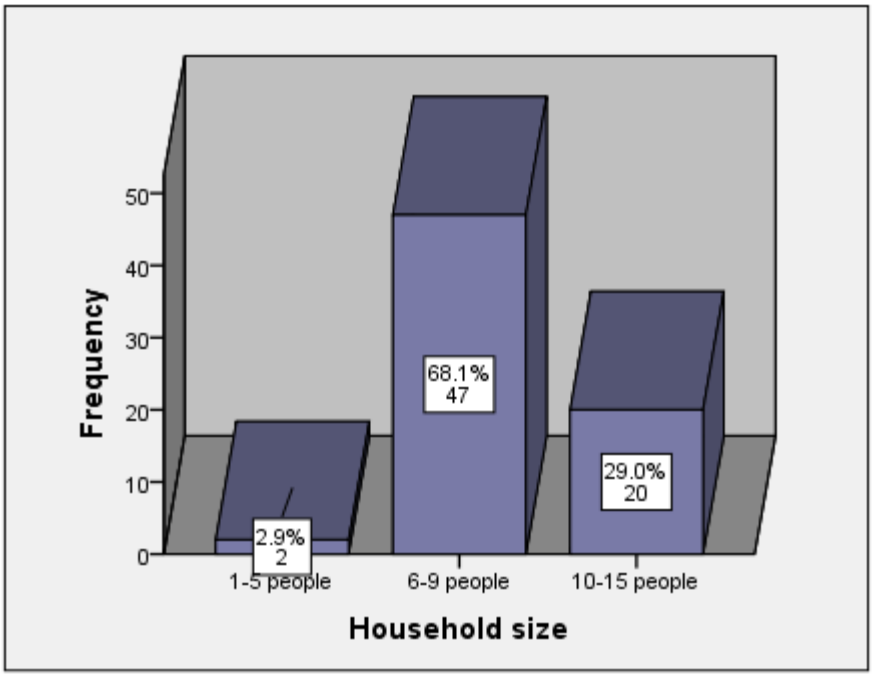

Figure 5.3: Distribution of household by household size

Source: Field survey, 2012

From Figure 5.3 it is presented that 47 respondents belong to the group of a household size with 6-9 people with a distribution of 68, 1% of the respondents and is the only group with most respondents, followed by 29, 0 % which is 20 people from 69 respondents which is the group of 10-15 people in the house, and then lastly the group of people from 1-5 people in the house with a distribution of 2,9 % with 2 respondents. Most respondents are in the group of 6-9 people which is a good number, from the above information we can conclude that most of the respondents have enough family members to carry on household duties and mostly can handle farm labour.

5.2.5. Education level of household head

The number of years spent in formal education is one of the important determinants of increased agricultural production. Education catalyses the process of information flow and leads the farmers to explore as wide as possible, the different pathways of getting information about agriculture and technology. Especially the use of modern technologies such as use of hybrid seeds, fertilizers and herbicides. The number of years spent in formal education is one of important determinants of adoption of new technologies (Ersado, 2001). Figure 5.4 displays information on the education level of the respondents.

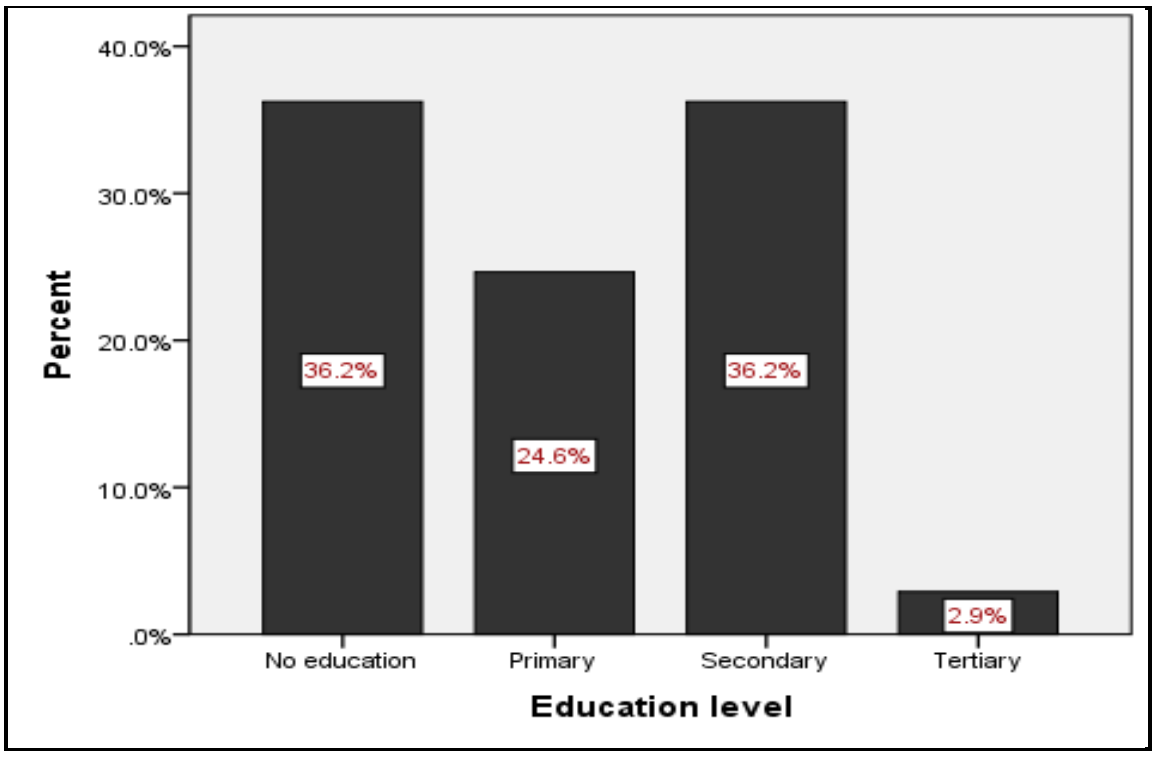

Figure 5.4: Distribution of respondents by education level

Source: Field survey, 2012

Figure represents the education level of respondents. In the 69 people that were interviewed, most of the people fall in the group of no education obtained. Many of the people with no education are old and very old people. The groups of education ranged from no education with 36, 2% and tertiary education also with 36, 2% and then followed by primary which is 24,6 % and then lastly tertiary education which is 2,9 %. With this

information a conclusion can be drawn stating that it is clear that back in the days school was not that important or people had problems attending school but that did not stop them from farming, it is clear that old people who are illiterate use their technical know-how for farming. Also all those who have managed to reach secondary school are not very old people but they could not further their studies.

5.2.6. Employment status of the household

The employment status of respondents clearly defines the time people have for farming, if a person is employed then it means that they will have less time for agricultural production on their hands, they will have to use the time they have after work of which by that time they are very much exhausted. Pote (2008) notes that people who are self employed or not employed have more time for agricultural production; they are able to try out all new techniques of production and will reap out great yields. The information on employment status is displayed in Figure 5.5.

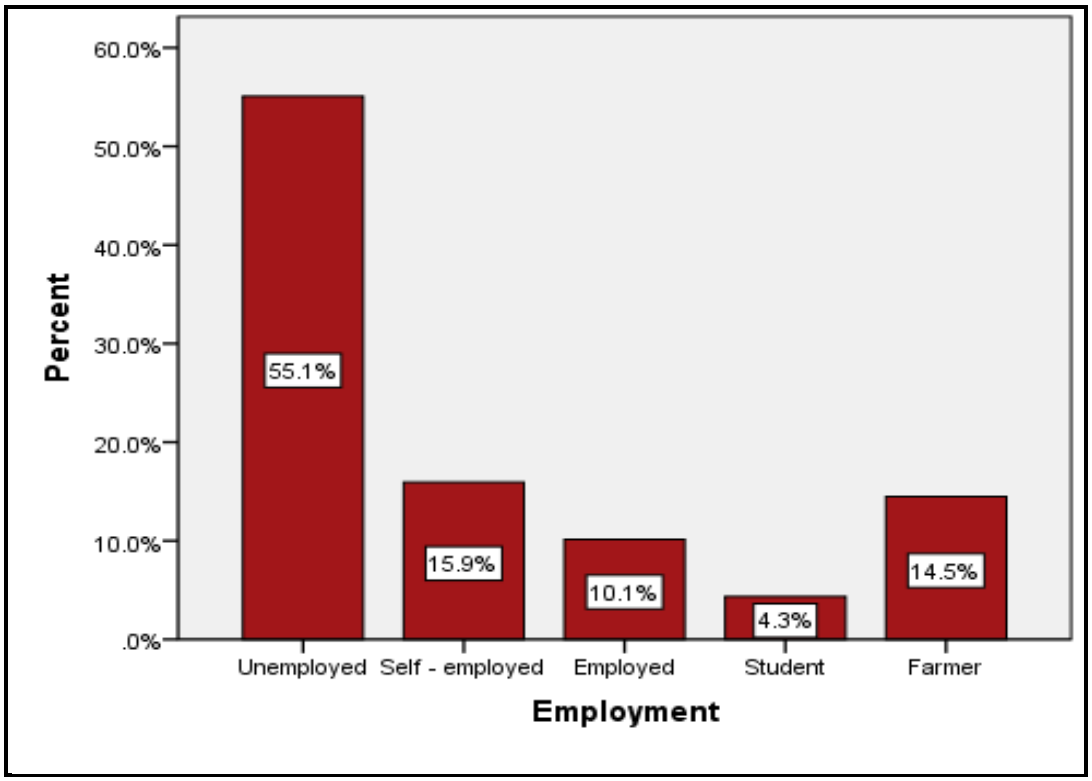

Figure 5.5: Distribution of respondents by employment status

Source: Field survey, 2012

About 55,1 % of the respondents are not employed which is more than half of the sample size which is 69, followed by 15,9 % of self - employed people, then 14,5 % of people who are farming, 10,1 % is employed people of both casual and permanent employees, and then lastly the 4,3 % which is comprised of students . This means that 55 % of the respondents is able to devote its time in farming because they are not employed and so they spend their time in production for own consumption and selling the surplus. The reason for the high unemployment is due to lack of jobs especially in the eastern cape, people especially the youth do not have anything to do and they think that farming is old fashioned and is only for the old.

5.2.7. Number of people generating household income

In most areas in the rural areas the person generating income is the household head. Many people depend on social grants and old age pension as a source of income. Information on the number of people generating household income is presented in Figure 5.6.

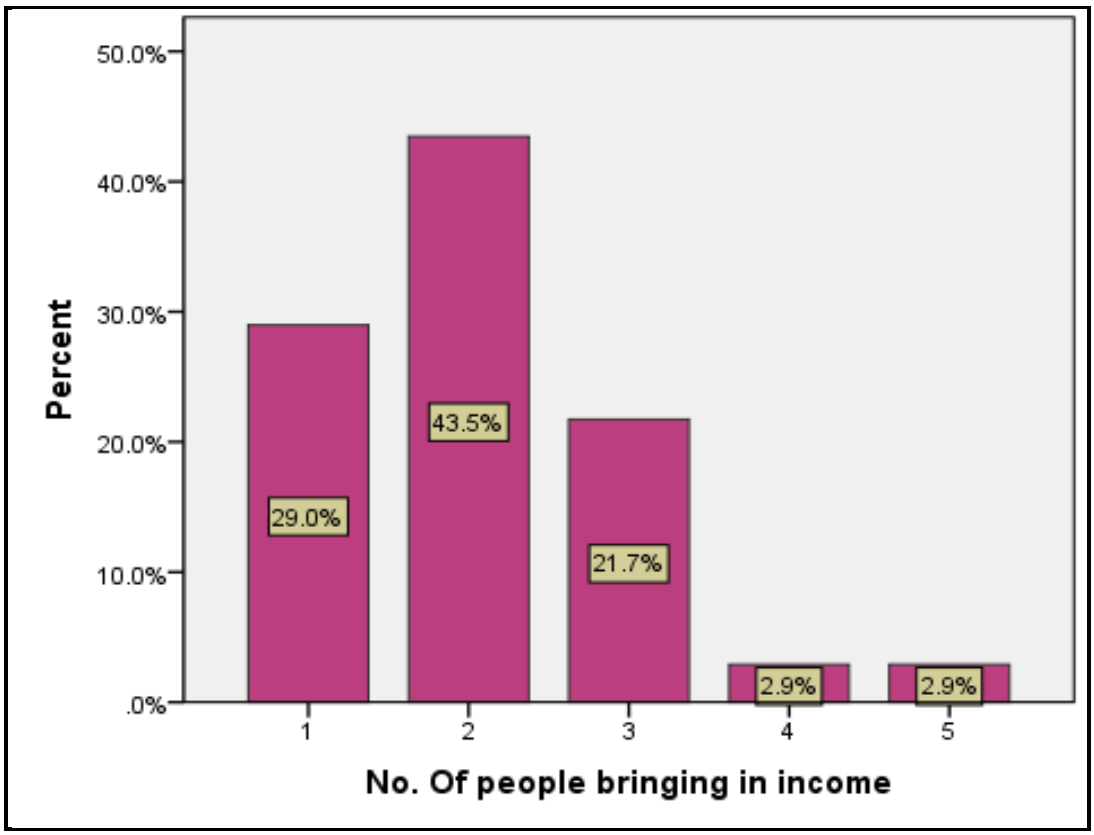

Figure 5.6: Distribution of households by the number of people bringing in household income

Source: Field survey, 2012

From figure 5.6 it is clearly shown that 43,5 % of the respondents belonged to a group of 2 people bringing in household income which is quite a good number and the household can be able to survive with the income that they bring in. Followed by 29 % which is 1 person bringing in income at home, 21,7 % belongs to a group of 3 people supporting the household, and then lastly the 2,9 % of the respondents which is both 4 and 5 people per household bringing in income. From the above information it can be concluded that 43,5 % 0f the respondents live in households where the is a few number of people which are bringing in income and also where there are a few number of people who are employed or who are dependent on social grants and old age pension.

