



**THE IMPACT OF FARMER SUPPORT PROGRAMMES ON MARKET ACCESS OF
SMALLHOLDER FARMERS IN THE EASTERN CAPE AND KWAZULU-NATAL
PROVINCES, SOUTH AFRICA.**

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Dedication

To all my friends who have been supportive in my entire life at the University of Fort Hare.

Declaration

I, Mpuzu M Sikwela, hereby declare that this thesis is my original work, and has not been submitted in partial or entirety for degree purposes to any other university. All the work that was written by other authors and used in this thesis is fully acknowledged.

Submitted for the **Doctor of Philosophy in Agriculture (Agricultural Economics)** at the
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ABSTRACT

Most smallholder farmers in South Africa are characterized by poor resources such as land, labour and capital while they play an important role in poverty alleviation especially in poor rural areas. Smallholder farmers are increasingly recognized because of their contribution to household food security. The world markets are increasingly being integrated due to globalization and liberalization. As a result, smallholder farmers are facing increasing market competition, not only in international markets but in local markets as well. However, smallholder farmers often face a number of barriers to accessing these markets arising in part from the tightening of food safety and quality standards requiring compliance with phytosanitary and sanitary standards and growing power of supply chain integration.

Furthermore, the viability of these smallholder producers is constrained by institutional obstacles which include lack of access to information, high marketing and transaction costs and low quality and lack of critical volume in the absence of bulking up arrangements, etc. These barriers have contributed to the exclusion of smallholder/small-scale farmers from formal markets. In order to address these obstacles and speed up the pace of agrarian reform many support schemes (farmer support programmes) are now being designed to specifically address market access and value chain issues through unique co-innovation arrangements to improve the farmer's access to profitable international chains. A number of farmer support programmes (FSP) have been implemented in South Africa to reduce the risk of a lack of capacity and a lack of economic and/or financial experience in smallholder farms. Intervention measures have been instituted to these smallholder farmers to assist them to move out of poverty through agricultural production.

The aim of this study was to understand the roles played by farmer support programmes in addressing income and welfare levels and sustainability of smallholder farmers in South Africa. Eighty nine (89) farmers were interviewed for this study and almost half (49%) of them received support from various organizations while 51% of the sampled farmers did not receive any support. The study was designed to compare the two groups between the treated and control group to assess the impact of these programmes. Using a Tobit and Propensity Score Matching technique, potential diffusion effects were eliminated between farmers supported by Farmer Support Programmes and farmers that did not belong to support services. The latter was selected from comparable communities with no agricultural support services.

Findings from the Tobit regression and propensity score matching are consistent across the two methods, suggesting that being a member of any agricultural support programme has a significant positive impact on income and welfare of smallholder farmers. Farmer Support Programmes and collective marketing activities such as the collection and sale of members' products appear to have a significant and positive impact on smallholder welfare of those farmers engaged in them.

In the second analysis the study tested the types of arrangements that farmers would adopt to market their produce. From the results it was established that those farmers who were supported by institutional arrangements or FSP had better access to markets than those farmers who operated as individuals. Marginal effects are used to show the degree to which farmers chose a particular marketing channel or institutional arrangement that these farmers take when trying to access better paying markets. Then the final analysis is on factors that determine the extent to which collective action contribute to farmers' income and market access. A number of variables (age, distance to the market, region the farmers are located) were evaluated using the multinomial regression model. Empirical results suggest that among South African cooperatives, those established in KwaZulu-Natal and partly in the

Eastern Cape and upon the voluntary initiative of farmers are more sustainable and have access to better paying markets both locally and internationally than the other areas. The results also show that NGO-supported cooperatives have a longer life span than Government controlled cooperatives.

Key words: Smallholder farmers, Farmer Support Programmes, Income, Welfare.

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List of acronyms

AgriBEE	Agricultural Broad Based Economic Empowerment
ANC	African Nation Congress Party of South Africa
CASP	Comprehensive Agricultural Support Programme
DAEA	Department of Agriculture and Environmental Affairs
DAFF	Department of Agriculture, Fisheries and Forestry
DALA	Department of Agriculture and Land Affairs
DBSA	Development Bank of South Africa
DED	Department of Economic Development
DLA	Department of Land Affairs
DoA	Department of Agriculture
FAO	Food and Agricultural Organization of the United Nations
FSP	Farmer Support Programmes
GDP	Gross Domestic Product
GNP	Gross National Product
IDC	Industrial Development Corporation
IDPs	Integrated Development Plans
IFAD	International Fund for Agricultural Development
LRAD	Land Reform and Agricultural Development
MAFISA	Micro Agricultural Finance Institute of South Africa
MALA	Ministry of Agriculture and Land Affairs
NGO	Non-governmental organizations
PDAs	Provincial Departments of Agriculture
PLAAS	Programme for Land and Agrarian Studies
PTO	Permission to Occupy Land
SADC	Southern African Development Community
SLAG	Settlement Land Acquisition Grant

CHAPTER 1

INTRODUCTION

1.0 Introduction and background

In South Africa, smallholder farmers are perceived as non-productive, backward, non-commercial, subsistence farmers who are located in the former homeland areas (Kirsten and Van Zyl, 1998). According to Department of Agriculture and Land Affairs (DALA) and Ministry of Agriculture and Land Affairs (MALA) many households are made up of disadvantaged farmers who are vulnerable to food insecurity and practice subsistence agriculture in overcrowded semi-arid areas (Mpandeli, 2006). Most of these farmers are located in the rural areas of South Africa and are non-commercial, thus their contribution to Gross National Product (GNP) is still limited (Makhura, 2001).

Historically, black smallholder farmers have been undermined in most countries in sub-Saharan Africa, while white farmers were preferentially supported by legislation and subsidies (Ngqangweni, 2000; Makhura, 2001). This created a highly dualistic agricultural sector, with black farmers operating on small areas of land, having insufficient investment or lacking institutional support while white commercial farmers continued to receive tailored subsidies to enhance their agricultural productivity (Delgado *et al.*, 1998). However, by the mid 1980's, the rapid decline in the South African economy had resulted in subsidies to white commercial farmers being politically unsustainable, and during the 1990's these were successively reduced. While leading to relative economic hardship for some, and contributing to substantial reduction in agricultural employment, lower subsidies resulted in improved productivity and probably improved sustainability. The challenge is to create an enabling environment in which:

- Rural poverty is eliminated as targeted by government under the Millennium Development Goal (MDG) and

- The smallholder and large scale farming sectors both develop sustainably.

According to Markelova *et al.*, (2009), agricultural sector has the potential to create economic growth in rural areas. It generates job opportunities in adding value (as in the food processing industry), in bringing agricultural products to the consumers (market linkages), and providing support (infrastructure, information, quality control and training. Sustainable agriculture does combat hunger in rural areas and significantly enhances degraded soils. Baiphethi and Jacobs (2009), agree that sustainable agriculture with its emphasis on small scale, labour-intensive activities, helps to overcome unemployment. Government must find ways to enable the rural poor to benefit from agricultural development. Sustainable agricultural practices are usually based on local social customs traditions, norms and taboos, so people are more likely to accept them and adapt them to their own needs.

Sustainable agricultural development seeks to build on indigenous knowledge and enrich it with appropriate information from outside instead of ignoring or replacing it. It also improves food security by improving quality, volume and nutritional value of products produced by smallholder farmers throughout the year. Application and distribution of sustainable agricultural practices on both smallholder and large scale farmers would contribute significantly to the achievement of Millennium Development Goals. Governments tend to view export orientated production systems as more important than those that supply domestic demand Human Sciences Research Council (2007). Smallholder farmers tend to be left out when it comes to export markets and this misguided because focusing on exports alone side-lines most smallholder farmers who are not able meet the quality demanded by export markets. Most policies treat domestic demand in particular food security as equally important to visible trade as most developing countries are faced with a number of challenges especially in smallholder farmers. Concentrating on specific commodities seems to promise high economic returns, but markets change quickly and international agricultural

prices are dropping leaving local farmers without markets due to cheap foreign food (GTZ Sustainet, 2006).

Having said this, one major body of thought that has dominated the landscape of rural development thinking for the last 50 years which is the agricultural growth paradigm based on smallholder production efficiency. A number of studies including one done by Schultz (1964) showed that lending support to this concept and its widespread acceptance proposed that smallholder farmers in developing countries are rational in making their decisions and behave consistently according to microeconomic principles. Schultz (1964) also argued that smallholder farmers in rural areas acted reasonably in their allocation of limited resources such as land labour and capital and got the most economic value possible from their resource endowments. Under such a scenario, changes in smallholder agriculture in Africa is only possible through innovation and investment in high income streams; mainly in resources that contribute to the livelihoods of smallholder farmers such as physical capital and improved production methods and investment in human capital in smallholder agriculture (IFAD, 2003).

Smallholder farmers are constrained by a number of resources and this brings about the development economics theories that try to explain the changes that have progressed since the start of these development theories. According to dual-economy theories, the subsistence sector possessed negligible prospects for rising productivity or growth and could play only a passive role in the process of economic development, supplying resources to the modern sector of the economy, until the latter eventually expanded to take its place (Ellis, 1998). A number of studies on smallholder agriculture have become the main focus in most rural areas of developing countries which are centred on a development strategy because of a number of interlocking assumptions that were raised to promote smallholder agriculture. Another important aspect is that smallholder farmers have the potential to

become commercial farmers by taking advantage of high yielding varieties because input combinations in agriculture are scale neutral (Lipton and Longhurst, 1989). In terms of agricultural output in smallholder farming, there exists an inverse relationship between farm size and economic efficiency, hence smallholder farmers are more efficient than large farmers because of the intensity of their use of abundant labour in a largely capital scarce economy (Lipton, 2009). Moreover, raising agricultural output in the smallholder farming sector has positive impact on rural growth linkages that spur the growth of labour-intensive nonfarm activities in rural areas (Johnston and Kilby, 1975; Mellor, 1976). A crucial attribute of the smallholder farm strategy is that both growth and equity goals appear to be achieved simultaneously since most of the rural poor are poor farmers with limited resources. The contradiction is the emerging evidence that the rural poor tend to depend on non-farm (and often non-rural) sources of income in order to sustain their livelihoods, which puts the validity of the small-farm first orthodoxy into question (Ellis, 1998).

A number of development policies have been implemented in these developing countries and most of them are characterized by the rural development thinking right from the 1960s which can be summarised as modernization for the 1960s, state intervention for the 1980s, market liberalisation for the 1980s and participation and empowerment for the 1990s, although the ideas and their practical effect on rural policies did not undergo these transitions in such uncluttered manner (Ellis and Biggs, 2001). In developing countries such as Africa, post-colonial governments had a leading role in development, with most of the economic activities initiated and executed by the ruling government. In the agricultural sector, government policies resulted in a range of government-controlled specialized institutions in input and output supply markets, marketing, credit and extension services to smallholder farmers (Kirsten and Vink, 2000; van Rooyen *et al.* 1987). Table 1 summarizes the historical growth of the rural development thinking and the role that agriculture plays in economic development from the 1960s to the late 2000s as empathized by various authors.

Table 1: Characterization of progression in rural development thinking

Era	Rural Development Thinking or philosophy	Actors and Emphasis	Example of a country
1960s	Modernization of agriculture	Machinery and equipment (Green revolution)	India
1980s	State interventions	Green revolution in Zimbabwe (hybrid seeds)	Zimbabwe, Zambia,
1990s	Market liberalization	Structural Adjustment programmes (dismantlement of state structures to allow farmers to compete)	Zimbabwe, Malawi
Post-1994 era (SA)	Rural development	Agricultural growth on both smallholder and emerging farmers (LRAD).	South Africa
1994-1996	Liberalization of agricultural trade	Government unilaterally liberalized the SACU tariff structure	South Africa, Zimbabwe, Zambia, Malawi
1996-2000	Dismantle the elaborate structure of direct subsidies to white commercial farmers	BATAT and CASP Programmes, Ministry of Agriculture in Zimbabwe	South Africa, Zimbabwe
2000s	Farmer Support Programmes (CASP)	Comprehensive support to changing and providing an enabling environment for smallholder farmers (Land bank and Agri-bank)	South Africa and Zimbabwe

Source: [after Van Rooyen *et al.*, 1987; Kirsten and Vink, 2000; Ellis and Bergs, 2001].

In most African economies competition was enforced by government policies, which led to monopolistic tendencies and inefficiency within these specialized institutions. Although governments in developing countries subsidised the inputs and credit to farmers in the early 1980s, the agricultural exports were heavily taxed to support government expenditure and service external debts. Farmers had to face a number of inefficiencies and high costs in the government-controlled institutions and ended up receiving low prices for their produce; in most cases payment for produce was delayed (van Rooyen *et al.*, 1987). As a result, investment in the agricultural sector did not yield the expected results but instead budget

deficits and external debts in these countries where smallholder farmers were subsidized by the government. Internal and external pressure (mainly from donor agencies, private and international financial institutions) brought about changes in policy through Structural Adjustment Programmes (SAP), which meant reduction in government participation in production, trade and financing of commercial activities. Market orientated reforms presumed that elimination of government intervention was going to reduce government spending and promote smallholder farming and access to inputs, leading to more competitive and efficient markets (Van Zyl, Vink, and Fenyes, 1992; Byerlee *et al.*, 2009; Vink, Tregurtha and Kirsten, 2008). Thus in South Africa, policies have been designed to accommodate some of these imbalances that prevailed before the country got its independence in 1994 by introducing farmers support programmes to assist black smallholder farmers who were previously disadvantaged.

Investments in agriculture by smallholder farmers have often been costly, such that farmers are not willing to practice commercial farming because of resource constraints. In particular access to credit was restricted to those having sufficient collateral (Jari, 2009). As a result, smallholder farmers have increasingly relied on cash crop and non-farm income (through labour markets or small to medium-scale enterprises) to finance their production and smooth consumption (Reardon *et al.*, 1999). Some smallholder farmers could have chosen subsistence production based on the rationale that their transaction costs caused a wide gap between selling and purchase price (Sadoulet and Janvry, 1995).

The factors highlighted explain why the growth rate of the Sub-Saharan Africa (SSA) region has lagged behind that of other developing countries. Changes in climatic conditions and location of most of the Sub Saharan African countries have had a devastating effect on the productivity and growth of the agricultural economy, which in turn has affected the overall economic development (Bloom and Sachs, 1998). The climate for SSA is quite different from

that of other parts of the tropical world for a number of reasons. Climate change as result of global warming has made temperatures rise by 4° C causing extremely hot temperatures in these countries (Lobell *et al.*, 2008). As a result, most of the population is settled in these areas which are of low productivity, generally poor soils and low rainfall areas. But the hinterlands are economically disadvantaged, South Africa being a country with a number of sea ports has access to international markets for both agricultural and non-agricultural products. The hinterlands areas have higher transport costs when compared to lowland areas which are in close proximity to the sea and hence to the export market. Most parts of South Africa have very poor soils, limited rainfall and agriculture is mostly concentrated in the KwaZulu-Natal, Eastern Cape, Limpopo and Mpumalanga provinces. Most agricultural land in South Africa and many other parts of Sub Saharan Africa have poor soils with low fertility (Thwala *et al.*, 2008). Most of these soils depend on decomposition of dry matter or dead plant materials for soil fertility in most of these areas. While these are the bio-physical constraints faced by smallholder farmers, markets access is crucial for farmers to develop and fight poverty in rural areas.

Most rural households are dependent on agriculture and rely on agriculture for their development and poverty reduction. While some of these farmers are different in nature, some are of them are linked to formal markets or informal markets depending on the products. There is increasing recognition that the opportunity for smallholders to raise their incomes from agricultural production and this depends on their ability to participate actively in markets.

Market access is not only influenced by support services offered to farmers but also by biophysical constraints, including pests, diseases and decline in soil fertility (Lyne, 2009). Poor agronomic practices have also been cited as major causes of the decline in agricultural production in these provinces where high temperature in the KwaZulu-Natal Province and

cooler temperatures in the Eastern Cape region are associated with low rainfalls (Vink, 2001). The high demand for agricultural products in both local and export markets such as the European (EU) and United States of America (US) markets has contributed to an increase in agricultural production (especially fresh fruits and vegetables) from both smallholder and commercial farmers in South Africa and many other countries such as Madagascar, Ethiopia and Kenya (Bahiigwa, 2006). Extensive research in these countries has been conducted to address the biophysical constraints, more specifically the main pests and diseases and also use of chemicals on the crops and livestock kept by these smallholder farmers. Fertilizers and herbicides, livestock with minimum diseases and growth hormones, which contemporary local and international markets require minimum amounts of have been studied (IFPRI, 2008). Limited research has however been done in the area of socio-economic and little is known about the socio-economic factors that contribute to household income, welfare and food security in smallholder households.

According to Kherallah and Minot (2001), there two types of markets (informal and formal). Informal markets embrace unofficial transactions between farmers and from farmers directly to consumers. On the other hand, formal markets have clearly defined grades, quality standards and safety regulations and prices are formally set. Smallholder farmers find it difficult to access these formal markets and such are the focus of this research. Mangisoni (2006) argues that smallholder farmers are constrained by high transaction costs, high risks, missing markets and lack of collective action in the marketing environment. Smallholder farmers are further constrained by licensing of their products, absence of grades and standards, lack of marketing information, poor access to markets, weak entrepreneurial skills and high marketing margins (Farina and Reardon, 2000). High risks, on the other hand, embrace lack of legal frameworks, weak policy environment, and high price volatility, while missing markets includes lack of value adding and agro-processing, weak infrastructure and lack of credit.

The South African agricultural policy noted that there was great need to support smallholder farmers with regard to the challenges they were facing. The components of the agricultural policy were to support smallholder farmers to create higher income and employment opportunities for resource-poor farmers. This would involve, among other things, re-establishing and supporting diverse forms of successful black agriculture alongside a prosperous commercial sector (Van Rooyen, Vink and Christodoulou, 1987). The vision was to create great diversity in agriculture in terms of scale, socio-economic profile of participants, sources of livelihoods, factor and output mix, and technology transfer to these smallholder farmers. The farmers support programmes were designed to build on linkages between agricultural and non-agricultural industries and between rural and urban sectors for markets access (Umhlaba Rural Services, 2006)

1.2 Problem Statement

Agriculture in rural areas of South Africa and sub-Saharan Africa provides suitable options for smallholder farmers in terms of income generation in the Eastern Cape and KwaZulu-Natal Provinces of South Africa (Louw *et al.*, 2008). In South Africa, smallholder farmers have been trying to enter the main stream of commercial agriculture and compete with commercial farmers of exporting countries such as Kenya for green beans, Madagascar for peas and Senegal for green beans (Dries and Swinnen, 2004; Jaffee and Henson, 2005). The challenge that these farmers are facing is accessing rewarding markets and having access to resources that improve their agricultural productivity. Imperfections in factor markets (labour and credit) and product markets are hypothesised to be some of the major reasons behind the decline of smallholder production and in smallholder farming in South Africa (DAFF, 2010).

High population pressure has been associated with high agricultural intensification where land is intensively cultivated through the use of abundant labour in production (Boserup,

1965; Pingali *et al.*, 1987). The driving forces behind intensification include increases in prices and demand for food in developing countries (Schultz, 1964, IFAD, 2010) and development of markets and specialization in the developed countries. However, there is still limited empirical evidence linking rural market development and improvement in agricultural production (Kirsten *et al.*, 1998). Such empirical evidence would motivate appropriate policy formulation and intervention to stimulate investment and growth in agricultural production in smallholder farming in South Africa and many other SSA countries. The agricultural system that has developed over the years depends entirely on human capital as the major variable input, with no or insufficient use of purchased inputs (such as artificial fertilizer, machinery, advanced equipment and use of hybrid seed) (Reardon *et al.*, 1999). In a situation where factor and credit markets are non-existent or partially exist, labour can hardly be substituted with capital inputs (Randela *et al.*, 2008). High transaction costs in both the labour and input factor markets can lead farmers to follow better methods (improved technology) that involve more use of family labour, hired labour and less capital. In cases where land is limited, usually farmers would opt to use labour intensively to get better produce instead of investing in capital inputs such as inorganic fertilizers and hybrid seeds (Schipper *et al.*, 2005). The seasonality of agricultural production in South Africa further constrains the use of purchased inputs (including hired labour) in times when output is out of season and purchases must be funded from savings and/or loans. Moreover, financial institutions require collateral in form of land or other fixed assets as a condition for extending loans, this constrains smallholder farmers' access to credit (Binswanger and Rosenzweig, 1986, Lahiff, 2005).

Agriculture in South Africa is dominated by smallholder farmers whose access to land is in marginal areas which are characterized by low use of inorganic fertilizers, organic matter and hybrid seed. Most of these soils are poor (low nutrients) and crop yields are low as these farmers do not use sophisticated inputs to boost their production. Glaringly, post-settlement support (after the democratic elections in 1994) failed to address smallholder

farmers' access to resources such as credit and infrastructure for rural development (Umhlaba Rural Services, 2006).

The fact that the majority of world's population live in rural areas calls upon development aid to mainly go to the poorest countries and to support agricultural and rural activities (IFAD, 2001). However, aid to agriculture in 1998 decreased in real terms to one third of the level of 1988 (IFAD, 2001). In the so-called 'Washington Consensus' on smallholder agriculture, small farm systems were regarded principally as an efficient structure to organize labour (Kydd and Dorward, 2001), while the World Development Report 2000/2001 emphasized trade and the role that the revenues from increased market participation could play in triggering development, economic growth and poverty reduction in rural areas (World Bank, 2000). A study according to Delgado (1999) however, highlighted that increasing interest in the promotion of the marketing of high value products could be a solution to Africa's economic development problems (also advocated in Mellor (1999) and Jaffee and Morton (1995)). Nonetheless, most African agricultural systems remained at low levels of productivity (Kydd and Dorward, 2001), as smallholder agriculture in the rural areas was typically confronted by structural constraints (Delgado, 1999). Therefore it remains to identify, within the South African context, which interventions or support programmes could reduce poverty and increase the welfare of the households in the former homelands and how the agricultural sector could play a role to trigger this process.

In particular, there is need for further empirical evidence on the effects of farmer support programmes on the smallholder farming and how these programmes contribute to markets such as labour, credit and food on agricultural production and changes in factor use in response to market opportunities such credit, product and labour markets. These programmes are thought to be a panacea to rural development and welfare of smallholder farmers. There is need to come up with appropriate policies, designs and strategies for

achieving sustained development in the rural areas. In this study, the effects of factor and product markets on the development of the smallholder farmers in the Eastern Cape and KwaZulu-Natal Province in South Africa are investigated. In particular, the impact of improvement in market access opportunities for smallholder farmers and the role played by farmer support programmes in promoting market access and ensuring that smallholder farmers are sustainable are analysed.

1.3 Broad Objectives

This study analyses resource allocation behaviour by smallholder farmers in Eastern Cape and KwaZulu-Natal Province of South Africa in particular the household response to production constraints (technical skills, credit, extension services, markets and market imperfections) and access to off-farm employment opportunities.

Thus, most studies on smallholder farming have recognized the need to integrate smallholder farmers into high value chains, but much is unknown about how to promote access to such chains. This study tries to contribute to filling this gap by looking at changes in the institutional arrangements. Such changes may be due to exogenous changes in the external environment of farmers or due to endogenous processes in the South African economy. This study seeks to identify the causal impact of certain governance arrangements by analyzing the multi-faceted effects of market support interventions, irrespective of their origin. It is hypothesized that such interventions act through their impact on assets and capabilities of farmers to influence access to markets. These market support interventions aim to improve smallholder access to both local and international markets by providing technical skills, information, training, advisory services and on and off farm infrastructural services.

1.3.1 The specific objectives are:

- a. To characterize the smallholder production systems, challenges and assessment of the performance of the smallholder farming sector in Eastern Cape and KwaZulu-Natal Provinces of South Africa.
- b. To investigate if collective action contributes to market access of smallholder farmers.
- c. To assess the effects of farmer support programmes on smallholder production systems with implications on household welfare.
- d. To assess how best assets of smallholders and their livelihood strategies can be used to access different markets.

1.4 Research questions

- a. What are the characteristics of smallholder farmers' production systems, challenges faced by smallholder farmers; and their performance in reaching input and output markets?
- b. How does collective action (cooperation) contribute to markets access of smallholder farmers in South Africa?
- c. What are the effects of farmer support programmes on productivity and household welfare of smallholder farmers?
- d. How can assets of smallholder farmers and livelihood strategies can be used to access to different markets?

1.5 Theoretical framework

A Russian economist (Chayanov, 1923) came up with models that describe the nature of smallholder farmers in developing countries. These models looked at agricultural production in rural households and mainly centred on consumption and production. These models have been used extensively to explain farm household production behaviour in the developing countries' rural economies (Taylor and Adelman, 2003). The models are divided into two classes which are the unitary and collective (or bargaining) household models (Hart, 1992). The unitary model represents a household as a single unit or an individual which makes its own decision making in production and consumption. Critiques of the unitary models of the household initially focus on the failure of the models to take into account intra-household inequality and conflict. The problem essentially involves on how to aggregate preferences made by these households and what decisions to take in order to improve agricultural productivity in smallholder households.

A number of neoclassical household theories on smallholder farming have been developed and as such have contributed to the academic world on how smallholder farmers maximise utility through their limited resources. Neoclassical theory requires that preferences are exogenous and fixed, and hence the individual's preference orderings are consistent. Under these assumptions, economic behaviour can be deduced as a set of responses to wages and prices, and infer the preferences from observed behaviour of the farmers. This convenient procedure breaks down if the basic unit of analysis is a group of individual household members with inconsistent preferences. The need to come up with a justification for equating the household to an individual with a consistent preference ordering has remained a central theme in the neoclassical literature (Hart, 1992).

Another category of neoclassical household theories draws from Chayanov's Theory of Peasant Economy (1966) and appeared about the same time as Becker's influential article.

The Chayanov peasant model is a theory of household utility maximization, first proposed in the 1920s by the Russian agricultural economist, A.V. Chayanov (Thorner *et al.*, 1966) and resurfaced in the 1960s (Mellor, 1963; Sen, 1966). The model focuses on the subjective decisions between farm work and income required to meet the consumption needs of the household (trade-off between drudgery and income from work). Smallholder farmers or farming households are assumed to maximize utility from income subject to a land and labour constraint.

The labour market is assumed to be absent and allocation of time between leisure and work on the family farm is determined purely by preferences. Subsequent development of the farm household model focused on the impact for the logic of the model of relaxing the key assumptions: absence of the labour market and flexible land access, key assumptions in the Chayanov farm household model (Singh *et al.*, 1986). The Barnum-Squire (1979) household model incorporates a perfectly competitive labour market in the Chayanov's peasant household model, providing a framework for generating predictions about the responses of the farm household to changes in domestic (family size and structure) and market (output prices, input prices, wage rates, and technology) variables (Ellis, 1993; Hart, 1992).

Household models in a farming sector are designed to capture interactions between three different spheres of the farm household: the farm firm, the worker household and the consumer household (Sadoulet and Janvry, 1995; Berg, 2001). The decisions made by the household can be modelled under two different model assumptions: separable and non-separable household models (Alderman *et al.*, 1995). Under perfect market conditions, production and consumption decisions are assumed to be made separately (Janvry *et al.*, 1992). On the production side, the household chooses the level of labour and other inputs that maximize farm profits given the current configuration of capital and land. Optimal input choice depends on input prices, output prices, and wage rates, as well as the

physical characteristics of the farm technology. Technology and sophisticated agricultural production methods characterize smallholder farmers which reduce their inability to access better markets and also increase their production. On the consumption side, the household maximizes utility over consumption goods and leisure time in the presence of a budget and time constraint. The budget includes profits from the farm. Farmer's optimal choice depend on the prices of the goods consumed by the household, wages received, total time available for production activities and the characteristics of the household members who are consumers and labourers, such as their age, gender, level of education and religion, ethnicity/cultural values and norms. In developing countries, perfect market conditions rarely exist because of the institutional setup. Not all products and factors of production can be traded on markets because of the high cost of transactions, shallow markets, and risks and uncertainty about markets and weather conditions.

Limited access to credit is a frequent cause of market failure, as the household cannot satisfy an annual cash income constraint, with expenditure greater than revenue at certain periods of the year (Sadoulet and Janvry, 1995). Family and hired labour may be imperfect substitutes in agricultural production while binding constraints in off-farm employment may prevent adjustment in the agricultural labour market (Singh *et al.*, 1986). Farmers may have a preference towards working off-farm (Lopez, 1986). Under any of these circumstances, the production and consumption decisions cannot be treated as separable because farmer's decision making depends on the availability of resources or endowments. Not only production decisions affect consumption decisions, but also consumption decisions (preferences) affect production decisions (Janvry *et al.*, 1991; Strauss, 1986). Production and consumption decisions are no longer taken in response to exogenous prices, which are taken to be the same for all households. In a nutshell, households in rural areas are prepared to allocate most of their labour on agricultural production depending on the

household decisions that yield better incomes from their farms. Thus, households will only produce if the market offers them better prices which are over and above their labour supply.

1.6 Outline of the study

This study is composed of nine chapters, which address the four specific objectives outlined in section 1.3.

Chapter 2 looks at the literature review of the study, the highlight of this chapter is on current data available on numbers of smallholders and the challenges faced by these farmers.

