Evaluating the impact of smallholder farming and its effectiveness in alleviating poverty in Sedibeng District Municipality of Gauteng Province, South Africa

by

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DECLARATION

I, Mosima Maureen Thomas, declare that this dissertation which I have compiled and submitted to the University of Pretoria for the MAgric in Extension degree, represents my own work and has never been submitted to any other tertiary institution for any degree.

M.M. Thomas …… Date …….

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DEDICATION

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ABSTRACT

The study aimed to investigate the impact of smallholder vegetable production on livelihoods and poverty alleviation in the community of Sedibeng District Municipality of Gauteng Province, South Africa. Data were drawn and collected from 60 smallholder vegetable producers using a questionnaire which was conducted through one-on-one interviews. The data were analysed using a descriptive statistics model to compare variables and the livelihood levels of smallholder vegetable producers in Sedibeng District Municipality (SDM).

The results suggest that gender, household size, marital status and household income influenced smallholder vegetable production. Women as primary caretakers of children were more involved in vegetable production than men and vegetable production increased when households were headed by females. In addition, results show that working with limited resources as a group was more productive than working

individually. Smallholder farmers working in groups worked more closely with extension officers and were assisted with the latest information related to agricultural production, proposal writing, financial support, production inputs as well as markets, compared to farmers working individually. Furthermore, the results indicated that farmers working in groups created more employment opportunities than those working on their own. Hence the community was able to improve its living conditions.

In addition, the age of farmers influenced smallholder vegetable production significantly. The majority of farmers (68%) were 50 years and above which meant that they had the advantage of experience. The major crops that were grown were spinach, cabbage, tomatoes, potatoes and onions. Furthermore, farmers indicated that project implementation and evaluation were successfully undertaken with the assistance of the Gauteng Department of Agriculture and Rural Development (GDARD) agricultural advisors. Regular visits received by farmers from GDARD agricultural advisors led to the effective use of the extension services and improved productivity. Farmers highlighted that the support services they received from the Comprehensive Agricultural Support Programme (CASP) assisted in enhancing productivity. In addition, the majority of agricultural advisors had BSc and BTech qualifications and had majored in crop production, which translated to higher production for the farmers they assisted.

This study indicated that smallholder vegetable production improved the livelihoods of Sedibeng District Municipality community. Smallholder production created self-employment and the smallholder farmers were able to provide basic foodstuffs for their families.

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LIST OF ACRONYMS AND ABBREVIATIONS

ABBREVIATIONS	DESCRIPTION
CASP	Comprehensive Agriculture Support Programme
CTA	Technical Centre for Agricultural and Rural Cooperation (CTA)
DAFF	Department of Agriculture Forestry and Fisheries
DOA	Department of Agriculture
GDARD	Gauteng Department of Agriculture and Rural Development
FAO	Food and Agriculture Organisation
NERPO	National Emergent Red Meat Producers' Organisation
NFES	National Food Emergency Scheme
SPFS	Special Programme for Food Security Projects
SDM	Sedibeng District Municipality
USAID	United States Agency for International Development
WHO	World Health Organization

CHAPTER 1: INTRODUCTION

1.1 Background

In Sedibeng district municipality, most households generally access their food through different programmes such as agricultural production activities, public transfer programmes or donations from other households. The agricultural economy in South Africa is distinguished by existing smallholder farmers and subsistence farmers who are situated in the poor rural areas and mostly operate on communal land and in commercial farming sectors. Seti, (2003) reported that subsistence-oriented farming activities range from crop production (spinach, tomatoes, etc.) to livestock production (cattle breeding and poultry production etc.). In South Africa, millions of people from former homeland areas are engaged in agricultural activities for different reasons (Baiphethi, 2004) and most of these people are smallholder farmers. Smallholder farming is vital as an intervention to improve nutrition and food security for rural-based communities. In addition, policy interventions for agricultural activities have successfully reduced poverty and improved the economic growth and livelihoods of communities (Turner *et al.,* 2013).

The community of the Sedibeng district is engaged in smallholder agricultural production for different reasons. The involvement of communities in agricultural activities in South Africa is due to persistent poverty and people engage in farming to improve their livelihoods (Sibanda, 2001). Apart from agricultural projects, these communities rely on a combination of livelihood strategies for living, including accessing social grants, and cheap labour (doing odd job).

In developing countries where millions of people reside in poor rural areas, agriculture has proven to have great potential to alleviate poverty and growth in a short space of time. However, communities who want to transform their livelihoods through agricultural projects are demotivated due to lack of resources for agricultural production.

The Gauteng Department of Agriculture and Rural Development (GDARD) and the Department of Agriculture Forestry and Fisheries (DAFF) have a support service programme to improve agricultural production and promote economic development through adequate financial support, infrastructure, marketing and capacity building (Jordaan & Jooste, 2003). In addressing the post-settlement support and poverty levels in the country, DAFF initiated the Comprehensive Agriculture Support Programme (CASP) in order to support the agricultural industry to handle the situation of increasing poverty in South Africa and the programme was launched in August 2004 (DOA, 2004). The programme initiated and developed six key development preferences as a way of intervention. These comprised:

- Knowledge management and information;
- Advisory and technical assistance;
- Provision of services on a regular basis;
- Capacity building and training;
- Development of business and markets on and off farm infrastructure; and
- Financial assistance for farmers.

In addition, CASP beneficiaries are identified and grouped into four categories, namely: those that are at risk and starving; households that produce their own food; land reform beneficiaries; and programmes of agrarian reform (DOA, 2004).

For sustainable smallholder farming, CASP provided the Gauteng Province with on-farm and off-farm training materials, infrastructure, capacity building, advisory services and technical assistance relating to development of business and marketing strategies. The aim of the programme is to stimulate community projects and attract funds for beneficiaries from other organisations to support their businesses.

1.2 Problem Statement

The majority of South African people are food insecure due to the historical political situation, which has led to high rates of poverty. Mushunje, *et al*. (2003) state that, to address food security and alleviate poverty, smallholder farmers need a support system to maximise their production. Hence, CASP is intended to provide such support to smallholder farmers.

1.3 Aim of the study

The study aimed to determine the impact of smallholder vegetable production on poverty alleviation and the livelihoods of the community of Sedibeng District Municipality of Gauteng Province.

1.4 Objectives of the study

Specific objectives of the study were:

1) to determine the impact of smallholder vegetable production on the livelihoods of Sedibeng community; and

2) to determine the role of the agricultural advisory service in supporting smallholder vegetable farmers in the Sedibeng District Municipality community of Gauteng Province.

1.5 Conceptual framework

A successful agricultural transformation strategy strongly depends on an enabling environment being in place to perform at optimal level. Moreover, public interventions require broad-based agricultural transformation to address failures of market and coordination. Any investments which have a positive impact on the country's economic growth and poor people's incomes are reliant on the capacity and incentives of a broad range of indicators.

Innovation and technology are equally important, key drivers of growth, value addition and productivity of smallholder agricultural production. Transformation of the agricultural industry in previously disadvantaged communities requires a focus on value chain development and a market-oriented sector that will assist smallholder farmers to respond constructively to market requirements and to become sustainably profitable. The International Food Research Institute (2008) recommended that to promote inclusive agricultural transformation, different intervention strategies are necessary. These would include:

(a) institutional arrangements that allow a substantial number of smallholder farmers and workers to engage in and benefit from commercialisation;

(b) agribusiness investments that may be beneficial to the largest proportion of poor people as workers and producers;

(c) mitigation of risks for possible agribusiness investments;

(d) development of the scale of agribusinesses and farms in order to deliver growth and reduce poverty.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

When compared to urban communities, South African rural communities are amongst the poorest in an unequal society, due to historical reasons as well as a lack of research and development (Department of Rural Development, 2013). This is supported by research by Schwabe, (2010) who reported that in 2010 approximately 6.4 million South Africans were living below the national poverty line and the majority of people resided in poor rural communities.

Most poor rural residents depend on agricultural production, and they operate smallholder farming. By contrast, the majority of urban communities are involved in short term contract employment or donations from community members to sustain themselves. Bakre (2015) reported that for many households, income is often not enough to provide for daily requirements. This has largely contributed to a higher number of people living below the poverty line in South African communities. Smallholder production has an essential role to play in improving the lives of communities in rural areas because it can intensify food production (Baiphethi & Jacobs, 2009). Literature has shown that agriculture under smallholder production could be considered an excellent tool in improving the living standards of communities in rural areas.

2.2 Smallholder farming in South Africa

Smallholder farming is defined as “the production of sufficient food and fibre to satisfy the needs of the farming family” (Wiggins, 2009, p. 8). In the past, smallholder farming was commonly practised where communities produced food according to their household requirements. Van Averbeke, (2008) reported that smallholder farmers

were contributing little to cash economy communities and indicated that smallholder farmers produced mostly for household consumption and did not sell their produce. However, Van Averbeke's (2008) finding contradicts the findings of Makeham & Malcolm, (1986) who held the view that smallholder vegetable producers were indeed selling some of the products they harvested. Makeham & Malcolm, (1986) reported that smallholder farming could produce enough food to feed the household and also sell surplus products. In return, smallholder farmers would earn income and accumulate secondary savings.

The nature of the agricultural sector in South African is classified as dualistic because it consists of unpredictable smallholder and subsistence farming systems on the one hand, and well-financed, reliable commercial farming enterprises on the other (Vink & Kirsten, 2003; May & Carter, 2009). Economists in South Africa described subsistence farming as a growing sector on small scale. Furthermore, they considered commercial farming as a reliable market, developing and operating on an increasing scale.

The commercial farming sector is mostly dominated by white farmers, while the subsistence and smallholder farming sector is dominated by African, Asian and coloured farmers. The wide division between commercial and subsistence farming within the smallholder farming sector is the legacy of the unequal ethnic policies that were imposed on the population during the apartheid regime. These policies prevented agricultural development and the upliftment of black farmers in the rural areas (Lahiff, 2000; Ortmann & Machete, 2003).

2.3 Role of smallholder farming in Sedibeng

The community of Sedibeng consumed food that was produced from their farms. Hendriks and Fraser (2003) argued that smallholder vegetable production provides two well-defined nutritional benefits. Smallholder vegetable farming produces fresh food consumption for rural households as well as generating income that might be used for different household needs. In addition, Hendriks and Fraser (2003) stated that smallholder farming increased fresh food consumption as well as improved health of the rural communities.

Hendriks and Fraser (2003) reported that households saved the income they generated from sales of surplus produce and the savings contributed positively to the lives of the poor rural communities, enabling them to purchase other foodstuffs for their households, such as meat and oil. Because of low levels of education (May & Carter, 2009), households in previously disadvantaged areas mostly lacked the skills required to compete for high-earning employment in the urban communities, hence the focus on agricultural farming activities which constitute one of the main sources of income in those regions (May & Carter, 2009). These rural households usually produce food for home consumption and to be assured of food security. However, some of the households regard smallholder agricultural production activities as an opportunity to gain employment and generate income (Vink & Kirsten, 2003; May & Carter, 2009) in addition to being a part of their livelihoods.