5.2.8. Total household income distributions

Total income for a household is defined as the total amount received by a household from

their various sources and livelihood strategies. Total income is the money derived from social grants, remittances, salaries, crop and livestock sales by a household and from income from their jobs (permanent and casual jobs). Information on the total household income is displayed in Figure 5.7.

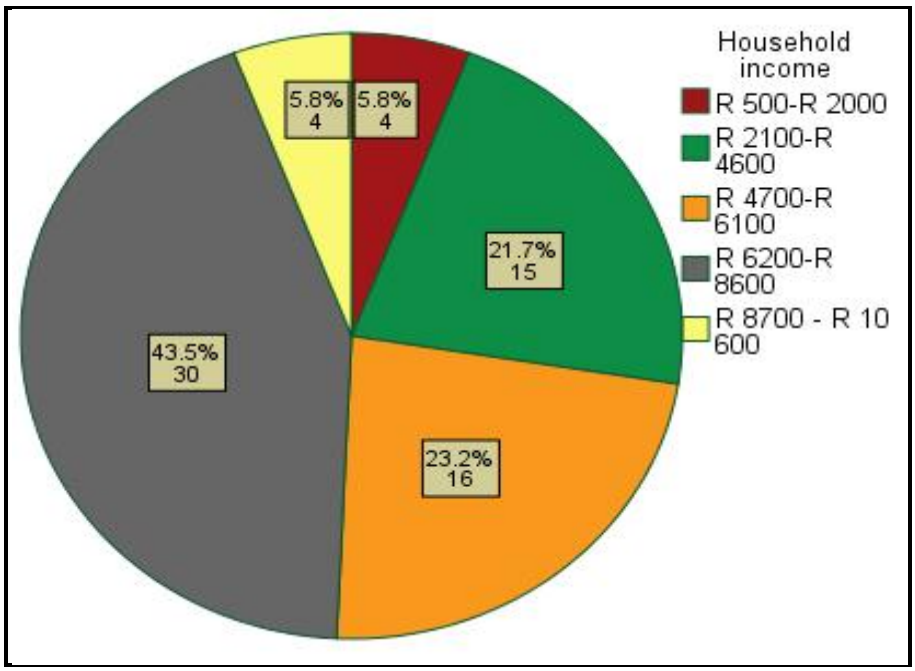

Figure 5.7: Distribution of household by the total household income

Source: Field survey, 2012

The majority of households earn an income of between the range of R6200 - R8600 a month as is indicated by 43, 5 % in the figure above, the reason for this is because many households men are in the mines working for their households and some are dependent on both social grants and old age pension with one or more members of the house. The range of income from R4700 ï R6100 comes second with 23, 2% of the total number of respondents, this is due to the fact that not many people in rural areas are employed and most of them still depend on child support grants and old age pension but still some do work to support their families even if its casual work. The range of R2100 ï R4600 comes third with 21, 7 % of the total number of respondents, this may be because in some of the households there are a few people who have jobs and are bringing income. This is followed by both the range of R500 ï R2000 and R8700 ï R10 600 respectively with a

percentage of 5, 8 %, these are people who depend on social grants and those who are permanently employed.

5.2.9. Who generates most income in the household

Income is the type of money earned through employment by an individual. There are various sources of income from which individuals could get income. The information related to the gender of the person who brings in most income in the household is displayed pictorially in Figure 5.8.

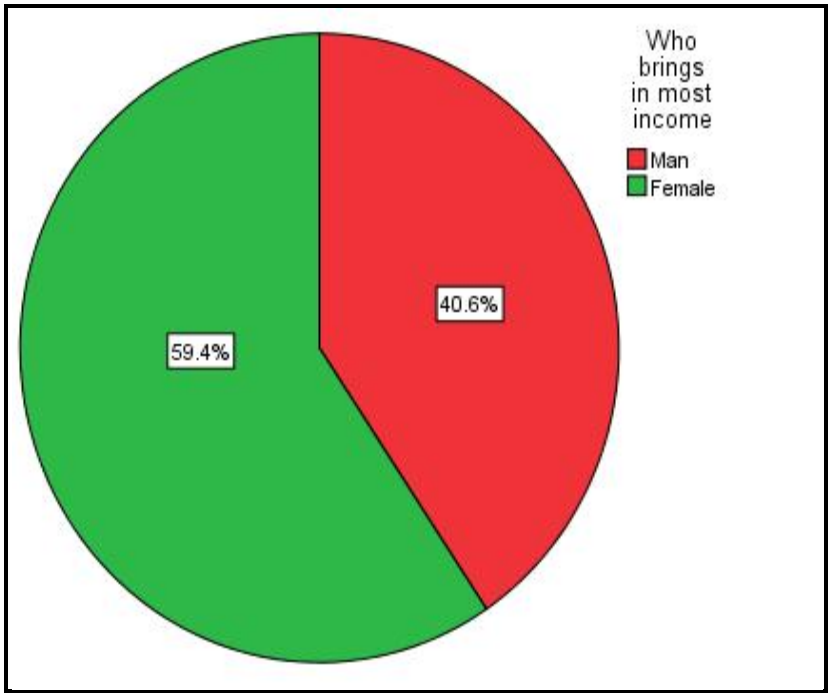

Figure 5.8: Distribution of household by the gender of the person bringing in most income

Source: Field survey, 2012

The information collected regarding the gender of the person who brings in most income at home. Figure 5.8 above shows that out of all the 69 respondents of which data was collected from, 59,4 % of the are females which means that many women are now respondents are now more employed. On the other hand 40,6 % of the respondents are males. From the above information it can be concluded that women are the ones who bring in most income at home and therefore, support the whole family.

5.3. Analysis of irrigation and water use by rural households

This second section of the chapter analyses information collected from farming participants. The purpose of including this section is to know the information about own food production of rural households, the use of irrigation in production and land ownership.

There are a number of factors that influence individuals or households to participate in own food production process or to be engaged in farming activities. Such factors may include the ease with which to access agricultural inputs, household size, gender of the household head, household income, time available for own food production, education level, land ownership and extension advices. This section will try to determine the factors that influenced own food production of rural households and to explain the contribution of own food production to rural households.

5.3.1. Access to arable land

Land is one of the most important production factors in agriculture. According to Altman (2009), land is the primary input and factor of production which is not consumed but without which no production is possible. Land ownership has a positive impact on agriculture since one has to have access to land in order to grow and produce crops for their households. The information on land ownership is displayed on Figure 5.9.

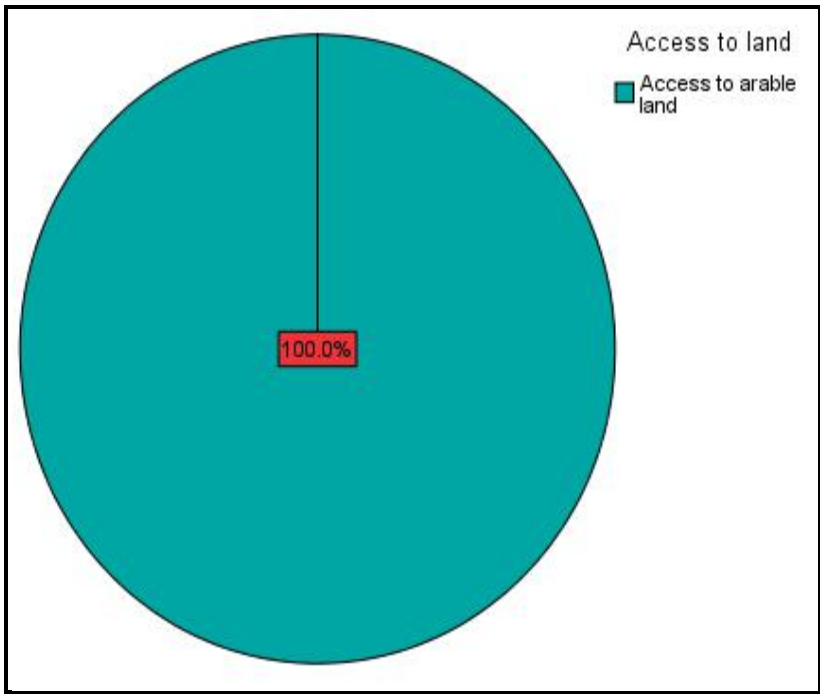

Figure 5.9: Distribution of the household by land ownership

Source: Field survey, 2012

Figure 5.9 represents land ownership; it represents the number of people who have access to land. In the above figure it is clearly shown that 100 % of the total numbers of respondents have access to arable land which means that they stand better chances for agricultural production. From the above information it can be concluded that all the respondents have access to land and thus stand a very good chance to agricultural production.

5.3.2. Land acquisition of household

Land acquisition refers to how people get hold of the land. There are some procedures that need to be followed regarding land acquisition in rural areas. Therefore in rural areas if a person wants to get hold of land that particular person has to consult a chief or a head man of the community for land acquisition. The information on land acquisition is presented in Figure 5.10.

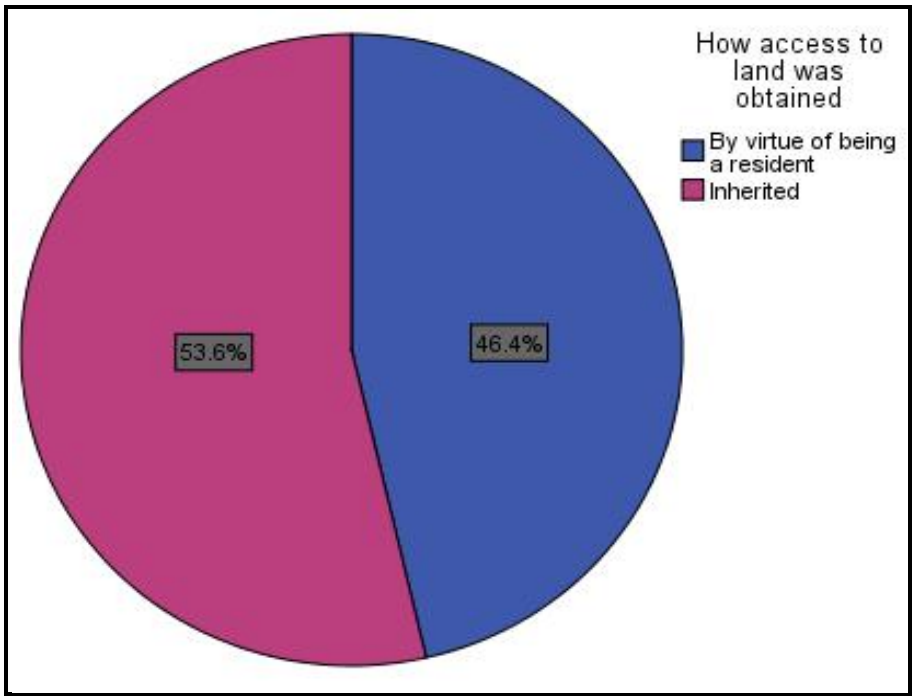

Figure 5.10: Distribution of household by the land acquisition of the household

Source: Field survey, 2012

Figure 5.10 shows land acquisition strategies for agricultural production. From the figure above it is shown that respondents with a distribution 53, 6 % of the total number of respondents in the area have accessed land by virtue of being residents. The remaining respondents with a distribution of 46, 7 % have inherited the land from their family members. From the above information it can be concluded that the majority of the people in the area have access to land without having to pay anything at all and this makes them owners of their arable lands, this therefore contributes or accelerates agricultural production because land itself is a factor of production, and so it is needed for agricultural production to occur.