Chapter 3 address the role of markets in developing countries and how these contribute to the livelihoods of smallholder farmers.

Chapter 4 looks at various farmer support programmes in South Africa, when they were initiated and what their impact on farmers were.

Chapter 5 covers the study area of this research, where socio-economic factors about the two provinces are described in detail which is in the Eastern Cape and KwaZulu-Natal Province.

Chapter 6 describes the methodologies used to address the objectives started in Chapter 1.

Chapter 7 presents the demographic characteristics of study households, farm characteristics of households and Income sources for households.

Chapter 8 looks at the empirical results of this study by addressing the research questions.

Chapter 9 summarises the study by addressing the Summary of Findings, Conclusions and Policy Implications.

CHAPTER 2

REVIEW OF LITERATURE

2.0 Introduction

This chapter reviews literature in an effort to look at the current issues surrounding the challenges that smallholder farmers in South Africa are facing. In general, smallholder farmers in sub-Saharan Africa experience scarce and diminishing resources, insufficient and inadequate physical infrastructure, lack of basic education and marketing knowledge, lack of organizational support and institutional barriers in marketing. Smallholder farmers have a number of challenges in physically accessing markets. The challenges that farmers face are described in the next sections. This chapter highlights the needs of the farmers such as training in more profitable and sustainable agricultural methods. Institutional constraints are discussed in this chapter as they are responsible for the failure to guarantee stable and sufficient supply of good produce. According to Kirsten and Sartorius (2002) these factors create challenges in producing quality produce for both local and international markets. Thus, this study looks at technical, institutional and organization factors that influence market participation choices among these smallholder farmers.

2.1 Smallholder farmers in South Africa

In South Africa smallholder farmers are defined as non-productive, backward, non-commercial, subsistence agriculture that is located in parts of the former homeland areas (Kirsten and Van Zyl, 1998). Aliber *et al.* (2010) defines smallholder farmers as those that derive benefits from primary agriculture. Included in this category of smallholder farmers are those who produce mainly to generate an income as well as those who produce for their own consumption, but excluded are those who earn wages from farm work. According to Department of Agriculture and Land affairs (DALA) and the Ministry of Agriculture and Land

affairs (MALA) many households of previously disadvantaged farmers are vulnerable to food insecurity and practice subsistence agriculture in overcrowded semi-arid areas (FIVIMS, 2003; Mpandeli, 2006). Smallholder farmers in rural areas of South Africa are non-commercial, thus contribution of these farmers to Gross National Product (GNP) is still limited (Makhura, 2001). The reason behind this is that they are having fewer endowments when compared to commercial farmers.

Agriculture is an important component in the South African agricultural exports, contributing on average about 4% to Gross Domestic Product (GDP) (DAFF, 2010; Hall, 2007). Different efforts to promote small-scale farming have been made in the past decades for smallholder farmers to contribute to the GDP. It remains clearly that there is more needed to be done to make a positive difference in terms of political objective of an integrated agricultural sector. Integration in agricultural sector will only be successful when smallholder farmers fully participate in the market (Azna and Besely, 1991; Makhura, 2001). Thus, the South African government persists to endeavour for empowerment of smallholder farmers who were denied opportunities under apartheid through giving disadvantaged communities and individual more choice, and in the case of agriculture, removing barriers and fully integrating and democratizing access to markets and be accommodated into these high value chains (Kirsten *et al.*, 1998).

The role of Government has been to shift households from subsistence production to producing for markets. Based on several investigations done by Delgado *et al.* (1998) and Ngqangweni (2000) agriculture has a significant role to play in fostering rural development and poverty alleviation among smallholder farmers in South Africa. Smallholder farmers' contributions to GDP/GNP and household food security have been found to be important in the economy and rural development in South Africa.

The importance of focusing agricultural development on smallholder farmers is best emphasised in this quotation from the 2008 World Development Report of the World Bank.

“Smallholder farming also known as family farming, a small-scale farm operated by a household with limited hired labour remains the most common form of organization in agriculture, even in industrial countries. The record on the superiority of smallholder farming as a form of organization is striking. Many countries tried to promote large-scale farming, believing that smallholder farming is inefficient, backward, and resistant to change. The results were unimpressive and sometimes disastrous. State-led efforts to intensify agricultural production in Sub-Saharan Africa, particularly in the colonial period, focused on large-scale farming, but they were not sustainable (WFP, 2008). In contrast, Asian countries that eventually decided to promote small family farms were able to launch the Green Revolution. They started supporting smallholder farming after collective farms failed to deliver adequate incentives to produce, as in China’s farm collectivization, or on the verge of a hunger crisis, as in India and Indonesia. Countries that promoted smallholder agriculture for various political reasons used agriculture as an engine of growth and the basis of their industrialization” (World Bank, 2008).

This research attempts to refocus attention towards the opportunities and challenges posed for developing countries such as South Africa from evolving markets for agricultural products coming from smallholder farmers. While trends in agricultural and food markets in both industrialized and developing countries suggest on-going and expanding opportunities for developing countries in terms of agricultural output from these farmers, in exploiting these opportunities, these developing countries face rather different (and arguably greater) challenges compared those that have historically been presented by basic commodity markets governed by price, volume and quality produced by smallholder farmers. There are more fundamental problems with this literature on the problems faced by these smallholder

farmers in accessing better paying markets which are basically caused by quality and volumes produced and poverty in rural areas.

2.1.1 Numbers of smallholders farmers in South Africa

Currently the number of black smallholder farmers in South Africa is estimated at about 2.6 million according to statistical data from Aliber and Hall (2011). Recent data from the Labour Force Survey (LFS) and the General Household Survey of Statistics South Africa (Stats SA, 2010), showed similar figures and these farmers have limited resources and are located in rural area of South Africa. According to Aliber *et al.* (2010) about 92% of these households engage in agriculture for subsistence purposes and can be regarded as 'subsistence smallholders', while the other 8% can be regarded as 'commercial smallholders' as they farm for income. In South Africa there are roughly 2,392,000 black households engaged in subsistence farming while there are 208,000 black households engaged in farming commercially (Aliber and Hall, 2011). DAFF (2010) has a slightly different way of accounting for the numbers of farmers and cite between 300,000 and 400,000 predominantly black farmers involved in smallholder agriculture. It can be assumed that these are 'commercial smallholders' as it will be shown later on in this literature review that DAFF's data sources and programmes are currently aimed at this category of black farmers and that they may have a lack of information about subsistence smallholders.

To get an idea of the size of the land being used by smallholder farmers, Vink and van Rooyen (2009) using data from the 2006 General Household Survey provide a breakdown as shown in Table 2.1 of the plot sizes that farmer households have for their farming activities.

Table 2.1: Land size holding by smallholder farmers in South Africa

Land size holding (hectares)	Percentage of households (%)
<0.5	64.4
0.5-1	18.3
1-5	10.7
5-10	3.0
10-20	0.9
20+	2.7
Total	100

Source: Vink and van Rooyen, 2009.

According to Vink and van Rooyen (2009), most of these smallholder farmers own less than 1 hectare of land and those that own more than 20 hectares of land could be farmers who are migrating from a stage of smallholder to emerging or commercial farming. These farmers producing on less than one hectare mainly produce for household consumption and as the sizes of the farms increase the farmers produce for commercial purposes (Aliber *et al.*, 2010).

2.1.2 Type of land holding by smallholder farmers in South Africa

Land ownership is one of the critical dimensions of the Land Reform Programme (LRP) that was instituted in 1994 when the government of South Africa attained its independence. The Land Reform Programme (LRP) in South Africa was a World Bank recommendation to address the skewed distribution of land in the country especially among the black people (CPLO, 2010; Tshuma, 2012). With so many black people having lost their land unceremoniously and without any compensation during the apartheid era, making sure that such injustices were addressed became one of the priorities of the African National

Congress (ANC) -led government soon after it came into power in 1994. The LRP resulted in only 10% of the land being reserved for blacks. As such, there is a perception that the LRP was adopted to address these injustices in order to foster national reconciliation and stability (Sibanda, 2001). Furthermore, the LRP through its implementation would facilitate a more rapid economic growth especially by improving household welfare and poverty alleviation (Sibanda, 2001).

The land reform programme is still an on-going process in South Africa and currently there are substantial number black people who own have title to their pieces land. According to Vink and van Rooyen using the General Household Survey data, land access by smallholder farmers has not been that significant. The data reveals that close to 50% of households farms are on less than 20 hectares of land in lands under Tribal authority. Table 2.2 shows that about 26.6% of the black population in South Africa owns land between 0-20 hectares and this is supported by DAFF (2010). These farmers who are concentrated in the former homeland areas of South Africa.

Table 2.2: Land ownership by smallholder farmers in South Africa

Type of ownership	Percentage of households	
	0-20 ha	20ha +
Owns the land	26.6	81.7
Rents the land	1.0	6.7
Share cropping	1.8	-
Tribal authority	49.9	4.3
Other	5.8	7.3
Unknown	14.9	-
Total	100	100

Source: Vink and van Rooyen, 2009.

According to Aliber and Hall (2011), there are 49.9% smallholder farmers who farm their land in tribal authority land, while 1.8% of the households rent out land. The geographical spread of these farmers is highly uneven in the homelands. This data looks at results produced by Stats SA from sources such as General Household Surveys and the Labour Force Surveys, the exact data on the location and sizes of lands that these individuals households use varies from one province to the next. The 2007 Labour Force Survey found there are 293 000 black individuals engaged in farming in South Africa (Aliber and Hall, 2011). The fact that agricultural departments are simply unaware of the existence of many black farmers is cited as one of reason why few receive support. Therefore, if poverty and food insecurity problems in South Africa are to be circumvented, then those that receive land in the former homelands and the government are aware of them should do their best to produce as much food from it as possible, probably more than their predecessors (Mushunje, 2005).

2.2 Constraints faced by smallholder farmers in rural areas

Empirical studies have exclusively focused on the question of smallholder farmers' contribution to supplying high value chains and have failed to measure the welfare and poverty effects (Maertens and Swinnen, 2006). On the one hand, global and (increasingly) developing countries' agricultural and food supply chains have been restructured to adjust to new modes of competition and market leadership by dominant buyers in developed countries. On the other hand, new and enhanced capacities are needed to meet the demands of increasingly changing customer needs in the developed countries e.g. from markets in the European Union (EU) and the United States of America (US). While a number of developing countries have tried to penetrate these new markets and higher-value markets, most of the work needs to be done by smallholder farmers who are having difficulties in entering these markets due to quality and volumes produced and the recent phyto-sanitary and sanitary standards which are obstacles to having access to these

markets (Sautier, Vermeulen, Fork and Bienabe, 2006). It is evident that many developing countries lack the capacity needed both to enter and to remain competitive in high value agricultural and food markets (Maertens and Swinnen, 2007; Reardon and Berdegue, 2002). The challenge is how to build this capacity in a resource-constrained environment and in a manner that establishes and enhances a credible competitive position for these smallholder farmers in developing countries such as South Africa on a sustainable basis.

The current state of supply chains of developing countries is compared and contrasted, especially according to the economic importance of agriculture. The key challenge that smallholder farmers face in developing countries is exploiting the opportunities in high value markets for agricultural and food products.

Smallholder farmers face a number of constraints, which increase risk and uncertainty and act as disincentives for increased production, consequently preventing them from accessing markets (Senyolo *et al.*, 2009). Despite growing market opportunities, there is a danger that smallholder farmers will be squeezed out, even though they possess some competitive advantages over larger producers, especially in their low costs in accessing family labour and intensive local knowledge (Poulton *et al.*, 2005). The disadvantages they face are high unit transaction costs in almost all non-labour transactions (Poulton *et al.*, 2005). Furthermore, over the last two decades structural adjustment programmes have led to a decline in state-funded agricultural support, with the result that many farmers find it difficult to access inputs, extension, and training.

A range of impediments to participation in high value markets are identified by Pingali *et al.* (2005). These constraints constitute the greatest barrier for smallholder farmers when it comes to accessing high value markets and overcoming these constraints is important if smallholder farmers are to access lucrative markets. According to Development Bank of South Africa (DBSA, 2009), can be classified into two categories which are

endogenous and exogenous constraints. Endogenous constraints are those that affect the farmer's ability to operate efficiently, despite having the potential to allocate resources in an economically efficient way. With regard to these endogenous constraints, the farmer has some control over e.g. shortage of labour, lack of skills, knowledge and education and a range of cultural factors. Exogenous constraints result from a broader agricultural environment which is beyond the control of the farmer such as limited access to agricultural inputs, credit, mechanization, marketing services, poor institutional and infrastructural support, in-appropriate policies and legislation, social structures, and problems associated with land tenure and acquisition of resources.

In South Africa and some other developing countries, smallholder farmers are excluded from these high value markets as a result of the historical colonial legacy and also due to poor performance of their production, which is characterised by high production costs and transaction costs and poor quality, making smallholder farmers less competitive (Dorward and Kydd, 2005). This was also supported by Louw *et al.* (2007) that smallholder farmer are faced with a range of high transactions costs and difficulty to exploit lucrative markets.

2.2.1 Lack of infrastructure

Infrastructure is considered as one of the keys to profitable development. Constraints that block smallholder farmers from greater market access to agro-food output markets are associated primarily with underdeveloped infrastructure, ranging from the nonexistence of local market spaces to unreliable sources of market information (Machethe, 2004). In South Africa, smallholder farmers are mostly found in areas remote to market places where there is a serious lack of the marketing facilities. In most instances, smallholder farmers usually rely on public transport to bring their output to the market. Machethe (2004) emphasized that the

importance of developing and maintaining the physical infrastructure after recognizing high transaction costs as one of the major factors constraining the growth of smallholder agriculture in African countries. Kherallah and Minot (2001) explained that the high transaction costs can largely be attributed to poor infrastructure and lack of telecommunication networks that result in high transaction costs. In rural areas transport contractors are reluctant to service smallholders due to the poor quality of feeder roads in rural villages. Infrastructure development in rural areas has made the smallholder farmers to fail to adopt new technologies that can enhance their potential to produce good quality products.

In South Africa, smallholder farmers have been neglected in terms of infrastructural support by past governments; the post-independence government is trying to close the gap (Makhura, 2001; D'Hease and Kirsten, 2003). Even though the government of South Africa is trying to empower these farmers, there are still barriers to market access. In the past, researchers focused on increasing food staples in irrigated and high potential areas where they conceived productivity returns would be highest. But production increases in high potential areas do not necessarily benefit poor farmers. This is because many of the poor live in rural areas that lack infrastructure to take advantage of improved technologies. It is also because many of the poor even if resident in high potential areas lack the control of land, water, labour, credit, or other critical assets necessary to take advantage of improved technologies. Kirsten, van Zyl and Vink (1998) and Meinzen-Dick *et al.* (2009), state that as for agriculture the government is trying to remove dualism and fully integrate and democratize the sector which is important for both sustainable growth and alleviation of poverty and inequality among black farmers in South Africa.

2.2.2 Poor access to inputs and technology

Smallholder farmers are generally poor so they have labour intensive systems in their production, and lack access to expensive inputs like fertilizers, chemicals and machinery (Van Zyl and Vink, 1998). They employ of more labour to try to increase productivity. If farmers are to produce for high value markets, this calls for the production resources that include land, labour and capital which are not readily available for rural households. Smallholder farmers can benefit from opportunities in agricultural markets and especially in terms of the volumes produced and those traded (Bienabe *et al.*, 2004). In many cases, smallholder farmers are still required by the funders to provide collateral in the form of an estate or enough funds to prove that they will be able to repay the loans that they may need from the creditors. But because they are poor they cannot satisfy the loan requirements.

Agricultural technology in rural areas is another factor affecting agricultural production especially in the former homelands of South Africa. Smallholder farmers in sub-Saharan Africa continue to value pursuing farming activities for home consumption and for sale. This is even more important in South Africa against the backdrop of food price differentials between urban and rural households. South African studies have shown that the number of households engaging in subsistence agriculture as a main source of food and income is declining, while there is a rise in the number of households engaging in subsistence production as an extra source of food (Aliber, 2005; 2009). However, there is evidence of agricultural resources (especially communal land in former homeland areas) being under-utilized (Aliber, 2005; 2009). Agricultural productivity has continued to decline partly due to the reduction in support for farmers to continue taking up the improved input packages as a result of economic structural adjustment programmes. The use of improved input packages could be increased by reinstating some 'smart or targeted' input subsidies (Bryceson, 2002; Smale *et al.*, 2009). These inputs should be made available at affordable prices and tailored

to the local climate and soil conditions. It should be noted that smallholder farmers in most parts of sub-Saharan Africa rely heavily on informal channels to access inputs (Smale *et al.*, 2009). These resources are not easily accessible to farmers, thus smallholder farmers in rural areas tend to sell their produce to informal or village markets. Minot and Ngigi (2003) emphasize that informal markets are important channels that may need to be improved or developed in order to improve smallholder farmer access to inputs.

2.2.3 Lack of farmer organization

According to Meinzen-Dick *et al.* (2009), smallholder farmers are not organized in the markets as they usually sell their agricultural produce individually and directly to the consumers without passing through other intermediaries. In other words, smallholder farmers lack collective action in markets. Ortmann and King (2006), state that most smallholder farmers fail to register as cooperatives or groups of farmers so that they can access facilities. In South Africa, some smallholder farmers tend to engage in institutions such as cooperatives to take their goods for sale, processing and storage (Makhura, 2001). Cooperatives have played an important role in the development of the commercial agricultural sector (Makhura, 2001). The government believes it can help farmers too and are advising them to register as cooperatives. Most farmers for various reasons have no access to finance and access to relevant information to register as cooperatives and consequently they cannot be financially assisted by government. In most cases, the government has no enough funds to fund individuals as it is considered high risk and expensive to fund individual farmers. Thus according to Frank and Henderson (1992), lack of facilitation in the formation of producer associations or other partnership arrangements makes it more difficult for smallholder producers to participate in formal markets.

2.2.4 Lack of access to skills development

There are few institutions that are prepared to provide skills development to smallholder farmers because of lack of funds on the part of small scale farmers. Without requisite skills it is difficult to keep records and therefore inputs can be easily used inefficiently (Louw *et al.*, 2004). However, the Agricultural sector in South Africa is not only dualistic with a developed commercial farming sector which co-exists with a large number of subsistence (communally owned) farms, but in terms of actual size of production, education and technological know-how, it is still primarily in the hands of white South Africans. Consequently, the challenge for the country is therefore to bring the previously excluded black community into the mainstream economy through job creation and entrepreneurship; agriculture is clearly one important avenue to redress past inequalities. Higher economic growth will not be possible without addressing, among others, illiteracy and low education and skills development levels which are most prevalent in rural South Africa, and where agriculture is most likely to play an important role in resolving both economic and human development (OECD, 2006).

2.2.5 Lack of potential land

Upon its assumption of power in 1994, the South African post-apartheid government sought to address the challenge of inequitable access to resources such as land. Access and control of land has been at the centre of struggles between racial groups since the 1860s (Keegan, 1985). The colonial and apartheid governments passed laws that aimed to restrict access and control over land resources by black Africans of which the Natives Land Act of 1913 had the most serious effects on the welfare of the blacks.

Most of these farmers in rural areas of South Africa have been affected by the land distribution program. The land reform program¹ has impacted on the welfare of black African households who depended on wage employment in white farms (De Klerk, 1984). Moreover, the deregulation of the markets and liberalization of the trade policy in agriculture created concentration of land ownership, production and the marginalization of small farmers, further impacting on the welfare of those whose lives depend on land (Hall, 2009).

Despite all these challenges, the post-apartheid government has been implementing a land reform programme that caters for smallholder farmers in order to address the poverty and create large scale employment (ANC, 1994; DLA, 1997). However this has not been achieved because of various policies and inefficiencies in government and this has led to some farmers questioning whether this model can contribute significantly to large-scale employment creation and poverty reduction (Vink and Van Rooyen, 2009). Despite significant progress in addressing the long-standing equity issues in land distribution in South African agriculture, there is evidence from a number of studies that agricultural production and income are not improving among the black smallholder population and that most of these farmers are located in marginal areas (Van Zyl and Binswanger, 1996; Lahiff, 2005).

2.2.6 Asymmetry or lack of information

Access to information among smallholders is generally poor and is compounded by the lack of reliable and efficient means of disseminating information (Bienabe *et al.*, 2004). Recent field evidence in a study among small-scale sheep farmers in Eastern Cape is a case in point to illustrate the need for public support for a reliable market information dissemination

¹ Van Zyl, J and Binswanger, 1996. Market-assisted rural land reform: How it works? In: Van Zyl, J, and Binswanger, H. P. (eds) *Agricultural Land Reform in South Africa*, Oxford University Press, Cape Town, South Africa, pp.3-17.

mechanism (Peter Jacobs, 2009). Both woolgrowers and meat-sheep farmers get their information on market prices from a combination of three main sources: networking with white commercial farmers and 'speculative bulk buyers-farmers', an early-morning radio show in local languages and cell phones (Stringfellow *et al.*, 1997; Masakure and Henson, 2005). Lack of product prices and information about the quality at a local level places smallholder farmers in a compromising position with regard to market access and getting good prices and times to sell their produce (Bienabe *et al.*, 2004).

2.2.7 Access to markets

Smallholder farmers often face constraints when they want to access markets or when they want to improve their competitiveness in markets (Kherallah and Minot, 2001). Market access and competitiveness relate to the options farmers have to sell their products and purchase inputs (Stockbridge *et al.*, 2003). Smallholder farmers often have low market access as compared to their larger and more capitalized colleagues. According to Louw *et al.* (2004), barriers to enter into markets can be related to physical limitations in reaching the market, such as poor roads, restrictions on international trade, or to minimum product characteristics required.

These barriers mean that a certain market does exist, but that smallholder farmers are hindered in selling their products in that market. In most developing countries, institutions (e.g. insurance) that can alleviate risks are missing or weakly developed as a result smallholder farmers are exposed to high market risk (Baiphethi and Jacobs, 2009). In many cases, smallholder farmers are not yet positioned to compete and access better paying markets and many will be left behind if they are not properly organized and supported by

both government and private sector to meet the standards and qualities required (D'Haese and Van Huylenbroeck, 2005).

Smallholder farmers usually sell their produce at the farm gate to intermediaries, often at a low price (Fafchamps and Vargas-Hill, 2005). However, innovations in marketing arrangements can transform market relations in favour of smallholder farmers (IFAD, 2001). Producer organizations and cooperatives are well-positioned to take advantage of these new opportunities that may incorporate smallholder farmers into high value chains. In addition to filling in the gaps created by market imperfections, collective action can open up new marketing opportunities for smallholders by introducing innovations to existing value chains or creating entry ways into new markets (Boughton *et al.*, 2007; IFAD, 2003). For example, creating new demand for traditional products through processing and value-adding activities has proved to be an innovative route to higher prices, such as through design of a branding strategy and awareness for agricultural products from smallholder farmers. Farmers can participate in high-value markets by obtaining the required food safety certifications, which otherwise would be inaccessible to them individually but as groups or cooperatives to enhance them to easily access markets (Reardon and Berdegue, 2002).

In local informal markets, for instance, smallholders often find their prices undercut by produce that informal traders buy from large-scale commercial farmers. Supermarket chains, on the other hand, provide a lucrative niche market for smallholders but these downstream linkages are limited to smallholders that meet product variety and quality standards (Reardon and Barrett, 2000). Farm workers in the sector are becoming more impoverished as they are squeezed in agricultural labour markets and agro-food output markets. Other sectors of the rural poor, specifically smallholder farming and informal trading, face similar pressures as a result of the market-oriented restructuring of food and agricultural value chains (Jacobs, 2009).

2.2.8 Transaction Costs

Transaction costs in different markets determine whether a particular household participates or does not participate in a market. For smallholder farmers in particular, transactions costs come in various modes which include the costs of searching for trading partners with whom to exchange with, the costs of screening partners, bargaining, monitoring, enforcement and, eventually, transferring the product to its destination (Jaffee and Morton, 1995; Hobbs, 1997). Households facing different market opportunities may make different decisions related to production, which affects efficiency. In the absence of credit and insurance markets, liquidity-constrained farmers might limit their investments in purchased inputs and hired labour (Key and Runsten, 1999). According to Kherallah and Minot (2001) imperfections in output markets could force farmers into subsistence production, leaving no or limited surplus for market sales.

In cases where transaction costs are high, markets fail in their role of allocating scarce resources to alternative ends. High transaction costs are the embodiment of access barriers to market participation by resource poor smallholder farmers (Delgado, 1999). According to Louw *et al.* (2007), supermarkets offer better and more sustainable market access to smallholder farmers. These opportunities opened by supermarkets turns out to be good strategies to reduce transaction costs among smallholder farmers (Reardon and Gulati, 2008).

To lower the transaction costs for both the smallholders and supermarkets, an option is to strengthen forms of collective action among smallholder farmers to promote equity and competitiveness (Makhura, 2001). More specifically this should facilitate coordinated efforts to train farmers in product quality and marketing, enable farmers to comply with deliver of schedules, overcome transport problems, access cheaper inputs as a transitional stage to

enter larger fresh produce markets (Krishna, 1997). Because transaction costs vary over households and enterprises, commodities, and regions, there is no single panacea innovation or intervention, public or private that can reduce them. Makhura (2001) further explained that when smallholder farmers are faced with high transaction costs, they will either stop participation or resort to other means such as spot markets. This, however, results in wastage of most smallholder products after harvesting or sales at unsustainably low prices.

2.2.9 Lack of investment and negotiations skills by smallholder farmers

The problem of market access has also been due to lack of follow-up investments by smallholder farmers and government, coordination challenges among farmers and inadequate management of these farms. Farmers face enormous constraints in physically accessing markets (Humphrey, 2005). Smallholder farmers lack resources such as business and negotiating experience and the collective organization to give them the power to interact on equal terms with stronger market chain actors (Magingxa and Kamar, 2003). In addition, farmers need more training in more profitable and sustainable agricultural methods. Many of these farmers spend up to twelve months producing fruits and vegetables and have to wait almost as long for a return on their investment. Because it is difficult to enter these long value chains this makes it difficult for the farmers to make ends meet. Lack of investment in smallholder farming has been noted to be responsible for failure to guarantee a stable and sufficient supply of agricultural produce to markets (Kirsten and Sartorius, 2002).

2.2.10 Grades and standards

Most smallholder produce has no clearly defined grades and standards and, therefore, fails to meet the consumers' demands (Reardon and Barrett, 2000). Produce from smallholder

farmers does not meet certain market grades and standards because the farmers lack the knowledge and resources to ascertain such requirements (Vermeulen *et al.*, 2006). In addition, institutions for determining market standards and grades tend to be poorly developed in smallholder farm environments.

2.2.11 Lack of Assets by smallholder farmers

Production assets such as tractors, machinery and vehicles to transport produce to markets are key requirements. All these factors determine the transaction costs of smallholder farmers. Asset ownership such as a motor vehicle is regarded as one of the factors determining market participation. Barriers to market entry are reduced when farmers possess assets. Frequently, poor smallholder farmers are unable to participate in lucrative agricultural markets due to lack of household specific productive assets (Pote, 2008).

2.2.12 Value adding

Lack of value adding and agro-processing are parts of missing markets amongst smallholder farmers in marketing. Agricultural produce from smallholder farmers are usually are poorly packaged. With few exceptions, most smallholder farmers cannot add value to their produce because they do not know its importance or lack processing technology (Louw *et al.*, 2007). Inability to add value to agricultural produce by smallholder farmers excludes them from profitable markets.

2.2.13 Lack of credit and governmental support

Most studies on smallholder farming have recognized the need to integrate smallholder farmers into high value chains but very little has been done to address the issue of access to

credit. The credit problem is also a critical missing link in current effort to develop a cooperative movement in South Africa. The support of farmers has been an issue since 1994, after the apartheid regime, but the efforts which were designed to promote smallholder farmers did not yield the required results (Lahiff, 2005; Jacobs, 2009). According to Jacobs (2009), access to credit is viewed as an important way in which farmers can raise the finance necessary for farming, but the challenge arises when loans cannot be repaid. Across the region, there has been a rapid withdrawal of government from agricultural input supply, subsidy programmes, agricultural produce markets and price controls. The differing roles of different organizations in service provision need to be defined by pragmatic criteria depending on local circumstances. Some remote areas have suffered when government supply and marketing has ended and have not been effectively replaced by the commercial sector.

Apart from unfavourable conditions, supportive instruments have been put in place, in order to assist agricultural development. Such instruments include the Agricultural Research Council (ARC), the Land Bank, the National Agricultural Marketing Council (NAMC) and the Provincial Departments of Agriculture. However, these institutions are still learning how to deal with the special circumstances and needs of emerging farmers (Hall and Aliber, 2010; Vink and Van Rooyen, 2009). Moreover government assistance has been often erratic and late, so in many areas the situation grew worse than before (Jacobs, 2009). In the former homelands there was very limited access to agricultural credit. The provision of credit via the state was largely confined to parastatals, which imposed strict conditions in terms of enterprise selection, and discriminated against women and small growers. The inability of smallholders to use their land as collateral prevented them from gaining access to funds from the commercial banks. Currently, private sector financial services are generally

unavailable to black smallholders. Thus, although these institutions were set up, they are not in a position to assist smallholder farmers fully.