During the rainy season households normally preserve food and use it during the dry season. This practice serves as backup in a situation where households do not have enough money during the dry season to purchase food items. Preserving enough food for the dry season is demanding for rural people since the majority of households do

not have facilities to store food and crops and this is a major concern for smallholder farmers (Baiphethi & Jacobs, 2009).

2.4 Poverty alleviation through smallholder farming

A study carried out by Vink & D'Haese, (2003) demonstrated that vegetable consumption from smallholder producer contributes to reducing levels of poverty in rural areas. In addition, Ashley and Maxwell (2001) reported that resettlement of men and youths to urban areas for better opportunities that are unavailable in poor rural communities due to poverty, could be reduced by their involvement in agricultural projects. In rural areas, land is a resource that is available. However, lack of money to purchase production inputs limits communities from becoming involved in agricultural projects.

According to a study by Lipton & Ellis, (1996), in South Africa smallholder agricultural projects are relatively small and they contribute below 5 per cent to the primary agricultural sector. However, smallholder farming is the main source of employment for most people in rural areas. Across the world, smallholder farming in poor communities has proven to have the potential to generate income opportunities and create employment. The study by Kirsten & Van Zyl, (1998) reported that for smallholder agricultural production to be viable, the industry needs proactive policy support that will assist farmers to improve their production.

2.5 Employment creation through smallholder farming

The most important aspect in the lives of many rural people remains the migration for employment as rural households depend on the migrants' income for remittances. The agricultural production sector claims to be the main means of improving food security and reducing poverty in poor communities. However, the sector does not have enough

opportunities to create sustainable employment for the rural communities. The previous South African Government used the Land Acts of 1913 and 1936 and the Administration Act of 1927 to uplift the production of commercial white farmers and these policies disadvantaged black people operating in smallholder farms, preventing them from being self-sufficient economically. These policies recognised white commercial farmers and gave them subsidies to expand their production, but the distribution of land to farmers was not done fairly. This led to black farmers farming at subsistence level, with no proper equipment and limited access to the markets. This meant that black farmers were producing crops not to sell at the market but mainly for home consumption, leading to the impression that a low yield, producing only enough for home consumption and not enough to supply the markets, was a failure (Catling & Saaiman, 1996). The impact that subsistence farming had on household food security was ignored, since more emphasis was placed on producing for the market. In addition, Catling & Saaiman, (1996) reported that people recognised subsistence farmers as a step towards commercial farming. Under subsistence farming, labour involved in production is supplied by the household and is unpaid, because the household consumes the produce directly, without any monetary transactions taking place. However, there could be a way of measuring household production, either through the time households took to produce the food, or the number of workers involved in production and the inputs and outputs value (Diewert *et al*., 2009).

Household agricultural production is composed of family members and is characterised by intensive labour (Potte, 2008). However, Dold & Cocks, (2001) pointed out that as rural household farmers are poor and are faced with limited resources, they have limited labour and cannot afford farm inputs (Potte, 2008). Household agricultural production contributes a small percentage of employment due

to the perception that agricultural production contributes very little to people's livelihoods (Potte, 2008).

2.6 Unemployment

The unemployment rate in South Africa, is very high, especially in poor rural communities where poverty rates are relatively high in comparison to other parts of the country (Vink & D'Haese, 2003c). This is due to the dualistic nature of the South African economy which consists of the poor and the rich. This finding is supported by Vink & D'Haese, (2003a) who reported a 0.593 Gini coefficient that showed a huge gap between poor and rich people in South Africa. In addition, Lipton *et al.* (1996) reported that the population in the rural areas consists largely of unskilled workers who are poorly educated.

This indicates that agriculture is the key to uplift rural (Rockefeller, 1969). Most South Africans migrating to cities are initially from the rural areas. Many young rural women and men from poor backgrounds relocate to urban areas to search for employment opportunities in the mines, manufacturing and construction sectors (Vink & D'Haese, 2003b). However, peri-urban households purchased most of their food as compared to rural households where households produced their own food (Ruel *et al.,* 1998 and Maxwell *et al.,* 1998).

2.7 Food security

A study by Du Toit (2009) reported that the term 'food security' describes a country as food secure if it can produce sufficient food to meet its daily dietary requirements. When South Africa became a democratic country in 1994, the government put more focus on food security programmes. In addition, the right to access to adequate food was set out in Sections 26 and 27 of the South African Constitution of 1996, which

states that every South African has a right to sufficient food and water. In addition, the Constitution also sets out the right to access to adequate food. This makes it clear that everyone in South Africa should have access to acceptable clean water and food. In addition, this law is in line with the World Food Summit which was held in 1996, where it was announced to global citizens that to be food secure involves access to adequate, balanced and safe diets surrounding the economic access and physical availability of the produce (WHO, 2008). Moreover, the resolution was in agreement with South Africa's Millennium Development Goal which aimed at halving the high number of hungry community members by the year 2015 (WHO, 2008).

The KwaZulu-Natal Department of Agriculture presented a strategy to alleviate poverty and food security programmes called 'one home one garden', where the department was providing homestead farmers with seeds and seedlings (Kruger, 2007). As defined by the World Bank (2015), food security refers to a situation where everyone has access to adequate safe and clean water and nutritious food at all times. Therefore, to be food insecure should not only be considered a problem resulting from an inadequate food supply, but also from inadequate buying power. Abalu, (1999) reported that if rural households could improve their buying power, it would increase the likelihood that they would be food secure and that their livelihoods would improve. This is due to the fact that rural communities spend more than 60 per cent of their earnings on food (USAID, 2010). In addition, it has been shown that the country's food security relies on the performance of agricultural production which supplies different commodities for the world's population (FAO, 2008).

However, 70 to 80 per cent of people living in poor rural areas, rely on agricultural production to derive their livelihood (Abalu, 1999). Frequent droughts cause the rising price of foods such as beans and maize, which are sources of energy and protein and

are the main staple foods of South African people (FAO, 2008). This is a major challenge for poor rural communities, because they are net direct consumers of the different commodities they produce (Altman *et al*., 2009).

The Food and Agriculture Organization (FAO), (2008) regards South Africa as a generally food secure country, able to produce enough food for its people and with capacity to import food to some African countries. This was supported by Hart, (2009) who indicated that, at national level, South Africa appears to be food secure but at household level in rural communities, it is said to be food insecure. However, FAO (2004) highlighted that agricultural production could be used as a means of ensuring that various parts of the world − not excluding South Africa − are food secure. This further indicates that agricultural production contributes to alleviating poverty by creating employment opportunities, increasing farm income, improving wages of the working force and reducing expenditure on food.

Baiphethi & Jacobs (2009) reported that poor rural households in the past were producing the majority of the food they consumed while they were producing at subsistence level. The migration of rural people to urban areas has led to the current situation where rural people are accessing their food from the market, certain public programmes or through other households. In addition, research has indicated that dependence on market purchases has increased from both poor rural and urban households, where demand for certain food supplies has reached over 90 per cent. The main reason for the growth of market purchases for food by rural communities is that rural agricultural resources (land) that had the potential to produce food are currently under-utilised (Baiphethi & Jacobs 2009). Hendricks & Fraser, (2003) reported that the land tenure received from government programmes on communal farming systems is discouraging rural communities from continuing with agricultural

production activities and from investing in communal land for development of agricultural production.

2.8 Challenges faced by smallholder farmers in South Africa

Agricultural smallholder farmers contribute a small percentage to the South African economy according to Chikazunga & Paradza, (2012) who also indicated that black, previously disadvantaged farmers do not have a strong support system to assist them to implement and improve their production. As a result of this lack of support, farmers are unable to take opportunities government institutions supply (Moloi, (2010); Ayinke, (2011)). In addition, Chikazunga & Paradza, (2012) reported that before 1994, the South African agricultural economy was growing at a fast rate because the previous South African government had supported programmes and subsidised farmers.

Following the democratic transition in 1994, the South African Government reduced farmer support programmes and state subsidies for underprivileged farmers, removed marketing boards and deregulated the agricultural sector. This impacted negatively particularly on commercial farmers as compared to smallholder farmers (Chikazunga & Paradza, 2012). In addition, Chikazunga & Paradza, (2012) reported that this decision led to the privatisation of many agricultural marketing control boards, leaving only the sugar industry's prices still supported by the government.

Most smallholder farmers are faced with challenges of acquiring informal, unreliable agricultural markets. As a result, marketing agencies have no interest in working with smallholder farmers. However, this is not only a South African problem: Bienabe & Vermuelen, (2011) reported that, worldwide, smallholder farmers are struggling to attract formal markets because they lack resources. Furthermore, smallholder farmers in South Africa cannot fully engage in commercial markets due to different challenges

(Makura & Mokoena, 2003; Wynne & Lyne, 2003). Makura & Mokoena, (2003) and Wynne and Lyne (2003) add that the main challenges limiting smallholder farmers are poor infrastructure, lack of implements, low education levels, shortage of business management skills and innovations to upgrade the quality of production and enable applying for credit. To change the negative market circumstances affecting emerging farmers, government could assist smallholder farmers to deal with these challenges by helping them avoid being confined to agricultural activities that do not bring any rewards (Makhura & Mokoena, 2003). A shortage of skills was identified as the main limitation for growth among smallholder farmers by the National Emergent Red Meat Producer's Organisation (NERPO), (2004). In addition, NERPO (2004) suggested that the South African government needs to improve their efforts to stimulate younger people's participation in the agricultural industry. For farmers to increase their yield of commodities produced, they need to improve their entrepreneurial skills (Bienabe & Vermuelen, 2011).

2.8.1 Access to infrastructural development

According to Meyer *et al*. (2009), classified infrastructure can be either social (e.g. education and health), institutional (e.g. agricultural institutions and farmers' cooperatives) or economic (e.g. electricity, railways, roads and bridges). Economic infrastructure provides services to facilitate economic production (Meyer *et al*., 2009). Development of infrastructure is one of the challenges that rural smallholder farmers are facing (Makhura & Wasike, 2003). However, big towns and industrialised areas of the KwaZulu-Natal and Gauteng provinces are well served by infrastructure and only rural areas still battle with huge backlogs left by the pre-1994 Government.

Most African countries are faced with poor infrastructure (Chaminuka, *et al*., 2008). However, the South African government is trying to upgrade the quality and quantity

of infrastructure in the rural areas through programmes such as the Comprehensive Agricultural Support Programme (CASP) (Chaminuka, *et al*., 2008).