5.3.3. Fencing on the lands

A well fenced land means that the produce is protected from livestock and other animals who will feed on it and therefore resulting to reduced yields. People in rural areas still depend on the government to fence their arable lands. Information on the fencing of the land is displayed pictorially on Figure 5.11.

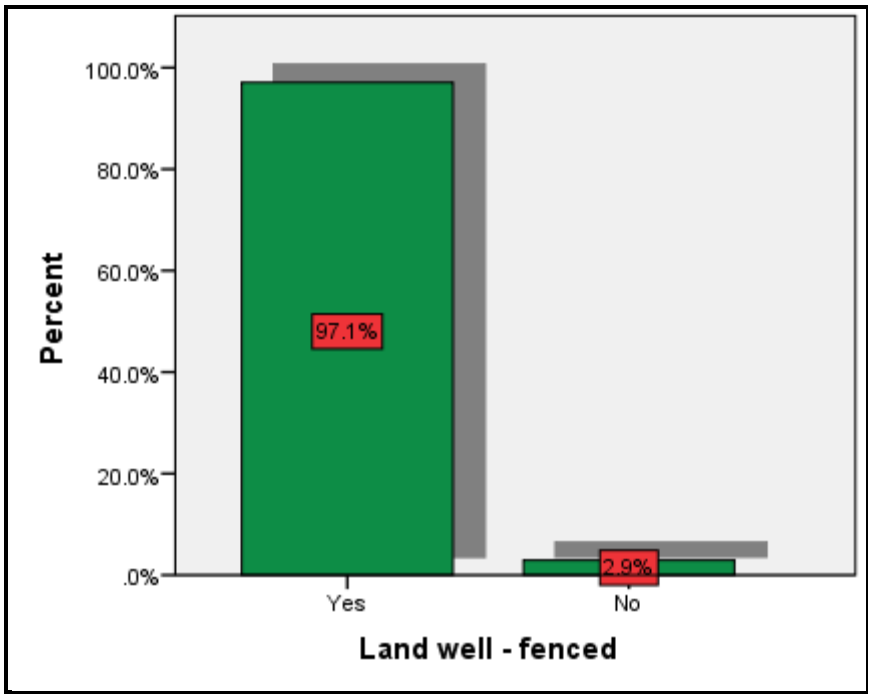

Figure 5.11: Distribution of household by fencing of the land

Source: Field survey, 2012

Most land in the rural areas is well fenced, although some of the fencing needs to be renovated, the government is trying by all means possible to make sure that people produce in well - fenced lands. From the 69 respondents, people who are using own production and have well-fenced arable lands have a distribution of 97, 1 %. While on the other hand those whose lands are not well-fenced but are still producing have a distribution of 2, 9%. From the above information it can be concluded that the government is doing everything in its power to fence arable lands in order to encourage them to produce more.

5.3.4. Farming enterprises households use

There are many enterprises that people in rural households engage in for their livelihood and as a source of food for their families. The enterprises include the following crop production, livestock production, vegetable production and citrus production. The information on the farming enterprises the rural households engage in is displayed pictorially in Figure 5.12.

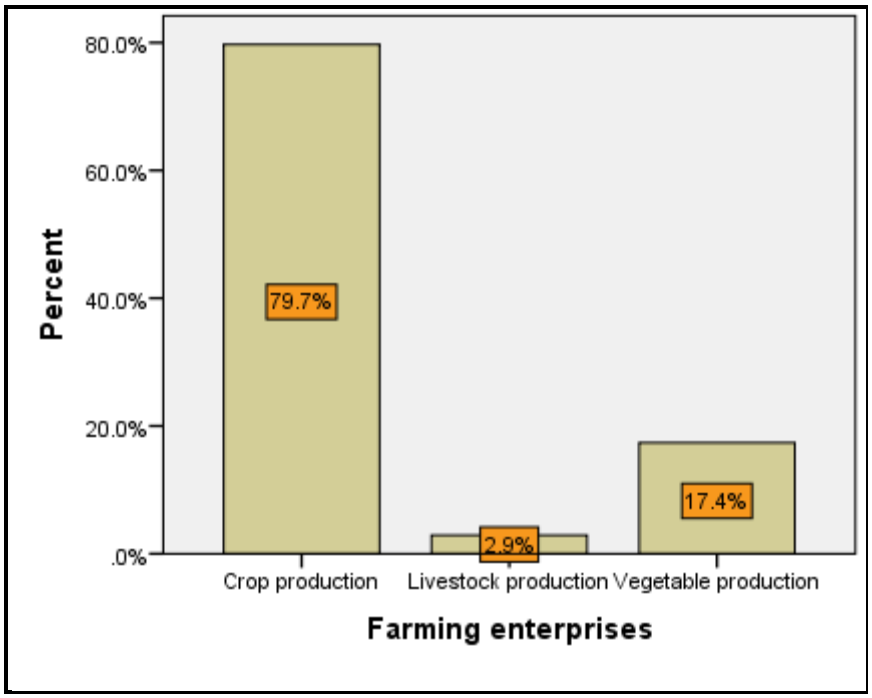

Figure 5.12: Distribution of households by the type of farming enterprises used

Source: Field survey, 2012

People in rural areas mostly engage in crop production, the reason for this being that they tend to sell the remaining produce after own consumption but some engage in order to sell and then consume the unsold produce or a small portion of the produce. Crops can be converted into many things in rural areas, maize of which it is the case in many areas; it can be crushed and processed to maize meal and other foods. There were three farming enterprises that the respondents engage in. The crop production came first with a distribution of 79, 7 % in the form of Massive food production system and Siyakhula step-up programme. Secondly respondents practice vegetable production with a distribution of 17, 4 % in the form of Siyazondla homestead food production program. 2,9 % of the respondents practice animal production. From the above information it can be concluded that crop production is the most widely practised agricultural food production enterprise in rural areas and people tend to group themselves in the form of Massive food production system to easily acquire inputs from the government and funders.

5.3.5. Farming inputs for the enterprises

In rural area people get farming inputs mostly from the government in the form of the municipality, agriculture and social development. The reason for this is that the government has developed a new strategy of trying to support and develop projects in rural areas, and with that the government is trying to bring together all the departments that have the urge to develop rural areas to work together. People can get inputs from the government, previous harvests and also they can buy inputs from local markets. Information regarding farming inputs for the enterprises in displayed in Figure 5.13.

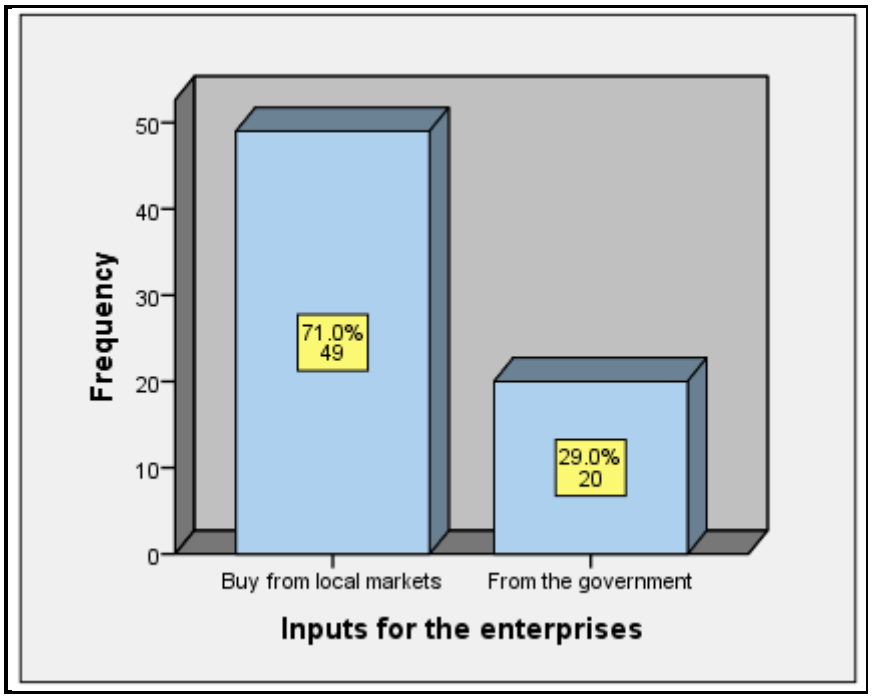

Figure 5.13: Distribution of households by farming inputs for the enterprises

Source: Field survey, 2012

People in rural areas acquire their inputs from the government this is in the form of the Massive food production system for the crop production, the Siyakhula (step-up) production program for the crop production with land less than that of Massive food, and the Siyazondla homestead food production program which are the backyard vegetable gardens. 49 respondents acquired their farming inputs from the market with a distribution of 71, 0 %. 20 respondents bought their inputs from local markets with a distribution of 29 %0. From the above figure it is revealed that the markets are the main suppliers of

inputs, respondents are now able to buy their own inputs from markets using money they have made from their produce sales the previous years.

5.3.6. Number of years the household has been involved in farming

The number of years the household involved in farming is one of the factors important in farming. The years indicate the experience of the respondent with farming. The longer the years a person is involved in farming the more experienced a person becomes, thus this means that the person will be able to farm on their own without the help of the extension officers which are sometimes busy and cannot reach everyone at the same time. Information regarding the years of the householdôs involvement in farming is presented Figure 5.14.

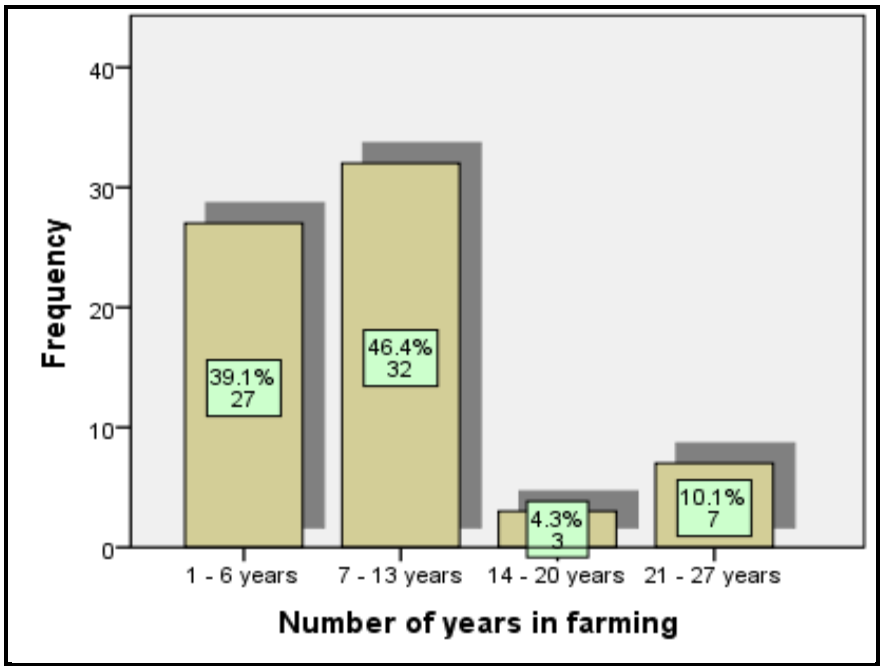

Figure 5.14: Distribution of households by the number of years the household has been involved in farming

Source: Field survey, 2012

From figure 5.14 it is revealed that out of the 69 respondents that participated in the survey the highest distribution of 46, 4 % which is between the ranges of 7 ï 13 years had the most number of respondents. With the range of 1 ï 6 years coming second with a distribution of 39, 1 %. Followed by the range from 21 ï 27 years with a distribution of

10, 1 % and lastly 14 ï 20 years with a distribution of 4, 3 %. Many respondents in the survey do not have that much experience and therefore they still need the extension officerôs assistance.

5.3.7. Visits from extension officers

Extension officers visit farmers in rural areas to give them advice on what they need to be advised on and to provide them with information on the new techniques of production to add on their technical know-how. Information about the visits from extension officers is displayed in Figure 5.15.