2.2.14 Other Inputs

Farm inputs are basic and essential to any farm enterprise; without them, no output is possible. Consequently, major efforts aimed at developing efficient and effective technologies to improve farm productivity have focused on high quality inputs (Ortmann, 2007). It has been widely recognized that lack of access to capital is a key constraint in smallholder farming systems in Southern Africa (Thirlwall, 2003). There is also a lack of storage facilities. A lack of storage facilities of all types places a severe constraint on marketing of agricultural produce in South Africa and this results in having heavy food produce losses, high food prices, and discouragement of farmers to increase production of these perishables (Machethe, 2004).

Smallholder farmers are constrained by agricultural tools used in the field which include hoes, spades and picks. Furthermore, the limited numbers of hand tools available are unserviceable and need replacement. There is also a lack of basic technical information in smallholder farmers on appropriate means of restoring and maintaining soil fertility as well as limited extension services to alleviate this to enhance South African agricultural prospects. Access to input and marketing services by smallholders is often weak. Thus many smallholder farmers are contracted by existing large scale farmers to produce for them, although the mechanism for encouraging this needs further exploration.

Government and private intervention may be needed where the markets fail to reach isolated or poorly organised smallholders and one-off grants to existing businesses for opening depots in smallholder areas might be the most efficient and sustainable approach (Pingali, Khwaja and Meijer, 2005). In some circumstances out-grower schemes, such as those

practised the sugar industry, can provide a range of services to smallholders, but affirmative action is necessary to ensure smallholders are empowered in the process (Thirlwall, 2003).

Input supply to smallholder farmers by the private sector has occurred on a limited scale and primarily limited to rural commercial centres catering for white farmers (Stroebe, 2004). Packaging and promotion of products has been directed at the two extremes of the large scale producer and the home 'hobbyist' gardener, and in the latter case high mark-ups have been the rule, making the cost of such inputs prohibitive for smallholders. Furthermore, as many smallholder producers are not registered as vendors, they are obliged to pay value added tax (VAT) on their input purchases. Value added tax exemption on small packages of agricultural inputs would make them more available to small growers. Market pressure is likely to encourage input manufacturers to supply in pack sizes appropriate for smallholders, but this also requires a retail network able to operationalize the demand (Thirlwall, 2003).

2.3 Summary of the chapter

This chapter examined the general constraints confronting smallholder farmers in South Africa. The key highlights of this literature are that smallholder farmers are faced with an array of problems in accessing markets in rural areas. There are a number of institutional and technical factors influencing marketing behaviour of smallholder farmers in the rural areas of South Africa and Sub-Saharan Africa. The chapter presented the role played by smallholder farmers and their contribution to the economy. The chapter highlighted most of the challenges these farmers face in accessing lucrative markets that could generate better incomes for them, these constraints included institutional and technical factors, and were discussed in detail.

The literature that was reviewed clearly shows that smallholder farmers have less wealth and/or access to credit markets and as result use much more labour input than capital input,

generating far more employment than their large counterparts. Smallholder farms provide employment for rural people and have a direct effect on poverty reduction as agricultural produce can be accessed easily from these farms. This means increased competition amongst producers. Even though the final result of such firm competition does not favour the smallholder farmers. Small farms are also important in terms of land ownership. Decentralized land ownership promotes more equitable economic opportunity for people in rural areas, as well as greater social capital (Rural development and Management Centre, 2005).

The literature reviewed has shown that smallholder farmers are finding it difficult to participate in the formal markets due to a number of institutional and technical factors. In order to access formal markets, there is need for institutional development and technological capacitation among these farmers.

CHAPTER 3

MARKET CONSTRAINTS FACED BY SMALLHOLDER FARMERS

3.0 Introduction

This chapter reviews recent changes in agricultural development and their implication on smallholder farmers. Agricultural marketing in developing countries plays an important role in both agricultural development and rural economy. The main issues reviewed include the role of market access in improving the welfare of smallholder farmers, the challenges faced by these farmers and how these challenges can be addressed for them to be sustainable. To gain insights on constraints faced in production and marketing of smallholder farmers in rural areas. The chapter highlights some of the al and institutional factors that affect market participation by smallholder farmers.

3.1 Definition of market access

The onslaught of globalization and liberalization has made the African economy more integrated with the global economy. With gradual disappearance of the protective shield, the domestic market has now been thrown open to international competition (Kees and Van der Meer, 2006). Consequently, African agriculture has profoundly changed its role in global markets and national economies. Economic reforms have forced the withdrawal of the state from agricultural/commodity markets (Rukuni and Eicher, 1994). Livelihoods have become increasingly commercialized in both urban and rural areas. Rural households are restructuring the ways they manage their economic activities and are transforming their social relations (Barret, 2008).

Access to markets in developing countries is becoming more difficult and therefore, is becoming of central focus to governments and development practitioners in the developing world (Reardon, and Gulati, 2008). The concept of market access, access to markets or

market linkages has as many definitions as practitioners and is used interchangeably. Some definitions developed by researchers include but not limited to the following;

“Market access is the concept that describes the sum total of all skills acquired through experience or training that enable a farmer to get and maintain regular customers to his/her produce. In other words it is a long term marketing relationship between a seller and a buyer” (Shepherd, 2007).

“This is a concept whereby producers of a certain product or commodity can sell to certain markets outlet/niche. The market outlet could be conventional market, specialty market, organic market or a fair trade markets. The linkage could be individually to a company or collectively through associations” (Poulton *et al.*, 2005).

The essence of market access concept is geared towards improving access. This improvement can be achieved through coordination of various actors and market players (sellers and buyers) and when necessary supported/facilitated by an external party. Market access has a lot of questions needing answers before interventions can be done by either internal or external organizations. Markets access involves a number of key issues on equity, poverty reduction, power differences between seller and buyer and risk of exclusion of smallholder farmers due to competition (Stockbridge *et al.*, 2003). Markets access also involves the focus to local, regional or international markets (Ferrand *et al.*, 2004).

3.1.1 The role of markets in developing countries

In most developing countries, smallholder farming is important in terms of poverty reduction, food security, employment creation and wider rural economic development. The importance of smallholder farmers derives from their prevalence, their role in agricultural and economic development and the concentration of poverty in rural areas of most African countries. Most

smallholders are vulnerable to economic and climatic shocks and spread their risk by diversifying their sources of livelihood, often including significant off-farm income generating activities (Barrett *et al.*, 2001). The perceived risk of these future changes is a strong disincentive to investment in agriculture. Investments in alternative crops and entering new markets that may provide them with better prospects can be extremely difficult due to the need for economies of scale and also the health regulations imposed by developed country markets. Many countries have agricultural policies and poverty reduction strategies that explicitly support the inclusion of smallholder farmers in both local and export markets (Humphrey, 2005).

In most of these countries, it is not the policy, as such, but the budgetary, technical and administrative implementation of the specific policies that enable smallholder farmers to fit in these markets and generate profits from their crop sales. Policy instruments and institutional arrangements have to be designed and built in a technically feasible and effective way for the objective of poverty reduction and food security to be reached in developing countries such as South Africa where the majority of the poor population (70%) is located in rural areas (Kirsten and Sartorius, 2002; World Bank, 2008). Understanding the pros and cons of these institutional arrangements or policy instruments is crucial to innovation and the policy design process that can be derived from what other countries implement in their own circumstances.

The interest in making markets work for the smallholder farmers is partly in response to changes in the global agricultural economy that are providing rural producers with both new challenges and opportunities. These changes include trade liberalization, increasing food safety and quality standards, and shifts in food consumption patterns by consumers in developed countries such as in the European Union (EU) and the United States of America (USA) (Narayanan and Gulati, 2002). One challenge that farmers face is the general long-

term decline in the real price of commodities, a trend that has been going on for over two decades and has been, in part, linked to the structural adjustments programmes and cuts in fiscal deficits under the umbrella of the Washington Consensus (World Bank, 2008). During this period, many developing countries such as Zimbabwe, Malawi and Zambia dismantled their State Marketing Boards that had previously exerted monopoly control over domestic trade and prices for agricultural commodities (Rukuni and Eicker, 1994; Jayne and Jones, 1997; Jiriyengwa, 2002; Fafchamps, 2004). One consequence was that farmers were no longer compelled to sell at prices set below the value of their produce on world markets. However, farmers had often relied upon the same marketing boards for accessing inputs such as seed, credit and fertilizer as well as extension and training services (Jayne *et al.*, 2010). In many cases, neither government nor the private sector has taken on these roles, and farmers in many of these developing countries have faced increasing prices for inputs and declining access to effective technical services (Umhlaba Rural Services, 2006).

As a result of rapid growth in demand from expanding urban populations in developing countries, food production systems can no longer be viewed simply as a way of moving basic food from farm to urban consumers. Smallholder farmers are now required to supply long and sophisticated market chains and market of processed and branded products to mainly urban consumers. In South Africa this has been very difficult mainly because of the number of constraints that these farmers face in accessing input and output markets (Magingxa and Kamara, 2003). This is further complicated by changes in the retail system due to growth and increasing concentration of supermarkets in both developing and developed countries (Reardon and Berdegue, 2002).

The reason for this sophistication entirely depends on the livelihood assets that these smallholder farmers have access too. The advantages of livelihoods thinking and

approaches are widely being used, including for example their stress on the importance of people-centred change, a holistic approach, and people's access to different assets, poor people's vulnerability, partnerships, sustainability, change and also the multi-faceted nature of livelihoods. The focus in this research is the gap in as much as the conceptualization and application of the 'livelihood approaches', namely a lack of markets for smallholder farmers and their roles in the livelihood development and poverty reduction in rural areas of South Africa. The role of markets and market relationships are not clearly shown in the livelihood analysis and action, thus it is very difficult to carry out an analysis of the livelihood opportunities and constraints arising from the critical market and also from institutional issues that are important for determining market development for the smallholder farmers (Jansen, 2006).

A more imaginative approach is required to allow smallholder farmers to access markets, a stronger understanding of the importance and nature of institutional development in economic growth is also necessary to contribute to market development. A sufficient condition will be to understand the social, political and technical processes that can lead to changes in smallholder farming in these developing countries especially in South Africa where smallholder black farmers have been marginalized from the main stream of commercial farming (Van Zyl, 1996; Machethe *et al.*, 1997).

In such a scenario it will be interesting to look at how external organizations can contribute to the success of linking smallholder farmer to markets thereby improving the farmers' welfare. It is important to look at activities that can be undertaken by farmers support organizations within smallholder farming sector to strengthen their capacities through understanding how smallholder farmer can be incorporated in high value chains in developing countries to generate remunerative income from markets by creating an enabling policy and regulatory

environment. This involves looking at the effectiveness of economic players such as farmer support organizations and institutions aimed at assisting smallholder farmers.

3.2 Institutional factors in agricultural marketing

In this section, the institutional factors which influence smallholder farmers' decisions in marketing their produce will be discussed. Institutional aspects and their role in marketing and economic development revolve around transaction costs, market information flows and the institutional environment. Generally, most smallholder farmers in developing countries are faced with high transaction costs, lack of market information and inadequate institutional support. These factors influence their decisions to participate in formal markets.

3.2.1 Institution defined

North (1990) and Hall and Soskice (2001), define institutions as 'rules of the game' defining the incentives and sanctions affecting people's behaviour. There are two distinct concepts which are the institutional environment and institutional (or contractual) arrangements (Davis and North, 1971). Williamson (1991, 2000) and Dorward (2001) argue that the interaction of these two (institutional environment and institutional arrangements) with property rights, information flows, transaction costs, transaction risks and market access failures for different market participants have failed to explain why smallholder farmers are unable to penetrate formal markets (Poulton *et al.*, 2005). Use of these concepts to examine institutional and economic development highlights high transaction costs and risks, weak information flows, and a weak institutional environment in rural economies of developing countries such as Ethiopia, Madagascar and South Africa.

Smallholder farmers particularly those with little political power or financial and social capital, thus face high costs in accessing information and property rights enforcement and this in

turn constrains access to profitable markets and hence economic and technological development are impaired (Kydd and Dorward, 2004). Micro-credit remains the domain of the Department of Trade and Industry or the Department of Agriculture in the case of smallholder farmers, where the entrepreneurial enterprise vision predominates. Meanwhile, the few South African micro-finance institutions that adopted a genuinely pro-poor approach, working to support smallholder farmers or non-entrepreneurial self-employment providing opportunities for “graduation” to entrepreneurial small businesses, where appropriate, remain outside the mainstream of promoting success of these farmers despite remarkable impact and even financial success.

The resultant low levels of economic activity among farmers lead to thin markets, high transaction costs and risks, and high unit costs for infrastructural development. The result can easily be a ‘low level equilibrium trap’ discussed by Jari (2008) in smallholder farming in Kat River Alice basin (Eastern Cape) South Africa. Another problem highlighted by Dorward and Kydd (2005) is how these processes such as institutional, technological and economic development break out of this and what roles different stakeholders have in promoting such development that will remove these smallholder farmers out of the poverty trap through improved access to profitable markets.

Like in many developing countries weak institutions have a negative impact on smallholder farmers. The origins of this is that while institutions play a pivotal role in addressing some of the challenges faced by smallholder farmers in most cases they have negative effects on smallholder farmers when it come to market access. The World Bank (2000, 2002) and IFAD (2001) emphasize the importance of institutions in economic development, but do not explicitly recognise the problem of the low-level equilibrium trap as outlined in Figure 3.1 or the fundamental co-ordination problems that exist under smallholder farming.

Market access is inhibited by economic and technological development among smallholder farmers in developing countries. According to Dorward and Kydd (2005) markets access is affected by weak institutional setup and high information costs that inhibit smallholder farmers. The result is usually low economic activity and thin markets as farmers are forced to sell their produce to less profitable markets as depicted in Figure 3.1.

Apart from weak markets smallholder farmers face high transactions costs and risks associated with marketing their produce. High information costs and weak bargaining powers contribute to the inefficiencies of smallholder farmers resulting in low income returns compared to commercial farmers or competitors from other countries.

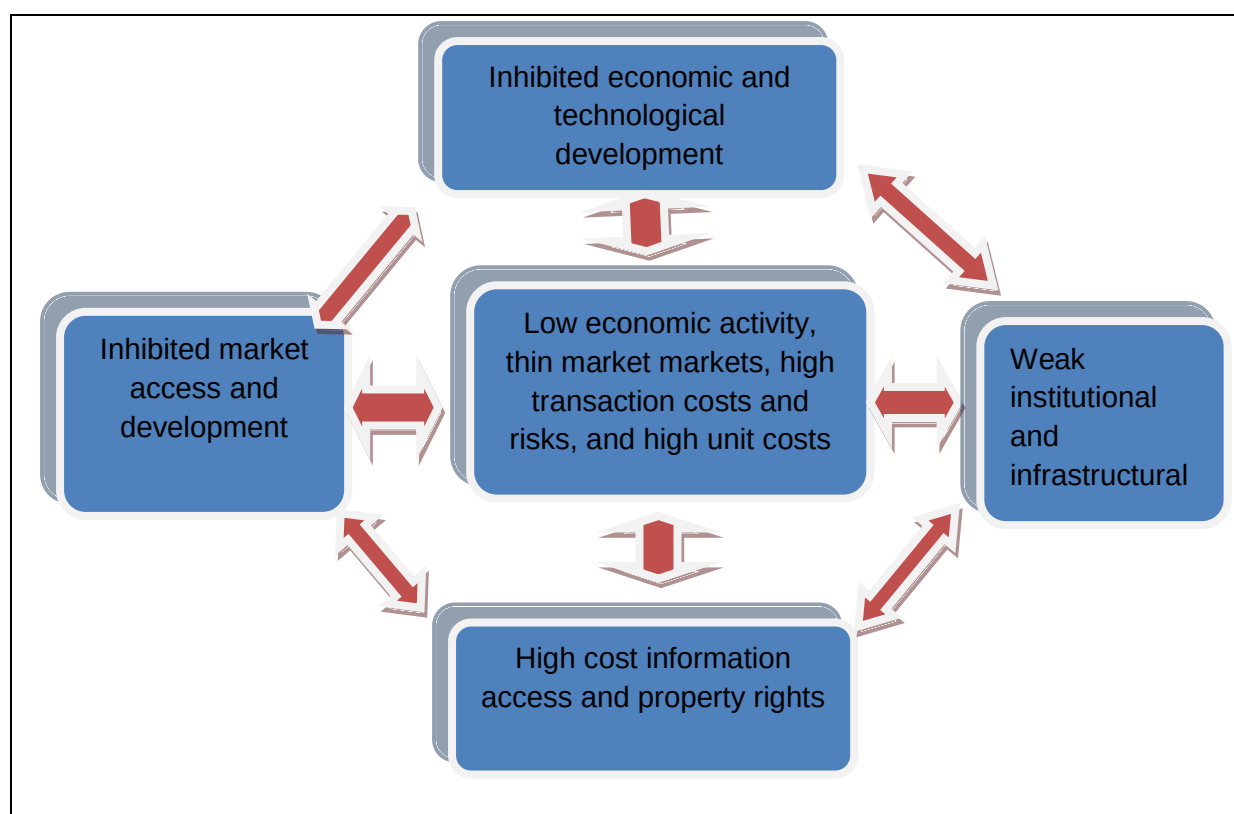


Figure 3.1: Institutions and the low level equilibrium trap in smallholder farming

Source: Dorward and Kydd (2005)

Attempts to tackle market failures will continue to prevail unless investors (government and private sector) have confidence that all the other failures in other markets are addressed at the same time, in ways that will not hold them hostage to opportunistic behaviour by other economic agents or by state agencies (Dorward and Kydd, 2002). Dorward and Kydd (2002) argue that weak institutions in rural areas of developing countries such as Zambia, Mozambique, Malawi and Zimbabwe are other factors that contribute to limited access to formal markets. In this regard, policies should be designed in such a way as to accommodate the institutional environment and clear roles of government and civil society in improving communication, property rights, the macroeconomic environment, and access to information to support neo-classical competitive markets (Kherallah and Kirsten, 2001). It is important that institutions are effective so that resources are allocated efficiently, co-ordinated and exchanged in an economical way in rural areas.

3.2.2 Markets as institutions

Markets can be grouped into informal and formal. In the agricultural context, Kherallah and Minot (2001) explained that informal markets embrace unofficial transactions between farmers and from farmers directly to consumers. In the case of South Africa, informal markets include selling products at farm gate or spot markets where transactions costs are high because smallholder farmers lack lobbies in the legal environment. As a result, rural trade thrives where trust has been developed on the basis of repeat transactions or informal relationships (Randela, 2005). Thus, the unfavourable legal environment creates a significant barrier to entry into formal food trade and limits participation by smallholders in the modern marketing system.

On the other hand, formal markets have clearly defined grades, quality standards and safety regulations and prices that are formally set (Henson and Jaffee, 2007). Smallholder farmers find it difficult to penetrate these formal markets and as such, are the focus of this research. According to Mangisoni (2006), smallholder farmers are constrained in marketing by high transaction costs, high risks, missing markets and lack of collective action. The evolution of the role of quality standards in shaping access to global value chains (and thus international trade) should be understood in relation to changing features of consumption in industrialized countries such as US and EU. Consumption in these countries is increasingly characterized by food or user safety awareness, the parallel processes of globalization and localization of consumer tastes, social and environmental concerns. This together with market saturation for goods with 'commodity' traits has stimulated product proliferation and differentiation among smallholder farmers in developing countries (Dollan and Humphrey, 2000).

Changes in the global market are affecting market access for agricultural products especially in remote rural areas. For instance, there is a reported increase in consumers' preference for supermarkets over local retail outlets in rural areas such as those found in the former homeland of Transkei in South Africa (D'Haese *et al.*, 2005). It has also been accompanied by an increased importance for issues of quality control, management, traceability and certification (Dries and Swinnen, 2004). In the world of 'mass consumption' of relatively homogeneous commodities, quality standards facilitated the emergence of economies of scale and the creation of futures markets (Daviron, 2002). In the current situation, quality standards are proliferating and becoming more specific. They also tend to focus (sometimes exclusively) on production and processing methods rather than on the product itself. Smallholder farmers in rural areas cannot produce good quality products because of the limited resources they own on their farms (Reardon *et al.*, 2001). Market

access can only happen if these farmers are supported by both financial and physical infrastructure on these farms to produce good produce.

Mangisoni (2006) further explains that transaction costs are linked to problems of licensing, absence of grades and standards, lack of marketing information, poor access to markets, weak entrepreneurial skills and high marketing margins. High risks, on the other hand, embrace lack of legal frameworks, weak policy environment, and high price volatility, while missing markets includes lack of value adding and agro-processing, weak infrastructure and lack of credit. Lack of collective action relates to weak farmer organization (Minot and Hill, 2007).

3.3 Overcoming marketing constraints in developing countries

It is generally believed that marketing as individuals is expensive when it comes to overcoming the transaction costs associated with production and marketing of agricultural products in rural areas of developing countries (Magingxa and Kamar, 2003). A number of studies have come to the conclusion that for smallholder farmers to increase their incomes and be food secure there is need for them to form groups and market their produce as producer organizations or cooperatives so that they can overcome these costs associated with searching and negotiations (Mazoyer, 2001). About 75% of the 1.300 billion people in rural areas still practice subsistence agriculture. Most of these farmers do not use any inputs such as hybrid seeds or chemical fertilizers to increase their yields. In addition to these challenges, low incomes and lack of capital of these smallholder farmers, marketing agricultural products especially from rural areas tend to be hampered by market imperfections such as imperfect information asymmetry reinforced by the geographic dispersion of agents and poor infrastructure and communication in rural areas (Magingxa and Kamar, 2003). These characteristics were particularly aggravated by the

withdrawal of the State from productive and economic functions when the private sector was still underdeveloped (Mazoyer and Roudart, 2002). Collective action can therefore be a way in which to address these constraints and mitigate the negative impacts of transaction costs. Globalization of food markets has led to competition and instability in markets as a result of food scares² in developed countries. Smallholder farmers need to enhance their competitiveness through increased productivity and ability to take advantage of economies of scale.

Markets in the developing world are characterized by pervasive imperfections such as lack of information on prices and technologies, high transaction costs and credit constraints. Moreover, the new procurement systems often expect larger supply volumes, favouring larger farmers. With the increasing number of free trade agreements affecting both national and international commodity markets, smallholder farmers are forced to compete not only with their local peers, but also with farmers from other countries as well as domestic and international agribusinesses. Rapid changes in the organization of markets are taking place in the developing world, with public marketing boards being dismantled; wholesale markets are losing their space and supermarkets chains are spreading from developed to developing countries. Reardon *et al.* (2003), states that the number of supermarkets in Latin America, East and Southeast Asia, Central Europe and Eastern and Southern Africa are continuing to increase and smallholder farmers have to compete to be in these supermarkets. In South Africa, for example there is the Johannesburg Fresh Produce Market (JFPM) which is the largest fresh produce market in Southern Africa and an important outlet for smallholder farmers from the Limpopo Province and elsewhere. The JFPM is involved in training

² Farmers are now faced with new constraints that include knowledge of acceptable agricultural practices, capacity to comply with market and regulatory requirements, new issues of conformity assessment and traceability of their products (Reardon and Berdegue, 2002; Balsevich *et al.*, 2003).

extension officers in production and marketing activities so that they are able to disseminate market information (such as prices, packaging, product quality, storage, delivery times, and market agents) to farmers in areas as far as 300km away in Limpopo Province (Baiphethi and Jacobs, 2009).

3.4 Marketing channels for smallholder farmers

Smallholder farmers to be included in the changing mainstream agro-food markets they are required to be able to maintain their participation by adapting their technology, management and organisation, having the required financial resources, and continually transforming to keep up with changes in the supply chains. Therefore small-scale farmers find it extremely difficult to infiltrate the restructuring market channels and have to develop and explore other markets strategies (Jordaan *et al.*, 2008).

As illustrated in Figure 3.2 four market channels that smallholder farmers may explore as well as the fact that ease of entry into these channels increases as the option moves from contractual arrangements to spot market strategies. This ease of entry associated with traditional markets explains why smallholder farmers can better often restrict only to this option. Small-scale farmers can be better access the restructuring market channels were contracting and vertical integration and coordination are rife only if they work together to reduce transaction cost.

According to the study by Bienabe *et al.* (2004), there are various initiatives that can be taken to connect smallholder farmers to markets. Findings suggest that producer organisations have an important role to play in strengthening farmers' position in traditional and new markets (such as fair trade) as well as in building their capacities (improved access to services and training). They also played an important advocacy role with authorities to

foster the development of policies that are favourable to smallholder farmers. All of these are especially important to meet the quality and quantity barriers that are associated with a lack of infrastructure and resources. Figure 3.2 shows that farmers can benefit from different market channels that are different from one another in terms of restrictions offered by the different channels with regard to quality demands.

Weatherspoon and Reardon (2003) also acknowledge that farmers need to gain a foothold in the supermarkets to secure their future, or risk extinction as supermarkets favour imports and established suppliers. Weatherspoon and Reardon (2003) state that in order to compete, smallholder farmers need to expand their productive capacity, ensure consistent supply and quality, and strive to adhere to supermarket and international grades and standards. The authors further subscribe to the wisdom of collective marketing as a means of accessing the supermarkets and meeting their needs. While this might be promising for smallholder farmers in South Africa, supermarkets are making contractual arrangements with small producers by promising them technical assistance to produce good quality food for the supermarkets. In the Eastern Cape, the role of supermarkets in promoting the economic growth of smallholder farmers' was shown to have a great impact by improving livelihoods of smallholder farmers by a study carried out by D'haese and Van Huylenbroek (2005).

While there are many marketing channels for smallholder farmers', supermarkets are now the central focus in terms of buying produce from farmers. In Africa supermarket chains are increasingly taking advantage of small/smallholder farmers to market their products and collaborate with development programmes that assist farmers to improve their quality and prospects of becoming commercial farmers in both local and international markets.

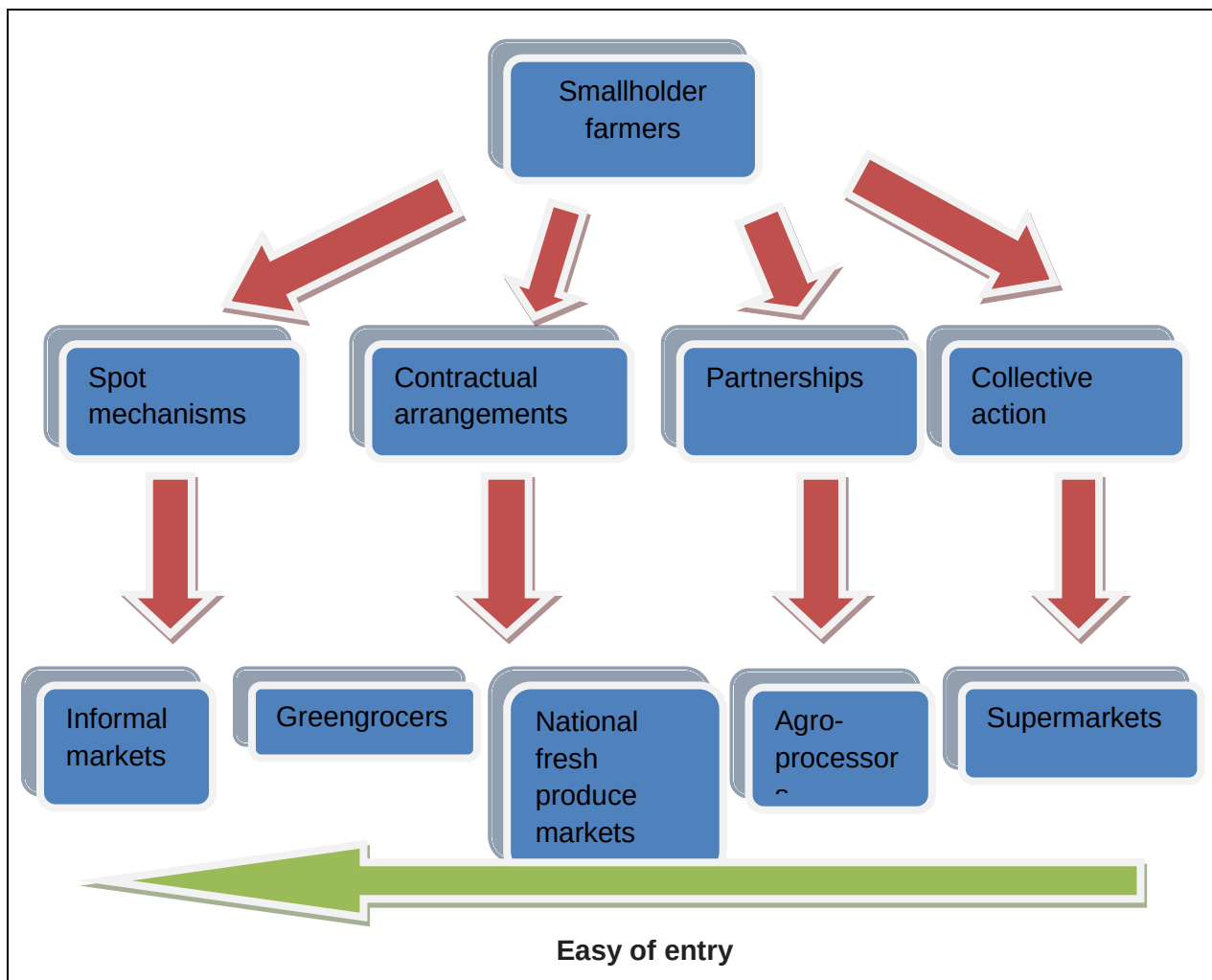


Figure 3.2: Marketing channels of smallholder farmers

Retailer shops play an important role since they support and investment in smallholder farmers. The supermarkets assist the farmers with infrastructural developments and subsequent community development and ensure a reduction in transaction costs. Weatherspoon and Reardon (2003) cite a successful case of a farmers' association in Montagu in the Western Cape Province that offered development support to sell butternut squash to Pick n Pay and suggest this type of collective marketing as means of helping farmers to meet the required grades and standards, and supermarkets to reduce the transaction costs associated with dealing with several small suppliers. These studies provide sufficient context and background to discuss the case study of a South African supermarket

chain that offers market opportunities for small growers through a combination of vertical integration mechanisms and horizontal coordination through farmers' associations (Louw *et al.*, 2007).