2.8.2 Limited access to land, capital, input resources and markets

Access to land for cultivation is a constraint for many smallholder farmers. This constraint includes insecure land tenure, unequal access to market, and absence of transfer rights, which delays agricultural development and degrades natural resources (Salami *et al.,* 2010; FAO, 2010). Intensive cultivation in small plots for many areas leads to reduced yields as the land becomes exhausted. The denial of women's right to access and own land has also compromised the productivity of the agricultural systems (Salami *et al.,* 2010). Women in South Africa, for instance, can only acquire rights to land through marriage (Thamaga-Chitja & Morojele, 2014). In certain other countries, women can only inherit land if they have children with a deceased husband. Land constraints as well as market problems affect women more than men (Hedden-Dunkhorst, Mathonzi & Mphahlele, 2001).

According to Salami *et al*, (2010) many African countries still face challenges in the marketing of both agricultural inputs and outputs. In these countries, many farmers live very far from market centres (Salami *et al.,* 2010) and have to walk for many hours to reach the markets. This is particularly hard for women, who must leave their houses very early to sell produce in a distant market (Thamaga-Chitja & Morojele, 2014).

The road network, which is necessary for market development and to distribute farm outputs, is also seriously underdeveloped in many developing countries (Salami *et al.,* 2010). Because of this poor road system, smallholder farmers rely on inefficient means of transportation (Salami *et al.,* 2010). The allocation of funds is urban-biassed,

because city roads are improved before those in the rural areas and town offices are constructed at the expense of storage facilities (Beets, 1990).

Governments generally give priority to urban areas rather than the rural areas which produce food for the city's residents (Thamaga-Chitja & Morojele, 2014). The FAO, (2013) found that investment in infrastructure development, availability of agricultural banks and extension services fell considerably since the mid-1980s. The portion of commercial banks' loans to agriculture has been very low, affecting the expansion and adoption of technology (Lupai, 2014, DoA, 2008). Lack of access to loans is the main factor responsible for the decline in agricultural productivity (Salami *et al.,* 2010). The absence of loans and extension services in the rural areas deprives smallholder farmers of the necessary advice they need to increase food production (Lupai, 2014). It is now widely recognised that institutional challenges at both national and international levels affect smallholder agriculture (Salami *et al.,* 2010). Large enterprises, which focus on agro-exports are favoured more than the smallholder sector that produces for domestic markets (FAO, 2013). Smallholder farming is associated with low status and considered a backward activity, to be performed by the rural poor (Beets, 1990). Their neglect by governments and private sectors deprives them of necessary farm inputs to raise agricultural output (FAO, 2013). However, due to a decrease in food supply, there is interest in promoting agricultural productivity, especially in Sub-Saharan Africa, from national governments and international agencies (Pingali, 2010).

All the above constraints mean that lack of agricultural support discourages farmers from hard work and reduces their motivation to pull together the resources that are available to improve food crop productivity (Beets, 1990). When farmers leave agricultural work, the amount of cultivated land is reduced, leading to a sharp fall in

food supply (Pingali, 2010). However, the lack of external inputs cannot be considered the only challenge responsible for food decline in a country. The absence of farmers' associations can become a challenge to agricultural development (Lupai, 2014), and where no progress has been made, the reasons are often human (Beets, 1990). Part of these challenges lies within the farmers themselves. The external factors may be fulfilled but if the will to improve production is missing, there will still be food insufficiency. Therefore, addressing the role of cultural factors in crop production is very important. A decrease in food supply cannot be blamed on the lack of external inputs alone (Vorley, 2002).

2.8.3 Access to extension services

Extension services strive to develop smallholder farmers by helping them to improve the productivity of their agricultural activities. Farmers that have access to advice on farming techniques through extension officers are likely to have high production and high productivity (Potte, 2008). A lack of extension services in South Africa contributes to low productivity of rural communities. The government's financial cut on transport allowances for extension officers hampered involvement of the extension officers with farmers. This affected production and resulted in a lack of advice which the extension officers were offering (Hedden-Dunkhorst, Mathonzi & Mphahlele, 2001).

Rural farmers tend to practise farming activities on small-sized projects initiated or supported to varying degrees by the extension services provided by provincial departments of agriculture. They tend to farm their own small plots on these projects and usually get help from the extension officers in terms of technology transfer, access to inputs such as plant material, agrochemicals and irrigation. Often this support is inadequate (Hart & Vorster 2007). Most of these farmers are dominated by females

and the elderly, and they receive support in the form of production inputs and practices. According to FAO, (1996), extension is an important informal educational process directed toward the rural communities. In addition, extension services aim to increase the efficiency of the family farm, production and the general standard of living of the farm family (Rogers, 1996). In South Africa, agriculture extension services is expected to remain for many years as it is a major contributor to food production and the economy (Anderson, Van Crowder & Dion, 1998).

2.8.4 Lack of information, knowledge and training

One of the most critical factors in the development of agricultural projects is information and knowledge which is characterised by marketing and selling skills as well as recognition of opportunities to diversify farm products (Potte, 2008). In addition, education and trading are key components of human capital (Potte, 2008). This can determine household ability to access higher production (Zezza *et al*., 2007).

Young people in rural areas need role models to motivate them and must be given a practical education, training and skills in order for them to understand farming activities better (Hart & Vorster, 2007). In the agricultural sector, motivation is an important tool that can be used to boost the self-confidence and encourage a positive attitude to farmers, especially the youth that have an interest in becoming involved in farming activities (Hedden-Dunkhorst, Mathonzi & Mphahlele, 2001). A sound educational and training background can reinforce farmers' ability to achieve higher production levels.

2.9 Agricultural advisory services for smallholder farming

The majority of smallholder farmers in the Sedibeng district do not interact with other smallholder farmers in other municipalities or other regions within South Africa to share their knowledge and learn what other farmers are doing. In South Africa, smallholder

farmers rely on governmental departments (DAFF and GDARD) and GDARD agricultural advisors to supply them with the latest information and support (Makura & Mokoena, 2003; Wynne & Lyne, 2003). The dependence of smallholder farmers on agricultural advisors is not only restricted to sharing information (Rahman, 2016). Agricultural advisors also serve as mediators between governmental bodies, donors and non-governmental organisations. It was reported that experienced smallholder farmers from Uganda, Bangladesh and India contributed positively to the growth of the economies of their respective countries (Rehman *et al.,* 2016). In addition, Sajesh &Suresh, (2016) mentioned that the influence of the agricultural advisor in the Indian smallholder farming sector positively reduced the drought concern and minimised concerns about low food production. They further revealed that agricultural advisors and smallholder farmers were playing a significant role in the development and increasing production of smallholder farmers. However, in South Africa, agricultural advisory services have not been as successful as those of the aforementioned countries due to the challenges faced by smallholder farmers on a daily basis (Van Niekerk *et al.,* 2009).

2.10 South African government's strategies in sustaining smallholder farming

2.10.1 Comprehensive Agricultural Support Program (CASP)

Because many children suffer from malnutrition in poor rural areas, the South African Department of Agriculture and Rural Development introduced the Comprehensive Agricultural Support Program (CASP) as an intergovernmental project to address the issue of food security. The programme was initiated with the aim of providing relief measures to previously disadvantaged households and land reform beneficiaries seriously affected by food insecurity and fluctuating prices of basic food items. In addition, the programme's mandate was to provide farmers with agricultural equipment

and production inputs to enable households and farmers to produce their own food (Department of Agriculture (DoA), Republic of South Africa, 2002). The DoA (2002) mentioned that CASP is working closely with other organisations (Special Programme for Food Security Projects (SPFS) and the National Food Emergency Scheme (NFES)) to assist subsistence farming, smallholder farmers and land reform beneficiaries to improve their agricultural production. The programme also aims to enhance household food production through crop diversification and cost-effective technologies. In addition, the programme strongly encourages mixed farming, smallholder agricultural production, urban agriculture, backyard gardening, school gardens as well as using sustainable new technologies and supporting the utilisation of underutilised and unused resources. According to the DoA (2002), the programme aimed to provide support to post settlement, targeting previously disadvantaged beneficiaries of land claims and smallholder farmers who claimed land through the private sector. Moreover, the programme is also involved in value-adding activities for domestic marketed products or products involved in international export. The DoA (2002, p. 17) further states that the programme plans to focus on the following priorities:

- Financial support;
- Technology transfer;
- development of business and marketing strategies;
- Production inputs for on and off farming;
- Agricultural advisory and technical support and
- Training and capacity building.

Furthermore, the DoA (2002, p. 18) argued that the programme expected the following outcomes:

- Improvement in national and household food security;
- Reduction in inconsistency in enterprise and land ownership;
- Maintenance of sustainable rural development projects;
- Improvement in farming efficiency;
- Increase in sustainable employment;
- Creation of wealth in rural areas, communities and agriculture;
- Creation of stable rural communities,
- Reduction of crime and violence within the communities;
- Improvement in income generation and
- Increase in investor trust in agriculture (domestic and foreign investment).

In addition, the DoA (2002, p. 8) revealed that the programme aimed at the following strategies/projects:

- One home, one garden strategy;
- Strengthening national and household food security;
- Giving a once-off maintenance or operational project support to beneficiaries;
- Involving communities and giving them ownership;
- Supporting long-term sustainable agricultural production that is economically viable;
- Prioritising projects that have the potential to generate sustainable employment opportunities;
- Granting financial support for agricultural activities relating to the projects and having technical skills; and
- Supporting previously disadvantaged beneficiaries.

On Mandela day, Dr. Zweli Mkhize, Premier of KwaZulu-Natal, stated that 'hunger and poverty in developing countries is the main cause of health problems and death'

(Kruger, 2007). This statement was backed by local statistics that showed that roughly 35 per cent of the residents in KwaZulu-Natal experience starvation on a daily basis. As a result of this shocking reality, the Premier initiated a rural development strategy known as ‘one garden and one home’ to stimulate households to produce their own food (Kruger, 2007). In addition, the premier emphasised that these strategies would also be used to issue food parcels and production inputs (seed and fertilizer packages) for people to begin their backyard and school gardening activities. Following commencement of gardening activities, training, advisory support and cooperatives would be developed to provide beneficiaries with technical support. In addition, the Premier pledged that the stalled mechanisation programme of local government and the Department of Agriculture would be re-launched as a means of supporting cooperatives and advisory departments. The aim of this industrialisation programme was to prevent child labour among farming communities and to cultivate agricultural land.

Kruger (2007) claimed that beneficiaries of CASP and some of the cooperatives received financial assistance in the form of credit through different financial institutions such as the Ithala financial institution and the Land Bank. Furthermore, Kruger, (2007) reported that the Premier had said ‘the interdepartmental advisory division to carry out the plan on food security programmes will be laid out for the beneficiaries’. For the strategies to succeed, the Premier encouraged collaboration between different institutions such as academic institutions (Universities and Agricultural Colleges), research institutions such as the Agricultural Research Council (ARC) and the Council for Scientific and Industrial Research (CSIR), commodity organisations as well as commercial farmers to share capacity and expertise to develop agricultural production in South Africa.