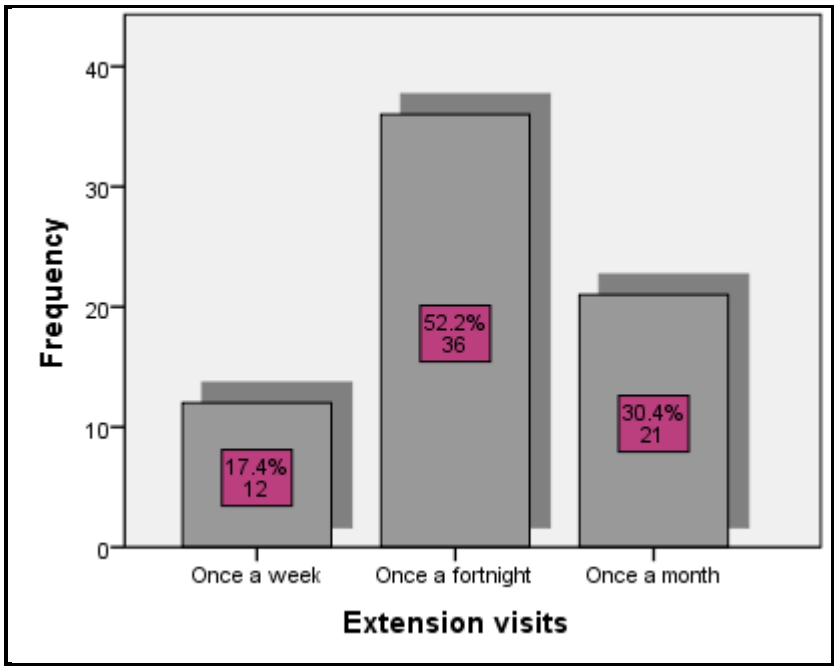

Figure 5.15: Distribution of households by visits from extension officers

Source: Field survey, 2012

From figure 5.15 it is revealed that out of 36 respondents with a distribution of 52, 2 % that extension officers visit once a fortnight. 21 respondents with a distribution of 30, 4 % are visited once a month by extension officers. 12 respondents out of the total number of 69 respondents, with a distribution of 17, 4 %. This shows that extension officers in the area visit once a fortnight or once a month mostly. This is good because there are many people to be serviced and limited extension workers.

5.3.8. Sources of water for irrigation in rural households

Water is one of the requirements for successful farming. In many rural areas water is very scarce together with extreme weather conditions this causes failure in agricultural production, because farming cannot happen without water availability. Information on water sources is displayed pictorially in Figure 5.16.

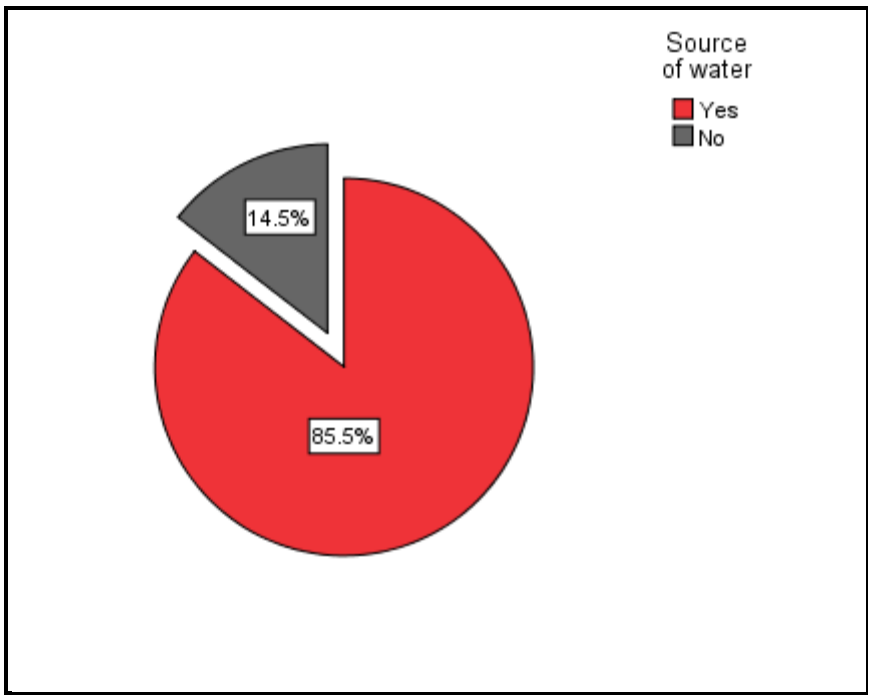

Figure 5.16: Distribution of households by access to source of water

Source: Field survey, 2012

From figure 5.16 it is revealed that many people in the area have access to water for irrigation with a distribution of 85, 5 % of the 69 respondents that participated in the survey. While on the other hand it is only a small portion of the respondents who do not have access to water and their distribution is 14, 5 %. This clearly identifies the area as an area which is not that water scarce.

5.3.9. The use of an irrigation system in the lands

The use of an irrigation system in arable lands makes it easier for farm production to take place; it substitutes for the labour that would be used to irrigate the area. This also saves the time that would be consumed by irrigation manually and all the trips to the source of

water and back to the area. The information on the use of irrigation system is displayed pictorially in Figure 5.17.

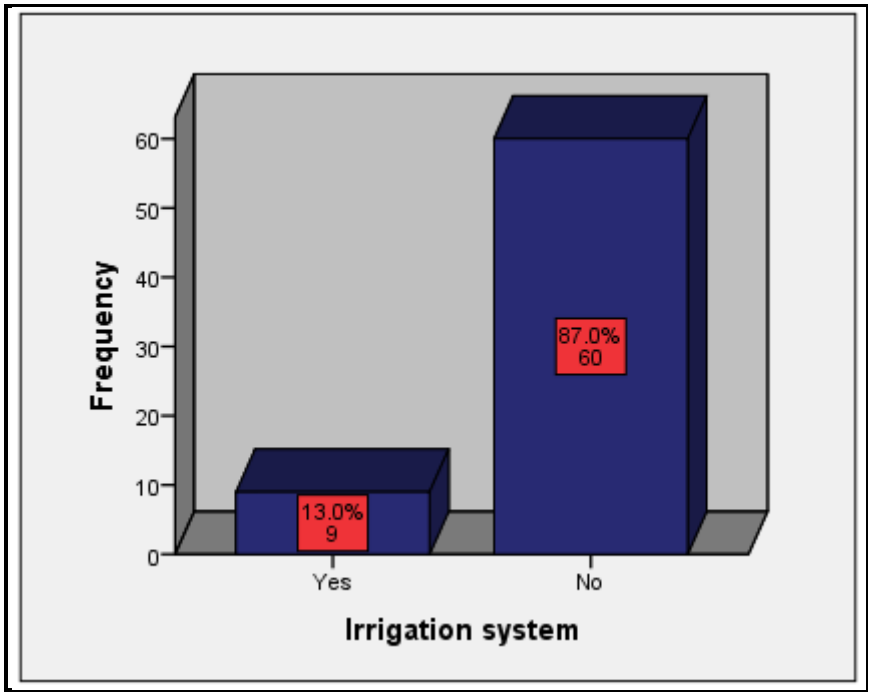

Figure 5.17: Distribution of households by availability of an irrigation system

Source: Field survey, 2012

From the above information, out of 69 respondents only 9 have an access to an irrigation system and their distribution is 13, 0 %. While on the other hand the remaining number of respondents did not have an access to an irrigation system which is 60 respondents and their distribution is 87, 0 %. From the above information it can be concluded that a large number of people from the respondents have no access to an irrigation system but still they practice farming and still reap out great yields.

5.3.10. Farm produces for the family

Many people in rural areas still produce for their own consumption, by doing this their primary aim is to feed themselves and then sell the other produce. This is one type of a

food acquisition strategy for the household. Information on the farm produce for the family is displayed pictorially in the Figure 5.18.

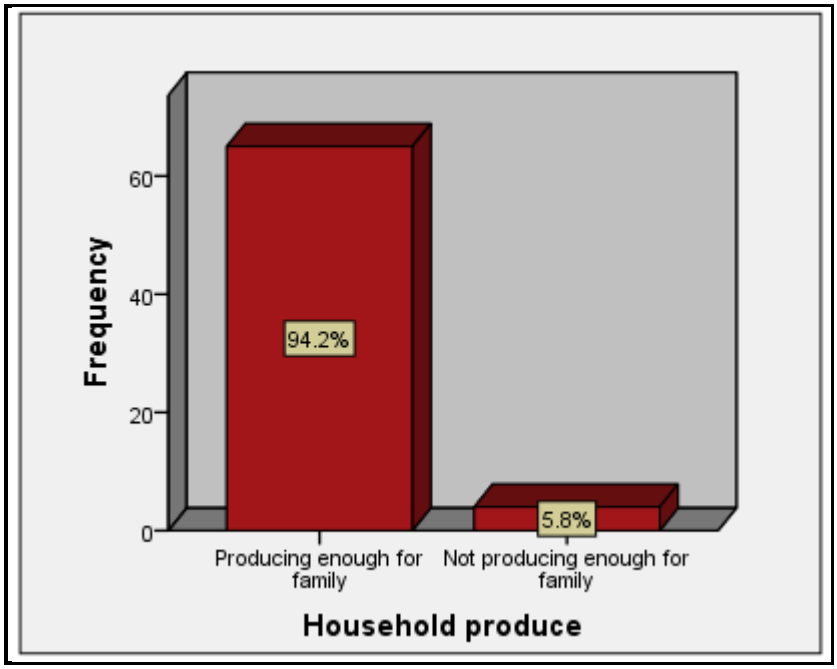

Figure 5.18: Distribution of households by farm produces for the family

Source: Field survey, 2012

From figure 5.18 regarding farm produce for the family, 94, 2% of the respondents are producing enough for the family, they are producing enough to feed themselves with one portion and then sell the other portion of their produce. On the other hand, the remaining 5, 8% of the respondents are not producing enough for the family, their primary aim is to produce for selling only.

5.3.11. Time for own food production

Own food production is the main household food acquisition strategy in rural areas, therefore it is very much important to have enough time for own production so that the farmer can reap great yields in order to be able to feed themselves and the same time be able to sell the other produce for income. Information on the time for own food production is displayed pictorially on Figure 5.19.

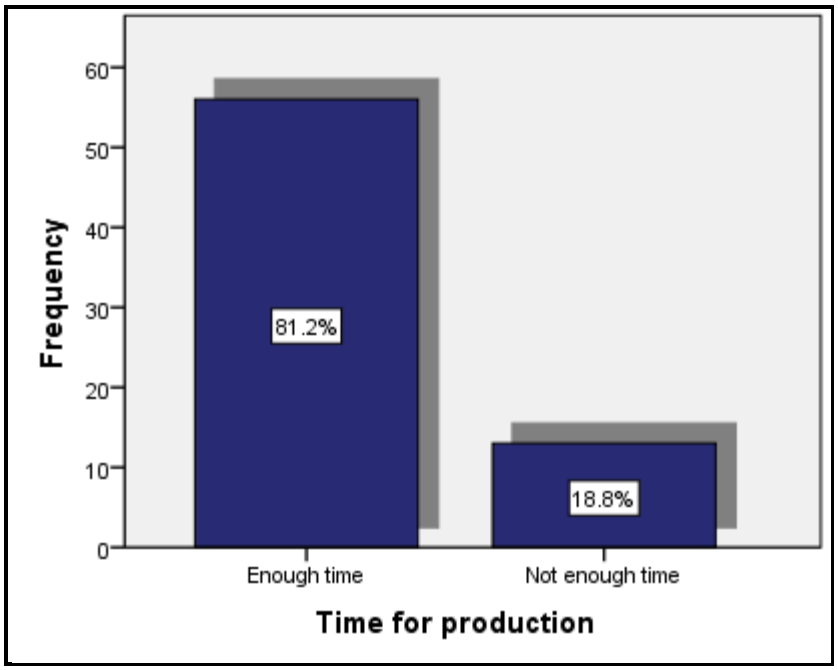

Figure 5.19: Distribution of households by time for own production

Source: Field survey, 2012

From Figure 5.19 it is clear that from the 69 respondents that were interviewed 81, 2% of them have enough time for own production. /while the remaining 18, 8% do not have enough time for own production. From the above information it can be concluded that the respondents have enough time for their own production and so they have the ability to produce more if they have enough factors of production other than time.

5.4. Analysis regarding the marketing of produce

Marketing is the pivot of economic development in rural areas. It is an essential component in income and employment generation in farm and non-farm sectors. Broadly rural marketing incorporates the marketing of agricultural products, rural industries products, and services of many kinds. The trade channels for different types of commodities available in rural areas are private, cooperatives, processors, regulated markets and state agencies. For the purposes of this study, only the types of markets that rural households use are examined and these are formal and informal markets.

5.4.1. Distribution of respondents who normally market their produce

Some people in rural areas market their produce in order to gain income to purchase other things needed in the household besides crops. The information gathered related to the number of respondents who normally market their produce is presented pictorially in Figure 5.20.