3.5 Can producer organization be a panacea to markets access?

There is increasing evidence from both research and practice that one way for smallholder farmers to overcome market failures and maintain their market position is through organizing into farmer groups or producers organizations (Markelova and Meinzen-Dick, 2009). Bienabe *et al.* (2004) also confirmed that “collective farming” or “collective action³” better positions smallholder farmers to reduce transaction costs for their market exchanges, obtain necessary market information, secure access to new technologies, and tap into high-value markets, allowing them to compete more effectively with large farmers and agribusinesses. The positive impact of marketing cooperatives on smallholder farmers market access involve the implicit cost-saving and risk-sharing devices of collective marketing especially for farmers who belong to these cooperatives, as supported by numerous studies (e.g. Bonin *et al.*, 1993; Helmberger and Hoos, 1995). On the other hand, potential reasons underlying the insignificant impact of all cooperatives on farm output to market access involve the ‘defensive’ attitude, related to prevalent rent-seeking behaviour, typical of non-marketing cooperatives.

Producer groups can simplify long marketing chains by connecting smallholders directly to markets, bypassing various marketing intermediaries. Thus, one of the main questions regarding market access is how to improve the farmer's competitiveness. Bourdanove (1991), defines competitiveness as the capacity to improve market position, it covers cost reduction strategies which can be achieved through economies of scale, input provision,

³The term collective action is used in the sense of “voluntary action taken by a group to achieve common interests” (Meinzen-Dick and Di Gregorio, 2004)

technical assistance or commercial logistics. The importance of farmer organizations is that they help farmers to negotiate or bargain as a group rather than as individuals. Stringfellow *et al.* (1997) and Stockbridge *et al.* (2003) argue that smallholder organizations are important for developing negotiation skills, power and political representation which are critical for smallholder farmers to participate in the improvement of their institutional environment. Social and local networks can give smallholder farmers flexibility and know-how, which facilitates learning by doing and learning by using and hence, the emergence of innovations. Sharing the same historical experiences and local identity of a relevant territory and building on local social capital, these local agri-food chains can under score some conditions that generate economies of scale, minimize transactions costs and trigger collective action, resulting in more sustainable market access for smallholder farmers (Roche *et al.*, 2004). An example of such is sugar smallholder producers in KwaZulu-Natal have since organized themselves and formed some producer organizations. Their sugarcane is collected by a sugar-milling company at designated places in rural areas in the province. These farmers are located in Umkhanyakude District Municipality and are assisted by Umfolozi Sugar Milling Company (USM) which collects the sugarcane to the mill. There are many success stories of farmer organizations leading to active and effective farmer participation in value chains, e.g. in the case of coffee producers in South America (Hellin and Hignman, 2003). One of the better known is the milk industry in India where more than 70 percent of India's milk is produced by households who own only one or two milk animals, and these producers form part of a nationwide network of dairy cooperatives (FAO, 2004). While the main role of marketing cooperatives is to reduce transaction costs and improve bargaining power of smallholders vis-à-vis the market, the role of cooperatives is to reduce transactions costs and increase bargaining power of smallholders vis-à-vis the state and the various support services these cooperatives receive from various NGOs,

private sectors and also from government incentives provided to farmers. Some of such services provided by farmer organizations according, to Stockbridge *et al.* (2003).

- Marketing services (input supply, output marketing and processing, market information)
- Facilitation of collective production activities
- Financial services (savings, loans and other forms of credit)
- Technology services (education, extension, research)
- Education services (business skills, health, and general)
- Welfare services, (health, safety nets)
- Policy advocacy
- Managing common property resources (water, pasture, fisheries, forests)

There is often too much excitement about these farmer organizations; however, at times it obscures the fact that the process of establishing viable organizations is not a simple one.

The success and effectiveness of these groups depend on certain factors such as group size and composition, types of products marketed and types of markets targeted, external environment, and the institutional structure chosen. In most cases, facilitation by an outside agent from the private, public, or civil society sector is also necessary to catalyse and support both collective action and market development (Shepherd, 2007). Without these factors in place, collective marketing may not be a realistic goal for a group of smallholders.

Literature on markets access for smallholder farmers has come to the conclusion that forming cooperatives or marketing as group is not a “silver bullet,” or “fit for all” which is applicable and replicable in all situations in developing countries for rural development.

Smallholder farmers are dynamic in nature and their decisions are based on various factors such as resources available to farmers, education level and social capital. Many case studies demonstrate that collective marketing often becomes difficult for farmers especially when it comes to sharing a common goal especially when it comes to marketing and thus most of these projects collapse or fail to market their products. The issues of creating and sustaining incentives and determining the appropriate level of outside assistance may add to the high physical costs that are involved in organizing farmers around marketing. In addition, the possible negative effects of group marketing on the non-participants (such as higher prices for inputs, limited market access, lower prices for outputs, failure to access credit) indicates that collective action may not be able to make all markets work for all poor.

Despite the potential gains from collective action, individual cooperative behaviour may not be translated into collective action unless other potential beneficiaries agree to cooperate and do likewise. Many studies have highlighted that the presence and assurance of trust between and among individuals facilitate the potential for reciprocity and emergence of cooperative behaviour (White and Runge, 1995). Figure 3.3 shows how trust relationships can contribute to group members to be effective in accessing markets for the products they sell. People's actions in a group can determine how successful they are and also how they can improve the quality of produce for market.

Some issues, for example trust, are much more important, especially in the African context where collective action is more prominent. The New Institutional Economics (NIE) still focuses on rationality and ignores issues such as trust. It follows, thus, that interventions which enhance trust among members in a group, including laws of engagement and operational democracy, are likely to contribute to successful collective action. The functional orientation of farmer groups and their internal features are also important determinants of the success of farmer organizations (Coulter *et al.*, 1999). Similar to findings in literature

suggests that smaller marketing groups have higher internal cohesion because it is easier to monitor other members.

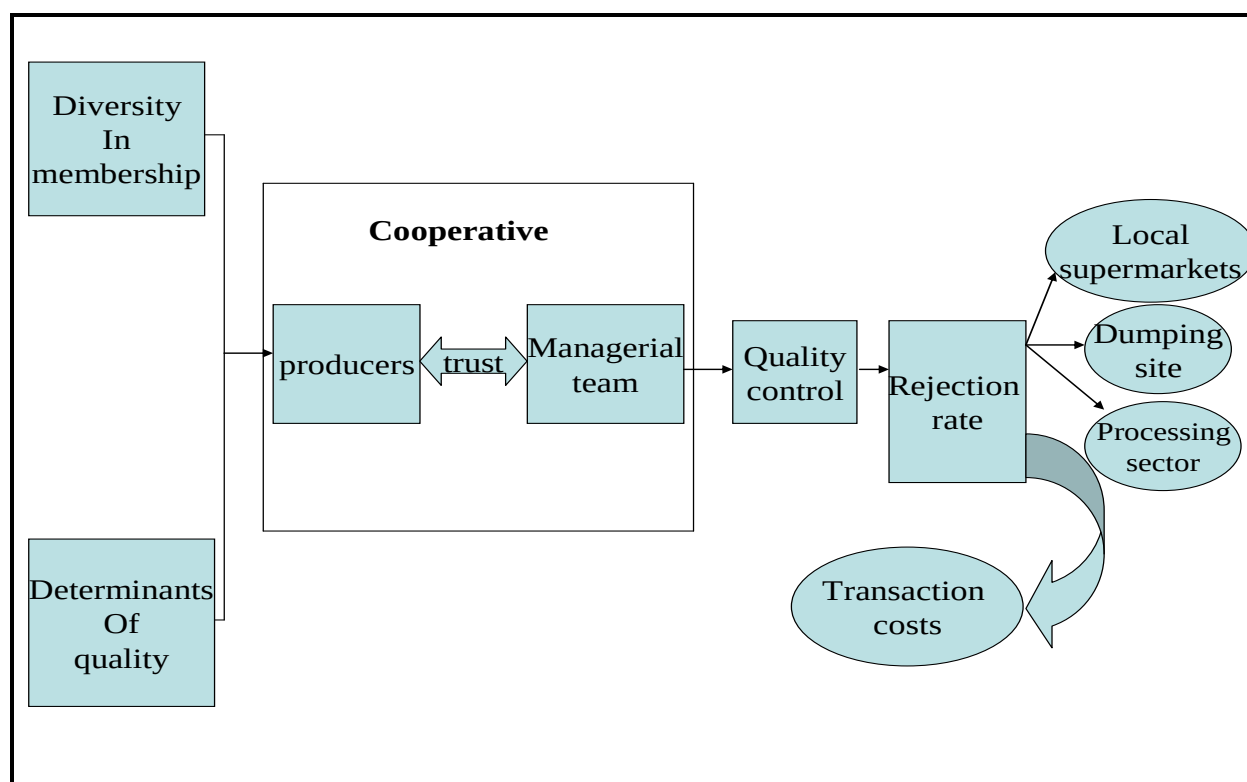


Figure 3.3: Framework showing how market access can be improved in smallholder farming

In most cases, successful collective marketing group size range between 20-40 members. However, larger groups are more likely to achieve economies of scale. Federated structures can build up on the small group dynamics, but also take advantage of scale economies. On the other hand, larger groups may be less successful than small groups in furthering their interest but only up to a certain level. This is mainly because the transaction and managerial costs of cooperation increase faster than the gains as group size increases beyond a certain level (Hussi *et al.*, 1993), which means that optimal group size will depend on the type of activity and the features of the group.

These farmer groups are normally associated with people with different ethnic and cultural backgrounds, thus the internal composition plays a significant role in participating in these farmer groups. On one hand, evidence shows that groups with members of the same socioeconomic status are more stable and effective. On the other hand, internal differentiation in terms of age and wealth may allow for the natural evolution of leadership in a group. Most studies have shown that shared norms and values, which often arise as a result of prior involvement in groups and networks, is another enabling factor for groups' success (Coulter *et al.*, 1999). Marketing groups that build upon experiences of working together in the past for other purposes have an advantage in terms of trust and cohesiveness. Finally, a group will be more likely to succeed if its group leaders are knowledgeable and skilled in collective enterprise, and motivated and trusted by other group members.

3.6 Creating an enabling environment for smallholder farmers

To enable farmer groups or individual farmers to compete in markets effectively, certain "basic needs" have to be put in place. These should include improving rural infrastructure, providing extension services, making credit markets accessible to the poor, and making relevant market information available. Since the main challenge for smallholders to engage in markets is high transaction costs, such interventions would lower the costs for farmer groups to participate in markets, creating additional incentives for them to organize around an appropriate marketing activity. In addition, simplifying the registration process would facilitate the smooth formation and operation of a group in situations where formal registration is required to access inputs and services.

Some studies have highlighted that these smallholder farmers require people or experts that can train them on financial and technical issues on the farms to smoothen the process of accessing markets. In the citrus industry in South Africa, citrus smallholder farmers have mentors. A mentor is a kind of person that assists these smallholder farmers in achieving

their goals on these farms. Mentorship is described in different ways, among them it is a process of forming a relationship between a more experienced, seasoned and wiser (mentor) and a less experienced person (mentee), where the mentor assists the mentee to achieve specific goals or develop a specified capacity. In the normal rural situation mentoring takes place in an informal way amongst neighbours and friends but in the programme's case mentoring has been formalized into a structured programme.

This programme has seen smallholder farmers being assisted with production, marketing, research and extensions services, supply of inputs and entrepreneurship skills. According to Meinzen-Dick (2009), they have another category of assisting these farmers which involves identifying a person who is a facilitator, or a "chain champion," who is important in helping farmer groups to access profitable markets. This facilitator can serve as a catalyst for collective action around marketing by providing information and technical assistance as well as building managerial and entrepreneurial capacity of the group. Such a facilitator may even enable the farmers to renegotiate power relations along the value chain by introducing marketing and institutional innovations, which involve redefining roles and objectives, finding new ways to market a product, and accessing sources of funding and training opportunities. This individual would smooth the processes by which farmer groups overcome barriers to entry, such as low technical and organizational capacity, informational asymmetries, and often financial constraints. On other issues, these mentorship and facilitation programmes have a comparative advantage in that they allow smallholder farmers to enter high-value products and be competitive through these skills that they acquire from their mentors or facilitators.

In most cases this facilitation or mentorship exercise is normally done by the state and its agencies, by members of civil society, donors, or even by private firms. The World Bank through its efforts to assist smallholder farmers has tried to bridge the market imperfections

by allowing the private and public sector to enhance opportunities for the poor in markets and make the market systems more inclusive and integrated (World Bank, 2002). However, success depends on their ability in conveying market information, coordinating marketing functions, defining and enforcing property rights and contracts, facilitating smallholder competitiveness in markets and more critically in mobilizing smallholder farmers to engage in better paying markets (World Bank, 2002).

While it might be very difficult to engage smallholder farmers into high value chains, it has always been observed that exogenous organization such as non-governmental organizations (NGOs) may be better suited to promote collective action processes around marketing rather than providing services or direct financial assistance (Shepherd, 2007). These organizations can offer more to rural development which would also work “on the ground” and may understand the context, especially in terms of the existing social capital, that would provide the basis for marketing groups. Therefore, the participation of all three sectors such as the public, private and civil society may be necessary for a group of smallholders to participate effectively in markets. Thus it is important to look at institutional arrangements among state agencies, companies, NGOs, and producer groups that would take care of various relationships along a commodity value chains and ensure the timely provision of funding and business development services for smallholder farmers.

3.7 Structural changes in smallholder agricultural in developing countries

While most of the changes in agricultural and food markets are taking place in the developed countries, they have far-reaching implications for agricultural development efforts in developing countries (Kirsten and Sartorius, 2002; Kherralah *et al.*, 2002). Lack of information on prices and technologies, lack of connections to established market actors, distortions or absence of input and output markets, and credit constraints often make it difficult for smallholder farmers to take advantage of market opportunities. The tightening of

quality and food safety standards in high income markets is causing new (non-tariff) barriers such as phytosanitary and sanitary and GlobalGap⁴ (Unnevenhr, 2000; Augier *et al.*, 2005). Some empirical studies find that the reorganization of the global food supply chains have led to a shift from smallholder production to agro-industrial production, thereby excluding smallholder farmers from profitable trading opportunities and resulting in negative welfare effects (Dolan and Humphrey, 2000; Maertens and Swinnen, 2008). High transaction costs faced by smallholders due to their small scale exacerbate these challenges, especially in quality conscious and niche markets (Poulton *et al.*, 2005). Access to these markets often requires expensive third party certification, which in turn may be a barrier to smallholder participation (Barrett *et al.*, 2001).

According to Reardon (2000), the transformation of the food industry sector, spread of supermarkets, changes in the procurement system, modernizing of processing presents a big opportunity for smallholder farmers that are capitalized and organized. However, the food industry firms do not like to buy directly from individual small farmers (too much transaction cost); hence, options are the brokers/wholesalers, contract farming, and small farmers' organizations or cooperatives. Barrett *et al.* (2001) findings confirm that the problem of market access has also been due to lack of follow up investments by farmers and government, coordination problems among farmers and poor management of these farms. Smallholder farmers lack resources such as business and negotiating experience and the collective organization to give them the power to interact on equal terms with stronger market chain actors (Magingxa and Kamar, 2003).

⁴ GLOBALGAP, formerly known as EUREPGAP, is a global partnership of voluntary members, bringing together likeminded parties with the shared vision of harmonizing Good Agricultural Practice (G.A.P.) world-wide (Reardon and Farina, 2002).

Most of these farmers cannot qualify into these high value chains because of the requirements they need to meet before they market their products. In the past decade, about 80% of the farmers have failed due to lack of investments in farming, coordination problems, free-rider problems, and poor management. Possible solutions would be to neutralize free riders and improve management and information.

Thus, the integration of agriculture, and predominantly small-scale farmers, into high-value markets must be seen alongside on-going and well-established processes of commercialization and the structural transformation of agricultural supply chains; what has been termed 'agro industrialization'. Such processes, according to Poulton *et al.* (2005) are characterized by:

- Increased use of purchased inputs for production.
- Increased post-harvest activities such as agro-processing, and distribution to geographically dispersed markets.
- Institutional and organizational changes in relationships between agribusiness firms and farms.
- Changes in farming practices resulting from shifts in product composition, technology and productivity.
- Changing market structures and relationships along the supply chain.

The processes of structural transformation generally commences with the intensification of agricultural production through the increased use of new on-farm technologies and investments, along with complimentary improvements in market infrastructure and institutions, including input supply and output marketing and processing (Poulton *et al.*, 2005). With increasing urbanization, distribution and marketing systems need

to be established that assemble, process, sort and transport agricultural and food products to markets that are distant from the location of production, thus integrating smallholder farmers into high value chains. These structural changes that take place in order for smallholder farmers to access markets vary from one farmer to the next. This depends on the farmer's assets and level of technology on the farm. There have been a number of such transformations which triggered the gradual shifts in demand, infrastructural and/or technological conditions. There has been a shift from consumer demand, down-stream supply chains and wider institutions are rapidly evolving and in different ways to meet different markets. Agro industrialization has been seen as not the only response to globalization and induced institutional and technological change, but also an agent of wider economic and social processes of transforming agriculture in developing countries (Dorward *et al.*, 2002). These changes also mean that the transformation of traditional agriculture is likely to proceed quite differently, and also at a faster pace, than has been observed in many developing countries to date, or indeed historically in industrialized countries (Kydd and Dorward, 2004).

The level and nature of the integration of agricultural producers into high-value market for fresh fruits and vegetables and food products reflects an established and evolving resource endowment both internal and external to agricultural production (Figure 3.4). Thus diversification is high in subsistence agriculture because of insecurity of smallholder farmers in one crop, but as for specialized agriculture or commercial agriculture, diversification is low as they have the sophisticated equipment to grow their crops and also there is use of irrigation to supplement crops in times of dry spells. Smallholder agriculture is basically constrained by primary resources such as land, capital and labour, thus farmers have to strike a balance on the crops that they grow to meet household food security. Markets are only accessed after household needs have been met (Shackleton *et al.*, 2001).

Rural households in developing countries are looking for diverse opportunities to increase and stabilize their household incomes through agricultural production and also being employed on white commercial farms as labourers.

3.7.1 Diversification by smallholder farmers

Smallholder farmers in developing countries play a crucial role in agricultural and economic development and reducing poverty in rural areas. Most smallholder farmers are vulnerable to economic and climatic shocks and spread their risk by diversifying their sources of livelihood, often including significant off-farm income generating activities (Barrett *et al.*, 2001). People in rural areas do not solely rely on agriculture for their livelihood but on a diverse array of activities and enterprises (Chapman and Tripp, 2004). The extent of dependence on non-farm income sources varies across countries and regions. Figure The perceived risk of these future changes is a strong disincentive to investment in agriculture. Investments in alternative crops and livestock and entering new markets that may provide them with better prospects can be extremely difficult due to the need for economies of scale and also the health regulations brought by European countries (phytosanitary and sanitary issues) (Reardon *et al.*, 2002). Many countries have agricultural policies and poverty reduction strategies that explicitly support the inclusion of smallholder farmers in profitable markets.

In South Africa, most rural households depend on social grants though this has not been documented in detail. The government of South Africa continues to support these people through seven different grants. While a number of South African people in rural areas rely on social grants, food security is still a challenge at household level (Monde, 2003). In countries such as Tanzania most of the people residing in rural areas on average derive their household income from crops and livestock and the other half from non-farm wage employment, self-employment and remittances (Ellis and Mdoe, 2003; Chapman and Tripp,

2004). The proportion of non-farm income was higher for upper income groups than for the lowest income groups. The poorest households were therefore more reliant on agriculture; a reliance which decreased as non-farm activities increased.

Subject matter		Internal and External Resource Endowments	
Diversification		Low	High
	High	Subsistence Agriculture	Market-Oriented Diversification
	Low	Local Low-Value Market Focus	Specialized Agriculture

Figure 3.4: Agricultural diversification and resource endowments

Source: Rao and others 2004

Thus, it is not surprising that the degree of integration, and the manner in which this occurs, will differ among the smallholder farmers. It is most likely to find sub-systems of agricultural production that are fully-integrated into high-value markets (largely the upper right-hand quadrant in Figure 3.4, alongside sub-systems of subsistence or semi-subsistence production, or producers that supply local low-value markets (the left hand two quadrants in Figure 3.4). At the same time, the speed and path of integration of smallholder producers into high-value markets will be influenced by the number of years in existence or the level of production that they produce and to which market they supply (Aliber and Hall, 2011). Like in the case of citrus farming, citrus is a specialized crop that requires a lot of investment in terms of inputs and marketing infrastructure to meet the demand of international customers. Most citrus smallholder farmers in South Africa do not have this infrastructure to export their citrus produce. Citrus smallholder farmers market their produce via white owned pack houses and through the assistance of export agents. In other countries such as Ethiopia,

Madagascar and Kenya where the farmers produce fresh fruits and vegetables (green beans), most of these farmers export their crops through supermarkets based in Europe (Dries *et al.*, 2004). Because of the risk of uncertainty in agriculture smallholder farmers tend to grow a number of crops as insurance that when one crop fails they are able to survive on other crops or livestock that will have survived.

Supply chains to high-value agricultural and food markets differ significantly to those for most traditional commodities and to local low-value markets, both in terms of the nature of the products handled and both vertical and horizontal structure and organization. This poses new and great challenges for agricultural producers attempting to gain or maintain access to markets for high-value products, which are heightened by the fact that the associated supply chains are themselves evolving rapidly due to changes in the global markets such as sanitary and phytosanitary standards including the recently introduced GlobalGap rules. Certainly, many of these challenges relate less to production issues that are predominant for most traditional agricultural commodities and more to the ability to perform on-farm and off farm tasks required of supply chains partners. This emphasizes the need to contextualize agricultural production in the wider supply or value chain, focusing as much on the linkages between technologically-separable stages or segments as on the management of processes within each stage or segment.

3.8 The role of supermarkets in enhancing market access for smallholder farmers

The increased rise in supermarkets has brought about new constraints for smallholder farmers in both developing and developed countries (Dries *et al.*, 2004). The increase in supermarkets has been a result of the ever changing quality demands by consumers in the EU and US markets who are so particular about how their food is produced. In developing countries there has been an increase in supermarkets and a rapid change in the organization of marketing channels. Until recently, food products characteristics are now

determined by consumers and not the producers through traders, supermarkets and agro-industries (Reardon and Berdegue, 2002). Furthermore the rise in supermarkets tends to result in most countries in the establishment of centralised buying and distribution centres with the first being concomitant shifts from the traditional brokers to new specialized or dedicated wholesalers like the JFPM and the second being a decline of traditional wholesale systems (Dries *et al.*, 2004).

The emergence of supermarkets in developing countries has changed the way smallholder farmers supply their products. The growth of supermarkets in the food retailing industry has resulted in supermarkets changing sourcing and procurement practices and policies. South Africa is among the countries that have largest number supermarkets after Latin America, South East Asia and East Central Europe and the Africa (in which South Africa has the largest supermarket). These are dominated by large central procurement systems that are used to procure fresh produce from a limited number of smallholder farmers in distant rural areas. The procurement decisions and practices of supermarkets are complex in nature and may be influenced by many factors both economic such as reducing transaction costs, determining the appropriate payment period and increasing efficiency in the supply chain and non-economic factors such as forming long term trust based relationships with smallholder farmers, suppliers of inputs and ethical trade requirements (Louw *et al.*, 2006).

The development of supermarkets in developing countries has shown that there is need for trust among the different key players in agriculture. Supermarkets' procurement practices for both fresh and processed foods are often influenced by price and continuous supply of consistent quality and volume from these smallholder farmers. Supermarkets and wholesalers' have strict requirements relating to volumes, quality, food safety systems, consistency and year round supply making it difficult for smallholder farmers who do not have the resources to produce the quality required by supermarkets (Meinzen-Dick, 2009).

There is an increasing likelihood that smallholder farmers (especially emerging black farmers), that are now entering commercial agriculture after years of social, political and economic exclusion, can once again be excluded and marginalised as supermarket chains tend to favour established and larger producers that can comply with their requirements. Most of these requirements include production methods that do not meet the standards of the both local and export markets (especially supermarkets in the EU and US countries).

Many analysts have attributed this problem of poor quality from smallholder farmers as the skewed distribution in infrastructure provision between white and black areas, the fall-outs of recent reform measures instituted since 1994 when South Africa attained its democracy, and the fact that post-settlement support to the land reform beneficiaries has failed to address the urgent capacity constraints of individuals who may be entering farming for the first time in their lives (Van Zyl and Binsgwanger, 1996; Lahiff, 2005; The De Klerk Foundation, 2007). It is now increasingly recognized that the crucial post-settlement support necessary to overcome this disadvantage was either completely absent or so badly structured that it was irrelevant (Louw *et al.*, 2008; Kherralah *et al.*, 2002).

Studies by D'Haese and Van Huylenbroeck (2005), and Reardon and Berdegue (2002) have shown how smallholder farmers have been included, in some cases, and excluded, in other cases, from high value chains because of the quality and volume of their produce. D'Haese and Van Huylenbroeck (2005) explored the effect of supermarkets on expenditure patterns in two villages in Transkei area of South Africa and found that the communities support local supermarkets more than farmers' markets. Findings from this study showed that supermarkets provided lower prices to consumers than local shops and local growers and were unable to compete with them. Reardon and Hopkins (2006) confirmed these findings when they established that the spread of supermarkets led to a decline in the traditional retail sector.

While this might be the case in South Africa and the rest of other developing countries, smallholder farmers are still failing to access profitable markets. Supermarkets can offer better opportunities to smallholder farmers since they are now spreading from urban areas to rural areas. The line of argument is that supermarkets are no longer located where the rich people stay but are now spreading to even much smaller towns where the rural people are located. This has happened in response to a number of forces, many of them interconnected: rising incomes (also associated with higher ownership of assets such as fridges and cars which facilitate supermarket shopping), urbanisation, more female participation in the labour force (increased opportunity cost of time) and the desire to emulate Western culture, spurred on by the globalisation of the media and advertising (linked in turn to the globalization of food manufacturing and the promotion of its products as well as of fast foods and soft drinks). Smallholder producers can greatly benefit from these upcoming markets and they can form some groups or cooperatives and market their produce together to cut down on transaction costs. The benefit of linking smallholder farmers to supermarkets such as Shoprite, Pick 'n Pay and Spar in the case of South Africa is that these smallholder farmers can secure contracts and have a market for their produce. At present, the only supermarket that is accepting fresh fruits and vegetables from smallholder farmers is SPAR, since it allows black smallholder farmers to supply products even without a contract.

3.9 Summary of the chapter

Smallholder farmers are faced with institutional factor that affect market access. The chapter has highlighted the role that is played by smallholder farmers in an economy, including their potential contributions. The chapter addressed issues on structural changes in smallholder farming and how these contribute to an enabling environment for farmers to access better

paying markets. The chapter went on to discuss why smallholder farmer diversify to reduce poverty and risk of losing all their crops and livestock. It also discussed how economic growth can be promoted by allowing smallholder farmer to organize themselves to overcome these challenges in rural areas.

The chapter revealed that despite many challenges that smallholder farmers are facing in South Africa and other developing countries, there is growing support from supermarkets for local procurement of their produce. Smallholder farmers can either form co-operatives or find alternative marketing channels that accommodate what they produce on their farms

Despite the significant role of informal markets, government has no policies or programmes to enhance smallholder capacities to supply these markets. The study suggests that informal markets channels (roadside and farm gate) should not be overlooked by policy makers and development practitioners. Informal markets can play an important role in the rural population with respect to enterprise development, job creation, food security and income generation.

The literature highlighted that smallholder farmers are finding it difficult to penetrate the formal markets due to a number of institutional and technical factors. In order to access formal markets, there is need for institutional development and technological growth among these smallholder farmers.

CHAPTER 4

FARMER SUPPORT ORGANIZATIONS IN SMALLHOLDER FARMING

4.0 Introduction

In developing countries agriculture is the economic backbone of most rural areas. Depending on a country's level of advancement in the economic sphere, agriculture contributes to overall economic growth by creating jobs, supplying labour, food, and raw materials to other growing sectors of the economy; and helping to generate foreign exchange. Despite these significant contributions, however, rural areas are the most marginalized in most parts of developing countries. They are characterized by poverty, food insecurity, unemployment, inequality and lack of important socio-economic services. Chapter 4 looks at how farmer support organizations can contribute to reduction in rural poverty through market access especially in smallholder agriculture. This chapter begins by a brief background of farmer support organizations and then followed by different types of support programmes and services that these smallholder farmers have been receiving and how these programmes have contributed to their livelihoods. To contextualize this chapter the study refers to Vink and van Rooyen (2009) who claim that smallholder production has declined over the past 10 years and that the divide between smallholder and commercial farmer productivity levels appears to be growing due to the post-colonial support that prevailed in the past.