In addition, to improve the government strategies towards capacity building and rural development projects, the Kwa-Zulu Natal Agricultural Department encouraged trade unions operating in the agricultural sector to provide mentorship to upcoming smallholder farmers. In this way, the Premier said, 'the Government will use agricultural platforms to fight hunger, reduce malnutrition in children and build a strong local economy'. The Premier made it clear that local communities should learn to do things for themselves in order to have a stable economy.

2.10.2 Vegetable production

In South Africa, gardening (backyard and school) projects, which include those that are sponsored (Government or any other organisations) or self-financed have a rich implementation history in the country's agriculture (DoA, Republic of South Africa (2002). For many years vegetable gardening has been acknowledged as a source of generating income yet vegetable gardening activities were regarded as activities that were performed by women, hence the sector did not attract general public attention. The perceptions of garden activities have changed, however, and vegetable gardening is now seen as making a positive contribution to the economy. Currently, small vegetable gardens are able to produce a range of crops such as herbs, different types of vegetable, grains, fruits and flowers. Hence, vegetable gardening is essential to home-based vegetable consumption which has the potential to decrease malnutrition and improve food security.

Community and backyard gardens are thus seen as one of the fundamental strategies to survive the downturn in the South African economy. Many people residing in poor rural communities have started to operate backyard and school vegetable gardens because the constant drought has increased food prices and households cannot afford basic needs for daily survival (DoA, 2002). Furthermore, it was reported that a

backyard vegetable garden that is four-by-four metres in size can supply a household of six people with good quality fresh vegetables for home consumption for a period of one year.

2.11 Conclusion

Smallholder vegetable production is still the main contributor of food for rural households. However, over the year's smallholder vegetable production has been declining due to fewer people becoming involved in agricultural activities.

In addition, lack of involvement in agricultural activities and frequent drought conditions in South Africa have contributed significantly to the rise in food prices, which has impacted poor households badly. There is therefore a need to revisit and revise the impact of smallholder vegetable production on the livelihoods of poor rural communities in South Africa in order to alleviate poverty.

CHAPTER 3: METHODOLOGY

3.1 Introduction

The main objective of the study was to investigate the impact of smallholder vegetable production on poverty alleviation and the livelihoods of the community of Sedibeng District Municipality of Gauteng Province.

3.2. Description of the study area

The study was conducted in Sedibeng District Municipality, Gauteng Province. The District Municipality was selected based on agricultural farming activities, use of water for agricultural purposes and demographic structures. The main languages spoken in Sedibeng District Municipality are English (12%), Sesotho (13%), Afrikaans (14%), and IsiZulu (21%) IDP, (2019/2020).

The Sedibeng District Municipality (SDM) is regarded as a Category C municipality in Gauteng province. The municipality is located on the southern tip of the Gauteng Province and consists of three district municipalities: Emfuleni, Lesedi and Midvaal (Figure 3.1). The surrounding towns within the municipalities include Heidelberg, Meyerton, Vanderbijlpark and Vereeniging. In addition, surrounding townships include Bophelong, Boipatong, Evaton, Ratanda Sebokeng and Sharpeville (IDP 2019/2020). The Sedibeng District Municipality is on the border of the following municipalities;

- Johannesburg metropolitan;
- Delmas;
- Ekurhuleni metropolitan;
- Merafong; and
- Metsimaholo local municipalities.

The main agricultural activities and rural areas are found in the eastern region of the district. The major urban areas (Evaton, Sebokeng, Vereeniging and Vanderbijlpark residential complex) of the district are situated in the western part of the district, in Emfuleni local municipality. However, Meyerton in Midvaal local municipality, and Heidelberg and Ratanda in Lesedi local municipality are considered small urban concentrations (IDP 2019/2020).

The Sedibeng District Municipality has a total geographical area of 5 185 square kilometres (km^2) land cover; Midvaal local municipality covers over 1,728km^2; followed by Lesedi 1,489 km^2 and Emfuleni at 1.968 km^2. The total population of Sedibeng is in the region of 916 484 people, of which Lesedi local municipality has an estimated population of 99 520 people, Midvaal local municipality 95 301 people and Emfuleni local municipality 721 663 people (IDP 2019/2020). In addition, Stats SA (2011), reported that the population density of the Sedibeng District Municipality as a whole is 198 people per km^2. Therefore, this translated to 8 out of every 10 people in Sedibeng district municipality living in the Emfuleni local municipality and the vast majority of those people (more than 700 000 people) live in the black township areas, especially Evaton and Sebokeng.

Figure 3.1. Map of Sedibeng District Municipality (Source: IDP 2019/2020)

The district forms part of the maize triangle and the main agricultural practices in the municipality are agronomic crops (e.g. maize rotated with sunflower), livestock (large and small stock e.g. cattle, sheep, pig and poultry production), horticultural crops (e.g. intensive hydroponics) and extensive vegetable production, herbs and medicinal plants.

3.3 Data sampling procedure

Sampling procedure is a process of selecting different components from a study population to represent the target population when conducting an experiment (Cooper & Schindler, 2006). The purpose of sampling is to generalise about the entire study population that allows predictions and accurate measures, and permits the investigator to draw meaningful conclusions regarding the entire population of the study. Sampling is classified into non-probability and probability types. The current study will use purposive and random sampling methods.

Probability sampling is defined in the following way: each respondent in each population has potentially the same known probability of being chosen, while non-probability is sampling in which each person in the population does not have the same known probability of being chosen (De Vos, 2002). Sixty (60) smallholder vegetable farmers in Sedibeng District Municipality were considered for the study without necessarily putting any selection criteria in place. In addition, fifteen (15) agricultural advisors were considered for the study.

3.4 Data collection

Data were collected using a structured questionnaire from sixty (60) smallholder vegetable farmers and fifteen (15) agricultural advisors from Sedibeng District Municipality. Van Niekerk, (2002) suggested that to measure the beliefs, values, attitudes, norms and type of information held by individuals the investigator may use a questionnaire survey method. According to Randela, (2005), the questionnaire survey method can be used in different ways such as personal interviews, mail and telephonic conversations to collect research data. A personal interview method using a one-on-one questionnaire was used for collecting data for the current study.

A questionnaire was developed in English and paraphrased as a tool to collect data (Babbie, 2001). Bless & Smith (2000) emphasised that an interviewer that administers face-to-face interviews is essential for collection of data due to its exclusion of hard questions by respondents. Furthermore, this method reduces the possibility of misunderstanding of some of the words or the wrong interpretation of questions and misunderstandings by respondents, who are farmers with poor literacy levels. The interpretation of the questions in the questionnaires was explicated in the local

language to ensure better understanding, especially when dealing with those farmers who had no formal schooling.

The questionnaires were divided into sections in order to elicit structured, logical information and also to avoid exclusion of important questions. The questionnaires consisted of four sections: A, B, C, and D.

- Section A was set aside for biographical information that required gender and marital status, age group, level of education and experience in farming. The questionnaire was anonymous as no personal questions like names, identity numbers and addresses were required
- Section B dealt with Farm Production and Income,
- Section C- with Markets and Contracts and
- Section D with Agricultural Extension Services and the Comprehensive Agricultural Support Programme (CASP).

The questionnaire questions were designed in English in the current study. However, during the interviews, the researcher translated the questions into the languages (Afrikaans, IsiZulu and Sesotho) understood by the farmers because the investigator was aware that the majority of smallholder farmers and rural people may not be able to communicate in English and would express their views better in their home language.

3.5 Data analysis

This section will indicate how data were analysed. Analysing data of a completed questionnaire is recognised as data preparation which includes different operations such as data capturing, editing and coding (Tustin *et al.,* 2005, Cooper & Schindler, 2006). Tustin *et al.* (2005) indicated that once data have been coded and captured,

processing of data can start. A version 20.0 for Windows, Statistical Package for Social Sciences (SPSS) was used to analyse data for this study. Data collected from questionnaires were coded in Ms Microsoft excel.

Data collected for current study were qualitative in nature. Personal and household (demographic information) data were analysed using descriptive statistics (percentages, frequency distribution, averages/mean, and mode scores) (Gerber-Nel et al., 2005). The study used graphs and tables to present and illustrate the results of the study.

3.6 Ethical clearance

Ethical clearance entails a set of widely accepted principles which offer behavioural expectations and rules regarding conduct towards the experimental subjects. During data collection, the researcher kept ethical accountability towards the respondents who supplied research data, which ensured no one was harmed in any possible way. To ensure that no one was hurt during the data collection of this research, the current study followed the guidelines by Cant *et al*. (2005) on how to conduct and implement research.

3.6.1 Right of participants to be comfortable

The current study avoided using intrusive and embarrassing questions as research instruments. All the participants were notified that they could abstain from responding to questions that they were uncomfortable answering. In addition, respondents were informed that they could withdraw from the interview at any time should they feel uncomfortable.

3.6.2 Misidentification and falsification

The researcher explained the purpose of the research before the beginning of the interview. In addition, the researcher provided the respondents with the personal identification.

3.6.3 Confidentiality of data

The researcher informed the respondents that all the information/ data they provided throughout the research would be kept confidential and they would be referred to as ‘Mr O’ or ‘Ms KK’ during the interpretation of data.

CHAPTER 4: RESULTS AND DISCUSSION

4.1 Introduction

The profile of smallholder vegetable farmers and the Gauteng Department of Agriculture and Rural Development's agricultural advisors around the Sedibeng District Municipality of Gauteng Province and their perceptions towards alleviating poverty through farming are discussed in this chapter. Pound *et al*. (2003), Perret and Mercoiret, (2003) and Reij & Waters-Bayer, (2001) reviewed literature on agricultural development for the previous ten years, and they emphasised that there is a need for agricultural research to participate meaningfully in the growth of agricultural commodities in order to help develop sustainable agricultural production. This argument implies that researchers and farmers may make a meaningful contribution towards resolving problems if they have relevant knowledge regarding production circumstances in the local environment (CTA, 2004), as discussed by Hart and Burgess (2006).

A questionnaire was used to collect data from 60 smallholder vegetable farmers of Sedibeng District Municipality. Thereafter, the data were analysed to determine demographic information and the impact of agricultural projects on alleviating poverty in the Sedibeng District Municipality. This section will show the results of the biographical information, farm production and income, market and contract and agricultural services, resources and infrastructure of the interviewed farmers. A number of descriptive statistical measures (tables, bar graphs, mean values, percentages, and frequencies) were used to discuss the results.

4.2 Biographical information of the interviewed farmers

Demographic information (age, educational level, gender, employment status, marital status, land size and size of household) is discussed in this section. Aspects relating to the head of household are very important because heads of household coordinate the household activities and their decisions are influenced by demographic aspects such as income bracket, employment status, level of education, marital status, age and gender (Makhura, Kirsten & Mathye, 1999). The demographic information of households is important when analysing economic data because such factors determine and reflect the households' economic situation.