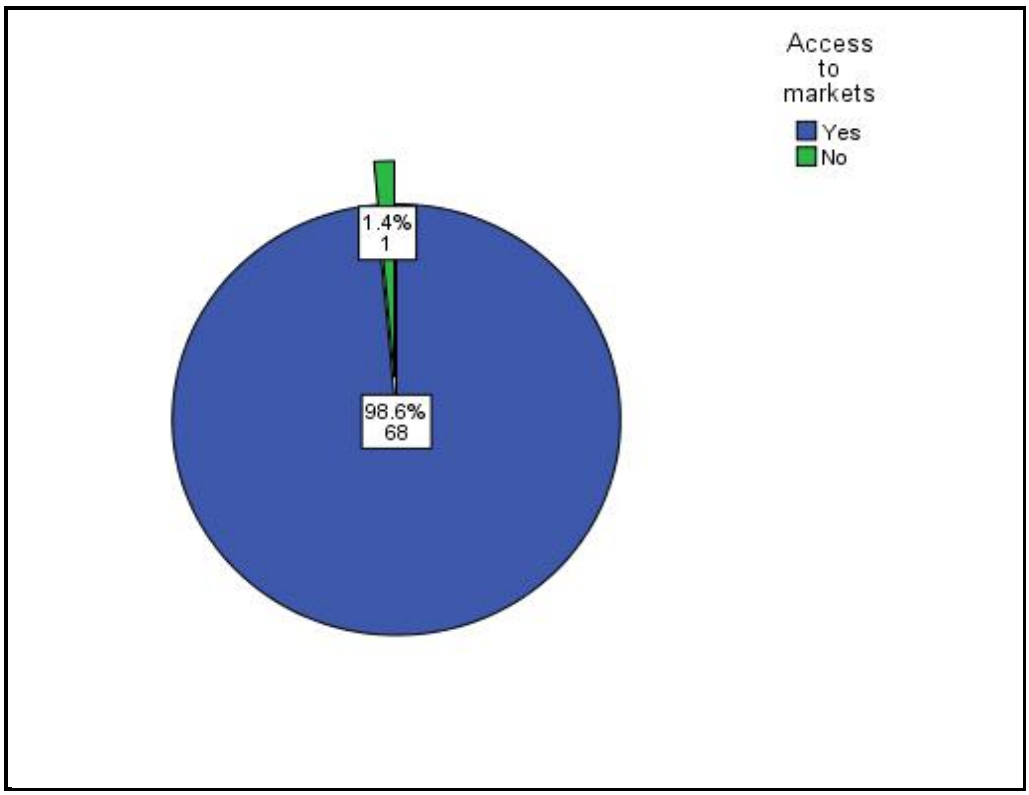

Figure 5.20: Distribution of households by the number of respondents involved in marketing

Source: Field survey, 2012

Figure 5.20 shows that data was collected from a total number of 69 respondents of which was collected 68 respondents with a distribution of 98, 6 % are marketing their produce, they had access to markets for their produce. While only 1 respondent with a distribution of 1, 4 % does not have access to markets and is not selling their produce. This concludes that people in rural areas do have access to markets and so they are able to produce for selling if they want to or for their own consumption and then sell the remaining produce.

5.4.2. Type of markets used by rural households

People in rural areas have difficulties finding markets because of many constraints, gravel roads with potholes which become muddy on rainy days make it more difficult for people to access markets. People in remote areas live very far from markets and many of them face too much transport costs. But nowadays situations are changing and formal markets buy produce from rural areas by bringing their transport when buying, this has made it easy for people in rural areas to overcome transport costs. The information gathered related to the number of respondents who normally market their produce is presented pictorially in Figure 5.21.

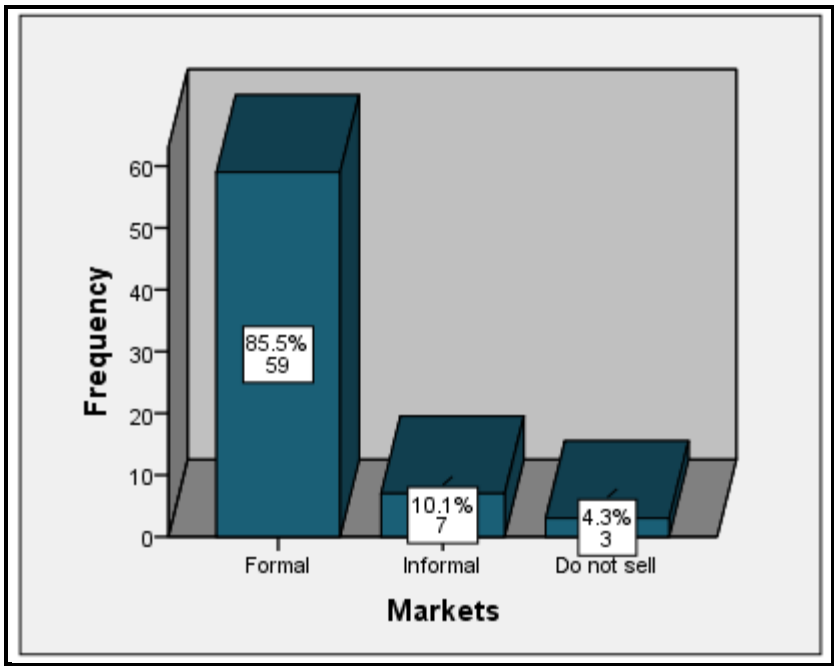

Figure 5.21: Distribution of households by type of markets used by rural households

Source: Field survey, 2012

From Figure 5.21, 85, 5% of respondents out of 69 that participated in the survey sell their produce to formal markets. 10, 1% of the respondents sell their produce to informal markets. Lastly the remaining portion of respondents which is 4, 3% do not sell their produce, they only produce for their own consumption. From the above information it can be concluded that most respondents who participated in the survey sell their produce

in formal markets, this is good because they get a reasonably income without being cheated.

5.4.3. Selling of produce

Produce can be sold in markets or locally depending on the area and the how exposed the farmers are to markets and marketing information. Farmers are able to access markets with the help of extension officers in their areas. Information on the gender of the respondent who sells the produce is displayed in Figure 5.22.

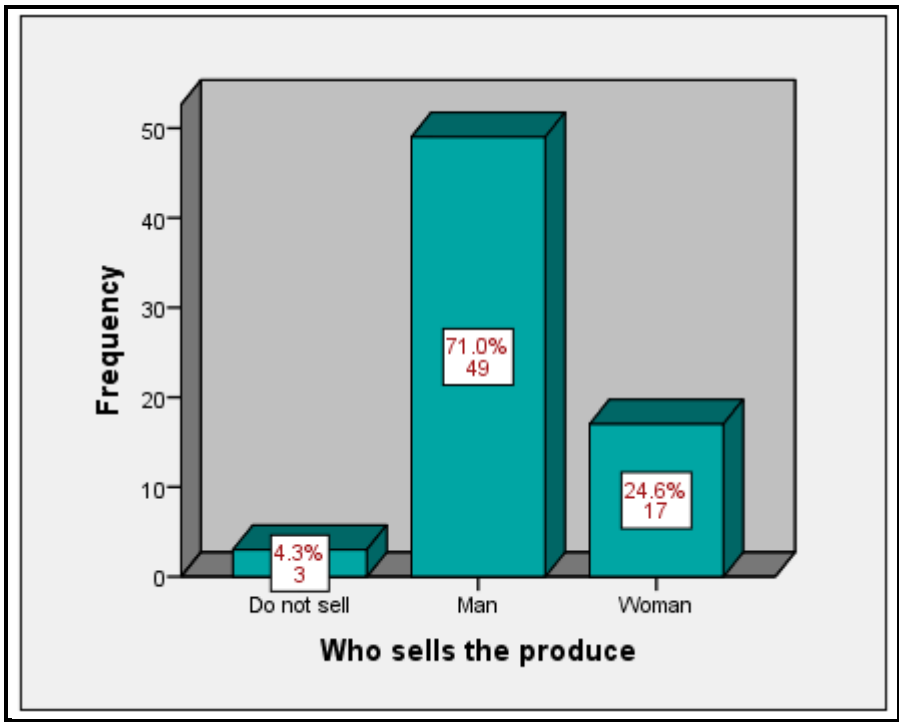

Figure 5. 22: Distribution of households by gender of the person who sells produce

Source: Field survey, 2012

From Figure 5.22 it is shown that 49 respondents out of 69 who handle the selling of produce are man with a distribution of 71, 0%. Following that is 17 respondents of women who sell the produce with a distribution of 24, 6%. Lastly, 3 respondents who do not sell any produce at all with a distribution of 4, 3%. From the above information it can be concluded that man are the ones who handle selling of the produce.

5.4.4. Food commodities for the year 2009 - 2011

There are three types of food commodities namely, crops, vegetables, and citrus production. Citrus is not mostly practised in rural areas because it does not go well with the unfavourable conditions in rural areas, lack of deep soils for citrus trees, semi-arid environment and too much labour for harvesting and packaging purposes. Information on the food commodities for the years 2009 ï 2011 is displayed on Figures 5.23, 5.24 and 5.25.

5.4.4.1. Food commodities 2009

Information on the food commodities for the year 2009 is displayed in Figure 5.23.

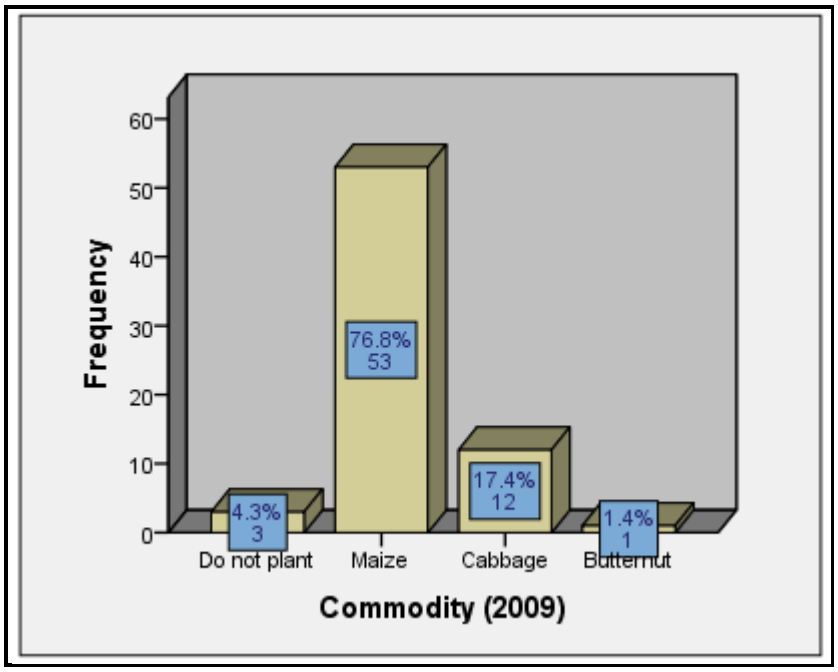

Figure 5.23: Distribution of households by food commodities (2009)

Source: Field survey, 2012

From Figure 5.23 out of 69 respondents 76, 8% produced and sold maize, 17, 4% 0f respondents produced cabbage, 4, 3% of respondents do not plant /produce anything and lastly 1, 3% of respondents produced butternut. It is clear that maize is the main crop produced by the respondents.

5.4.4.2. Food commodities 2010

Information on the food commodities for the year 2010 is displayed on Figure 5.24.

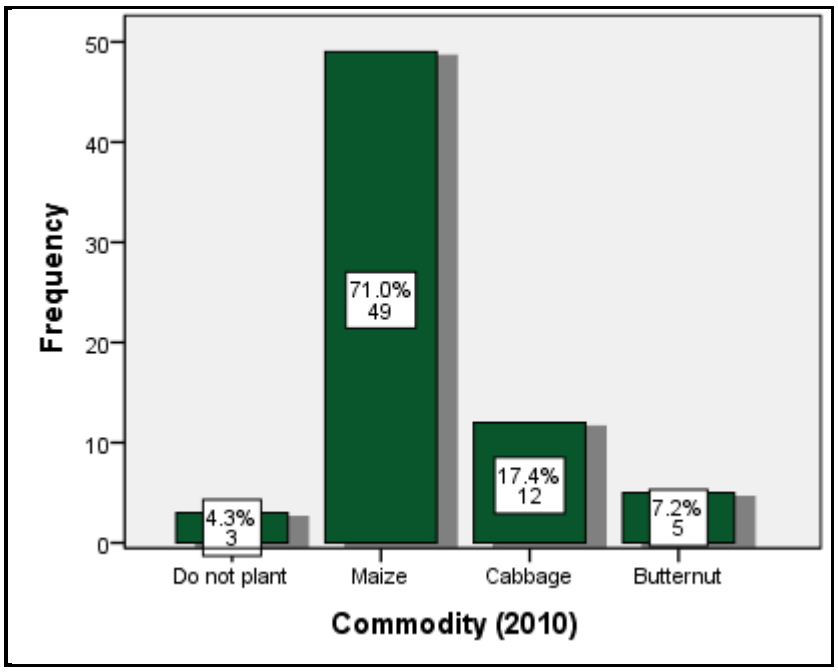

Figure 5.24: Distribution of households by food commodities (2010)

Source: Field survey, 2012

From the 69 respondents 71, 0% of respondents produce maize. Followed by 17, 4% of respondents who produce cabbage. Then 7, 2% of respondents who produce butternut. Lastly, 4, 3% of respondents who do not produce at all.Maize is the main crop which is produced more for the year 2010.