4.1 Brief background of farmer support programmes in South Africa

Literature on farmer support programme (FSP) states that it was started 1986 to assist those small-scale farmers or rural households to improve on their agricultural production in the former homeland areas (van Rooyen, Vink and Christodoulou, 1987; Singini and van

Rooyen, 1995). The farmers support programme was introduced by the Development Bank of Southern Africa (DBSA) as an initiative to address constraints faced by farmers in these rural areas (Kirsten and Van Zyl 1998). The farmers support programme was an instrument designed by the government to alleviate poverty and improve economic development and growth (Nel *et al.*, 1997; Ngqangweni, 2000). The farmers support programme was designed specifically address the inadequate support to small/ emerging producers by providing farmers with access to land, water, markets, finance, communications infrastructure, education and skills development facilities.

One of the grounds on which the approach to FSP was introduced was to help smallholder farmers to overcome poverty through agricultural production in rural areas of South Africa. It can be generally agreed that this was evidenced from a number of countries such as Zimbabwe and Kenya, where subsistence agriculture failed to commercialize due to lack of support from either government or private sector. Especially since they did not have any form of an institutional support. Singini and van Rooyen (1995) are of the opinion that the FSPs were aimed at creating a shift away from investment in projects to a programme that could provide access to support services, resources and opportunities to a large number of smallholders and rural households in a broad-based manner.

From its broad based approach, the FSP was applied in the former homelands as a unimodal strategy approach to agricultural development, as defined by Mellor and Johnston (1984). Timmer (1997) defined the unimodal strategy as “one in which the broad base of smallholder farmers are central focus of agricultural research and extension and recipients of the bulk of receipts from agriculture support”. The farmer support programme had various initiatives aimed at strengthening agrarian transformation and household food security which included a focus on the growth of the agrarian economy in the former homelands. Vink and Kirsten (2000) suggest that the programme was to provide an alternative to the

projects that dominated the agricultural sector in the 1970s that were very capital-intensive, expensive to operate, often incurred losses and rarely involved spill overs or linkages with the surrounding communities. As such, these poorly performing projects that Bromberger and Antonie (1993) referred to as “islands of prosperity amidst an ocean of poverty” created a justification for the creation of FSPs by the DBSA in the 1980s.

Van Rooyen *et al.* (1987) distinguish between the FSP's target groups and target areas. In defining the former, they distinguish between the three basic categories of smallholder farmers in the less developed areas. The first category is that of fully commercial farmers who farm independently for their own account on a commercial basis and can compete on an equal basis with commercial farmers elsewhere in Southern Africa.

Thus despite their smallness, these farmers produce more food than they need, hence they sell most of it in commercial markets. There is also what they described as “emergent or emerging” farmers. These lack the resources and access to the necessary support services to expand their base. Their wish is to become commercial and given enough support, they will not hesitate to expand their production (A typical example is citrus smallholder farmers in Kat River Valley). The third group is that of subsistence farmers who produce only to feed their families and rarely have more than what their households need (Van Rooyen *et al.*, 1987).

Many scholars have defended the FSP approach as a good motive to promote smallholder farming in Africa, terming it “a paradigm shift in the DBSA”. Experiences from countries such as Zimbabwe, Kenya and Malawi suggested that a broad based farmer support strategy was more effective way of promoting agricultural development. A study by Kirsten *et al.* (1997) in Zimbabwe on smallholder farmers' support highlighted that the implementation of this strategy improved production. The same results of improved production from agricultural support were observed in Malawi and Kenya through farmer support programmes. It is

argued that overall utilization and efficiency of agricultural resources can only benefit farmers when the FSP provides complementary coordinated and timely services to farmers (DBSA, 1986).

Kirsten *et al.* (1997) understands that the FSP was based on the assumption that small farmers are rational, and that at least some of them would emerge as commercial farmers if they were afforded the opportunity. The same author in 1994 highlighted that there is enough evidence of FSP to a large extent contribute to alleviating the constraints confronting smallholder farmers in the former homelands of South Africa. The farmers who joined FSP gained access to inputs, extension services and mechanization and institutional capacity building (African Union /New African Partnership for Africa's Development (AU/NEPAD), 2003).

Since commercial farmers are already well established, the economic role played by agriculture can be improved if more efforts are put towards supporting the emerging farmers. Van Rooyen *et al.* (1987) suggest this approach since such farmers are assumed to having the desire to grow into commercial farmers. Without ignoring the commercial and subsistence farmers, the focus of the FSPs was mainly on these emerging farmers to try to turn them into commercial farmers.

Van Rooyen *et al.* (1987) highlighted the part of the FSP which includes facilitating the entry and participation of smallholder farmers from the homelands in input and product markets. This view was also shared by Kirsten *et al.* (1997) who further explained that this was done through the creation of institutional support and incentives for such black farmers as was the case for the commercial farmers so that they became efficient in their use of the limited resources. In the long run, such support was hoped to make it possible for the smallholder farmers to graduate into the commercial farming sector as they would have learnt a number of necessary entrepreneurial and management skills through the FSP.

The farmer support programme's general assumption was that, given all the support that commercial farmers have, that is if the emerging and smallholder farmers were given the same resources and the help by extension officers or if they were provided and taught some skills about how to increase their productivity, the smallholder farmers would perform similarly (Van Rooyen, 1995 and Kirsten *et al.*, 1997).

The Department of Agriculture, Fishery and Forestry (2010) gave the following reasons about the level of farmers support organizations:

- Most national programmes explicitly targeting the second economy within Agriculture, Forestry and Fisheries fall short because they were not designed to impact at the scale required to make a difference at a socio-economic level, and they have acted in isolation of each other, leaving beneficiaries seeking support from a fragmented array of projects and programmes.
- There is a lack of capacity within government and state-owned enterprises to reach and offer efficient and sufficient support, limiting their scope to achieve the scale required.

A sobering overall view of the scale and required capacity of support services is given in Hall and Aliber (2010) who show that although public expenditure on agriculture has risen significantly over the last decade and a half, and even though this expenditure appears to be ample relative to the number of agriculturally active households, in fact very few agriculturally active black households are receiving direct support. This is depicted in Table 4.1 which shows the black agriculturally active households who cite having received any form of government supplied agricultural support services.

Table 4.1: Black agriculturally active households receiving agricultural support services

	Number of agriculturally active black households receiving support in previous year		Number of commercially-oriented agriculturally active black households receiving support in previous year	
	Number	Share*	Number	Share**
Any support provided by government programmes	339,805	12.9%	13,315	32.4%

Source: Stats SA 2010. *As share of all agriculturally active black households; **as share of all commercially-oriented agriculturally active black households.

The data in Table 4.1 serves to illustrate the fact that current government policies and programmes have focused on commercially-oriented smallholders. Aliber *et al.* (2010) argues that there is this belief that subsistence production is neither a route out of poverty nor developmental program in rural areas of South Africa. A number of farmer support programmes have been instituted in South Africa but very little is known about their impact on smallholder farmers.

Very little is known about these support programmes in South Africa and to what extent farmers are benefiting from these services. There is enormous promise for enhancing smallholder welfare, if these programmes can be carefully assessed to investigate their impact on smallholder farmers and to determine their potential for replication in marginalized areas of South Africa and other developing countries (Umhlaba Rural Services, 2006). Literature on their potential to serve as a pivot for designing successor programmes to the on-going poorly-performing government programmes has also not been evaluated to determine if these can be replicated in other areas.

Case studies from within South Africa such as in Limpopo where a recent Programme for Land and Agrarian Studies (PLAAS) study in Limpopo Province sought to understand smallholder farmers' participation in fresh produce value chains. The study found that most of the farmers who market fresh produce are full time smallholder farmers with limited resources which include inadequate production equipment such as tractors, machinery and irrigation infrastructure. The smallholder farmers surveyed participate in multiple markets, ranging from formal to informal, but informal market participation dominates. Market diversification is probably a risk mitigation strategy given the price volatility and quality differentiation experienced in the fresh produce sector. The National Fresh Produce Market (Johannesburg Fresh Produce Market) has secured the largest market share of produce from these smallholder farmers, despite being the market that is furthest away from Limpopo (about 300km). Informal channels such as roadside and farm gate markets have a significant share, while supermarkets and agro-processors are the least supplied.

Thus, there is evidence that smallholder agriculture has high potential to contribute positively to addressing the current challenges of accessing markets especially in respect to volume and quality standards required by consumers. To that extent, this study will make a major contribution both from the point of view of public policy impact as well as in development of theoretical framework for institutional analysis in respect of market access and its developmental implications on smallholder farmers in South Africa.

4.2 Agricultural Farmer Support Programme for smallholder farmers

At the end of Apartheid era in 1994, eighty-six percent (86%) of South Africa's farmland was in the hands of the white minority, while over thirteen million black people lived in crowded former homelands under extreme poverty. Since then, the Government of South Africa embarked on a comprehensive land reform programme to address the racial imbalance in land holding and secure the land rights of the historically disadvantaged people. The land

reform program was designed to assist the government in achieving its target of transferring 30% of the white commercial farms to formerly disadvantaged people by 2014 in an effective and sustainable manner. The program envisaged normative activities as part of capacity building of smallholder farmers through effective service delivery in support of the smallholder and emerging farmers who benefited from the land reform programme. In this context, the Food and Agricultural Organization (FAO) contracted the Umhlaba Consulting Group (Pty) Ltd to undertake a review of experiences of smallholder and emerging farmers and associated support programmes.

The study, which was based on literature review and case studies of six farms, assessed land reform policy, examined the support programmes and their implementation, and documented experiences of the emerging case farms. Programmes reviewed included the Settlement Land Acquisition Grant (SLAG), the Land Re-distribution for Agricultural Development (LRAD), Farm Equity Schemes, Municipal Commonage Programmes, Land Restitution and the Comprehensive Agricultural Support Programme (CASP). Existing practices were reviewed and then compared with international best practices. Very little information was assessed on how other initiatives such as joint ventures, contracts and cooperatives could shape smallholder farmers in accessing profitable markets.

For the farms that were investigated, the results showed that there was a significant improvement in the incomes of the farmers and welfare. Though the margin was not much, but the FSP contributed to increased agricultural production from both crop and livestock enterprises. Umhlaba Rural Services (2006) also confirmed these results when they conducted a study on smallholder farmers who received support from government and private sector.

4.3 The assumptions of the farmer support programme

The farmer support programmes were introduced to smallholder farmer as a way of addressing the challenges that they faced with regard to agricultural production. The focus of FSP was to ensure that smallholder farmers have access to comprehensive agricultural support services. The objectives of the FSP were to supply of appropriate technologies, to alleviate farmers from the constraints facing smallholder farmers and allowing for efficient utilization of agricultural resources (Kirsten, 1994). According to Kirsten *et al.* (1997) and Van Rooyen (1995) the constraints were addressed according to the six elements which are (i) production inputs and capital to farmers, (ii) mechanization services, (iii) marketing support, (iv) extension services, demonstration and research (v) training and education and (vi) policy formulation.

Due to the inequitable access of black farmers to agricultural support systems in South Africa, it was argued that measures such as the FSP, which could rectify these imbalances and provide fair access to the market, could improve economic efficiency (Van Rooyen *et al.*, 1987). According to Van Rooyen *et al.* (1987) the FSP was a demand driven, with a wide range of organizations providing services to farmers. The aims of the FSP were capacity building amongst local participants and followed by an integrated approach to alleviating the poverty among small black farmers in rural areas of South Africa.

The reason and objectives of the farmer support programmes was to address the following issues in rural areas of South Africa;

4.3.1 Limited access to markets

Poor infrastructure that is the road maintenance in the rural areas is poor therefore making it very hard for the extension officers to drive there and do their routines check on whether the

farmers participating in the programme are using the skills they have been taught (Gabre-Madhin *et al.*, 2001;Fényes, Van Zyl and Vink, 2008). Smallholder farmers are based in rural areas where there is little or no knowledge about the changes in market prices because they do not have the means to access market information. Changes in technology are one of the major causes of smallholder farmers to have limited to access to markets, because they do not know about the markets which are available to them or the markets in which they can purchase some of their inputs.

These days many markets use the internet as the source of advertisement for their inputs and outputs but because small scale farmers are not aware of these technologies such as information and communication technology (ICT) or they have information about the internet but because they are in rural areas where there are no computers they cannot access the information as a result they also have limited access to the markets and lack of information about the market. This has however resulted to limited access to markets by smallholder farmers while commercial farmers have full access to the market (Van Rooyen, 2003).

The design for the FSP was to improve road infrastructure to rural areas so that extension officers could visit farmers and teach them new farming methods. The roads were meant to link farmers with urban markets and help farmer to get better incomes for their produce. According to Van Rooyen (2003) smallholder farmers in rural areas were mostly constrained by poor roads that affected them in terms of skills knowledge and technology as extension officers could not visit them.

4.3.2 Long distances to markets

High transportation costs in rural areas where the smallholder farmers are situated or the other way round causes the costs to be high. Agricultural products are known to be bulky and perishable, that is they turn to be out of value very quickly and therefore they are difficult

and expensive to transport from the farm to the markets. Most farm products need to be stored in cool places therefore when transporting them to the market the farmer needs to have a cool storage which is going to increase the transportation cost. With increasing changes in the food industry, consumers are increasingly demanding higher quality, fresh and safe food products (Vermeulen *et al.*, 2006). High quality produce with a good shelf life, as explained by Bachmann and Earles (2000), is a result of sound production practices which is still a challenge to smallholder farmers, proper handling during harvest and appropriate post-harvest handling and storage facilities for their produce. Simons (1999) argues that in order to keep agricultural products fresh, there is need for proper handling and storage from harvesting till they reach the final consumer (Lebert *et al.*, 2007). In addition, during transportation, vehicles that keep agricultural goods from damage such as refrigerated trucks can be used but smallholder farmers cannot afford to hire them. Under the FSP farmers benefited from improvement in roads that service them and also some of the produce was collected from the farmers.

According to Bachmann and Earles (2000), one of the most important constraints facing agricultural markets throughout sub-Saharan Africa is transport infrastructure and the need to reduce transport costs in an effort to encourage commercialization of agricultural produce by smallholders. Thus, amongst others, lack of properly maintained roads and reliable transport makes it very costly for farmers to transport their goods to the market. Sometimes these costs are too high for farmers and traders to get any meaningful benefits from their trading activities.

The FSP tried to improve the inadequate physical infrastructure in rural areas, particularly in the former homeland areas through various initiatives. The government tried to improve the quality and quantity of infrastructure in the rural areas through programmes such as Community Based Public Works Programme, Consolidated Municipal Infrastructure

Programme, and Poverty Relief and Infrastructure Investment Fund, to improve the lives of many rural people in rural areas (Everatt and Zulu, 2001).

4.3.3 Low productivity

International experience has shown that, with adequate access to farmer support services, smallholder farmers can significantly increase agricultural productivity and production. For example, smallholder farmers in Zimbabwe doubled maize and cotton production in the 1980s when extension, finance and marketing services were provided (Rukuni and Eicher, 1994). Similar results were achieved in Southeast Asia when access to farmer support services was improved (Purcell, 1994). It is worth noting that in these examples of successful efforts to raise smallholder agricultural productivity, a variety of farmer support services were provided simultaneously. To emphasise the need to view these services as a package, Mosher (1971) refers to them as “elements of a progressive rural structure”

Thus, according to Doni (1997) subsistence farmers produce very low output as compared to commercial farmers in South Africa and the rest of the world. Doni (1997) also discovered that the low productivity may be caused by the lack of skills and knowledge about useful inputs that a farmer could use to maximize their productivity. In rural areas where the smallholder farmers are based there is limited or no land at all in order for them to grow their products or to expand their enterprises. In another study which was done by Denison, Mkeni and Van Averbek (1998) also indicated that smallholder farmers can progress from subsistence oriented to market oriented production if suitable institutional reforms particularly with respect to land tenure are developed.

The FSP came with input packages for smallholder farmers, this included inputs such as fertilizers and seed that improved outputs for the farmers. While the farmers received this

support they had to provide labour and work towards the national goals of reducing poverty in rural areas.

4.3.4 Lack of financial support

Smallholder farmers received little financial support as compared to commercial farmers (Coetzee *et al.*, 1993). The researchers also highlighted that smallholder farmers receive a lesser amount of money from the government than commercial farmers' the reason emanated from the country's inequality and that given the resource that the commercial farmers have, small scale famers still produce less products and that is caused by the lack of skills.

The FSP had initiatives that were directed to smallholder farmers. These included support services such as the Land Bank, MAFISA and Ulima financial institutions that gave credit to farmers at low interest rates. The finance was to assist farmers with production and marketing of their produce. Although access to credit was provided by the funders (banks or credit institutions) to provide farmers with finance to access better inputs and machinery to use on their farms. In some instances, the farmers were required to provide estate and enough funds to prove that they will recover the loans from them. But because they are poor they could not access some of the loans as they required collateral.

4.4 Components of Farmer Support Programme

4.4.1 Access to land by smallholder farmers

The land issue has had controversial aspects in many developing countries such as Zimbabwe, Malawi and now South Africa. Aliber *et al.* (2010) state that land reform policy has been evolving rapidly in the last several years and there has been a noticeable shift in

favour of commercially-oriented ventures. Aliber *et al.* (2010) argues that although PLAS was only formally launched in 2006, for the 2007/08 fiscal year it accounted for the largest share of land transferred through land redistribution programme in South Africa. They also cite PLAS as significant as it represented an effective mechanism for acquiring land which, given the inherent flexibility of the policy, could in fact be used to address poverty and land hunger for those in densely populated rural areas where land for subsistence purposes is in short supply.

Through this farmer support programme it was expected that the release of the green paper on land reform would provide clarity on future land ownership issues. This green paper offers little indication of how the position of the 2.2 million households involved in small-scale farming in the previous homelands will be secured (Naidoo *et al.*, 2011).

4.4.2 The supply of inputs and capital to farmers

The supply of inputs and capital was aimed at setting up input supply systems (e.g. fertilizers, seeds and pesticides) to enable farmers to have easy access to inputs at minimum or affordable prices and provide credit facilities that recognize the problem that the smallholders have in obtaining loans, while at the same time ensuring repayment of the loans. The farmer support programmes' aim was to provide smallholder farmers with capital assets such as land, tractors and machinery.

4.4.3 Mechanization services

According to Aliber *et al.* (2010) agricultural mechanization was introduced under the farmer support programme as a way to alleviate poverty. This was done by investing in irrigation schemes to assist smallholder farmers to have access to water for irrigation. Despite their problems, irrigation schemes lend themselves to developing black smallholders. If creating

conditions for reasonably large numbers of successful commercial smallholders is a priority, then expanding access to irrigation is vital. Rather than going out and creating new schemes, it is probably most practical for the redistributive land reform to specifically target a certain amount of irrigated farmland. This does not necessarily imply creating more 'schemes', but instead acquiring properties that lend themselves to subdivision so that individual irrigated plots can be allocated to smallholders. PLAAS would be the ideal vehicle for such a targeted land acquisition strategy, provided that attention is given to maintaining and, where necessary, restoring the irrigation infrastructure Aliber *et al.* (2010).

The farmer support programme was designed to improve these uses of capital assets that were found to be necessary for improved agricultural productivity and economics growth among smallholder farmers in South Africa. Therefore, technological change or adoption was an initiation to encourage the use of improved input packages that could increase productions in smallholder farming by reinstating some 'smart or targeted' input subsidies (Bryceson, 2002; Van Rooyen, 2003; Smale *et al.*, 2009). These inputs were made more readily available at affordable prices and tailored to the local climate and soil conditions. This was to stimulate the productivity of the farmers and raise living standards of the people.

4.4.4 Marketing services

Apart from providing supportive infrastructure, smallholder farmers need assistance in setting up appropriate marketing information systems so that they have access to market information regarding prices, market demand and other external information. Emphasis on quality of produce and products should be a source of sustainable competitive advantage for smallholder farmers in the long run. There is growing evidence that reducing poverty (among black people) in absolute terms through agriculture can only be achieved when farming is market oriented (Pauw, 2007).

The FSP was designed to promote markets access by assisting smallholder farmers. A typical example is the Eastern Cape Department of Rural Development and Agrarian Reform programme which was introduced as an access-to-markets model, where a central market was established in Mthatha, in OR Tambo District with satellite markets distributed around the villages. The satellite markets were took produce from the farmers to a central market as farmers found it difficult to have access to regional markets. These satellite markets were based at KSD Local Municipality, Flagstaff, Mfundisweni, Lambasi and others. Some of the old shops were converted into market centres through which farmers would take their produce to reach the central market.

4.6.5 Financial support

One of the challenges that these smallholder farmers faced was access to credit for farm and infrastructural development. Improving access to credit was often regarded as one of the key elements in raising agricultural productivity (DBSA, 2005). The establishment of private institutions with a mandate to channel credit to smallholder farmers was one of the approaches used by farmer support organizations through the Government of South Africa to promote smallholder agricultural development. Such institutions were established in the former homelands but collapsed due to transformation of agriculture leaving smallholder farmers without access to credit services (Fafchamps and Vargas-Hill, 2005; Kirsten and Machethe, 2005).

A number of initiatives by both the government and private sector aimed at addressing the issue of credit or financial support to smallholder farmers. The Comprehensive Agricultural Support Programme (CASP) and the Micro Agricultural Financial Institutional Scheme of South Africa (MAFISA) were the two financial interventions aimed at small-scale black farmers. Statistics from the Department of Agriculture Forestry and Fisheries (2010) showed

that over the period of 2005/06 through 2008/09 there were about 61,000 beneficiaries per year under CASP (mostly land reform beneficiaries) and about 2,500 loan recipients from MAFISA. This equated to no more than 13% of black farming households deriving direct benefits from the provincial spending sources which included the above financial support and extension services (MAFISA, 2005).

Other support services launched included the Ilima/Letsema grant campaign which was particularly geared towards subsistence farmers in communal areas and its aim was to assist targeted vulnerable South African farming communities to increase agricultural production and improve farming skills through activities such as investments in production-enhancing infrastructure, including irrigation schemes and soil reclamation, the provision of seed packs and input subsidies and livestock breeding programmes.

4.4.6 Extension services, demonstration and research

Agricultural extension was one of the principles that were introduced under the farmer support programme as an initiative that was directed at developing smallholder farmers. Rural poverty was a challenge in the early 1980s and before in most rural areas of developing countries. The introduction of extension services under the farmers support programmes was important to address the economic challenges that these farmers faced. Agricultural extension can play a role in improving economic development and agricultural production. Agricultural extension was adopted as a fundamental technique that could be used to transfer skills to rural households so that they can improve their agricultural produce and reduce poverty (Van Averbeké and Mohamed, 2006).

Its role was to help to identify, test and introduce suitable needed varieties in rural households. Agricultural extension to smallholder farmers was designed to supply information on high yielding inputs which were suitably adapted to local conditions. Thus, the

farmer support programmes were aimed at disseminating such technologies to smallholder farmers. More effort in extension services will have a positive impact on smallholder farmer. Furthermore, this would ensure financing for the smallholder sector which aims at developing sustainable agricultural systems.

Under the extension component the FSP recognized the need of extension services to smallholder farmers. The FSO recognized the need for farmers to continue to manage their farming systems whether or not extension services were available. Extension services were the most important tool in dissemination of skills and technology to smallholder farmers (Bembridge, 1993). The FSP aim was to enhance agricultural skills to farmers by basing on the knowledge they had and their survival strategies. Beside the FSP playing a pivotal role among poor farmers, the FSP knew that smallholder farmers' best know what risks to take when confronted with a situation to improve their lives and how to cope with diversity. Farmers usually know when they are losing potential profits or degrading their resource base due to more immediate shorter needs, and do not do this by choice.

When the FSP was introduced to the farmers under the extension programme it was to contribute to reducing poverty through a diverse of livelihood strategies and the multiple uses and reasons which informed farmer's decisions. Extension services involved changing the primitive methods that the farmers were using by introducing new technical and management skills to run their farms (Aliber *et al.*, 2010). Despite extension services being introduced to farmers, the mandate were to contribute to increasing farmer's ability to make their own informed choices and to adopt different mixes of wealth generating and coping strategies which suit their particular situation and social and institutional assets.

4.4.7 Training and education

The farmer support programme included training by the extension officers from the Department of Agriculture and also from the private sector to transfer of information from farmer to farmer and other stakeholder to increase their yields and ensure efficient use of the resources provided. An educational programme was also provided in order to educate the farmers about the use of different methods of increasing their yields also encouraging each smallholder farmer to invest on different enterprises rather than have one.

4.4.8 Policy formulation under the farmer support programme

For the farmer support programme to be effective and achieve the intended goals, there was a policy that was set in-order for the programme to be a success. This was based on analysing and influencing agricultural policies that would lead to sustainable agriculture in smallholder farming. Government policies were at the fore-front when the farmer support programme was designed to help reduce neglect rural markets. One way or the other the policies helped farmers in accessing the markets. Despite the significant role of informal markets, government had no policies or programmes to capacitate smallholder farmers to supply these markets. It is interesting to know that in Limpopo Province a study on smallholder farmers supplying informal markets revealed that informal markets could play an important role in the rural population with respect to enterprise development and income generation (De Lange *et al.*, 2004). The study concluded that smallholder farmers participate in multiple markets (formal to informal), but informal market participation dominates supermarkets and international markets. Market diversification is probably a risk mitigation strategy given the price volatility and quality differentiation experienced in the fresh produce sector. It is against this background that policies were formulated with the inception that both

formal and informal markets play a significant role in improving markets access and incomes to smallholder farmers.

4.5 The purpose of the farmer support programme

The capacity to support the establishment of new farmers involved a number of support services that were required to enhance the competitiveness and viability of the new farmers.

These are some of the services that were provided to new farmers:

- Institutional innovation in rural financial markets, particularly in market-assisted land reforms
- Facilitating access to credit, technology, financial and farm management skills and marketing information
- Facilitating linkages with the private sector
- To ensure sustainable support mechanism for new and established farmers (including land reform beneficiaries and farm workers)
- To measure the impact of interventions as delivered by the programme
- To leverage investment from the private sector and commodity groupings
- To ensure quality and standards of service and advice to farmers
- To ensure that the programme assisted municipalities and other government departments with the implementation of projects aimed at alleviating poverty in rural communities in South Africa.

Structurally the support services were required to be well coordinated and integrated to achieve maximum benefit to smallholder farmers. The South African experience with the

provision of support to land and agrarian reform was a major learning curve, which resulted in the development of several new approaches to improve effectiveness, including area-based plans and the Settlement and Implementation Support Strategy (SIS) for farmers. The whole process involved giving support to smallholder farmers who had benefitted from the land reform by giving them post-settlement support through various organizations to assist them with agricultural production activities.

4.6 Institutions involved in farmer support programmes in South Africa

The Comprehensive Agricultural Support Programme (CASP) and the Micro Agricultural Financial Institutional Scheme of South Africa (MAFISA) are the two financial interventions that were introduced to address the problem of lack of access to farmer support services. The two programmes appear to have incorporated some of the lessons for the agricultural development experience in the 1960s (Machethe, 2004). Machethe (2004) suggests that in the 1960s large investments were made on agricultural research especially the introduction of high yielding varieties. However, despite all these investments, there was little improvement in the productivity and incomes of resource poor farmers. Thus, the Comprehensive Agricultural Support Programme provided a wide range of services simultaneously rather than emphasizing one of the elements.

Elements of the CASP and MAFISA included technical and advisory services, training and capacity building and on and off-farm infrastructure. This initiative was to contribute to the success of the land reform programme which had been criticized for failing to provide farmer support services to beneficiaries of this initiative. In South Africa, even though the government was trying to provide these services, often a few of the services provided managed to reach the intended beneficiaries which are poor farmers (Aliber and Hall, 2011). The NGOs in South Africa augment the role of the government as they are involved in research and working with disadvantaged communities. From the above discussion, one can

note that these interventions are an on-going process, which is changing, and being modified over time. It is important to note that from this discussion some problems associated with interventions have already been brought out.

4.7 Implementation and success of the FSPs in South Africa

The farmer support programme was introduced in South Africa in the year 1987 by the Development Bank of South Africa to enhance the success of both the emerging farmers and the smallholder farmers around the country by giving them all or enough resources they required to increase their productivity. A study conducted by Van Zyl, Vink, and Fenyes, (1992) showed that a number of communities in South Africa have experienced improvements in their yields since the introduction of farmer support programmes. The two places around the country in which the programme was first introduced to are, Phokoane region of Lebowa in the Polokwane and Kangwane region in KwaZulu-Natal Province.

4.7.1 Case study of FSP in Limpopo Province

The Phokoane region of Lebowa is one example of such a community where maize yields increased after the introduction of the FSP. According to Kirsten *et al.* (1998), maize production in the region improved between the 1989/90 seasons, from 1 828 tons in 1989/90 to 2 145 tons in 1990/91. This increase took place under the same environmental and climatic conditions as those that prevailed in previous seasons. The extension and training provided through the FSPs also contributed a great deal towards this increase. Van Zyl, Vink, and Fenyes, (1992) also documented the positive effects of the FSPs in the Mashamba and Khakhu areas of Venda as the farmers in the two communities changed from being deficit to surplus producers of maize.