4.2.1 Marital status and age distribution of interviewed farmers in Sedibeng District Municipality

Distribution of gender of the respondents in Sedibeng District is shown in Figure 4.1. The female population accounted for about 70 per cent and the male population 30 per cent. Challenges such as poor education levels, limited or no information, lack of technology, production inputs and access to markets make it difficult for female farmers to perform at an optimal level. Women are the principal custodians of children, and they have limited time and mobility to carry out all their responsibilities. Women play a very important role in communities and in their household activities and the agricultural sector depends heavily on women in order to succeed. Saito and Weidemann, (1990) reported that women provided almost 70 per cent of agricultural labour, which is in agreement with the results of the current study.

Decision making on farming activities is very challenging for people who are not heads of households. The concept 'head of the family' is generally assumed to be male, and this is problematic when making decisions in matters relating to farming. In situations

where the husband works far from home and the wife is left at home, the woman will usually postpone difficult decisions until the husband returns. If a woman attempts to take decisions herself, she will be discriminated against and vulnerable to abuse by traditional leaders and neighbours. Married men and women made up 61 per cent of farmers and thus dominated (Figure 4.2) because they are eager to improve their livelihood as family and innovate other things. The women in Sedibeng Municipality headed their households in situations where they were single or widowed. In addition, women headed households and were responsible for all household activities when the husband was employed in an urban area. Mihiteru, (2008) indicated that when it came to the use and adoption of technology, women and men were likely to play different roles. This is due to gendered socio-cultural norms and values. In most cases, males participated in extension programmes (at different levels) and had freedom of mobility. Consequently, males had greater access to information. However, women worked hard to nurture their families and had the desire/motivation to be independent.

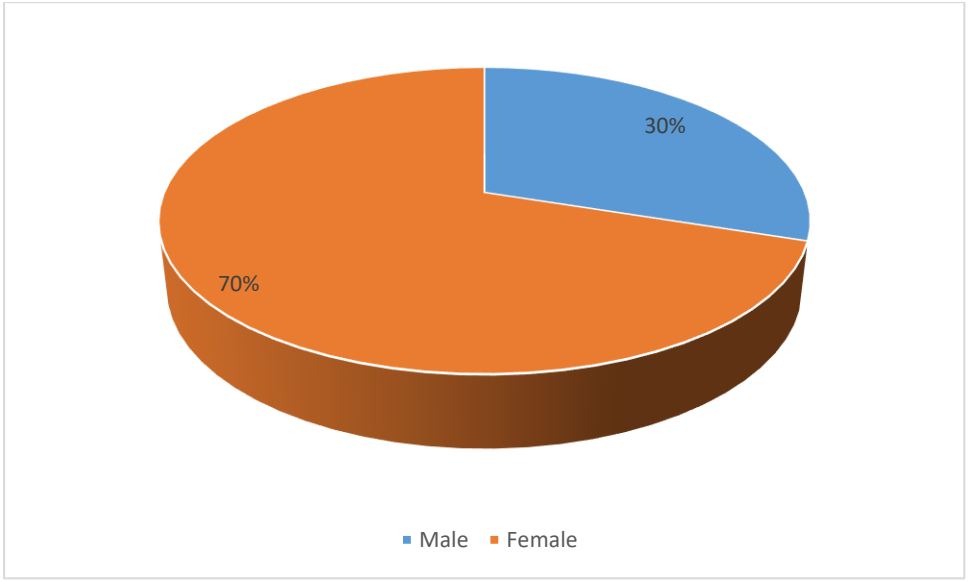

Figure 4.1. Gender distribution of the interviewed farmers in Sedibeng District Municipality

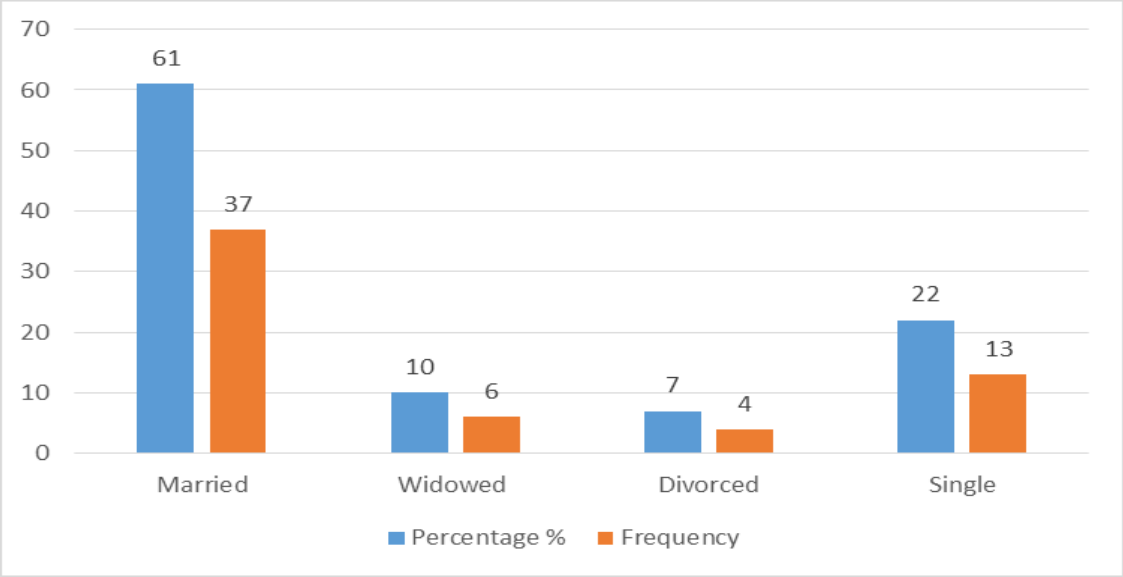

Figure 4.2. Marital status of the interviewed farmers in Sedibeng District Municipality

The maximum age of respondents in Sedibeng District was 55 years old and above (Table 4.1); the mean age was 36 years old and the minimum age was 18 years. Respondents who were 55 years old and above constituted 68 per cent, while the respondents that were below 34 years of age made up 7 per cent which was lower than the number of respondents who were between 35-54 years (25 per cent). This suggests that the people in Sedibeng District involved in agricultural farming activities tend to be older. The explanation for this could be that younger people migrate to urban areas to search for greener pastures which may come with a higher income, or young people are not interested in agricultural activities due to the perception that employment in the agricultural sector has a lower status. However, Dejere, (2006) reported that farmers are creative and are capable of earning high incomes. In addition, Van Rooyen & Njobe-Mbule, (1996) reported that farmers who are 45 years and above are more likely to succeed in agricultural enterprises, which was in line with the current study.

Table 4.1. Age distribution of the interviewed farmers (n =60)

Age	Variables description	Frequency	Percentage (%)
18-34	4	4	7
35-54	15	15	25
55 and above	41	41	68

4.2.2 Education level, employment, experience and family size of the interviewed farmers

Previous experience of the farmers played a valuable role in making decisions. Most of the farmers stopped their operation very quickly if they were not generating any income. However, some of the farmers were previously farm labourers and had gained valuable experience. In addition, the level of formal education was used as an index of increasing production. Hoag *et al. (*1999) reported that household levels of education often positively influence the adoption of technology and translated to good management, financial control and the use of technology in cultivation; for example, to produce hybrid seeds. In addition, Sebadieta *et al.* (2007) reported that education allowed the farmer to explore different ways of obtaining agricultural information and use technology to process it. In the current study, the farmers' level of education was evaluated by the actual number of years the farmers attended school. Bester *et al.* (1999) reported that in developing countries, literacy is one of the limiting factors in achieving physical, social, economic and technical education. Therefore, adoption of new technologies by farmers is influenced by educational considerations (Bester *et al*., 1999).

Table 4.2 demonstrated that 62 per cent of the respondents had a high school certificate, 27 per cent a university qualification and 7 per cent had primary schooling. However, only 23 per cent of the respondents had agricultural qualifications. In addition, 63 per cent were employed and 37 per cent were unemployed. As pointed out by Bembridge, (2000), failure to adopt new technology may be influenced by lack of knowledge. Conversely, Ziervogel *et al*. (2006) reported that the farmers can adopt and apply new technology that can benefit them and overall production. This was in agreement with findings of the current study as the majority of farmers had only primary to secondary education level and it was hard for them to process and interpret information systematically.

Questions on employment and years' experience were designed to capture income sources which were remitted by the respondents. The respondents were given a number of options from questions that were structured to allow them to express their views. The responses indicated that households had a variety of income sources. The majority of the households were unemployed (63 per cent), their source of living and income were agricultural activities and they consumed what they produced. Only 37 per cent of the households were employed formally. Education levels played a big role in providing opportunities for those in the employed households.

The size of the family was considered to be the number of individuals who reside with head of the head of household. The results of the current study showed that the size of families ranged between 5 to 11 people per household. The average number of people per household was 6 (Paddy, 2003). This translated into the reality that households had labour from people living within them to produce their own food. In addition, a bigger household implied the household's labour force included different generations, ranging from young to old (Hayes *et al.,* 1997). Households consisted of

adults at 70 per cent; the youth at 23.3 per cent and children making up 7 per cent, as shown in Table 4.3.

Table 4.2. Frequency of education level, employment and experience of the interviewed farmers

Variables	Variables description	Frequency	Percentage (%)
Education Level	Not educated	0	0
	Primary	7	11
	High	37	62
	University	16	27
Employment	Yes	22	37
	No	38	63
Agric Qualification	Yes	16	27
	No	44	73
Years' Experience	<5 Years	15	25
	20 Years plus	17	28
Land Size (ha)	<2	7	12
	3-5	25	42
	6-10	17	28
	11-20	8	13
	21 plus	3	5

Table 4.3. Family size of the households

Variables	Variables description	Frequency	Percentage (%)
Number of people (438)	Adults	306	70
	Children	30	7
	Youth	102	23.3

4.3 Farm production and income of the sampled farmers

Farm production and income are factors that affected farmers' decisions to take part in agricultural projects. This is due to the nature of employment a household head would need to generate income from agricultural projects. The majority of the respondents indicated that they were farming as a group (65 per cent) as opposed to those who were farming individually (35 per cent), as indicated in Figure 4.3. However, the respondents indicated (Figure 4.4) that the purpose of production was to create employment opportunities (76.7 per cent), earn income (15 per cent) and improve the livelihood of the community (8.3 per cent).