5.4.4.3. Food commodity 2011

Information on the food commodities produced for 2011 is displayed pictorially on Figure 5. 25.

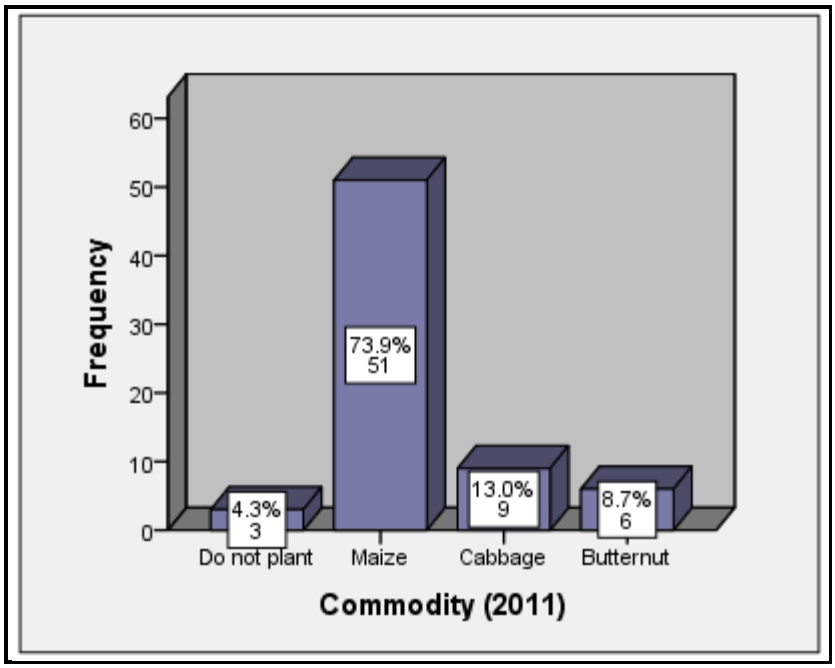

Figure 5.25: Distribution of households by food commodities (2011)

Source: Field survey, 2012

From the 69 respondents 73, 9% of them produce maize with a distribution. Followed by 13, 0% of respondents who produce cabbage. Then 8, 7% of respondents who produce butternut. Lastly, 4, 3% of respondents who do not produce anything. Maize is the main crop mostly produced in the year 2011.

From the three figures it can be concluded that maize is the main crop mostly produced for own consumption and sold for income by the respondents, the reason for this is that it has many uses, it can be processed into maize-meal for consumption, it can be used as feed for livestock, it has a very high demand in the market and farmers realize great returns when it is sold.

5.5. Analysis of challenges of small scale farming

The results of the logistic regression that discuss the results of the significant variables determining whether or not irrigation is sustainable over time. All the variables that were discussed in the previous sections were considered for the model and tested for their significance. The binomial logistic results are presented in table 5.3. The table shows the

estimated coefficient (ϐ values), standard error, significance values and odd ratio of the independent variables in the model.

The results of the omnibus test of model coeffients were not significant with P> 1.000 with a chi-square of 45.760. The chi- square value for the Hosmer and Lemeshow test is 5.217 with a significance level of 0.734. This value is greater than 0.05 indicating support for the model. The model as a whole explained between 0. 485 (Cox and Snell R square) and was insignificant (ϔ > 0. 05) suggesting that the model was fit to the data well. In other words a non-significant Hosmer and Lemeshow chi-square statistic indicated that a model had adequate fit, and 0.804 (Nagelkerke R square) of the variability in the farmers ability to sustain their irrigation for their food production status.

The accuracy of classification was estimated at 97. 1 percent with the sensitivity of the model showing that 98.2 percent of farmers who are able to sustain irrigation for their production being correctly classified while the specificity of the model is 91. 7 percent (indicating that the farmers who are not able to sustain irrigation for their production is correctly classified. According to table 4.1, the major factors influencing the ability to sustain irrigation for own productions are gender of the household head, the household size, education and visits from extension officers.

Table 5.4: Estimation of binary logistic regression for small scale farming and food security, Mbashe local municipality, 2012.

Variable	B	S.E.	Wald	Df	Sig.	Exp(B)
Area	-7.129	3.069	5.395	1	0.020**	0.001
No. of years in farming	-0.522	0.271	3.701	1	0.054**	0.594
Commodity type (total)	1.512	1.548	0.954	1	0.329	4.534
Bags sold (total)	-0.317	0.184	2.958	1	0.085***	0.729
Amount received (total)	0.004	0.002	3.072	1	0.080***	1.004
Standard obtained	-0.549	1.849	0.088	1	0.766	0.578
No of people bringing income	0.088	0.861	0.010	1	0.919	1.092
Constant	16.360	8.715	3.524	1	0.060	12734975.970
Observations:N=69						
Hormer&Limeshow test: Chi square	5.217					
: Significance	0.734					
-2 log likelihood ratio	18.001					
Cox and Snell R^2	0.485					
Negelkererke R^2	0.804					

*** indicates significance at 10%;**indicates significance at 5%;***indicates significance at 1%.**

Table 5.4 presents results of the major factors influencing the ability of a farmer to sustain irrigation over time for a better production are area, the number of years in farming, total number of bags sold, and the total amount received (revenue). The results presented in the table will be discussed into more detail. For the purposes of this study the discussion will be focusing on the variables which are significant in the table. One of the specific objectives of the study is to identify the challenges encountered by women in small scale farming and in the implementation of the food security programs. The response variable is whether or not a farmer is able to sustain irrigation for better produce and more yields.

5.5.1. Area

Area is significant at 5% significant level with positive effect of the area on the ability of a farmer to sustain irrigation for their production, suggests that the areas with access to water have 0.001 more chance to sustain irrigation for better production and greater yields as compared to those who are not able to sustain irrigation for their production. Area is negatively correlated to sustainability of irrigation which means that for irrigation to be sustainable it does not depend on the area, it can occur anywhere it does not need a specific area.

5.5.2. Number of years in farming

The number of years in farming is significant at 5% significant level with a positive effect on the ability of a farmer to sustain irrigation for production, as it has been proven by recent studies that the more years a person has in farming the more experienced that person will be in terms of farming practices. This furthermore suggests that a farmer with many years in farming will have 0.594 more chance to sustain irrigation to produce more yields.

5.5.3. Total number of bags sold

The total number of 50 kg bags sold is significant at 10% significant level, and is negatively correlated to the ability of a farmer to sustain irrigation, which suggests that production can occur with or without irrigation; it is not solely dependent on irrigation.

This furthermore suggests that for a farmer to produce more is 0.729 more inclined to need irrigation.

5.5.4. Total amount received

The total amount received is significant at 10% significant level, and is positively correlated with the sustainability of irrigation. This suggests that the income made from selling the produce has a positive relationship with the sustainability of irrigation. There more irrigation is applied, the more the income that will be made from the produce sold. This furthermore suggests that a farmer who irrigates is 1.004 more inclined to reap great yields.

5.6. Chapter Summary

This chapter provided empirical evidence of perceptions factors influencing the ability of farmers to sustain irrigation for production and to be able to reap great yields in small scale farmers of Mbashe municipality. The perceptions influencing the predictor variable were defined and tested using the binomial logistic regression model. The statistically significant independent variables, at the level 5% significant level are as follows; area and the number of years in farming. At the 10% significant level; the total number of bags sold and the total amount received (revenue). Basically the area is negatively correlated with irrigation and own production in rural areas. The household head is the one that determines household own production. The number of years involvement in farming determine their experience in farming and the amount of yield he / she will get.

CHAPTER 6

CONCLUSION AND RECONMENDATIONS

6.1. Introduction

This chapter provides an interpretations and discussion of the main findings of this study. These are organized into similar themes as presented in the previous chapter and seek to establish an answer to the research questions. These findings are then linked with literature in chapter two. This chapter ties up the entire project based on previous discussions by providing a summary of the key findings. From these linkages with the theoretical framework in chapter two are drawn. Recommendations with respect to key findings are also provided. The study also makes provisions for future research and practice. Lastly a concluding statement about the entire project is also presented.

Small-scale farmers and rural households of South Africa have the potential to contribute to growth in rural areas, reduce poverty and income disparity, and hence contribute to economic growth. People in rural areas are engaged in different activities as their livelihood strategies. Rural areas used to be places where surplus of food crop products was transferred to urban markets, but recent studies have revealed that this is no longer the case, as rural areas in nowadays purchase most of their food products from urban markets. The most employed food security strategy is own food production and the other portion is buying from markets. Farmers have not yet reaped the full benefits potential of new technology because of their illiteracy in rural areas. It is argued that there is need for small holder farmers to increase adoption of improved techniques of production. However, it has been observed that smallholder farmers are still restricted by a number of institutional arrangements, technical factors and perceptions, making it difficult for them to commercialize.

The purpose of this study was to explore Idutywa, small holder farmers production characteristics, institutional factors and their perceptions of own food production programs and its impact. The empirical results for this study agree with the literature that

identifies that smallholder farmers face a number of factors that restrict them by perceptions relating to attributes of food security programs, institutional arrangements and factors in adopting new technology. Hence this encourages them to continue with their own food production programs, to make them sustainable and feasible in the long run.

6.2. Summary

All the chapters that were included in the study are summarized in this section, which include the literature review, the methodology and the study results.

6.2.1. Literature review

Most smallholder farmers produce mostly for subsistence, in some instances they fail to meet production levels which guarantee household food security due to many diseases and pests. Furthermore, damage on food production does not only affect household food security but it goes on to reduce household savings and income as smallholder farmers find themselves in a situation where they have to supplement own production with food bought from local shops.

Women play a very important in agricultural production and the economy at large. The government has designed programs to benefit women in the form of projects, the women have been provided with a lot of infrastructure to improve their projects. The absence of a significant number of men in rural areas of South Africa (for example, due to high rates of migration to urban centres) often implies that many women become the factor heads of households and ôbreadwinnersô for their families. In addition, due to the gendered social norms around care, women tend to be those who care for and support children and the elderly. Women are always left in rural households to take care of the whole household together with agricultural production which encompasses farm labour.

Rural households try to produce their own food even if there is lack of some resources. Lack of equipments, inputs and labour shortages are the main constraints in food production in rural areas. In rural areas with limited income-earning opportunities, the ability to produce most foods in the home garden and on the farm, without depending on

market purchases, means a better guarantee of household food security. The food produced by rural households is used mainly to supplement the food purchased during those times of the year when seasonal crops are harvested. Own food production by households is important because it helps in times when the income-earner is unable to provide money for food purchases. The contribution of own food production to rural households is that it help to increase food security status of the household.

The government, with the support of donors, should be encouraged to provide people with more training, workshops and technical advice. It should also employ more extension workers in order to advise and supervise people in rural areas. Women projects are very much successful; women are trying their best to make their projects sustainable as they lack funding. They work on their own not to wait for their projects to be funded but have started the projects on their own and their projects are successful. Furthermore, it is argued that the establishment of co-operatives can help facilitate better access to improved yields in own food production.

6.2.2. Research methodology

The study was carried out in five villages of Idutywa town, which is situated in the Amathole District Municipality which falls under the Eastern Cape Province of South Africa. The random sampling procedure was used to select the 69 respondents in the villages namely; Good hope, Lusizini, Mamfeneni, Zimpuku, Sheshegu. A questionnaire was used as the primary tool for data collection and the process of collecting data was based on face- to- face interviews.

Data analysis involved the use of descriptive statistics and the binomial logistic regression model. The main descriptive indicators that were employed were frequency and mean values. The binomial logistic regression model was used to test the farmerôs ability to sustain irrigation for their own production and to reap great yields. Binomial logistic regression model was chosen because it is useful in analysing data where the researcher is interested in finding the likelihood of a certain event occurring.