4.7.2 Case studies of FSP in the Eastern Cape Province

The Siyakhula / Massive Food Programme was launched in the Eastern Cape in 2003 with the aim of promoting successful black commercial farmers in the province's ex-Bantustan areas. The programme was financed through grants and loans to participants over a four year period, scaling down from a grant of 100% in the first year, to 75% in the second year, to 50% in third year and finally to 25% last year (DBSA, 2009). Despite widespread interest, delays in disbursing funds led to low uptake and in subsequent year's high levels of debt contributed to farmers choosing to exit or be excluded. Both of these above initiatives began with ambitious aims, but were hampered by inadequate capacity on the ground and so never reached the scale intended. Both programmes also sought to reinvent themselves after a short while as experience accumulated and evaluations identified shortcomings in design. Arguably the most important shifts in this respect were as in determining who the target clientele were and the vision that the interventions had for them.

4.7.3 Case study of FSP in Mpumalanga Province

In Mpumalanga a programme worth R500 million called Masibuyele Emasimini tractor mechanization which was part of a bigger Food Security and Agrarian Reform Programme was launched in 2005/06 until 2009/10, 175 tractors were distributed through this programme to assist the farmers with implements to farm their land and produce agricultural crops and livestock. The programme was a four-year initiative aimed at addressing the on-going problem of food security and sustainable livelihoods in Mpumalanga. The programme was launched in Mpumalanga and saw the first tractors distributed across all three districts of the province (Erasmus, 2011).

The intervention was aimed at further increasing agricultural land to smallholder farmers by transferring about 36 223 hectares of land to 42 430 households. The FSP was to assist farmers' access to agricultural inputs to small scale farmers, empower rural entrepreneurs and thus enhancing black economic empowerment, ensure adequate support and sustainability of the mechanization programme and increase land under agricultural production through the resuscitation of failed land reform projects and targeting fallow land in communal areas

4.7.4 Case of farmer support programme in KwaZulu-Natal Province

Two broad programmes were introduced in KwaZulu-Natal Province to address the challenges that smallholder farmers were facing. The KwaZulu-Natal Department of Agriculture, Environmental Affairs and Rural Development provided the farmers with mechanization and livestock programmes in 2011. The mechanization programme was aimed at providing resource-poor households and communities with ploughing and planting assistance and had 196 tractors deployed during 2011. The targeted group of farmers had to grow maize and dry beans under this programme as it was aimed at addressing food security in rural households.

In another programme the Department of Agriculture decided to focus attention on animal health care to increase livestock numbers in the province. The initial stage of the livestock programme was to assist smallholder farmers with livestock production and marketing skills.

4.8 Summary of the chapter

This chapter examined the general constraints confronting smallholder farmers in South Africa. The supply of appropriate support services could alleviate these constraints, allowing more efficient utilization of agricultural resources and increasing the opportunities for

smallholder farmers to access agricultural markets. The FSP strategy, to some extent, attempted to address some of the challenges facing smallholder farmers in rural areas of South Africa by looking at various support services available to the farmers. To overcome most of the challenges confronting smallholder farmers in South Africa, the various elements of CASP and MAFISA needed to be implemented together as a package.

Despite significant progress in these farmers support programmes, it is now time to evaluate these programmes and assess if these have succeeded in overcoming some of the constraints facing smallholder farmers in the former homelands of South Africa. Literature on FSP suggests that new markets for higher-value agricultural and food products could provide small-scale farmers who make up a large proportion of the poor in developing countries with a vital opportunity to enhance and diversify their livelihoods. However, they must first overcome a wide range of constraints prohibiting them from accessing such markets, including limited access to production inputs, transportation links, high transaction costs and market information. In the new paradigm of agricultural development, smallholder farmers find themselves at a major disadvantage. These challenges have an impact on the ability of smallholder farmers to sell to national, international markets and even to local supermarkets because smallholder farmer are not able to match with the quality and volume requirements and they are thus further crowded out of the global supply chains.

CHAPTER 5

DESCRIPTION OF THE STUDY AREAS

5.0 Introduction

This chapter describes the research sites of the study. The chapter gives a description of the background information of the Eastern Cape and KwaZulu-Natal Provinces regarding history, agricultural potential, land tenure security, population, resources and economic activities. The description of the study area is important because it familiarizes one with the area in which the study was carried out. The study areas were chosen in order to understand the role of farmer support programmes and the impact they have on smallholder farmers. The research sites are described in order to understand the geographical patterns and how the climate and socio-economic activities promote agricultural development in the Eastern Cape and KwaZulu-Natal Province.

5.1 Background

The study took the input provided by the literature review and proposed that the research sites should be in Umgungundlovu and Umkhanyakude Districts in KwaZulu-Natal Province and OR Tambo and Amathole Districts in the Eastern Cape Province where smallholder farmers have received some form of agricultural support and the others have not. Four districts were chosen for this study to collect data regarding the interventions provided to smallholder farmers and to determine their extent on farmers' welfare.

5.2 Description of the Eastern Cape Province

The Eastern Cape is a large province representing 13.9% of South Africa's land mass and straddling two worlds; one of severe underdevelopment and one of a modern, growing

industry (Water Research Commission, 2006). By any measure, it is still the country's most impoverished area. The province's population of 6.9 million makes it the country's third-most populous province, with about 15% of the national population (Integrated Development Plan (IDP) Review of Umgungundlovu District Municipality, 2004; Stats SA, 2010).

The Eastern Cape Province is one of the most rural provinces of South Africa. The Eastern Cape Province is one of the poorest provinces in South Africa where poverty is aggravated by growing unemployment and limited economic opportunities. The situation is worse in the former homeland areas of this province where very few improvement efforts have been successful (Jacobs, 2009). The province has smallholder farmers practicing both livestock and crop production (Motteux, 2001). The majority of the smallholder farmers keep sheep, goats and cattle for livelihood purposes (Musemwa, 2008). The Eastern Cape Province area lies in sub-humid to semi-arid environment which receives rainfall ranging from 400mm-1,200mm per annum. Temperatures range from moderately hot summers to moderately cool winters. Mean Annual precipitation received is approximately more than 65% especially in March where high rainfall figures are recorded (Magni, 1999).

The Eastern Cape Province has two shipping ports and the construction of a large new port is underway at Ngqura, within the Coega Industrial Development Zone (IDZ) next to Port Elizabeth.

The province's manufacturing sectors are dominated by the automotive producers who together export just more than half of the motor vehicles produced in South Africa. Other major manufacturing sectors in the province are food and beverages with Cadbury, Nestlé, SAB, Clover, Parmalat and Dairybelle domiciled in the Province.

Agriculturally the Eastern Cape Province is South Africa's leading livestock province with a fifth of the country's cattle, a quarter of its sheep and nearly half its goats (Smit, 2003). The

province produces a quarter of the nation's milk. Wool-producing merino sheep and mohair-producing Angora goats thrive in the interior. Deciduous fruit (in the Langkloof), citrus fruit (around Addo/Kirkwood/Fort Beaufort) and chicory (Alexandria) continue to form important components of the province's agricultural mix. Pineapple farming is quite prevalent in the Cacadu district. Sugar cane is grown on the northern border of the province, in North Pondoland (Eastern Cape Provincial Government, 2003).

The agricultural sector employs about 70 000 people on commercial farms, with a further 436 000 dependent on smaller farms, which are mostly in the previous homeland areas of the Ciskei and Transkei. Table 5.1 shows that most of the land in the Eastern Cape is used for commercial farming compared to communal areas. The bulk of the land produces crop and livestock products that are exported to international markets. Part of the land is also used for tourism purposes which attracts a lot of foreigners. The tourism sector contributes to the GDP in terms of foreign currency earned.

Table 5.1: Land use distribution in Eastern Cape Province

Total Land area (ha)	Commercial Agriculture (ha)	Communal areas (ha)
16 958 000	10 327 660 (60.9%)	4 821 077 (28.4%)

Source: Hall (2007)

5.2.1 Description of Amathole Municipality

Amathole municipality falls in the zone of two historically conflicting races, which are the blacks and whites. The racial difference and conflict later manifested themselves in laws favouring whites to access key means of production whereas blacks were resettled in the former homeland reserves of Ciskei and Transkei with limited access to means of production

(Nel and Davies, 1999). Ciskei and Transkei reserves came to be known as “homelands”. The formation of these two reserves for the resettlement of thousands of people compounded differences, particularly in terms of the small size of landholdings allocated, increased rural densities and limited access to state support and infrastructure.



Figure 5.1: Map of Eastern Cape (Amathole and OR Tambo districts)

Source: Google maps 2011

Consequently, the former homelands are characterized by extreme overcrowding and frequent environmental collapse. Land appropriation and uneven development regarding service provision characterize the municipality.

However, policies of the past and the present have had major impacts on to the inhabitants regarding the province resources. In this respect, the creation of the former homelands of Ciskei has further complicated the history in the Eastern Cape Province. Historically, the Eastern Cape Province development was hampered by poor land management practices and complex land tenure arrangements (Nkonkobe Municipality, 2004). Whilst some farmers have got traditional land tenure arrangements, about half of the land appropriated from white farmers has since the consolidation of the Ciskei remained government owned (Water Research Commission, 2006).

Nkonkobe extends over 3725.32 ha of the former magisterial districts of Alice, Balfour, Hogsback, Fort Beaufort, Middledrift and Seymour. It consists of 21 wards and 41 municipal councils (Nkonkobe Municipality, 2004). It is mostly an agricultural area. It has an average population density of 43 persons per hectare. The urban areas of the Nkonkobe municipality account for the biggest concentration of its population. Despite the province difficulties emanating from its troubled past, there has been some positive developments concerning utilization of resources. To date, the formation of a Water User Association (WUA) and catchment forum has brought together various communities inclusive of smallholder and large commercial farmers to a level where they collectively decide on good resource conservation practices such as citrus farming and game farming in the province (Water Research Commission, 2006).

Amathole district is characterized by a series of impediments to human welfare due to high unemployment levels (Nel and Davies, 1999). The situation is made worse by the presence of low industrial activities (Nel and Davies, 1999). Amongst these obstacles are high poverty rates resulting from high unemployment rate, low income and lack of basic skills required to spur local economic development, inadequate infrastructure and social services, low agricultural productivity, high dependence on government grants and inadequate and

inefficient income generation strategies to improve the economic base of the municipality. De Wet (1993), as cited by Nel and Davies (1999), says income derived from agriculture does not exceed 10% of the average rural income. Many rural people rely on gifts, state pensions and migrant labour remittances for household survival (Nel and Davies, 1999).

5.2.2 Agronomical potential of the Amathole district

Farming or agronomical potential of the study area is high, but limited by availability of arable land due to steep slopes and hilly areas surrounding the study area with altitude ranging from 550m-1 680m with fertile soils (Motteux, 2001).

As mentioned before, some areas of Amathole district have high potential for agriculture. The agricultural sector contributes only 17 percent towards the municipality's GDP (Nkonkobe Municipality, 2004). However, there are various agricultural activities including citrus farming, beef and dairy production such as the Fort Hare Dairy Trust and Middeldrift Dairy project. Farming in Kat River Valley is supported by the availability of natural assets such as favourable soils and adequate water supply. The Kat River Valley is the main source of water to perform the agricultural activities.

5.2.3 Topography and Climate

Agriculture activities are also facilitated by the terraced basin topography and foot slope bottom lands enclosed by the steep mountain slopes (Water Research Commission, 2003). Rainfall on the high ground is around 1000 mm per annum whereas it is much lower in the valley bottom (600 mm) where it can only support limited rain fed cultivation (Water Research Commission, 2003). Approximately 75% of the mean annual precipitation is received between October/November and February/March, where the highest rainfall figures

are recorded in March. The temperatures range from moderately hot summers to cool moderate winters (Motteux, 2001).

Due to inconsistent climatic conditions compounded by poor grazing practices, the area has experienced land degradation in the form of sheet, gulley and donga erosion on the foot slope areas (Water Research Commission, 2006).

5.2.3 Current stakeholders, role players and support services

In Amathole district there are a number of government and private companies that are involved in farmers in the province. Most of these organizations are involved in the development of farmers especially smallholder farm projects. The projects were initiated and funded by Department of Agriculture and Dohne Agricultural Research and Development Institute, Social Development and Welfare, Nkonkobe Municipality and the Nkonkobe Economic Development Agency (NEDA), Fort Cox College of Agriculture and Forestry, University of Fort Hare and other stakeholders such as BKB, Wool Growers Association and Umtiza Farmer Co-operative.

5.3 Socio-economic profile of Amathole district

5.3.1 Population in Amathole District

Just less than 14.7% of the Eastern Cape's population lives in Amathole. This represents less than 2% of South Africa's population. The population of the Amathole district has been growing slowly. The annual rate of population growth since 2005 has been about 0.2%, which is far below the national or provincial averages. The growth rates for the various groups are: Black population 0.2%, Coloured population 0.9% and Asian population 7.2% (Stats SA, 2006).

White population 2.5% and black Africans are by far the majority in Amathole (97.6%) followed by coloureds (6.7%), whites (6.9%), and Asians (0.3%) (Stats SA, 2006). The population density of the Amathole district is 74 people per km² compared to South Africa with 41 people per km² and the Eastern Cape with 40 people per km².

5.3.2 Employment

The percentage of employed people with formal jobs is declining slowly as more people find informal positions. In South Africa this has fallen from 87% in 1995 to 82% in 2010. The same trend is evident in the Amathole district where 85% formal employment was recorded in 1995 and only 75% in 2010 (Department of Economic Development and Environmental Affairs, 2011). In the Amathole district informal employment contributes 25% of all jobs.

Key sectors in Amathole district include community or public sector service (33%), followed by manufacturing (21%), trade (15%) and agriculture (2.6%). Community services contributed the most to employment (35%) followed by manufacturing (18%) and then agriculture (6.7%). Tourism is also a significant contributor to the GDP and employment in the district (Department of Economic Development and Environmental Affairs, 2011).

5.3.3 Poverty and income

Poverty in the Eastern Cape remains wide spread and deep due to South Africa's Apartheid history. Poverty is inter-generational and structural. The South African and Eastern Cape governments have under taken a series of programmes to address poverty and have been achieving successful main streaming of anti-poverty initiatives into the planning and implementation of government programmes and in the budgeting process (Nkonkobe municipality, 2004). However, government programmes implemented since 1994 have not yielded the desired impact in eradicating poverty. The notable exception to this is the

availability of social security grants. In the Eastern Cape, the number of people living on less than a dollar a day is largely eradicated due to comprehensive social security programmes.

5.4 OR Tambo district

OR Tambo is one of the six district municipalities and the second poorest in the Eastern Cape Province with some areas having poverty being high as 82 % (Eastern Cape Provincial Government, 2005). It is situated in the north eastern part of the province, incorporating a large portion of the former Transkei inland areas and bordered by the Alfred Nzo District Municipality in the northeast, Chris Hani District in the northwest, and the Amathole District in the southwest. The total population of the OR Tambo is about 1.7 million people and approximately 306,464 households (ORTDM, Undated, citing 2001 Statistics). The majority of the dwellers speak Xhosa and Nguni languages while the rest of the people speak Afrikaans and English.

The region is predominantly rural with large tracts of arable land. Nevertheless, agriculture in OR Tambo is inadequately developed and largely subsistence. OR Tambo is characterized by moderate and high rainfall temperatures with a diversity of vegetation, from grasslands and thickets to forests and bushveld including coastal and marine habitats (Mucina and Rutherford, 2006). The district is considered to have the richest natural resources and the most fertile areas in the country, with good soils and climatic condition. The vegetation of the study region has been previously described (Cawe *et al.*, 1994; Van der Berg *et al.*, 2007).

5.4.1 Agronomical potential of the study area

Oliver Tambo has a relatively small formal economy compared to the rest of the province, providing 11% of value added. The Transkei, however, has a significant subsistence and informal economy that is not measured by statistics (Stats SA, 2004). Agriculture is the

major private sector activity, contributing 13% of value added and 8% of formal employment (Stats SA, 2007a).

Beyond the statistics, there are significant numbers of small commercial farmers in the area, concentrating on mixed farming of livestock and crops (mostly maize). Some commercial farmers have invested in small-scale irrigation, with cabbage, butternuts, spinach and potatoes the most popular crops (Eastern Cape Development Corporation, 2011). Subsistence agriculture makes a major contribution to household food security (WFP, 2008). Most production is for home consumption or limited to local sale.

5.4.2 Climate

OR Tambo is characterized by moderate, humid and subtropical coastal climate. Summer temperature varies from an average maximum of about 25°C to an average minimum of 20°C, whilst winter maximum and minimum are 21°C and 8°C respectively. The annual rainfall varies between 1100 and 1400 mm per annum occurring mostly during the summer months (October to March). OR Tambo enjoys fairly favourable weather conditions throughout the year.

5.5 Socio-economic profile of OR Tambo

5.5.1 Population distribution

The OR Tambo District is characterized by poor socio-economic conditions and low levels of development which is not an uncommon trend in the region. OR Tambo has the second highest population, estimated at 1,676,480, with a high population density for a mostly rural district of 108 people per square kilometre. The majority of the people living in OR Tambo

are African with 99.5% being black and Xhosa is the predominant language (Ngqangweni, 2000).

5.5.2 Employment levels

The OR Tambo District is characterized by low levels of employment and a high percentage of people who are not economically active. This in turn accounts for the high poverty levels and low income levels. High unemployment rates impact negatively on OR Tambo District as low affordability levels result in a poor payment rate for services. A comparison of the unemployment rate on district level reveals that OR Tambo District has the second highest level of unemployment in the province.

5.5.3 Income and Poverty levels

Income levels within the OR Tambo district are very low. Sixty nine (69) percent of the economically active population does not generate any income. Only 6.7% of the economically active population has an income of more than R1601.00 per month. District planning needs to focus strongly on local economic development initiatives that will enable the community to generate an income (Govender *et al.*, 2007).

Poverty levels vary according to district but in OR Tambo district 62.3% of the population live below the poverty line which is much higher than the Provincial norm (Govender *et al.*, 2007). High poverty levels imply a high dependency on social assistance in the form of grants. The district needs to focus on poverty alleviation mechanisms such as creating employment and supporting agricultural activities to support smallholder farmers.

5.6 KwaZulu-Natal Province

KwaZulu-Natal (KZN) is South Africa's most populated province, with a large rural population and a growing manufacturing sector (Stats SA, 2009). KZN has relatively high agricultural potential due mainly to the climate, soils and abundant access to water. The coastal areas lend themselves to sugar production and fruit growing, with subtropical fruits doing particularly well in northern parts of the province. Thirteen of South Africa's 15 sugar mills are located in KZN. KZN also produces 7% of South Africa's citrus fruit. Vegetables also grow well in these areas, while some maize is grown in the north-west of the province. Nuts such as pecan and macadamia thrive and livestock of all sorts can be found the province. Dairy cattle are found in large numbers in the KZN Midlands with beef farming taking place mostly further north.

KwaZulu-Natal farmers hold 1.5 million cattle, which represents 55% of the provincial beef herd, and their goat herds' account for 74% of the province's stock (Agricultural Development Plan, 2002). Beef originates mainly in the Highveld and Midlands areas, with dairy production being undertaken in the Midlands and south. The province produces 18% of South Africa's milk, mostly in or near Durban and Pietermaritzburg. Clover, Africa's largest milk processor, was founded in the town of Mooi River. The headquarters of Rainbow Chickens, producer of more than four million chickens per week, is in Westville (Mkhambathini Municipality Integrated Development Plan, 2009).

There are approximately 8 000 commercial farmers in the province, and around 400 000 rural farming families, involved in small-scale farming. Combined total employment in agricultural production is 250 000, accounting for 2.5% of the population. Like in the Eastern Cape Province land is not equally distributed between the black and white people (uMkhanyakude District Municipality Agri-Industry Study, 2002). This is shown in Table 5.2.

Land distribution is highly skewed to the white farmers who own most of the productive land compared to the black farmers.

Table 5.2: Land use distribution in KwaZulu-Natal Province

Total Land area (ha)	Commercial Agriculture (ha)	Communal areas (ha)
9 210 000	4 068 401 (44.2%)	3 353 951 (36.4%)

Source: Hall (2007)

KwaZulu-Natal Province has 10 District Municipalities, the most of any province in South Africa, as well as 50 local municipalities.

Access to land in KwaZulu-Natal Province is skewed in favour of a few white commercial farmers who own about 72% of land. This situation is not unique to other provinces in South Africa, but affects the whole of South Africa. As a means to address this situation the Department of Land Affairs and Department of Agriculture (DoA) have developed a programme designed to fast-track land redistribution and has set a target of transferring not less than 30% of agricultural land to the previously disadvantaged and marginalized people by 2014 (DoA, 2004; LRAD, 2004).

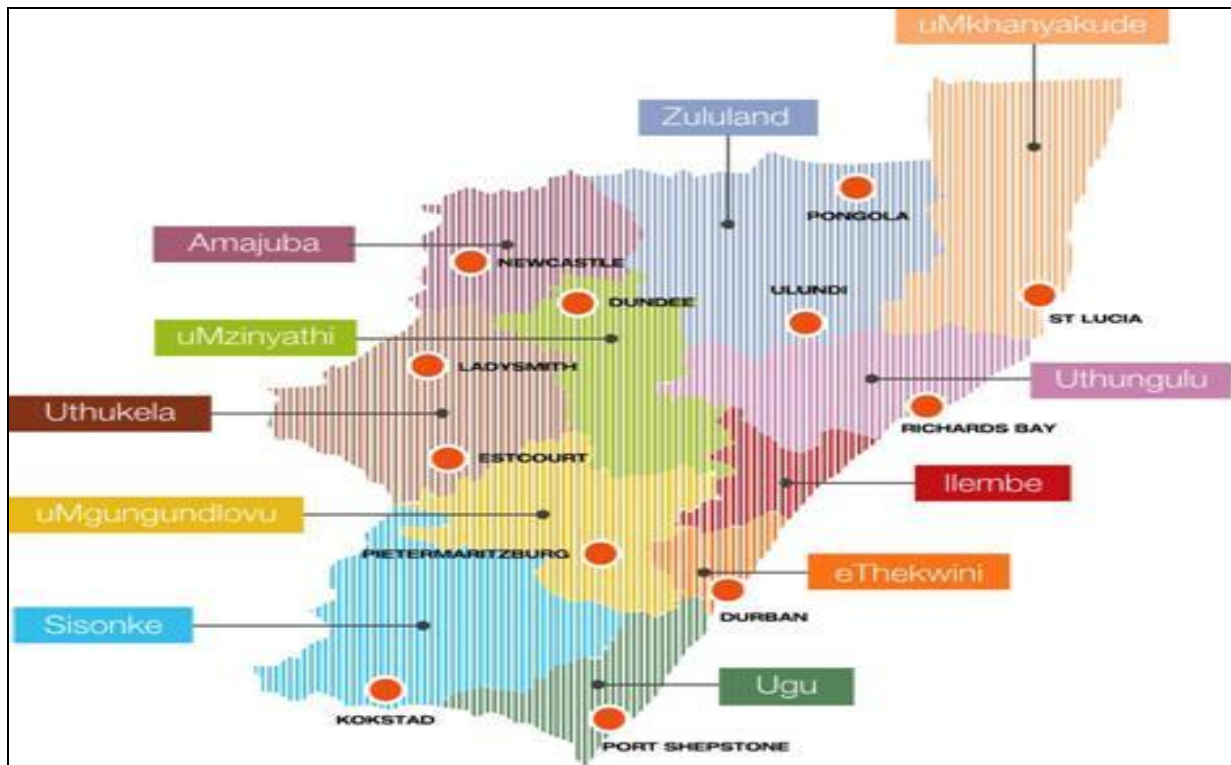


Figure 5.2: Map of KwaZulu-Natal Province (Umgungundlovu and Umkhanyakude)

Source: Google maps 2011

5.6.1 Umgungundlovu District Municipality

The Umgungundlovu Municipal District covers 8307 square kilometres with the population of 1,066,152 people who live in traditional farmland communities and informal rural settlements to up market urban areas (General Household Survey, 2009). Umgungundlovu District Municipality is situated in the central portion of the province of KwaZulu-Natal and consists of 7 Local Municipalities, namely: Mooi-Mpofana, uMngeni, uMshwathi, Impendle, Msunduzi, Richmond and Mkhambathini. The region has a rich and complex natural environment with numerous resources accounting for 13.5% of KwaZulu-Natal's Gross Domestic Product and 14.5% of the province's formal employment (The Umgungundlovu district municipality IDP technical committee, 2004).

Umgungundlovu is one of the fast growing districts in the KwaZulu-Natal Province in terms of both demographic and economic characteristics (Treasury, 2005). A comparison of the 1996 and 2001 census data indicates that the population increased from 872 612 in 1996 to 1,066,152 people in 2001 giving an aggregate population increase of 6.33% (UMDM IDP Review, 2006/2007). The population is spread unevenly among the seven local municipalities with the majority (553 223 people) being in the Msunduzi Municipality (Treasury, 2005).

Although Umgungundlovu has the third smallest population in the district, it is one of the areas that have experienced net population increase between 1996 and 2001. This is attributed to a number of factors including its strategic location in relation to Pietermaritzburg and Durban which creates opportunities for commuting between the municipal area and each of these economic centres. This emphasizes the importance of rural urban linkages in addressing development at a district level and what this means at a local level

The economy of the district is largely dependent on manufacturing (22%), government services (16%), finance and business services (15%), wholesale, retail and tourism (14%), agriculture, forestry and fishing (11%), and transport and communication (11%) (Woolard and Leibrandt, 2006). According to the economic performance indicator the trend is said to be in an upward direction and most of the individual indicators suggests further growth in the local economy (The Umgungundlovu district municipality IDP technical committee, 2004). This could be attributed to the relocation of government offices from Ulundi to Pietermaritzburg in the Umgungundlovu District. This poses a challenge to the district in terms of pressure on space for housing and especially service clusters to support the emerging government precinct.

5.6.2 Agriculture in Umgungundlovu district

The agricultural sector is characterized by apartheid-based inequalities manifested in the dichotomy between the well-developed, well-endowed and productive commercial sector in the district and the underdeveloped, under-resourced subsistence agriculture (Berliotz, 2005). Concentration of agricultural production in this district means that the majority of rural people residing on traditional authority areas are excluded from commercial agriculture and only concentrate in smallholder farming. However, there is scope for out grower schemes and strategic partnerships with the major poultry producers and sugar cane farmers in the district.

5.6.3 Commercial aagriculture

While the commercial sector is heavily supported, the subsistence farming sector is faced with many serious problems, which limits its ability to become transformed into small-scale commercial farming. A number of concerns have been raised at community workshops, which echo those experienced by subsistence farmers throughout the province. Challenges faced by these smallholder farmers include insufficient access to land for farming. Traditional areas experience land shortages while some private and state land appears to be undeveloped. The sizes of farming plots are too small for viable and economical farming enterprises. Thus, communal land tenure arrangements do not provide sufficient security of tenure, this limits investment and affects commercial crop and livestock production in controlled grazing areas.

5.7 Umkhanyakude District Municipality

Umkhanyakude district is located in along the north coast of KwaZulu-Natal and extends over 12 818km². It is bounded by the Indian Ocean to the East, Mozambique to the North,

Swaziland to the Northwest and the Districts of UThungulu and Zululand to the South and West respectively. It has a population of approximately 504 000 people who are distributed unevenly among five local municipalities. It consists of 5 local municipalities, namely Umhlabuyalingana, Jozini, Hlabisa, Hluhluwe, Big five and Mtubatuba.

Umkhanyakude is one of the four District Municipalities in KwaZulu-Natal that were selected as Presidential Nodes for the implementation of the Integrated Sustainable Rural Development Programme (ISRDP). The programme was aimed at alleviating poverty to assist rural poor farmers in the areas. Umkhanyakude District should ideally receive greater attention from various government departments and service providers. Secondly, it forms part of the strategic initiatives for social and economic development involving South Africa, Mozambique and Swaziland.

Umkhanyakude has a high incidence of poverty, and that has experienced years of neglect in terms of economic development. The district has failed to attract industries while tourism is just picking-up. Urban centres such as Hluhluwe, Jozini and Mkuze mainly serve as service centres and agriculture in traditional authority areas has not developed beyond subsistence level.

Finally, the district is well endowed with natural resources and is strategically located to benefit from national and Southern African Development Community (SADEC) initiatives. Natural resources include relatively good soils, protected areas and game reserves, sites of international significance and a range of other raw materials. The district is located along and forms part of the Lubombo Spatial Development Initiative and the proposed Tran frontier Peace Park involving Mozambique.

5.7.1 Socio-economic profile of Umkhanyakude district

5.7.2 Population distribution

UMkhanyakude has about 504 000 people who are distributed unevenly among the five local municipalities with the majority (33.44%) being in Hlabisa Municipality. Hlabisa only covers 11% of the total land area, which suggests substantially higher population densities (e.g. urban and peri-urban areas). Umhlabuyalingana and Jozini Municipalities account for 24.28% and 30.10% of the total population respectively.