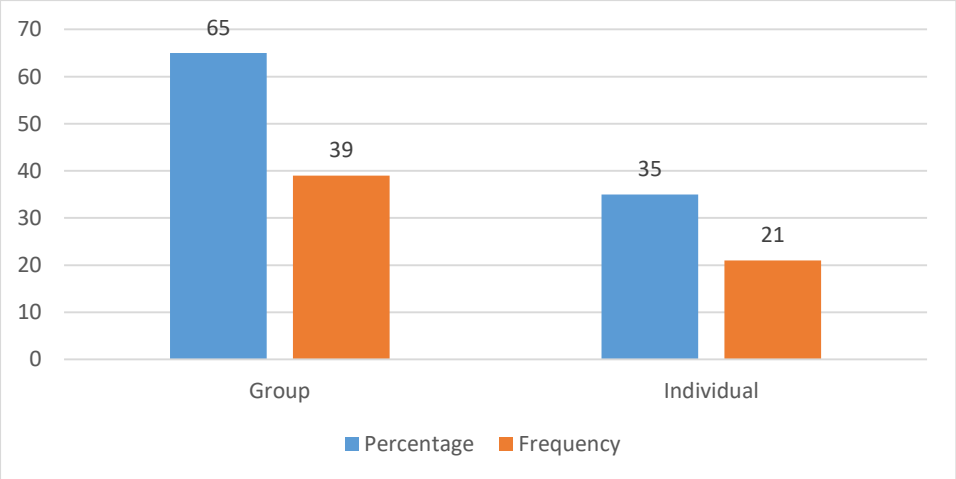

Figure 4.3. Farm production of the interviewed farmers in Sedibeng District Municipality

In Sedibeng District, the main activities driving the economy are agricultural production due to poverty and high levels of unemployed women and youth. The majority of households rely on government support such as pension grants, disability grants and child support for survival.

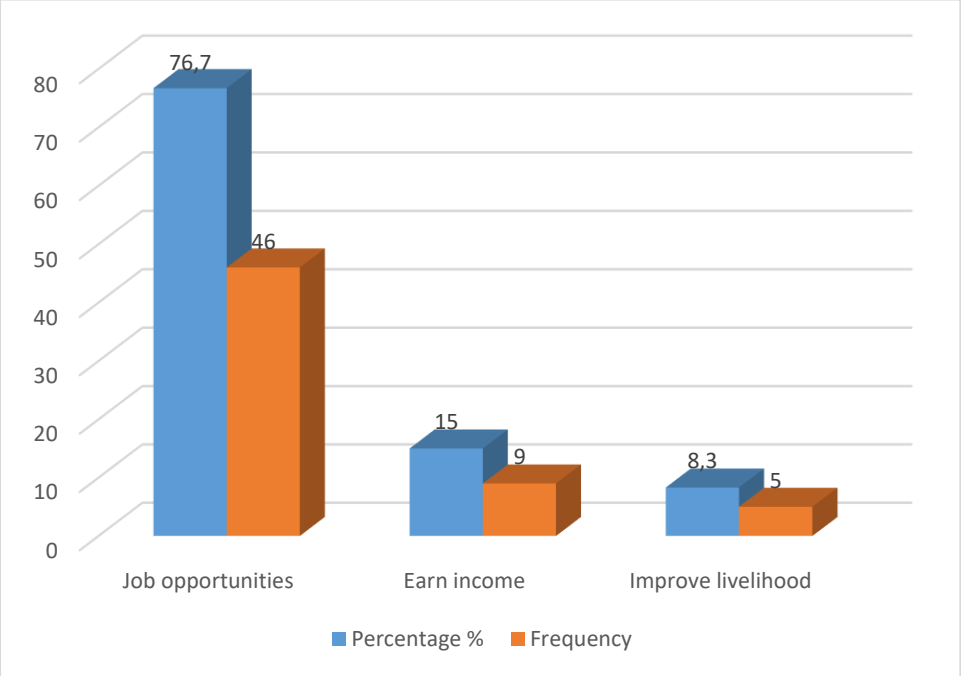

Figure 4.4. Purpose of agricultural project in Sedibeng District Municipality

In the current study, households indicated that the kind of commodities they produced was informed by the environment and area in which the respondents were residing. In addition, market and demand for certain commodities drove the type of products produced by the households. Figure 4.5 shows that 62 per cent of the respondents produced spinach, 15 per cent cabbage, 10 per cent tomatoes, 8 per cent potatoes, 3 per cent onions and 2 per cent of other commodities.

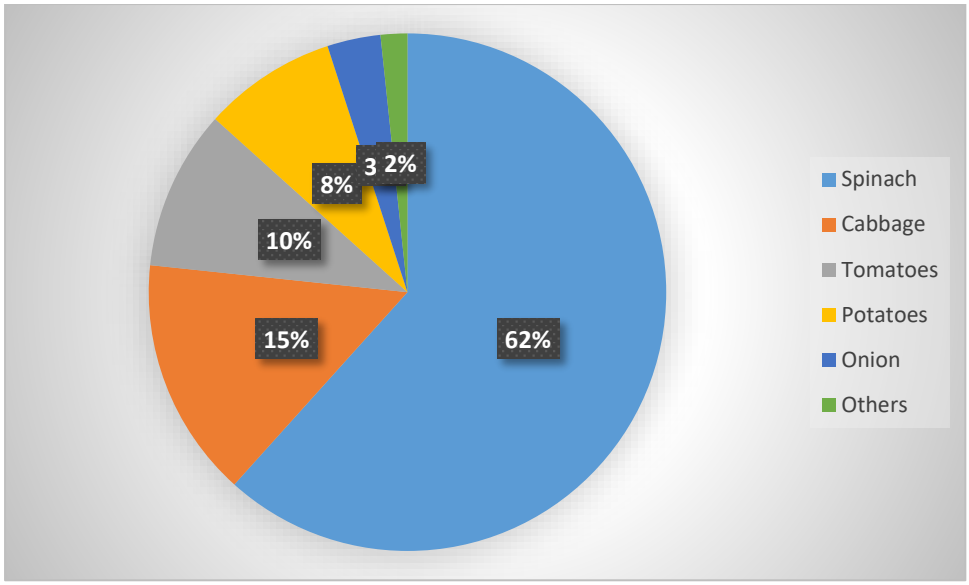

Figure 4.5. Vegetable production

The respondents indicated that 73.3 per cent used organic fertiliser (Figure 4.6), 18.3 per cent chemical fertiliser and 8.3 per cent used both organic and chemical fertilisers. In addition, 61.7 per cent of the respondents used seedlings, 28.3 per cent used seed and 10 per cent used both methods of planting.

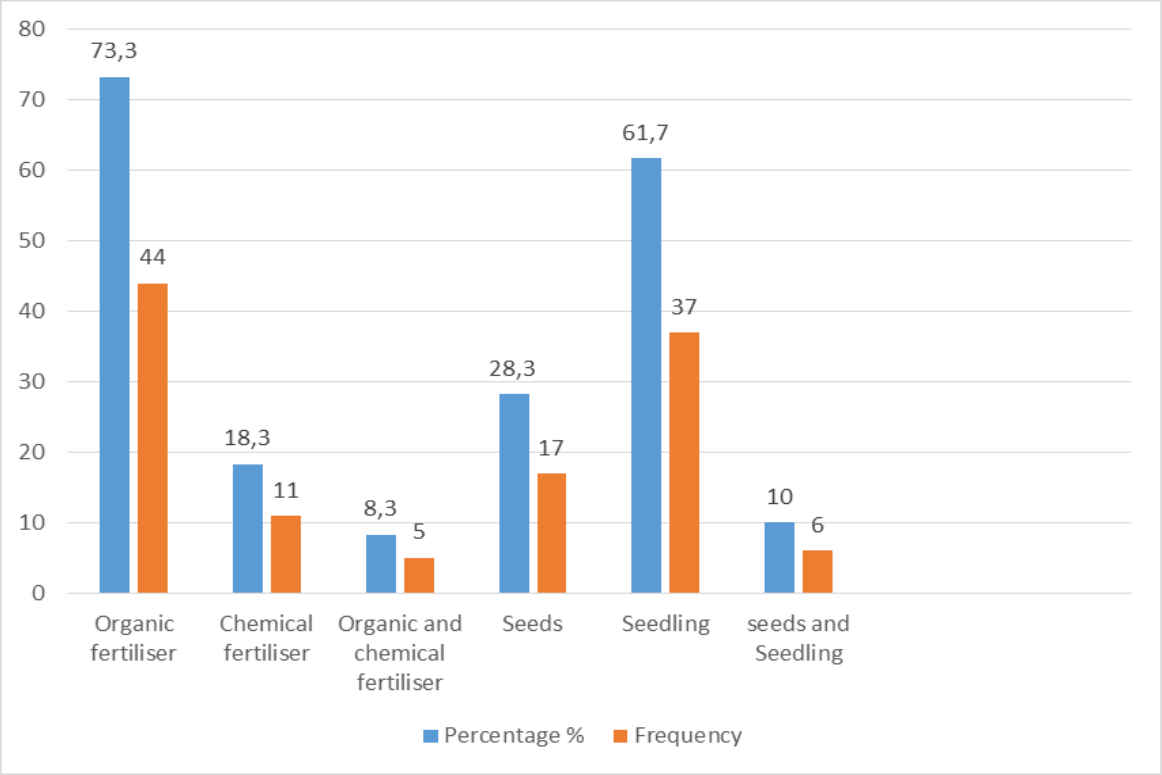

Figure 4.6. Use of fertilizer and planting methods

Smallholder vegetable farmers in Sedibeng District Municipality are faced with different constraints as indicated in Table 4.4 where farmers rank their challenges (indicating the greatest and least challenges). According to the results shown in Table 4.4.

- 47 per cent of the sampled group lacked information on how to produce somewhat seriously; 23 per cent did not lack information so seriously and 15 per cent were seriously lacking in information regarding production;
- In addition, 70 per cent of the participants had very serious constraints (VSC) in accessing markets for their produce; 18.3 per cent had serious constraints (SC) in accessing markets and 11.7 per cent had no serious constraints (NSC) in accessing markets;
- Poor infrastructure (55% SC, 36.7% VSC and 8.3% NSC);

- Lack of skills (25%VCS, 61.7%SC and 13.3%NSC);
- Insufficient water (41.7% VSC, 31.6% SC and 26.7% NSC);
- Lack of funding (53.3% VSC, 28.3% SC and 18.3% NSC) led to low productivity among the sampled population; and
- Insufficient land (73.3% VSC, 18.3% SC and 8.3% NSC).

Table 4.4. Constraints faced by smallholder vegetable farmers in Sedibeng District Municipality.