6.2.3. Descriptive statistics

The descriptive statistics results provided information related to demographic and institutional arrangements. The descriptive results provided information related to personal information of the household head and household information (demographic information). The results show that the majority of the sampled rural households at Ngxakaxha A/A range between 56 years and over. The educational levels of many household heads are generally low as 36. 2% did not attend school at all and also 36. 2% who have attended secondary school. Most rural households earn a total income in the range between R6200 ï R8600 per month as it shown by 43. 5%. Most of the Ngxakaxha Admin Area households are not employed as 55. 1% proves that. 100% of the respondents have access to arable and all of them are producing in those arable land. Farmers indicated that they employ crop production and vegetable production enterprises. The villages of Ngxakaxha Admin Area receive extension services as they are available and so they utilize the technical advice being given to them by extension workers employed by the government to improve their yields at harvest time.

6.2.4. Binary logistic regression results

The results of the binomial logistic regression revealed that the sustainability of irrigation is influenced by independent variables, but not all independent variables have an influence on irrigation in rural households. The dependent variable is whether or not farmers are able to sustain irrigation for their own food production and independent variables are area, the number of years in farming, the total number of bags sold, and the total amount received. The explanations for the relationship between the independent variables and the sustainability of irrigation can be summarized:

- Area has a negative relationship as β value of -7.129 shows a negative relationship. It has no influence on the sustainability of irrigation for own production, the area where a farmer resides has no effect on the sustainability of irrigation.

- The number of years a farmer has been involved in farming does not have an influence on the sustainability of irrigation as it is indicated by β value of -0.522 proves that there is a negative relationship between the number of years in farming and irrigation.

- is influenced by the total number of bags sold which is indicated by a β value of -0.137. This shows the negative relationship between the total number of bags sold and the sustainability of irrigation.

- The total amount received has a positive relationship with the sustainability of irrigation and is shown by a β value of 0.004. This implies that for an income to be available from produce sales, irrigation is needed for production to occur.

From the above summary explanation of variables, the significant variables are those with significant values. The significant variables include: area, the number of years in farming, the total number of bags sold and the total amount received (revenue). Significant variables means that the relationship that exist between the depend variable (sustainable irrigation) and independent variables is true and we can claim it as there is sufficient evidence to support that relationship whether it is positive or negative. Other three variables which include the type of commodity used, the standard of school obtained and the number of people bringing income in the household are not significant as their significant levels are greater than 0.05 and they are 0.329, 0.766 and 0.919 respectively, and this resulted to these variables to be insignificant in the model.

6.3. Recommendations

With regard to gender analysis strategies, with respect to women involvement in farm decision making and management, there are strategies that the government has put into place to counteract the impression that agriculture is a field for men. The empowerment of women strategies employed by rural households, they only employed the strategies in which are in the form of programs and projects designed by the government for the

people in rural areas to be able to alleviate poverty and these are: their main food acquisition strategy is obtaining food products from own food production and then purchasing food products from markets. There is a need for rural households to employ other food acquisition strategies besides the two they are using. By doing that it will help rural households not to use or depend on the food acquisition strategies mentioned above. If households can try to employ other food procurement strategies such as bartering of food (exchange of food for food), claims against relations, collecting and hunting food from wild areas. As these strategies were used before in olden days, rural householdsô food security status was better than the household food security status in nowadays. If a household can try to employ many different food acquisition strategies its food security status can or will be different as compared to if it was using the food acquisition strategies mentioned above. A household employing different food procurement strategy, which will result in a household not relying on acquiring food through economic access, it can use other strategies. The farmers being able to sustain irrigation for their own food production can result in great yields for their own consumption and for selling the other produce to generate an income to be able to sustain the produce.

Rural households of Ngxakaxha Admin Area used home backyard gardens for own food production and their fields for crop production, but there are still fields which are idle and not fenced of which people are still waiting for the government to fence them.. Those fields were used before to grow crops but in nowadays they are not used. If households can produce food crop products from both home backyard gardens and fields, it can produce large quantities of food crop products and that will result in reduction of hunger and poverty of a household, increase the food security status of the household as there will be more food crop products produced and that will result to a decrease in food purchasing from markets as the households will be producing different food crop products in large quantities as compared to the quantities they produce now since they use home backyard gardens only for own food production. Many farmers have turned to the government to help them and supply irrigation systems to make their lives easier and to be able to use water more efficiently, they are still irrigating the old fashion way and are pleading with government to come through for them so that they produce more and

more, still today not much has been done but the farmers still produce with their technical know - how.

6.4. Areas of further research

This study only focused on food acquisition strategy employed in rural households which is own food production in irrigated farming and the availability of water and irrigation as a whole as a tool for gender analysis strategies in rural areas, with special emphasis on the roles played by women in farm decision making and management. Further study or research is required on other food acquisition strategies employed on rural areas. That study will need to look or focus on all food acquisition strategies and own food production without irrigation and not to focus only on own food production using irrigation.

There is also a need of study to be undertaken on the issue of rural households Ngxakaxha A/A on the fields that are idle to grow crops. The study that can be undertaken is to look at influential issues that prohibit rural households of Ngxakaxha A/A in using those fields for growing food crop products. If such study can be undertaken, from its findings it can be easy to know why rural households of Ngxakaxha A/A still have an idle land whereas they should be producing in it, so that if maybe they lack funding and infrastructure so as the government to take part and provide the necessary support. There is also a need for research in the areas of funding for womenôs projects, many projects lack funding for the projects , the government cannot be able reach each and every project with funding and support and so the Non-governmental organizations should also take part in empowering and recognising women as productive farmers who will one day emerge from small scale to commercial farming and benefit the whole country as a whole.

List of references

African Encyclopaedia, 2010, *Apartheid*. Viewed 22 March 2011, from http//www.africanencyclopedia.com/arpatheid/ arpatheid.html.

Agarwal, B. 1997. "Bargaining and Gender Relations: Within and Beyond the Household". *Feminist Economics* 3(1). 1-51.

Ali, S. Y., 2002, *Smallscale Irrigation and Household Food Security: A case study of three Irrigation Schemes in Gubalafto Woreda of North Wollozone, Amhara Region*, Regional and Local Development Studies, Research and Graduate Programs Office, Addis Ababa, Ethopia.

Altman, M., Hart, T. G. B., & Jacobs, P. T., 2009. "Household food security status in South Africa 2009". *Agrekon* 48(4).

Backeberg, G. R., & Groenewald, J. A., 1995. "Lessons from the Economic History of Irrigation Development for Small Holder Settlement in South Africa". *Agrekon* 34(4). 167-171.

Barret, H., 1995. "Women in Africa, The Neglected Dimensions in Development". *Geography* 80(3). 215-224.

Bembridge, T. J., 2000, *Guidelines for Rehabilitation of Small-Scale Farmer Irrigation Schemes in South Africa*. WRC Report No. 891/1/00, Pretoria, South Africa.

Berg, B. L., 2009, *Qualitative Research Methods for the Social Sciences*, 7th edn., Boston MA. Viewed 10 January 2013, from http//en.m.wikepedia.org/wiki/methodology.

Brown, E. P., & Nooter, R., 1992, *Successful Small-Scale Irrigation in the Sahel.* World Bank Technical Paper No. 171. New York, the World Bank.

Carter, M., & May, J., 1999, ôPoverty, Livelihood and Class in Rural South Africaõ *World Development* 27(1).

CIA, 2012, *South Africa Unemployment Rate*, World Fact Book, viewed 07 January 2013, from http:// www. Indexmuundi.com/south Africa/unemploymentrate.html.

Commission on Legal Empowerment for the Poor, 2008, *Making the Law Work for Everyone* 2(3), viewed 13 July 2011, from http://www.undp.org/legalempowerment/.

Cousins, B., 2003, ôSmallholder Irrigation Schemes, Agrarian Reform and Accumulation From Above and From Below in South Africaõ *Journal of Agrarian Change,*13 (1),116-139.

Department of Agriculture, 2004, *Broad-based black economic empowerment in agriculture*, National Department of Agriculture, Pretoria.

Eastern Cape Development Corporation about the Eastern Cape, 2010, *district map*, viewed 05 January 2012, from http://www.ecdc.co.za/theeastern cape/ district map.

Economic Commission for Africa, 2007, *Impact of Food Aid and Developed Countries' Agricultural Subsidies on Long Term Sustainability of Food Security in southern Africa,* viewed 17 August 2011, from http:// www.uneca.org.

Ellis, F., 2000, *Rural Livelihood Diversity in Developing Countries*, Oxford University Press.

Ersado, L., 2001, ôProductivity and land enhancing technologies in northern Ethiopia: Health, public investments and sequential adoptionõ. Dissertation Submitted to the Faculty of Virginia Polytechnic Institute and State University, Blacksburg, viewed 02 January2012,from:http://scholar.lib.vt.edu/theses/available/etd-08162001-201925/unrestricted/Vita.pdf.

Estudillo, J.P., Quisumbing, A. R., Otsuka, K., 2001, "Gender Differences in Land Inheritance, Schooling and Lifetime Income: Evidence from the Rural Philippines", *Journal of Development Studies* 37(4), 23-48.

Eveningham, M., & Jannecke, C., 2006, "Land Restitution and Democratic Citizenship in South Africa", *Journal of Southern African Studies,* 32, 545-562.

Food and Agriculture Organisation, 2012, "Roles of Women in Agriculture: Prepared by the SOFA Team and Cheryl Doss", Rome, viewed 07 January 2013, from http://www.fao.org/sofa/gender/did-you-know/en/.

Food and Agriculture Organization, 2005a, "Emergency and Rehabilitation Programmes: Does Gender Matter?", Rome, Italy, viewed 17 August 2011, from http://www.fao.org/documents/show_cdr.asp?url_file=/docrep/007/y5834e00.htm.

Food and Agriculture Organisation, 2005b, "Building on Gender, Agro biodiversity and Local Knowledge: A Training Manual", *United Nations Food and Agriculture Organization*, viewed 11 August 2011, from http://www.fao.org/sd/LINKS/documents_download/Manual.pdf.

Food and Agriculture Organisation, 2004, "Socio-Economic Analysis and Policy Implications of the Roles of Agriculture in Developing Countries-Summary Report, Roles of Agriculture, project", Rome, Italy, viewed 07 July 2011, from http//www.fao.org.docrep.w0078e04.htm#P1642_90314.

Food and Agriculture Organization, 2003, "Gender: Key to Sustainability and Food Security. Gender and Development Plan of Action", Rome, Italy, viewed 17 August 2011, from http://www.fao.org/documents/show_cdr.asp?url_file=//docrep/005/y3969e/y3969e00.htm.

Food and Agriculture Organisation Statistics, 2002, *Statistics Database of the United Nations Food and Agriculture Organisation*, Rome, Italy.

Food and Agriculture Organisation, 2001a, *The State of Food and Agriculture (2000*), Rome, Italy.

Food and Agriculture Organisation, 2001b, *The State of Food and Agriculture (2001*), Rome, Italy.

Food and Agriculture Organisation, 1996, *Agriculture and Food Security : World Food Summit*, Rome: Food and Agriculture Organisation of the United States.

Government of South Africa, 2010, ôInformation on South African Servicesô, viewed 20 June 2011, from http://www.services.gov.za.

Griffin, K., Khan, A. R., & Ickowitz, A., 2002, ôPoverty and the Distribution of Landô, *Journal of Agrarian Change* 2 (3).

Groenewald, J. A., 1995, *Lessons from the Economic history of irrigation*, New York.

Gujarati, D., 1992, *Essentials of Econometrics*, New York, McGraw-Hill.

Heidi, S., 2011, ôTo End World Hunger, End Factory Farmsô, *World Watch Report*, Revolution Broadcasting, viewed 03 July 2011, from http://www.gaia-health.com/articles551/000384-end-world-hunger-end-factory-farms.shtml.

Hlengani, 2005, óAgriculture Charter: Three ï prong fork to turn over landô, *Financial Mail*, February 4,24:25.

Hofferth, S. L., 2003, ôPersistence and change in the food security of families with children, 1997-1999ô, *Department of Family Studies*, University of Maryland, viewed 31 December 2011, from http://www.findarticles.com/p/mi_m1309/is_3_40/ai_111027115.

Hopson, F., 2009, Report on the Performance of Siyakhula/Massive Programme in Terms of Crop Yields with Regard to the Objectives over the Programme and the Result from Course corrections in the Programme, Internal Report: Eastern Cape Department of Agriculture.

Hudson, N. W., 1987, *Soil and Water Conservation in Semi-Arid areas, Soil Resources, Management and Conservation Service, Land and Water Development Division*. Food and Agriculture Organization of the United Nations, Rome.

ILO, 1996, *Rural Women in Micro-Enterprises Development: A Training Manual and Programme for Extension Workers*. ISBN 92-2-110508-3.

Itabari, J. K., & Wamuongo, J. W., 2003, *Water Harvesting Technologies in Kenya*, Technical Note No. 16.