5.7.3 Employment Profile

Unemployment is one of the major problems facing UMkhanyakude district. In 79 981 people who are able and willing to work, only 36 939 are employed. About 43 000 are unemployed and are actively looking for work. This figure excludes the housewives and people who are not looking for work. The situation varies according to municipalities, with Jozini and Hlabisa being the most affected (Stats SA, 2006).

Low representation of the agricultural, trade and manufacturing sectors indicates a low level of development and economic diversification. About 31.5% of the employed are involved in various types of elementary activities or unskilled work, which do not require any formal training of skills level. Skilled, technical and professional workers account for 3435 (10.7%), 1368 (4.26%) and 4396 (13.7%) respectively. Some 4381 (13.3%) of the total labour force, works in the craft and trade related industries (Local Economic Development; Strategies and Instruments, 2002). This clearly indicates a general lack of appropriate skills for economic diversification. It also highlights a need for skills training in order to position the labour force to exploit the emerging economic opportunities in the district.

5.7.4 Income profile

An analysis of the income profile of the population suggests that poor low income communities dominate UMkhanyakude district. About 81.4% households earn less than R1 500 a month (Stats SA, 2009). Close to 25.7% of households have no formal income, which suggests a high dependency on subsistence activities for survival or government grants and pension funds. More than 50% of households in the district have an income of below R500 per month. A key contributor to the aggregate low income levels is the high rate of unemployment and the low wages paid in the agricultural sector (Magni, 1999).

5.7.5 Education profile

A relatively high level of functional illiteracy characterizes Umkhanyakude District. Studies indicate that close to 35.4% of the total district population has not received any formal education while 30.4% has primary education only. The number of people with secondary education could be estimated at 16.8% of the total population. Only 0.5% has tertiary education. Lack of appropriate levels of education and skills training has a negative impact on the potential of the working age group to compete effectively in the job market, hence the majority of the employed is involved in unskilled labour. This introduces a need to equip the population with the necessary skills to increase their chances of employment.

5.8 Summary of the chapter

It can be concluded that both provinces have potential for smallholder agriculture given the demographics and socio-economic status of the areas that were studied. The Eastern Cape Province has a cooler climate which is suitable for fruits and vegetables under irrigation since the province experiences low rainfall, while the KwaZulu-Natal Province is characterized by moderate, humid and subtropical coastal climate which has fairly

favourable weather conditions throughout the year and soils that encourage agricultural activities like vegetable gardening. There are high levels of illiteracy in both provinces though in KwaZulu-Natal it is much higher than the Eastern Cape. OR Tambo district in Eastern Cape that has the highest levels of poverty and unemployment compared to the ones in KwaZulu-Natal Province. People who practice agriculture are mostly those in the rural areas and a high population depend on social grants as their source of income, while agriculture also plays an important role in alleviating poverty in these rural areas. Unemployment is rife in both provinces as most of these rural residents are dependent on commercial farms for employment.

CHAPTER 6

RESEARCH METHODOLOGY

6.0 Introduction and rationale

Chapter six explains data collection methodologies used in the research. This chapter presents discussions on the research tools used in the collection and analysis of data on the impact of farmers support programmes on the socio-economic situation of smallholder farmers in the Eastern Cape and KwaZulu-Natal Province. The section on data collection methods explains the nature of the data, the tools that were employed and the sampling techniques, including the basis on which the sample was drawn. This chapter then goes on to discuss the procedures for collecting the data and how the data were processed and analyzed. The details of the models adopted for study are presented and the data variables that were considered for each research question are also addressed.

6.1 Selection of study areas

The Eastern Cape and KwaZulu-Natal Province were selected for this study to assess the impact of various organizations (Industrial Development Corporation, CASP, MAFISA, Government and NGOs) supporting smallholder farmers in South Africa. A number of farmer support programmes have been implemented through government and private initiatives in both provinces. Most of these programmes are aimed at improving quality and volumes for smallholder farmers. The aim of this study was to compare farmers in the Eastern Cape and KwaZulu-Natal Province by looking at crop and livestock production systems. In the Eastern Cape the farmers produced citrus which is a commercial crop and livestock while in KwaZulu Natal the main commercial crop was sugarcane and crop production (maize and vegetables). Smallholder farmers in both provinces have a potential to increase their

production size if production difficulties are lessened. One of the main production difficulties that smallholder farmers are facing is lack of support services such as technical and managerial skills to access better paying markets.

6.2 Questionnaire design

Both primary and secondary data were used in this study. Primary data was collected using a pre-tested questionnaire which included household characteristics such as demographic questions (name, sex, age, education, marital status), farm specific characteristics (number and class of livestock, crops grown and the hectarage), food and non-food expenditures, remittances, government and private assistance in agriculture, employment and income, agricultural activities and finally the challenges faced by smallholder farmers in marketing their products. The manner in which the questions were designed was that they were carefully phrased to avoid ambiguity, sensitive and provocative questions. Interviews were conducted in Xhosa and Zulu which are the local languages used in the study areas.

Secondary data was collected from the local Agricultural Research and Extension offices, Provincial and District offices of the respective Departments of Agriculture, the Lima Rural Development Foundation (LiMA) and Non-governmental organizations working with the farmers.

6.3 Sampling of Respondents

Stratified sampling was used to group farmers that received some support irrespective from which organization and farmers who never received any assistance for agricultural purposes. The farmers were divided into those belonging to farmer support programmes and those that never had any form of support (distant areas from those that received support). Table 6.1 shows the different enterprises that were supported and those that were not. It is also

important to note that some of these farmers are into cooperative farming and did receive some assistance such as agricultural inputs and technical skills. The farmers were put into relatively homogeneous subgroups before simple random sampling was used to pick respondents for interviewing. This technique of selecting respondents was adopted from the works of Matata *et al.* (2001) and Ravallion (2001).

Table 6.1: Farmers selection by gender distribution

Type of Farming	With support		Without support	
	Male	Female	Male	Female
Vegetables	11	8	8	14
Citrus	8	3	0	0
Livestock	9	3	7	5
Sugarcane	7	0	6	0
Total	49		40	

Source: Data survey

Farmers were randomly selected from the villages that had received some farmer support and the control group consists of farmers who were distant from farmer supported ones to avoid spill overs of technical skills and extension services offered to the supported group. Random sampling was used to choose the farmers from the finalized groups. This approach was employed to ensure that as many different farmers were included in the study. Interviews were conducted on individual farmers or chairpersons of the different cooperatives.

6.4 Sampling Size

Forty nine (49) smallholder farmers who received the farmers support programme were interviewed and forty (40) farmers without support were interviewed so that a comparison could be made. A total of 89 questionnaires were administered to farmers in their local

languages to gather as much information for the study. Questionnaires were administered in the two provinces to cater as much for the farmers who had received the support for agricultural purposes. Table 6.2 shows the distribution of farmers that were interviewed for this study. This was done to reduce discrepancies in the data collected.

Table 6.2: Stratification of farmers in Eastern Cape and KwaZulu-Natal Province by FSP

Province	With FSP	Without FSP
Eastern Cape Province		
OR Tambo	12	10
Amathole	13	10
KwaZulu-Natal Province		
Umkhanyakude	12	10
Umgungundlovu	12	10
Total	49	40

Source: Data survey

6.5 Interviewing procedure

Interviews were carried out by the researcher and his assistants who were taken from the university. Local university students and a researcher were the most preferred since the questionnaire required some numerical data and were able to speak the local languages in the area. Extension officers from the different municipalities assisted as the initial contact people when visiting the farmers who were interviewed in the Eastern Cape and KwaZulu-Natal Provinces. A total of eighty nine (89) farmers were interviewed for this study from the Amathole, OR Tambo, Umkhanyakude and Umgungundlovu District Municipalities. The geographical distribution of the farmers and distances to these farms limited to researcher to

increase the sample size as most of the farmers are located far from each other in the districts.

The purpose of the study was explained to the assistants and the data needs made clear. Knowing what is required for the study ideas were shared on how to approach the respondents in the various districts. The study objectives and questionnaire were first discussed and explained to the sampled farmers. When the farmer was found to be willing to answer questions interviews progressed. All this was done, so that enumerators could establish good rapport and encourage respondents to cooperate and hopefully give honest and unbiased answers.

Focus group discussions were conducted with farmers from all different enterprises. These included farmers who kept livestock and grew crops for sell and household consumption. Attendance in the focus group discussions included key stakeholders from the farms who gave detailed information about how the farms were being operated under the current tenure system pertaining to land reform programme and farmers faring on tribal authority land in South Africa. The open forum of the focus group discussions provided immediate triangulation of the data in-situ.

6.6 Data collected

The study applied quantitative methods of data collection by visiting smallholder farmers producing a selected range of commodities and livestock to investigate the constraints faced them in the production and marketing of these products. Database of smallholder farmers from the different local municipalities were used to access the smallholder farmers producing the particular crops and livestock in the selected districts.

To measure the effect of these farmers support programmes on the farmers' livelihoods and welfare a household survey was conducted in the smallholder farming sector where crop and

livestock production farmers were interviewed in the two provinces. The majority of households in the Eastern Cape and KwaZulu-Natal are smallholder farmers that produce for both the local and international markets. To ensure that there was sufficient coverage in the data collected a stratification method was used to separate farmers that have received some external assistance/support and those that did not receive this assistance from farmer support organizations that include government, private parastatals and non-governmental organizations.

A number of questions regarding the history of the smallholder farms, the agricultural output and the markets for their produce were asked to find out the position of the farms in terms of their operations and resource endowments. The farmers were also asked questions on the challenges faced and how these impacted on their incomes and welfare and what strategies they adopted to stay in the farming business.

6.7 Definition and units of measurements of key data variables used in the study

For each of the research questions stated in the introductory chapter, response variables are discussed and the anticipated outcomes are explained for this study.

6.7.1 Response variables for the first research question

Table 6.3 shows the details of variables for which the data was collected to address the first research question “What are the characteristics of smallholder farmers’ production systems, challenges faced by smallholder farmers and their performance in reaching input and output markets?”. Details included household demographic characteristics, land and non-land holdings, agricultural productions, off-farm employment, non-labour income, credit and extension services in order to understand how farm characteristics contributed to household net income from farm and non-farm sources. The following variables were investigated in trying to answer the first research question.

Table 6.3: Hypothesized relationship between the dependent variable and the expected outcome

Response Variable	Predictor variable	Hypothesis	Expected outcome
Demographic characteristics	Age, gender, household size, employment level e.t.c	To assess if these have a positive or negative impact on incomes of famers.	Positive/negative
Support interventions⁵	Credit	Access to credit improves farmer's livelihood.	Positive
	Technical skills	Access to technical skills has a positive impact on livelihood of farmers.	Positive
	Networking/extension services	Farmers network with different support services or not. A dummy variable will be used	Positive
	Facilitation to market access	Farmers support organizations facilitate market access in smallholder farming.	Positive
	Access to information	Access to information has allowed farmers to produce better crops.	Positive
	Production levels in the enterprises	Higher yields increase income received by farmers.	Positive
	Cost of production	Higher production costs of inputs decrease household income.	Negative
	Production	Increased production increases food security/ welfare of farmers.	Positive
	Gifts to friends	Donations to friends or relatives (monetary and non-monetary donations)	Negative
	Land and non-land assets	Access to land size, physical and non capital.	Positive
	Earnings from off-farm	Increase in income from off-farm activities.	Positive
	Off-farm employment	Income from labour	Positive

⁵ A dummy is used to determine if a farmer received support or not.

6.7.2 Response variables for the second research question

In relation to question d “How does collective action (cooperation) contribute to markets access in smallholder farmers in South Africa?” the study assesses the role that collective action can contribute to markets access and improved incomes among smallholder farmers in South Africa. Table 6.4 shows the different variables that are used to answer research questions 2.

Table 6.4: Hypothesized relationship between the dependent variable and the expected outcome

Response Variable	Predictor variable	Hypothesis	Expected outcome
Collective action	Joint operations	Joint operations by farmers reduce transactions costs.	Positive
	Coordination	Coordination by farmers reduces transactions costs.	Positive
	Alliances	Formation of alliances reduces transactions costs.	Positive
Incomes	Investment in infrastructure	Investment in infrastructure farmers improves livelihoods.	Positive
	Diversification	Diversification into other crops or finding off-farm income improves the farmer's livelihoods.	Positive

A probit model (econometric regression) will help to explain how collective action in smallholder farming can contribute to farmer's livelihood and welfare in rural areas of South Africa. To achieve this specific co-innovate approaches/strategies adopted by farmers will also be used to determine the means by which smallholder farmers access different markets to improve their welfare.

6.7.3 Response variables for the third research question

In trying to understand the impact of the FSP on the farmers the study compared participants and non-participants to these programmes and their contribution to household welfare, observations about market behaviour were investigated with the aim of understanding how support programmes may lead to higher earnings of the farmers and also depending on how important the indirect effects are thought to be in the specific application and also the resultant spill overs that come with these programmes. Table 6.5 shows farm household variables used to investigate the impact of these farmer support programmes. Propensity Score Matching (PSM) is used in this study to investigate the impact of farmer support organizations on the income and welfare of smallholder farmers.

Table 6.5: Hypothesized relationship between the dependent variable and the expected outcome

Response Variable	Predictor variable	Hypothesis	Expected outcome
Welfare	Poverty	The higher the income received by households the lower poverty.	Positive
	Assets Profiles	Increase in asset ownership from two different periods e.g. livestock and machinery.	Positive
	Household size	The more household members the higher poverty in the household.	Negative
	Memberships to these FSP	If a farmer is a member or has received support	Positive
	Distance to the market	Farmers who are close to the markets have better incomes.	Positive

To access the effect of farmers support services on smallholder farmers a comparative investigation of farmers who have received support and those who did not was made

between 'treatment farmers' (those that had some form of support) and 'control farmers' (those that did not receive any support). The aim was to determine if there is a significant difference between these two sets of farmers and how these farmer support programmes contributed to market access and household incomes.

An investigation of whether farmers who received technical skills on new technologies and managerial skills were compared to non-participants of the FSP using the average treatment procedure (Propensity Score Matching) as explained by Bernard *et al.*, (2008). The aim of this study part of the study was to understand whether farmers who had access to new technologies, credit support and skills were better in terms of markets access and welfare.

6.7.4 Response variables for the fourth research question

The study investigated the best way that assets of smallholders and their strategies can be used to access better paying/different markets and how it would contribute to the farmers' incomes and welfare. Variables included in this research were income, employment, area cultivated, networks, extension services and farm assets used in production as shown in Table 6.6.

The multinomial logit model was used to test the role played by partnerships or associations in contributing to market access. Partnerships and collective action have greater depth in promoting marketing access which contributes to increasing farmers' incomes. According to Matungul, Ortmann and Lyne (2002), the greater the depth in marketing methods used by households, the greater the expected income.

Multinomial logit model can be used to predict a dependent variable, on the basis of continuous and/or categorical independent variables, where the dependent variable takes more than two forms (Hill, Griffiths and Judge, 2001). Furthermore, it is used to determine

the percent of variance in the dependent variable explained by the independent variables and to rank the relative importance of independent variables.

Table 6.6: Hypothesized relationship between the dependent variable and the expected outcome

Response Variable	Predictor variable	Hypothesis	Expected outcome
Education	Whether the farmer attended school or not	If the farmer is educated he/she is able to understand	Positive
Household size	Number of people in a house	The more people the more labour the household has for production purposes	Positive
Networking	Farmers network with different support services or not. A dummy variable will be used	Networking services helps the farmers to be aware of their surrounding	Positive
	Extension services provide farmers with new skills and technology	Farmers who have access to extension are well informed about changes in farming and have access to new farming skills	Positive
Labour	Employment levels	Increased use of hired labour increases output	Positive
	Income	Income sources e.g. farm and non-farm incomes.	Positive
Land size	Land owned by farmers	The higher the number of hectares owned by the farmers the more production level.	Positive
	Area cultivated	The more the number of hectares cultivated to various crops the higher the income.	Positive
Market information	Access to information about the market	Farmers with access to information from either extension officer, books, magazine and radio	Positive

Production depends on the resources available to the farmer. Labour, capital and land play a significant role in smallholder production and this also has an impact on incomes received by farmers (e.g., crop yields are dependent on the technology and equipment used in farming). The aim of this part of the research was to investigate how various strategies and assets can be used by farmers promote market access and improved welfare of smallholder farmers using the multinomial logit model (Verbeek, 2004). The multinomial logit model encompasses multi-responses which can be used to investigate the different strategies that farmers adopt to access different market in rural areas

6.8 Analysis of the data

Descriptive analyses are briefly explained using demographic characteristics of the sampled farmers, which are then followed by an overview of farms' assets ownership. This chapter goes on to discuss socio-economic aspects of farm households, giving special attention to aspects related to agricultural production and marketing and factors influencing them. In Chapter 7 descriptive statistics such as mean, percentages, standard errors, frequencies and standard deviation are used to explain the socio-economic aspects of the farmers.

6.8.1 Analytical model for the first research question

In order to address the research questions, various techniques were employed to come up with empirical results (next chapter). The first research question was addressed by interrogating the household characteristics and household production systems so as to explain how smallholder farmers were organized and what challenges they faced in addition to assessing the performance of the smallholder producers in particular. The basic reasoning behind this part of study was to examine the impact of farmer support programmes in

addressing the challenges faced by smallholder farmers in the Eastern Cape and KwaZulu-Natal Province.

In order to find out the differences between the above groups based on whether or not they were receiving support from the government, private parastatals or non-governmental sectors, two multivariate procedures (explore analysis and linear discriminant analysis) were used to examine the extent to which these factors were important in explaining markets access. These two methods are used when the dependent variable is categorical and independent are continuous (Press and Wilson, 1978).

6.8.2 Analytical model for the second research question (Probit model)

To be able to answer the second research question in this study the probability for agricultural cooperatives/farmers to engage in output marketing activities over time, given the market and governance environment in which they operate in South Africa is quantified. Smallholder farmers in South Africa market their produce as individuals or producer organizations. Transaction costs which include negotiation and bargaining skills among individual farmers and cooperatives affect market access. A probit model used by Godtland *et al.*, (2004) and Wooldridge (2002) was adopted in study to estimate the probability of smallholder farmers in engaging in marketing activities or not. The empirical model is presented in equation 1:

$$\gamma_i = \alpha_0 + \alpha_1(m_i * x_i) + \alpha_2(m_i * x_i^2) + \alpha_3(m_i * x_i^3) + \alpha_4(b_i * x_i) + \alpha_5(b_i * x_i^2) + \alpha_6(b_i * x_i^3) + \alpha_7(d_i * x_i) + \alpha_8(d_i * x_i^2) + \alpha_9(d_i * x_i^3) + r_i + \varepsilon_i \quad [1]$$

where the dependent variable, γ , is equal to one when a cooperative i is engaged in output marketing activities during 2010-2012⁶, and equal to zero when it did not. In order to capture

⁶ Study period in which the data was collected from these smallholder farmers

the cyclical evolutions of cooperative business, the independent variables in Equation 1 include cooperative age, χ , as well as its squared value, χ^2 , and cubic term, χ^3 . Since cooperatives in South Africa develop from business cycles which involve company registration for beginners, these variables are expected to explain γ , with χ^2 showing opposite sign in respect to χ and χ^3 .

In order to distinguish the effect of different markets and institutional arrangements on the development of cooperatives on South Africa, χ , χ^2 , and χ^3 are interacted with two indicators: (1) a dummy, m , for cooperatives established on farmers' initiative (m equal to one), as opposed to cooperatives originated from top-down interventions by the government or NGOs (m equal to zero); and (2) a dummy, b , for cooperatives whose initial chairman was appointed by the government (b equal to one), as opposed to cooperatives with an initial chairman chosen by the farmers (b equal to zero), to determine sustainability of the project the distance to the market is measured by d , where (d is equal to zero for easily accessible markets) where χ , χ^2 and χ^3 are interactive terms showing variability in distance to the market.

Cooperatives or group farming in South Africa requires formal registration so that they can receive support from either the state or NGOs. This initiative normally comes from small group of members, under the favourable support of the state and those that are initiated by NGOs centred on a ready market for their produce. For this reason farmers' initiative, m , is expected to have a positive influence on collective marketing in 2010-2012, γ . Part of the literature discussed in Chapter 3 and 4 suggests that governmental interference, d , has a negative impact on collective marketing. However, when cooperatives are formed by poorly educated smallholders the intervention of the government could also be necessary to promote collective marketing but more often than not those that are supported by NGOs

tend to have a longer life span because of the support package they receive. The empirical model (Equation 1) includes also a set of three dummies, d_i , indicating the different districts in which a cooperative i operates (OR Tambo, Amathole, UMkhanyakude or Umgungundlovu). While these cooperatives play a significant role in contributing to household food security and income, their developmental stage vary depending on how they were established and by whom. In the Eastern Cape Province most of these cooperatives or groups of farmers are supported by the state but those in KwaZulu-Natal had support programmes coming from NGOs.

The empirical model proposed in Equation 1 could suffer from econometric problems inherent to the use of cross-sectional data, and these should be addressed before interpreting the results. In most cases, when econometric models are based on data collected at one point in time, as in this case, it is difficult to ascertain that right hand side variables cause variations in the left hand side variable rather than the other way around (endogeneity). However, causality will not seem to be a problem in this model since age of (existing) cooperatives, and lagged variables (referring to cooperatives' establishment) are interacted in the model. An additional concern relating to the use of cross section data is heteroskedasticity, here controlled by estimating the model with robust standard errors⁷.

6.8.3 Analytical model for the third research question (Propensity Score Matching)

To answer the third research question the analytical method used in this study draws from the work of Ravallion (2001), *Godtland et al.* (2004) and Bernard *et al.* (2008). According to these authors, a way to obtain robust impact assessments is to compute the Average Treatment Effect on the Treated (ATT), which in this case refers to the average effect of

⁷Heteroskedasticity occurs when the variance of the random error term is not constant across observations.

smallholder farmers who had some form of assistance from farmer support organizations such as government, non-governmental organizations and private parastatals. The empirical problem faced in this case was the typical absence of data concerning the counter-factual, for example, what would the smallholder farmers have done had they not had this support from these organizations. The challenge was to identify a suitable comparison group of non-participants whose outcomes on average provided an unbiased estimate of the outcomes that smallholder farmers would have had in the absence of the these assistance of farmer support organizations and how their incomes would have changed by being members to these organizations.

Given the non-random selection of smallholder farmers who had assistance from these farmer support organizations, (the farmer support organization are a result of government, non-governmental organizations and other private organizations) and farmers' self-selection into organizations (membership is a voluntary decision depending on farm resources, knowledge, as well as farmer preference), a simple comparison of outcomes between farmers who had been assisted in terms of finance and other support services was compared with those that had not received any assistance. There are a number of potential sources of bias in naive comparisons. Individual farmers and farmers who are coop-members are likely to differ from individual farmers in the distribution of observable characteristics (such as agro-ecological conditions, public infrastructure and services, market institutions and demands, households characteristics, farm assets and practices) leading to a bias related to 'selection on observables'. Such a bias is likely to arise because these observable differences can also be expected to have a direct effect on commercialization of these projects in the absence of these farmer support services. A second source of bias in assessing the impact of an intervention or support service can arise in case of diffusion or spill-over effects between those farmers who have support and the surrounding communities/farmers. For instance, farmers who receive support are more likely

to attract extension and input services. In many cases the benefits from these service providers can pass on to neighbouring farmers that are not members of these support services, leading to an underestimation of these farmer support services. Another source of bias is that farmers with access to these services may differ from non-participants in unobservable characteristics (e.g. personal ability, motivations and preference), which may also affect agricultural output of their farms, resulting in 'selection on unobservable' or 'self-selection' especially for individual farmers.

To address these potential sources of bias, the following steps were taken. First, all individual farmers located in areas which are close to the farmers who received support services from any of these organizations were excluded from the sample. This procedure reduced further the size of the sample but eliminated any potential sources of diffusion bias. Second, in the absence of a suitable instrument, it was not possible to explicitly control for potential bias related to selection on unobservables. However, the strong incentives provided by these farmer support organizations were to promote farmer's participation in farming. This provided sufficient reasons to believe that selection on unobservables might also be negligible, especially after the exclusion of individual farmers located in areas close to those have received support services. In other words, it sounds logical that these organizations that provide support services had enough incentives that are sufficient to convince farmers to easily access markets.

Third, the farm household variables presented to control for selection on observables were used. In the absence of reliable data at the community level, one cannot control for location-specific effects associated with market, agro-ecological and infrastructural conditions on the decision to have access to these support services. However, since most of these farmers interviewed were located in the Eastern Cape and KwaZulu-Natal Provinces which are areas considered to be favourable for agricultural production and these areas are major sources of

agricultural commodities for the local and export market. Thus, agro-ecological and infrastructural differences across sample sites were assumed to be negligible.

It is then justifiable to control for potential bias caused by selection on observables using two separate techniques: Propensity Scores Matching (PSM) and Tobit regression analysis. The PSM technique involves the estimation of the predisposal of farmers to be attached to these support organizations on the basis of farm household characteristics (using Probit models), and subsequently the matching of individual farmers and those cooperative farmers on the basis of propensity scores and the estimation of Average Treatment Effect (ATE).

The Tobit model was used to regress farmers who were members to a farmers support program and farm household characteristics against those who were not. Propensity Score Matching and Tobit model allow controlling for selection on observables and providing comparable estimations of membership impact. In both analyses, endogeneity (i.e. simultaneity) problems were avoided by using explanatory variables that include household and fixed farm characteristics (such as the fixed land asset and distance from the market). Moreover, farm-household characteristics were intentionally over parameterized using quadratic terms in order to take into account possible nonlinearities in the impact of these variables and to improve the predictions of both analytical models as suggested by Godtland *et al.* (2004).

A right and left censored Tobit estimator was used as farmers' incomes and welfare varied between zero and one. The Tobit analysis were tested for the presence of heteroskedasticity (using Breusch-Pagan/Cook-Weisberg test), which appeared not significant, and improved through the exclusion of a few influential observations. Statistical robustness of the PSM analysis was instead promoted by matching farmers using two separate techniques -Kernel and Nearest Neighbour, and by comparing the results obtained. To ensure maximum comparability of the treatment and control groups, the sample used for PSM was restricted

to the common support position, defined as the values of propensity scores where both treatment and control observations can be found.

The objective was to estimate the impact of two treatments, participation in farmer support programme (W_1) and those that did not participated in these support schemes (W_2) on how the household income and welfare (Y) are affected. The ultimate goal was to estimate the average treatment effects ATE_1 and ATE_2 with Y_1 and Y_2 representing the income with treatment, and Y_0 the income without treatment.

The Propensity Score Matching (PSM) was thus used to investigate the impact of farmer support programmes on the income and welfare of smallholder farmers.

$ATE_1 = E$ for W_1 : non-participation in farmers support programme.

$ATE_2 = E$ or W_2 : participation in farmers support programme.

The assumption was that there are two treatments, W_1 and W_2 for households that had either participated or not participated with these farmer support programme.

$ATE'_1 = E$ for ($W_1=1, W_2=0$): not a member of a farmers support programme.

$ATE'_2 = E$ for ($W_1=0, W_2=1$): member of a farmers support programme.

In the first model (Equation 4) referred to as regression on explanatory, control for selection bias was done by including a large set of observable explanatory variables (χ) as control functions in the regression on household income which are shown by equation [2] and [3] below.

$$\text{For } (W_1=1, W_2=0): \text{ where } \gamma_i = \theta + \alpha_1 + \beta\chi_i + \varepsilon_i \quad [2]$$

$$\text{For } (W_1=0, W_2=1): \text{ where } \gamma_i = \theta + \alpha_2 + \beta\chi_i + \varepsilon_i \quad [3]$$

The model to be regressed using OLS is:

$$\gamma_i = \theta + \alpha_1 W_{1i} + \alpha_2 W_{2i} + \beta \chi_i + \varepsilon_i \quad [4]$$

Where χ_i = explanatory variables which include age, gender, household size, land size, access to remittances and support from FSP.

The ATEs shown by equations [2] and [3] were then estimated with the propensity-score matching method. Matching involves pairing farmers who have received some form of assistance with those that have not in terms of their observable characteristics (Abadie and Imbens, 2002). In this study the treated and the controls units were matched according to the estimated propensity score and calculated the ATEs as a weighted average of the outcome difference between treated and matched controls.

The propensity matching method estimates the ATEs as follows;

$$ATE_1 = \frac{1}{N_1} \sum_{i \in N_1} (\gamma_{1i} - \gamma_j) \quad [5]$$

$$ATE_2 = \frac{1}{N_2} \sum_{i \in N_2} (\gamma_{2i} - \gamma_j) \quad [6]$$

With N, the number of farmers who received support (treated) units γ_j , the income of the treated group is matched with that untreated group (farmers without support). It is important to note that households that participate or have some form of assistance are matched to those that do not have any assistance. Matching between the treated and control groups is done on the propensity scores estimated as bivariate probabilities from the bivariate probit model (Equation 5 and 6). The ATEs can be estimated using OLS as the regression coefficients on W_1 and W_2 are unbiased and consistent with the OLS model.