Constraints	N	VSC	SC	NSC	Mean score	Ranking order
Lack of information	60	9 (15%)	28(47%)	23(38%)	0.38	6th
Access to market	60	42(70%)	11(18.3%)	7(11.7%)	0.79	2nd
Poor infrastructure	60	22(36.7%)	33(55%)	5(8.3%)	0.64	4th
Lack of skills	60	15(25%)	37(61.7%)	8(13.3%)	0.56	5th
Lack of Funding	60	32(53.3%)	17(28.3%)	11(18.3%)	0.68	3rd
Insufficient water	60	25(41.7%)	19(31.6%)	16(26.7%)	0.35	7th
Insufficient land	60	44(73.3%)	11(18.3%)	5(8.3%)	0.83	1st

N – Number of respondents, VSC – Very serious constraints, SC – Serious constraints, NSC – No serious constraints

4.4 Markets and contracts of the sampled farmers

Bembridge, (2000) reported that income received by smallholder vegetable farmers from sales of their farm produce accounted for 10 per cent. According to Table 4.5, the respondents indicated that 53.3 per cent had business plans and 46.7 per cent did not have business plans. In addition, 81.7 per cent had access to a market and 18.3 per cent did not. However, 33 per cent were selling at the formal market, 20 per cent were selling at informal markets and 47 per cent were selling at both formal and informal markets. Farmers were engaged in different types of market: 55 per cent had written contracts, 13.3 per cent had verbal contracts and 31.7 per cent had both written and verbal contracts. All the respondents (100 per cent) indicated that they had support from GDARD agricultural advisors to market their produce. The interviewed households indicated their farm income, as shown in Table 4.6. The respondents indicated that 30 per cent were generating between R201000-300000, 25 per cent between R301000-400000 and 10 per cent between R401000-500000. However, 12 per cent and 18 per cent of the respondents had between <R100 000 and R101 000 – 200 000 incomes respectively and only 5 per cent were generating >R500000.

Table 4.5. Type of markets and contracts for the sampled participants (n60)

Variables	Variables description	Frequency	Percentage (%)
Business plan	Yes	32	53.3
	No	28	46.7
Market access	Yes	49	81.7
	No	11	18.3
Type of market	Formal market	20	33
	Informal market	12	20
	Both	28	47
Type of contract	Verbal contract	8	13.3
	Written contract	33	55
	Both	19	31.7
Support to market	Yes	60	100
	No	-	-

Table 4.6. Total farm income

Variables	Variables description (R)	Frequency	Percentage (%)
Farm income	<100 000	7	12
	101 000-200 000	11	18
	201 000-300 000	18	30
	301 000-400 000	15	25
	401 000-500 000	6	10
	>500 000	3	5

4.5 Agricultural services, resources and infrastructure of the sampled farmers

Whittome *et al.* (1995) reported that farmers who work with agricultural services have greater access to the latest technology and information regarding markets and are able to participate in demonstration tests. In addition, Feder *et al. (*2003) reported that farmers that have sufficient knowledge regarding new developments and technology are enabled to optimise decision-making processes. However, farmers also consider other farmers, study groups and information days as a source of agricultural information and they consider specialised training sources as complex. Therefore, farmers who are profit-driven adapt to new technology to improve their production (Negatu & Parikh, 1999).

The interviewed households indicated that evaluation and implementation of projects were successfully undertaken with the assistance of GDARD agricultural advisors, who were working in the area. The respondents reported that the benefit of having GDARD agricultural advisors included training in different aspects of agricultural farming such as financial management, record keeping and production systems. The

heads of households indicated that 75 per cent of them received weekly extension services, 21.7 per cent monthly visits and 3.3 per cent received quarterly visits from extension services (Table 4.7). This translated to how effectively the extension services worked, where 56.7 per cent were very effective and adequate, and 28.3 per cent of the respondents agreeing that that the extension services were helpful to their production efforts. However, 10 per cent of respondents indicated that the extension services were limited and 5 per cent of the respondents indicated they were ineffective. According to Sidibé, (2005), farmers can regularly upgrade their knowledge on projects development when they receive frequent visits from extension services and experts. In addition, farmers are provided with the latest information about potential outbreaks of disease, and could produce good quality products and improve their income. However, some of the farmers lacked motivation to participate in the services provided by extension services.

Farmers can benefit from support provided by the Comprehensive Agricultural Support Programme (CASP) on market information, workshops, inputs, capital and implements. The majority of the respondents highlighted that the type of support they received included production inputs and training on enterprise development, enterprise value chain, compiling business proposals and business management. In addition, 95 per cent of the respondents participated in the CASP and 66.7 per cent of the participants joined the CASP through GDARD. However, 23.3 per cent joined through DAFF, 6.7 per cent through municipalities and 3.3 per cent through ward councillors. In addition, 65 per cent indicated that the type of support they got from CASP were seeds and 20 per cent received fertiliser, while 15 per cent received infrastructure.

Table 4.7. Effects of the extension and advisory services on smallholder vegetable production

Variables	Variables description	Frequency	Percentage (%)
Extension services	Weekly	45	75
	Monthly	13	21.7
	Quarterly	2	3.3
How effective or adequate is the extension officers' advice	Very effective	34	56.7
	Effective	17	28.3
	Limited	6	10
	Ineffective	3	5
CASP participate/benefit	Yes	57	95
	No	3	5
Application of CASP	GDARD	40	66.7
	DAFF	14	23.3
	Municipality	4	6.7
	Ward	2	3.3
Type of CASP support	Cash	-	-
	Infrastructure		15
	Fertilisers		20
	Seeds		65

According to Figure 4.7, 53.3 per cent of the household heads were registered with the CASP programme which was adequate and very effective in implementing their projects. In addition, 33.33 per cent of the household heads were also registered with the CASP programme which they found to be effective and helpful to their projects and increased their production. This was mainly due to the assistance they received from GDARD agricultural advisory services and was in agreement with the findings of Sidibé (2005), who reported that farmers who had access to agricultural services from GDARD and experts from research institutes received useful production information.

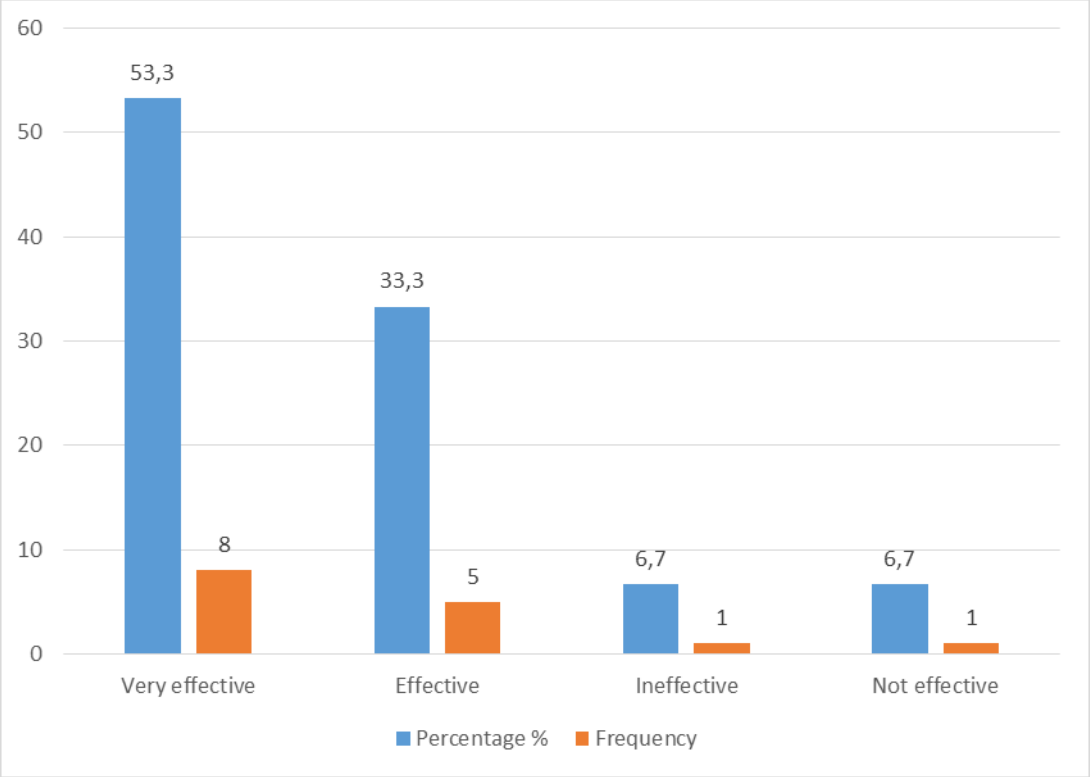

Figure 4.7. CASP effectiveness in improving production of smallholder vegetable farmers

The Ministry of Agriculture used to employ more male agricultural officers (Schmink *et al.,* 1988) because agriculture was mainly practised by men. However, as already discussed, women contribute most of the necessary labour required on farms

nowadays. Therefore, the Ministry of Agriculture, Forestry and Fisheries (DAFF) is implementing congress's resolution to employ more female agricultural advisors to address the needs of female farmers in South Africa. This agreed with the findings of this study (Table 4.8), where 60 per cent of the agricultural advisors were female and 40 per cent were male.

The majority of agricultural advisors (86 per cent) were younger than 39 years old, which worked very well for the agricultural advisors. Moreover, 7 per cent of agricultural advisors were between the ages of 20-29 and 7 per cent were between the ages of 40-49. According to Adams (1982), agricultural advisors are the only government officers operating at local level. In addition, it is vital to acquire specific skills and knowledge to perform efficiently. Dahama (1998) as quoted by Moken (2004) indicated that it is important to have qualifications that enable advisors to perform work in positions of great responsibility. Normally, organisations' employees that have gone through a certain amount of training would contribute successfully to development goals.

Table 4.8. Frequency of education level, employment experience and area of specialization of agricultural advisors

Variables	Variables description	Frequency	Percentage (%)
Gender	Female	9	60
	Male	6	40
Age	20-29	1	7
	30-39	13	86
	40-49	1	7
	50 and above	0	0
Tertiary qualification	Diploma	0	0
	BTech	10	67
	Honours/BSc	3	20
	MSc/MTech	2	13
Work experience	<2	1	6.7
	3-5	5	33.3
	6-10	7	46.7
	11 and above	2	13.3
Number of projects serviced	<10	1	6.6
	11-20	7	46.6
	21-30	6	40.2
	31 and above	1	6.6
Speciality	Crops	6	40
	Livestock	1	7
	Mixed farming	2	13
	Agric Management	3	20
	Extension	3	20
Production scale	Smallholder	11	73.3
	Commercial	2	13.3
	Both	2	13.3

Stevens & Ntai, (2011) reported that agricultural development has evolved over the years, and it is important that agricultural advisors ensure that they have the necessary

level of appropriate professional qualifications. The majority (67 per cent and 20%) of agricultural advisors had BTech and BSc degrees respectively and 13 per cent had MSc and MTech qualifications, while there was no one with diploma qualifications. This is in line with departmental policy that employees should have a BTech or a higher qualification. The data show that 46.7 per cent and 33.3 per cent of the advisors had 6 to 10 and 3 to 5 years work experience respectively, while 13.3 per cent had 11 years or more work experience and only 6.7 per cent had 2 years or less work experience. Project agricultural advisory services definitely have the potential to influence farm productivity. The results indicate that agricultural advisors served 46.6 per cent (11 to 20) and 40.2 per cent (21 to 30) of projects. This has translated to higher production levels for smallholder farmers. However, agricultural advisors had a range of specialisation, where the majority (40 per cent) had majored in crop production, 13 per cent in mixed farming and 7 per cent were qualified in livestock farming, respectively. While 20 per cent were qualified in agricultural management, only 20 per cent had majored in agricultural extension science, which indicated that a gap exists and there is potential to improve the extension officers' qualifications and skills in extension science.