Kehler, J., 2001, ôWomen and Poverty: The South African Experienceö, *Journal of International Women's Studies* 3(1).

Kwanulu, 2004a, *Circular 14/2004*. Kwazulu ï Natal Agricultural union, Pietermaritzburg.

Kwanulu, 2004b, *Feedback to AgriBEE Steering Committee (20 December 2004).* Kwazulu ï Natal Agricultural Union, Pietermaritzburg.

Levy, P., & Lemeshow, S., 1991, *Sampling of Populations: Methods and Applications*. New York, Wiley.

Lunning, H. A., 1995, ôThe Input of Socio-Economic Factors on the L Tenure Pattern in Nothern Nigeriaö, *Journal of Administration Overseas,* 4(3). Pages 173-182.

Machingura, C., 2007, óAn analysis of factors that can be used to identify successful smallholder farmers: A case study of Mbashe and Ngqushwaô, unpublished Masters Dissertation, University of Fort Hare, Alice.

Makhura, M. T., 2001, óOvercoming transaction costs barriers to market participation of smallholder farmers in the Northern Province of South Africaô, unpublished PhD thesis, University of Pretoria, Pretoria.

Mashiri, A. L., 2007, Rapid *Appraisal of Community Transport Infrastructure & Services*, Mpumalanga Department of Roads & Transport, Nelspruit.

Massive Food Production Programme Report, 2004, óMassive Food Schemeô, Internal Document- Unpublished.

May, 2006, *South Africa- Poverty and Rural Development*, OCEN. UK.

Moges, Y., 2004, *Water Harvesting techniques: Training and Construction Manual*, Consultancy Sub-Report No. 2, Tropical Forestry.

Moyo, S., 2000, óThe Political Economy of Land Acquisition in Zimbabwe, 1990-1999ô, *Journal of South African Studies* 26(1), viewed 10 June 2011, from http://www.land.tenure.zimbabwe.za.html.

Moyo, S., 1995, *The Land Question in Zimbabwe, Harare*, SAPES Book, viewed 10 June 2011, from http://www.land.tenure.zimbabwe.za.html.

Mutekwa, V., & Kusangaya, S., 2006, óContribution of Rainwater Harvesting Technologies to Rural Livelihoods in Zimbabwe: The case of Ngundu Ward in Chivi District. *Water SA* 32(3) 437-444.

Namara, R. E., Horowitz, L., Nyamadi, B., & Barry, B., 2011, *Irrigation Development in Ghana: Past experiences, emerging opportunities, and future directions*. International Food Policy Research Institute, GSSP Working Paper No. 27.

NDA, 2001, *The Strategic Plan for South African Agriculture*, National Department of Agriculture, Pretoria.

Ntsebeza, L., 1999, *Land Tenure Reform In South Africa: An Example From the Eastern Cape Province*, Issue Paper 82, London: IIED.

Obi, A. (ed.), 2011, *Institutional Constraints to Small Farmer Development in Southern Africa*, Wageningen Academic Publishers, The Netherlands.

Platinum Industry, 2012, *At Root of Marikana Massacre*, viewed 08 January 2013, from http://nsbc.me/2012/lonmin-platinum-industry-at-root-of-marikana-massacre-in-south-africa/.

Platteau, J. P., 1992, *Land Reform and Structural Adjustment in Sub-Saharan Africa: Controversies and Guidelines*, FAO Economic and Social Development Paper No. 87, Rome.

Pinckney, T. C., & Kimunya, P. K., 1994, ôLand Tenure Reform in East Africa: Good, Bad or Unimportant, *Journal of African Economics* 3(1),1-28.

Province of the Eastern Cape, 2003, *Provincial Growth and Development Plan*, Bisho: Government Printer.

Pote, P. P. T., 2008, ôTechnical Constraints In Smaller Holder Agriculture: A Case Study of Nkonkobe Municipality, Eastern Cape, South Africaõ, viewed 31 December 2011, from http://ufh.netd.ac.za/jspui/handle/103.

Right to Food, 2010, ôWhat is the Right to Food?ô, viewed 05 July 2011, from http://www.righttofood.org.

Rockstrom, J., 2000, ôWater Resources Management in Smallholder Farms in the Eastern and Southern Africa: An Overviewô. *Phys. Chem. Earth (B)* 25(3), 275-283.

Romuld, S., & Sandham, J., 1996, *Gender issues and Farming Systems research and extension in Ethiopia, Proceedings of the international workshop*, Institute of Agriculture Research, Addis Ababa, Ethiopia.

Sapa, 2013, ôFarm Worker Strike to Intesifyô, *Times Media Group*, Sunday times, viewed 13 January 2013, from http//www.timeslive.co.za/loca l/2013/01/13/farmworker-strike-to-intensify-says-cosatu.

Saunders, C., 1993, ôPutting the History of White Poverty in South Africa on the Agendaô, *South African Journal* 28. 242-248.

Standard Bank, 2005, ôBlack Economic Empowerment (BEE) Agriculture Customer Forumô, Held On 17 March 2005, The Golden Horse Hotel, Pietermaritzburg.

STANLIB, 2012, ôSouth Africa Unemployment Rate: Economic Focusô, viewed 08 January 2013, from http//www.stanlib.com/Economic focus/pages/SA unemployment rate Q1 2012.aspx.

Statistics South Africa, 1998, viewed 28 June 2011, from http://www.stats.sa.gov.za.html. Accessed on June 28, 2011.

South African Government Information, 2012, ôNational Development Plan 2030ô, viewed 13 January 2013, from http://www.info.gov.za/issues/national-development-plan/index.html.

United Nations Non-Governmental Liason Service, 2012, ‘Government Programmes’, viwed 13 August 2011, from www.un-ngls.uk.al.

Van Zyl, J., Kirsten, J., & Binswager, H. P. (eds.) 1996, *Agricultural land Reform in South Africa*, Cape Town, Oxford University Press.

Weiner, D., Moyo, S., Munslow, B., & O’keefe, P., 1985, ‘Land Use and Agricultural Productivity in Zimbabwe’, *Journal of Modern African Studies* 23(2).

World Bank, 2003, ‘World Development Report (2004): making Services Working for the Poor’, viewed 27 July 2011, from http://econ.worldbank.org/wdr/wdr 2004/.

World Bank, 1994, *South African Agriculture: Structure, Performance and Options for the Future*. Washington DC, the World Bank.

World Bank, 1986, ‘Poverty and Hunger: Issues and Options for Food Security on Developing Countries’, Washington DC, World Bank, viewed 04 August 2011, from http://www.worldbank.org/poverty/mission/upl.

Yemis., I., Ogunlela & Mukhtar, A. A., 2009, ‘Gender Issues in Agriculture and Rural Development in Nigeria: The Role of Women’, *Humanity and Social Sciences Journal* 4(1), 19-30.

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APPENDIX 1

UNIVERSITY OF FORT HARE

FACULTY OF SCIENCE AND AGRICULTURE

DEPARTMENT OF AGRICULTURAL ECONOMICS AND EXTENSION

ANALYSIS OF GENDER ROLES IN SMALLHOLDER IRRIGATED FARMING: A CASE OF WOMEN'S PARTICIPATION IN AGRICULTURAL DECISION MAKING IN MBHASHE LOCAL MUNICIPALITY, EASTERN CAPE PROVINCE.

HOUSEHOLD SURVEY QUESTIONNAIRE:

Questionnaire no..... Name of the village: é é é é é é é

Name of respondent (optional): ..... Date of Interview: ....é é é é é .....

I. Are you a member of an irrigation scheme?

Yes	1	No	2

II. If yes to I, who negotiated the project / scheme membership? (Tick as appropriate)

Man	1	Woman	2

III. Do you own a homestead food garden?

Yes	1	No	2

SECTION A: PERSONAL INFORMATION

A.1 Please provide the following information about the respondent.

Household head 1-Male 2-Female 3.-Child	**Position in family**	**Sex 1-Male 2-Female**	**Age**	**Marital status 1-Single 2-Married 3-Divorced 4-Widowed**	**Education level 1-No education 2-Primary 3-Secondary 4-Tertiary**	**No. of years in school / Standard**	**Occupation category 1-Unemployed 2-Self-employed 3-Employed 4-Student 5-Farmer**	**Years of employment**

SECTION B: HOUSEHOLD INFORMATION

B.1 (Tick as appropriate)

Variable	**Response**
No. of years in farming	
Household Size	
Total Number of Adults (age Ó21)	
Total Number of Children (age Ò20)	
Number of Individuals Bringing in Income	

B.2 How much is the total household income?

.....

B.3 Who brings in the most income in the household? (Tick as appropriate)

Man	1	Woman	2

B.4 Farm activities, please provide information on who does which activity

Activity	**Type of worker**								
	Men			**Women**			**Tractor**		
	No.	**Days**	**Cost**	**No.**	**Days**	**Cost**	**No.**	**Days**	**Cost**
Land Preparation									
Ploughing									
Planting									
Fertilizer application									
Weeding									
Spraying									
Harvesting									
Post harvest (Drying, Packaging)									

B.4 Farming assets owned by farmer

Assets	**Yes / No**	**Owner (Man / Woman)**	**Quantity**	**Year bought**	**Price paid when bought**
Plough					
Tractor					
Oxen					
Hand hoe					
Boom sprayer					

SECTION C: IRRIGATION AND WATER USE

C.1 Do you have access to arable land?

Yes	1	No	2

C.2 If yes to C.1, how did you obtain access to this land? (Tick as appropriate)

By virtue of being a resident	Inherited	Bought	Apply from a chief	Rented	borrowed
1	2	3	4	5	6

C.3 Is your land well fenced?

Yes	1	No	2

C.4 What farming enterprises do you engage in? (Tick as appropriate)

Crop production	Livestock production	Vegetable production	Citrus production
1	2	3	4

C.5For the enterprises mentioned above, from where do you get inputs? (Tick as appropriate)

Buy from local markets	From previous harvests	From the government
1	2	3

C.6 Using the land, is the household producing enough for the family?

Yes	1	No	2

C.7 Do the household members have enough time for own production?

Yes	1	No	2

C.8 When farm output falls below the household requirement, who supplements? (Tick as appropriate)

Man	1	Woman	2

C.9 Which of the following mostly affects your produce? (Tick as appropriate)

Pests	diseases	droughts	frosts
1	2	3	4

C.10 Is there any source of water available for irrigation

Yes	1	No	2

C.11 If yes, name the source? (Tick as appropriate)

River	Dam	Tanks	Borehole	Taps
1	2	3	4	5

C.12 Do you pay for water?

Yes	1	No	2

C. 13 If yes, how much?

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C.14 Do you have an irrigation system from the source to the irrigated area?

Yes	1	No	2

C.15 If yes, what type of system? (Tick as appropriate)

Sprinkler system	Centre pivot system	Drip irrigation	Furrow irrigation	Other (Specify)
1	2	3	4	5

C.16 Who implemented the system for the project? (Tick as appropriate)

Government	Project members	Other
1	2	3

C.17 Is using irrigation for production successful over time?

Yes	1	No	2

C.18 How often do the extension officers visit you? (Tick as appropriate)

Once a week	Once a fortnight	Once a month
1	2	3

C.29 Are the officers always available when you need help? (Tick as appropriate)

Never available	Available sometimes	Always available
1	2	3

C.20 How would you rate the message given to you by the officers? (Tick as appropriate)

Excellent	Good	Fair	Bad	Poor
1	2	3	4	5

C.21 What methods of communication do officers use mostly to communicate with you? (Tick as appropriate)

Tele phone	meetings	Information days
1	2	3

SECTION D: MARKETING

D.1 Do you have access to markets?

Yes	1	No	2

D.2 If yes, which markets do you usually use for selling your produce? (Tick as appropriate)

Formal markets	Informal markets	Do not sell
1	2	3

D.3 Who sells the produce? (Tick as appropriate)

Man	1	Woman	2

D.4 To whom do you sell most of your produce to? (Tick as appropriate)

Local	Fresh produce Market	Anyone
1	2	3

D.4 Do you always find a market for all your produce?

Yes	1	No	2

D.5. List the main crops you produced and sold, provide the following information for the last three years.

Year of production	**Name of crop**	**Area (ha)**	**Amount sold (kg/bags)**	**Amount consumed (kg/bags)**	**Unit price (R)**	**Amount received (R)**
2009						
2010						
2011						

D.6 How is your produce moved to the marketing points? (Tick as appropriate)

Own transport	Hired vehicles	Public transport	Buyers transport
1	2	3	4

D.7 Before selling your produce, what value adding activities do you perform, if any? (Tick as appropriate).

Washing	Sorting	Packaging	None
1	2	3	4

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