CHAPTER 5: CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This section will present the conclusions and recommendations drawn from the analysed and interpreted data on smallholder vegetable production and its effectiveness in alleviating poverty in Sedibeng District Municipality of Gauteng Province.

Chapter 1 stated the main objective of the study which was 'to determine the impact of smallholder vegetable production on the livelihoods of the Sedibeng community and to determine the role of the agricultural extension advisory service in supporting smallholder vegetable farmers among the community of Sedibeng District Municipality of Gauteng Province'.

Chapter 2 presented a summarised review of literature which focused on the state of smallholder vegetable production and efforts to alleviate poverty.

Chapter 3 demonstrated the methodologies and the procedures used to collect data. Chapter 4 interpreted and discussed the research findings.

5.2 Conclusion

The results of the study indicate that smallholder vegetable farmers in Sedibeng District Municipality of Gauteng Province participated in vegetable production to alleviate poverty and create employment. Furthermore, the results showed that 70 percent of the women were directly involved in smallholder vegetable production. In addition, 68 per cent of the smallholder farmers were above 55 years. This was due to younger people migrated to urban areas to search for greener pastures which may come with a higher income, and young people were not interested in agricultural

activities due to the perception that employment in the agricultural sector has a lower status.

In addition, the study showed that 86 per cent of the agricultural advisors were younger than 39 years old and 60 percent of agricultural advisors were females, which was in agreement with resolution to empower women. Furthermore, the results indicated that 46.7 per cent had 6 to 10 years work experience and 40 per cent had majored in crop production. This has translated to higher production levels for smallholder farmers. However, less than 13 per cent of the agricultural advisors had MSc and MTech qualifications majoring in Extension.

Objective 1: Impact of smallholder vegetable production on the livelihoods

A total of 65 per cent of respondents were farming as a group and 76.7 per cent indicated that the purpose of production was to create employment opportunities and 62 per cent produce spinach. In addition, 73.3 per cent used organic fertilizer and 61.7 per cent used seedlings for planting.

Constrains and challenges faced by smallholder vegetable farmers in Sedibeng District Municipality of Gauteng Province:

The results showed that insufficient land (73.3 per cent), accessing markets (70 per cent) and lack of funding (53.3%) were a very serious constrain. In addition, lack of skills (61.7 per cent), poor infrastructure (55 per cent) and lack information (47 per cent) and insufficient water (41.7 per cent) were considered serous constrain. This contributed to only 53.3 per cent having business plan.

Objective 2: The role of agricultural advisors supporting smallholder vegetable farmers in Sedibeng District Municipality of Gauteng Province.

The results of the study indicated that implementation of projects were successfully undertaken with the assistance of Gauteng Department of Agriculture and Rural Development, agricultural advisors. This was demonstrated by higher production output from smallholder vegetable farmers. In addition, 75 per cent of the farmers indicated that they received services on weekly basis and 56.7 per cent of the farmers indicated that the service were very effective and the benefits of having GDARD agricultural advisors included training, financial management, record keeping and production systems. In addition, 95 per cent of farmers received support provided by CASP on market information, workshops, inputs capital and implements.

5.3 Recommendations

Smallholder vegetable farmers in the Sedibeng District Municipality have great potential to alleviate poverty and create employment. Therefore, smallholder vegetable farmers should adopt a group approach by registering as Co-operatives to ensure effective use of limited resources (land, water and market). Co-operative method will assist farmers to access subsidies provided by the government to projects and also to get full service such as trainings from the Extension officers. Poverty alleviation is easily reduced when working as a Co-operatives because development and life improvement reach a number of people at one time.

Furthermore, there is a need for a strong extension support to assist smallholder vegetable farmers on how to diversify their production, provide market information by enhancing production and opening channels to the market. This may enhance income from agricultural production thereby alleviating poverty. Furthermore, extension officers should be supported to improve their qualifications in agriculture as well as in

extension science in order to deliver more professional services to smallholder farmers.

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APPENDIX A

FARMERS QUESTIONNAIRE

SECTION A: Biographical information

Fill in the relevant information in the table below in respect of the household head. Please mark the applicable option with an X.

A1: Age	A2: Gender	B3: Marital status		A4: Education Level		A5:Years of schooling	A6:Employment
	Male (1)	S (1)	M (2)	1	2		Yes (1)
	Female (2)	W (3)	D (4)	3			No (2)

S= Single; M= Married; W= Widowed; D= Divorced; 1= Primary; 2= high School; 3= College/University

A7: # people on Farm?	A8: # Adults > 35	A9: # children and youth <34	A10: Agri Qualification?	A11: Years Experience in Agric	A12: Land size (ha)
			Yes (1)		
			No (2)		

SECTION B: Farm Production and Income

B1: What is the purpose of farming?

To create job opportunities	(1)
To earn income	(2)
To alleviate poverty	(3)
All of the above	(4)

B2: Do you farm individually or as a group?

Individual	(1)
Group	(2)

B3. Do you have a business plan?

Yes	(1)
No	(2)

If yes, who developed the business plan?

B4: Give the 3 main commodities that the project produces?

i……

ii……

iii)……..

B5: Do you plant using seeds or seedlings or both?.....

B6: Where do you get the seeds or seedlings?.....

B7: Do you apply fertiliser on your crop?

Yes	(1)
No	(2)

B8: If yes; what type of fertiliser do you apply?

Inorganic	(1)
Organic	(2)
Both	(3)

B9: How much do you spend on the fertiliser?.....

B10: Do you apply pesticides to control disease and pest?

Yes	(1)
No	(2)

B11: How much did you spend on pesticides?.....

B12: How do you irrigate your crops?

Borehole	(1)
Harvest water	(2)
Municipal water	(3)
Other	(4)

B13: Kindly provide the following information where applicable

Farm Produced	Area planted (ha, meters)	Output for the season (tons, kg bags)	Price/unit in Rand	Total amount in Rand/ production cycle

B14: What challenges do you face in your project?

Challenges	Very serious	Serious	Not serious
Lack of information			
Poor markets			
Poor infrastructure			
Lack of skills			
Lack of funding			
Insufficient water			
Insufficient land			
Any other (name them)			

SECTION C: Market and Contract

C1: Do you have access to a market?

Yes	(1)
No	(2)

C2: If yes, where do you market your produce?.....

C3: What kind of market do you sell your products?

Formal market	(1)
Informal market	(2)
Both formal and informal markets	(3)
I don't sell	(4)

C4: Do you receive support to market for your products?

Yes	(1)
No	(2)

C5: From when did you receive support?.....

C6: What is the distance from your farm to the nearest market centre in kilometres?.....

C7: What is the mode of transport do you use to take your produce to the market?.....

C8: What type of contract do you engage in?

Verbal contract	(1)
Written contract	(2)
Both	(3)
No contract	

C9: With whom do you have contract?.....

SECTION D (I): Agricultural Extension Services

D1: Do you receive extension services?

Yes	(1)
No	(2)

D2: From whom do you receive extension services?

GDARD	(1)
DAFF	(2)
NGO	(3)

D3: How many times in the cropping season, do you usually receive extension services?

Daily	(1)

Weekly	(2)
Monthly	(3)
Quarterly	(4)

D4: How effective or adequate are the extension officers advice?

Very effective	(1)
Effective	(2)
Ineffective	(3)
Not effective at all	(4)

SECTION D (II): COMPREHENSIVE AGRICULTURAL SUPPORT PROGRAMME (CASP)

D5: Are you farming?

Full time	(1)
Part time	(2)

D6: Did you purchase your land?

Yes	(1)
No	(2)

D7: If no, do you…

Leasing the land	(1)

Rent to buy	(2)
Other (name)	(3)

D8: Have you participate in Comprehensive Agricultural Support Programme (CASP)?

Yes	No

If **Yes**, how did you benefited?.....

If **No** give reason: ……

D9: How did you apply for the CASP grant?

GDARD	(1)
DAFF and DAFF directed you to GDARD	(2)
Municipality/LED officer and the Municipality directed you to GDARD	(3)
Ward Councillor and directed you to GDARD	(4)
Other (Specify)	(5)

D10: Indicate your opinion regarding the following perception statements on CASP grant.

4 = Strongly agree, 3 = Agree, 2 = Disagree and 1 = Strongly disagree

Statement	1	2	3	4
Grant application process is time consuming				
Grant was insufficient				

CASP provided adequate training and workshops for farmers				
CASP gave us adequate production inputs and farm implements				
CASP provided farmers with adequate market information				
CASP has potential to reduced poverty level				

D11: Do you have any suggestion on procedures of CASP grant?

……

……

D 12: Did you receive any training as part of the CASP program? Yes/No

D 13: How effective or adequate are the training?

Very effective	(1)
Effective	(2)
Ineffective	(3)
Not effective at all	(4)

APPENDIX B

EXTENSION OFFICER QUESTIONNAIRE

Gender: M (1) F (2)

2. Highest qualification in Agriculture extension:

Diploma (1)

BSc/ B-Tech (2)

Honours degree (3)

Master (4)

PhD (5)

Other (6)

3. How many projects/ farmers do you service?

Projects	
Farmers	

4. How many years have you been employed in the Gauteng Department of Agriculture and Rural Development?.....

5. Primary focus or client base:

Smallholder/Subsistence farmers (1)

Commercial farmers (2)

Both (3)

6. How often do you do site visits?

Daily (1)

Weekly (2)

Monthly (3)

Other (4)

7. South Africa is noted to be 'nationally' food secure but not universally food secure at household level; what is your understanding of food security as an extension officer?

……

……

8. Do you think that household food security should be one of the current objectives of South African public extension?

Yes, why:

……

No, why: .....

9. How does the public/private agricultural extension influence food security in South Africa?

(i) Public agricultural extension influence food security

……

……

(ii) Private agricultural extension influence food security

……

……

10. How effective has the public agricultural extension been in promoting food security in Sedibeng?

Very effective (1)

Effective (2)

Somewhat Effective (3)

Not Effective (4)

11. A. What are the major challenges affecting your work?

……

……

11. B. How can these challenges be addressed?

……

……

12. How can ICT be used to improve service delivery to the farmers?

……

……

13. What are the best options to improve the sustainable intensification of agriculture in Sedibeng?

……

……

14. How can the transition from today's smallholder-based agriculture to sustainable agricultural intensification occur in ways that maintain livelihoods for smallholder farmers?

……

……

15. How many of farmers you are servicing benefitted from Comprehensive Agricultural Support Programme (CASP)?.....

16. How effective is this the Comprehensive Agricultural Support Programme to farmers benefited from it?

Very effective (1)

Effective (2)

Somewhat Effective (3)

Not Effective (4)

17. What are the challenges are you phasing as extension officer when it comes to implementation of the CASP?

……

……