6.8.4 Analytical model for the fourth research question (Multinomial logit model)

Multinomial logit model, also called a logit model, is used to model when there are more than two outcomes for the dependent variable. In the logit model the log odds of the outcome is

modelled as a linear combination of the predictor variables. Multinomial logit model analysis was used to identify the relationships between dependent variable and independent variables such as skills/knowledge and demographic variables (e.g., age, gender, income), and constraints faced by smallholder farmers in rural areas of South Africa. The Multinomial logit model is shown by Equation 7. The choices of the farmers are explained by the characteristics of the individuals where answers to the survey question on the types of strategies these farmers use are given by equations adopted from Verbeek (2004):

$y_i = 1$ if farmers is in a partnerships with different organization

$y_i = 2$ if farmer is a member to a producer organization

$y_i = 3$ if farmers is a member to a cooperative (work collectively)

$y_i = 4$ if the farmer is operates as an individual

$$P\{y_i = j\} = \frac{\exp\{x_i' \beta_j\}}{1 + \exp\{x_i' \beta_2\} + \dots + \exp\{x_i' \beta_M\}} \quad [7]$$

For $j=1, 2 \dots M$

For each group that the farmer belongs to gives a set of parameters estimated using log – odds ratios (relative probabilities):

$$\log \left[\frac{p\{y_i = j\}}{p\{y_i = 1\}} \right] = x_i' \beta_j \quad \text{and} \quad \log \left[\frac{p\{y_i = j\}}{p\{y_i = k\}} \right] = x_i' (\beta_j - \beta_k) \quad [8]$$

$$\text{Marginal effects: } \frac{\partial p_j}{\partial x_i} = p_j (\beta_i - \bar{\beta}) \quad \text{with} \quad \bar{\beta} = \sum_{k=1}^j p_k \beta_k \quad [9]$$

A multinomial logit model⁸ was used to identify the main determinants of household-level strategies to access markets in communal areas of South Africa. The model included both biophysical and socioeconomic explanatory variables. Biophysical variables included in the model represent a household's natural capital and include the amount of land that is owned by the household; access to water for farming as an important indicator of agricultural production potential. Included in the model is the amount of land owned by the different farmers as an explanatory variable.

Table 6.7: Variables included in the multinomial logit model

Variable	Definition
X ₁	Age
X ₂	Gender
X ₃	Education level
X ₄	Household size
X ₅	Access to land
X ₆	Access to market information
X ₇	Land size
X ₈	Ability to get market information
X ₉	Access to extension services
X ₁₀	Access to farmer training services
X ₁₁	Farmers belonging to farmers' organizations
X ₁₂	Availability of a access markets

Ownership of land is expected to stimulate on-farm activities whereas a lack of own land can be expected to stimulate a household to look for off-farm work. The expected effects of land

⁸ A multinomial logit model (Greene, 1990) is appropriate when the dependent variable consists of multiple categories (e.g., channel choices) and in our case relates the probability that a household chooses a given channel choices (marketing channels) to a number of asset-related explanatory variables.

to farmers are important in terms of trying to get credit from financial institutions (Barham, Boucher and Useche, 2002; Boucher, Barham and Carter, 2002). Land for which the farmer has valid title deeds can be used as collateral and therefore may stimulate channel choices or strategies that require larger amounts of financial capital. Farmers may also be willing to invest more in land that they have title to than in land that has no title, even though this may be true for any land that is owned, with or without formal title.

The socio-economic explanatory variables were included in the model as they have influence on market access and welfare of the farmers. Not all forms of capital in smallholder farming were included because of concerns that these may be endogenous to the choice of livelihood strategy. Improved market access can be expected to stimulate production of cash crops as farmers have assets to produce better quality and consistent output (Pender *et al.*, 2004; Van de Walle, 2002). Higher road densities tend to lead to improved market access and are expected to stimulate cash crops or high income crops to smallholder farmers. Moreover, better road connections are expected to facilitate off-farm work.

Other variables in the model include household size, gender and age of the household head, proportion of female adults operating the farms and education of farm household heads. Size of the household determines the availability of family labour and as such is expected to influence both livelihood strategy to maximise profits and technology use. For example, to maximize employment for its members, large households may want to adopt a livelihood strategy that centres on working on own farms. They may also find it easier to adopt labour-intensive production technologies to lead to improved markets access. On the other hand, a high dependency ratio may be indicative of labour shortage, which may stimulate livelihood strategies that require less family labour. Given a number of specific characteristics of female headed households and the many competing demands on the time of female household heads, gender of the household head is expected to influence the choice of

strategy and channel choice (as females tend to chose markets that easily accessible compared to males).

A higher proportion of female adults in the household decreases the availability of non-domestic labour (the fact that most female adults have children restricts their options for non-domestic work) and therefore may influence the household's choice of livelihood strategy as well as technology choice. Finally, households in which the average level of education is higher can be expected to have more members working off-farm (often in better remunerated occupations) and be more receptive to new technologies. This also depends on the crops that are also grown by farmers, in most cases women tend to grow crops that can be easily be sold such as vegetables while males tend to grow cash crops such as sugar cane and citrus fruits.

6.9 Summary of the chapter

In order to try and answer the research questions stated in Chapter 1, quantitative techniques were used to better understand how prospects for sustainable growth and poverty reduction could be stimulated in the rural areas of South Africa. The methods used for analysis were based mainly on household data and secondary sources of information collected from 89 farm households. The results to be presented in the next chapter were based on statistical analysis describing the households' demographics and asset base according to income level. To access the impact of farmer support organization membership on farmer incomes and welfare, a Propensity Score Matching (PSM) technique was used to compare the differences in incomes received by the farmers. A probit model will be used to estimate the probability of smallholder farmers in engaging in marketing activities of not in communal areas and how engaging in market activities contributes to sustainability of their farms. Factor and cluster analysis was then used to identify the major strategies followed by rural households in accessing different markets based on their use of land and labour

resources. A multinomial logit econometric model was adopted to assess the main determinants of these strategies as part of an integrated econometric framework for analysing the complex relationships between households' asset portfolios, livelihood choices, agricultural production, use of labour and external inputs, land management decisions, and income. Finally, the results of the multinomial logit regression analysis were used to simulate changes in the strategies taken by farmers and marginal effects were used to determine marginal change in the probability of each variable.

CHAPTER 7

Descriptive results and discussions

7.0 Introduction

The following section contains a summary of observations and findings for the different farms and farmer groups surveyed. This chapter is followed by the detailed analysis of the data collected through the questionnaires and captured in a spread sheet to give descriptive analysis of the study population in the Eastern Cape (OR Tambo and Amathole districts) and KwaZulu-Natal (Umkhanyakude and Umgungundlovu districts).

The questionnaire focused on eliciting responses to questions in the following areas, general detail on farming operations, amount of land farmed, agricultural activities, markets for products, training and support, financial support and constraints faced by smallholder farmers, incomes received by farmers and challenges faced by smallholder farmers in the two provinces of South Africa. A total of 89 smallholder farmers were interviewed.

7.1 Demographic characteristics

Demographic characteristics of respondents are provided in Table 7.1. Household heads average 53.3 years of age with most household members having attained primary and secondary schooling in all the districts (formal education). The proportion of household members with post primary education was higher for Amathole (EC) and Umgungundlovu districts (KZN). In this study there were very few household members without education in OR Tambo, Umkhanyakude and Umgungundlovu districts. Education level is slightly higher for Amathole and Umgungundlovu districts while the other districts have lower educational status. Most households were male headed, the proportion being slightly higher in the Eastern Cape Province compared to KwaZulu-Natal Province. Literacy is high in both

provinces since there are very few people without education except for Amathole district among the household that were interviewed in this study, implying that they were able to independently access written information as shown in Table 7.1. The family size averaged 6 persons of which approximately 3 were adults (15-60 years) implying that half of the household members were dependents.

Table 7.1: Demographic characteristics by district

Variable	Eastern Cape				KwaZulu Natal			
	OR Tambo		Amathole		Umkhanyakude		Umgungundlovu	
N respondents	17	%	28	%	22	%	22	%
Gender (Male)	41.20		82.1		72.7		22.7	
(Female)	58.80		17.9		27.3		77.3	
No education	13	65.0	1	5.0	5	25.0	1	5.0
Primary education	2	9.5	4	19.0	13	62.0	2	9.5
Secondary education	2	5.2	15	39.5	4	10.5	17	44.8
Tertiary Education			9	90			1	9
Farmer	Mean	SE	Mean	SE	Mean	SE	Mean	SE
characteristics								
Family size	6.35	0.36	5.90	0.46	7.12	0.81	6.5	0.06
Age (Years)	50.91	1.32	54.5	1.23	53.6	0.98	54.3	0.87
Male (> 60 years)	0.26	0.20	0.47	0.01	0.36	0.32	0.12	0.42
Male (45-60 years)	1.02	0.02	1.03	0.21	0.56	0.24	0.45	0.17
Male (30-45 years)	0.06	0.43	0.37	0.05	1.22	0.21	1.30	0.99
Male (18-30 years)	0.11	0.09	0.08	0.21	1.08	0.30	0.58	0.35
Male (<18 years)	0.41	0.01	0.07	0.45	0.13	0.02	0.68	0.24
Female (> 60 years)	1.16	0.24	1.41	0.08	1.10	0.41	1.04	0.41
Female (45-60 years)	0.82	0.43	0.09	0.02	1.68	0.23	0.15	0.16
Female (30-45 years)	1.24	0.72	1.96	0.23	0.82	0.41	0.23	0.04
Female (<18 years)	0.06	0.12	0.45	0.22	1.32	0.32	0.03	0.05
N respondents	17		28		22		22	

SE = standard error

The results that are presented in Table 7.1 show that there were a larger proportion of male respondents (55%) as opposed to females (45%). These results show a fair gender distribution among the farmers implying that any development strategy for the farmers in the area will benefit males and females almost equally.

In order to characterize the different types of smallholder farmers in the two provinces, the sample population is divided into four groups in terms of the district the farmers are located. Table 7.1 present the results of the analysis of significant intrinsic differences among these smallholder farmers operating in the two different provinces (EC and KZN).

There are few differences between farmers in terms of their farm-household characteristics as shown in Table 7.1. The farmer's age, size of the farm, and family size have no significant impact on the variability between farmers located in the Eastern Cape and KwaZulu-Natal Provinces. The age of the farmer and more farming experience is thought to improve farming practices of the farmers and exposure to agricultural markets, whereas younger farmers are oriented towards better paying markets since they possess less experience in farming (Bester, 2008). However the standard error (SE) for Amathole and OR Tambo were quite high implying that there was high variability in tier ages as compared to the other districts. Table 7.1 shows that most of the farmers in the two provinces are educated and those that have not attended school are few. The level of education was investigated to determine the human capital level of households and the ability to interpret information. Thus, according to Montshwe (2006), people with higher educational levels are more able to interpret information. Thus, education levels affects market information interpretation and hence, market participation level of farmers and understanding of both technical and management skills. OR Tambo has 65% of its people not being educated, while Amathole, Umkhanyakude and Umgungundlovu have 5%, 25% and 5% respectively. Amathole and Umgungundlovu have the most of the people having secondary education.

7.1.1 Farming types of respondents by gender

Table 7.2 shows both the gender distribution among all sampled farmers and gender distribution in different farming enterprises. There are more male farmers (57%) than females (43%) from the sampled population. The reason for this could be the role played by males in farm decisions as stated by Bester (2008) and Monde (2003).

Table 7.2: Gender distribution and farming types of respondents

Type of Farming	Male		Female	
	N	%	N	%
Vegetables	19	47.5	21	52.5
Citrus	8	66.7	4	33.3
Livestock	15	62.5	9	37,5
Sugarcane	9	69.2	4	30.8
Total	51	57	38	43

Source: Data survey

When the farmers were divided into their different farming types, the distribution of males to females was different from the overall distribution. In vegetable farming, there were greater proportions of females (52.5%) compared to males (47.5%), but in both livestock and citrus farming there were greater proportions of males. There were 66.7% males for citrus and 33.3% females while livestock farmers constituted about 62.5% males and 37.5% females. Citrus and sugarcane farming are intensive and require skilled people to run operations on the farms as price is determined by good quality. Citrus farming requires a lot monitoring of production activities as EU and US markets are particular about the production process of these for their consumers. Mostly male farmers are involved in high value crops such as sugarcane and citrus farming. This counter-intuitive result may be explained in part because crop exports (citrus smallholder farming) are rather recent phenomena in South Africa and are mainly promoted at newly established farms.

Sugarcane farmer are mostly concentrated in KwaZulu-Natal Province with most of them being male farmers. The high figure of males (69.2%) could be ascertained to the labour intensiveness of sugarcane production. Livestock farming is yet another enterprise that was found to be dominated by males (62.5%) compared to females with 37.5%. Most of these farmers rear cattle, sheep, pigs and goats. The sheep are kept for wool while goats are normally used for traditional ceremonies in rural areas.

7.2 Resource endowments

7.2.1 Land

The average farm size was approximately 10.4 hectares in the Eastern Cape Province, with big farms found where there are smallholder citrus growers. The highest land access (28 hectares owned by citrus farmers) and while in the other parts of the province the farms range between 2-8 hectares (Table 7.3). Cropped area accounted for the biggest proportion 60% for the Eastern Cape Province and 40% for KwaZulu-Natal Province. Smallholder farmers are much more constrained in terms of land access than the other parts of the country. Most of the land in the Eastern Cape is suitable for livestock pastures and farm sizes were higher in Amathole (18.4ha) and OR Tambo (6.3ha) compared to Umkhanyakude (and Umgungundlovu districts.

However, the percentages for Amathole district were quite high signifying that there was high variability in land ownership. The largest proportion of land under cultivation was allocated to citrus. The proportion was highest for the Amathole district (41.3%), followed by that of OR Tambo (28.4%), Umkhanyakude (20%) and lowest for the Umgungundlovu (10.3%). The large proportion of land allocated to citrus and vegetable production for the Amathole and OR Tambo shows the importance farmers attach to the crop.

Table 7.3: Land access by smallholder farmers

Land ownership	Eastern cape				KwaZulu Natal			
	OR Tambo		Amathole		Umkhanyakude		Umgungundlovu	
	N	%	N	%	N	%	N	%
Communal	7	13	9	16.7	22	40.7	16	29.6
Own	8	30.8	13	50.0			5	19.2
Lease	1	33.3	1	33.3			1	33.3
Land access	Ha	SE	Ha	SE	Ha	SE	Ha	SE
Land size	6.30	0.23	18.4	2.46	3.24	0.62	2.65	0.22
Average years in farming	9.41	0.13	13.2	2.03	14.2	0.32	9.62	0.36

Source: Data survey (SE-Standard error and Ha-hectares)

Land ownership in the two provinces is mainly communal with a few farmers owning the land and having title deeds. In the Eastern Cape 50% of the farmers in Amathole own the land, while in OR Tambo is made of 30.8%. In KwaZulu-Natal only Umgungundlovu has farmers owning the land making up about 19.2%. Farmers who lease land in both provinces constitute about 33.3% each for Amathole, OR Tambo and Umgungundlovu districts. Table 7.3 shows that these farmers have not been doing farming for a long, the average number of years in farming for both provinces is about 10 years.

7.2.2 Livestock and major crop grown by farmers

Livestock are found throughout the country, however, mainly in the Eastern Cape, KwaZulu-Natal, the Free State and the North West provinces. Nearly 80% of the agricultural land in South Africa is suitable mainly for extensive livestock farming. The mixed veld types of the Eastern Cape present a competitive advantage for livestock activities.

Crop and livestock production are more diversified in the Eastern Cape Province with significant proportions of land allocated to citrus, vegetables and maize as highlighted in Table 7.4. Livestock in the Eastern Cape includes sheep, goats, pigs, chickens, ducks and cattle. In KwaZulu-Natal Province, the farmers are more into vegetable, livestock and

sugarcane production. Most of the vegetables grown by the farmers are for household consumption while sugarcane and livestock products are sold to local markets.

The most important crops in terms of land allocation were sugar cane, vegetables, maize and citrus. Both provinces have the least diversified in terms of livestock kept on their farms. Livestock is also kept on the marginal land for the purpose of household food security and Xhosa and Zulu traditions. Farmers in the two provinces derive most of the cash income from crops such as citrus, vegetables and livestock is also the most important source of income for the households (Jari and Fraser, 2009, Musemwa *et al.*, 2007).

Table 7.4: Livestock and crops grown by smallholder farmers

Major crops (ha)	Eastern Cape				KwaZulu Natal			
	OR Tambo		Amathole		Umkhanyakude		Umgungundlovu	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE
Maize	8.3	3.23	3.2	2.60	8	2.06	2.1	2.68
Beans	1.22	0.01			4	0.23	0.9	0.11
Sugar cane					3.62	4.57		
Cabbage	2.81	2.03	2.44	0.43	1.92	0.47	0.80	0.23
Spinach	2.13	0.52	1.82	0.67	1.22	0.01	2.10	0.30
Carrots	0.53	0.03	0.50	0.01	0.63	0.06	0.43	0.38
Beetroot	0.71	0.01	0.33	0.12	0.86	0.02	0.25	0.04
Butternuts	2.60	0.62	2.46	0.52	2.88	0.02	2.14	0.47
Potatoes	2.11	2.60	3.42	2.04	3.13	0.03	2.20	1.06
Citrus			24.23	3.94				
Livestock								
Cattle	14.8	5.20	23.2	4.69	13.7	3.65	8.61	2.36
Poultry	18.9	0.56	35.6	0.36	29.1	0.46	8.78	2.66
Pigs	12.3	0.38	19.3	0.24	12.7	0.62	12.4	0.56
Sheep	23.3	5.47	27.4	6.78	13.4	4.21	13.4	3.79
Goats	15.6	1.69	26.1	1.92	20.1	0.64	16.6	0.78
N	17		28		22		22	

SE = standard error

Source: Data survey

Table 7.4 shows that most of the livestock kept by smallholder farmers include cattle, pigs, sheep and goats. Cattle in rural areas are considered as an investment which can be used

when there is a need like traditional events, while sheep and goats are used for traditional and ritual ceremonies. The trend for value in both provinces of all animals owned was similar to that of cattle, the value being highest in the Eastern Cape and lowest in KwaZulu-Natal Provinces. The proportion of farmers that own livestock was slightly higher for the Eastern Cape Province.

7.3 Employment on the farms

Farmers in the Eastern Cape Province used more family labour (in terms of work hours per year) in farm production than farmers in KwaZulu-Natal Province as highlighted in Table 7.5. However, the proportion of female labour out of the total family labour used in farm production is greater than those found in the KwaZulu-Natal Province compared to Eastern Cape Province. The Eastern Cape Province makes use of more hired labour with an average 27 labourers compared to 5 labourers in Kwazulu-Natal Province simply because there are a number of citrus farms in the Eastern Cape Province that require large amount of labour during the harvesting and marketing season. The proportion of farmers that used external sources of labour was highest for Eastern Cape Province (74%), followed by the KwaZulu-Natal Province (26%) where the latter labour is only required during the harvesting by mostly sugarcane farmers.

Labour, particularly casual labour, is a very important factor of production among the smallholder farmers. This is mainly because they are labour-intensive rather than capital intensive (Kirsten and van Zyl, 1998). As shown on Table 7.5, Amathole citrus farmers employ the largest number of labourers where each farmer has an average of 32 seasonal workers and four fulltime workers. In citrus farming, seasonal workers are normally employed during the picking season. The use of more employees in this type of farming is closely related to larger land sizes and advanced production techniques. In contrast with citrus farming both cattle and vegetable farming rely mostly on unpaid family members,

where the average of casual labour ranges between 4.84 and 32.44 workers for citrus, while in KwaZulu-Natal the average labour is between 4.84 and 6.67 for sugarcane and vegetables.

Table 7.5: Labour used in farm production

Labour	Eastern Cape				KwaZulu-Natal			
	OR Tambo		Amathole		Umkhanyakude		Umgungundlovu	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE
Permanent labour	2.81	0.16	4.64	0.62	6.14	0.45	4.33	0.32
Casual labour								
Male	9.63	0.01	9.52	0.50	5.52	0.26	4.84	0.17
Female	23.64	0.03	32.44	0.04	6.67	0.21	4.85	0.05
N	17		28		22		22	

SE = standard error

Differences were apparent in the amount of labour used in citrus, sugar cane and vegetable production, by activity and between the Eastern Cape and KwaZulu-Natal Provinces. Labour allocated to harvesting of citrus was relatively greater in the Eastern Cape compared to KwaZulu-Natal Province (Table 7.5). The proportion of male labour was quite low in the KwaZulu-Natal while the proportion of female labour was larger in Eastern Cape Province due to the labour requirements for citrus and vegetable production in the area, illustrating the differences in importance given to citrus by gender. In both provinces, vegetables have the dual purpose of sale and home consumption, explaining why women participate heavily in production. These findings agree with the works of Tati (2009) about the role of women in agricultural production in South Africa. Citrus and sugarcane are high income crops and demand a lot of labour when compared to other crops such as cereals and vegetables. The level of support given to these farmers to pay for the labour contributes to better quality and also the level of input usage on these farms. Labour used on livestock is limited as farmers leave their cattle to graze in open fields and only check them when there is a ceremony in

the village (e.g. weddings or traditional gatherings). Livestock that are kept under close monitoring are sheep and goats which are used for Xhosa ceremonies such as circumcision and family reunions. Sheep and goats also contribute to household food security and household income in the short-run.

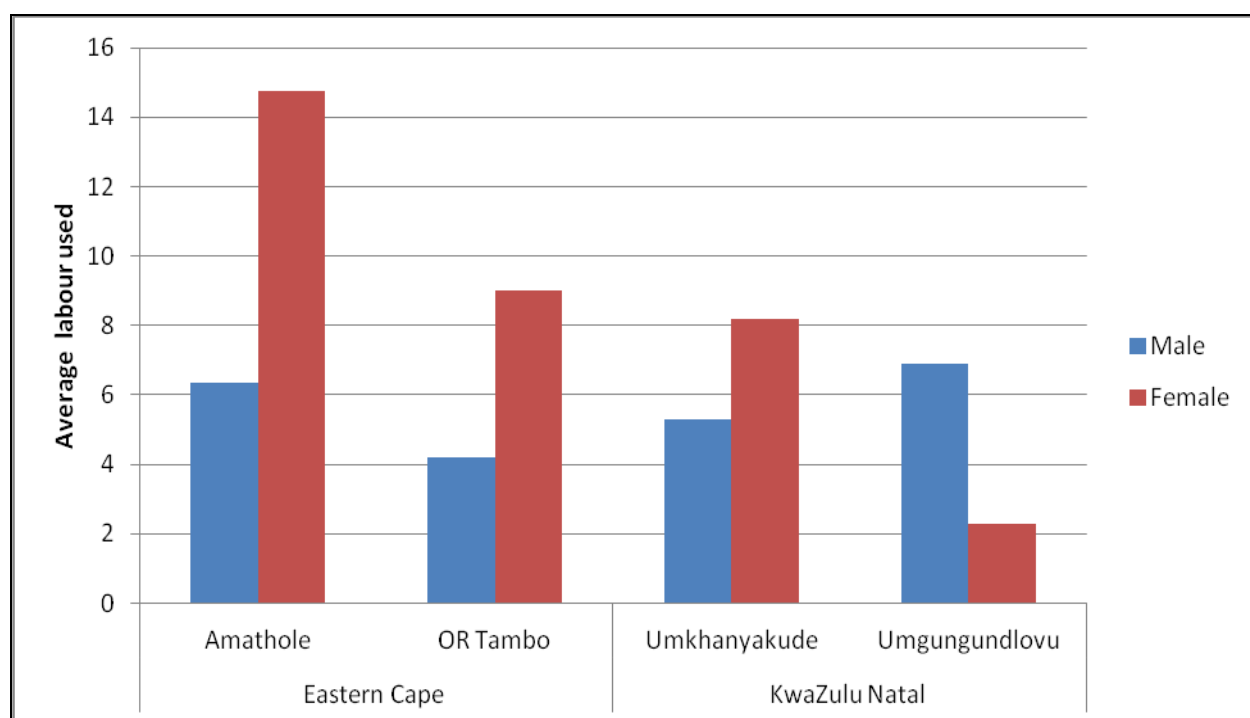


Figure 7.1: Number of labourers used in crop production by gender and region

Figure 7.1 shows that in both provinces the women provide a lot of labour when compared to males, the reason could be that women are left behind to take care of the children and homesteads. In the Eastern Cape most of the labour used on the citrus farms was mostly from the coloured community with a few black people. Most of the vegetables and crops farms were run by black smallholder farmers in the same province. In KwaZulu-Natal Province, a lot of labour was required on the sugar cane farms as compared to the cereals and vegetables. Figure 7.1 shows that in Umkhanyakude, labour from females was higher

than that of males. This is because most of these women are into vegetable production as it is less labour intensive than sugarcane production.

In terms of agronomic practices, most labour is allocated to crop sanitation and harvesting in both provinces, while the amount of labour allocated to cultivation and land preparation is high for vegetable production. In the KwaZulu-Natal Province, the proportion of labour allocated to weeding was higher compared to crop sanitation despite the fact that this was the area with the most cereal and vegetable crop production. The labour employed on these farms determines the quality of produce and markets these products are destined. For citrus smallholder farmers they sell to both local and international markets, while for sugarcane the markets are local sugar refining companies such as Umfolozi Sugar Milling Company.

Vegetables producers find their way to local markets such as hawkers, street vendors and for good quality produce is sold to local chain supermarkets. While a few farmers growing vegetables have their produce destined for international markets. Thus according to Maginxa and Kamara (2003) and D'Haese and Van Huylenbroeck (2005) agree that smallholder farmers are slowly penetrating local and international markets and improving their net incomes.

7.4 Labour remuneration from the non-farm sector

Smallholder farmers in both provinces have wages mostly coming from crop farming. Farmers in the Eastern Cape pay higher wage rates than in KwaZulu-Natal Province. In KwaZulu-Natal Province the wage rates are lower because of the nature of farming which is basically subsistence for most of the farmers and not much of the produce is sold to better paying markets. While sugarcane in KwaZulu-Natal and citrus farmers in the Eastern Cape have better incomes as these crops are commercial and sold to competitive markets which pay better incomes.

Labourers employed on these farms receive better wages than their counter-parts in the vegetable and livestock enterprises. These findings reflect the differences in the level of development of the smallholder farm sector in the two provinces. Casual wage rates reflect market wage rates determined by the labour supply and demand in both on-farm and non-farm⁹ sectors. The high casual wage rates in the Eastern Cape imply that the nonfarm sector for unskilled labour is more developed and more remunerative than the farm sector. Farmers are only able to pay cheaper rates to labourers that cannot find employment in the nonfarm sector (wage or self-employment). By contrast, farmers in the Eastern Cape hire labour during peak harvest times for citrus fruits while in the vegetable and cereal farms, not so much labour is required because there are no skilled harvesting techniques required. This is the same with the sugarcane farmers in KwaZulu Natal. Three possible reasons could be advanced for this observed behaviour: (1) most farmers were smallholders and had limited bargaining power, (2) majority employ labour at periods of peak labour demand when wages are high, and (3) farmers employ outside labour for harder tasks (e.g. land preparation and management and sanitation of land after crop harvests especially in the citrus farms) and were thus charged higher wage rates.

Table 7.6: Wage rates paid by farmers and earnings per hour from the non-farm sector

Type of wage	Eastern Cape				KwaZulu-Natal			
	OR Tambo		Amathole		Umkhanyakude		Umgungundlovu	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE
Wage rate (casual)	1259	0.36	1200	0.78	890	0.12	2300	0.31
Agricultural wage	1200	0.78	1560	0.23	800	0.56	950	0.56
Non-agricultural	1632	0.56	1900	0.68	1650	0.42	1800	0.85
Salary	1200	0.12	1230	0.92	1600	0.84	1200	0.46
(regular wage)								
Non-farm self-employment	2600	0.62	2300	0.87	1000	0.95	1360	0.91
N	17		28		22		22	

SE = standard error

⁹ Mostly income from government grants and remittances

The above interpretation is supported by the data showing important differences in amount and source of non-farm income between the two provinces (Table 7.6). Income for households in the Eastern Cape is higher than that of KwaZulu-Natal farmers because of the vibrant strong citrus industry and proportionately more smallholder farmers producing vegetables in the province, while in incomes of the KwaZulu-Natal farmers are mostly from non-farm self-employment and partly from the vegetables and cereals sold. The incomes are determined by the produce the farmers receive and sell to various markets. Other incomes are from employment form outside agricultural which ranges from R1200 to about R1800 per month. Income from crops (including subsistence production) was highest in KwaZulu-Natal (Umkhanyakude and Umgungundlovu) farmers. In Umgungundlovu the income from non-farm sources is greater (approximately one and half times) than the income from crops because of the manufacturing industry in the district which employs a lot people in the district.

Non-farm self-employment available in the area required limited education and skills compared to salaried jobs or activities with higher wages, which depend on more education and skills (Kirsten and van Zyl, 1998). Thus non-farm self-employment is more likely to compete directly with the farm sector for unskilled labour. Households involved in non-farm self-employment were less likely to invest in farm production as most of the income was used for household consumption smoothing and also the government grants that these household receive are also used to cushion financial constraints facing households. On the other hand some households that were interviewed were less likely to accept work in the agricultural wage sector, since earnings in the nonfarm self-employment sector were higher than the agricultural wage. Salaried household members and those involved in high wage labour activities were more likely to make savings, invest in farm assets and hire labour for farm production. Findings therefore suggested that the farm sector in the KwaZulu-Natal was more likely to have limited access to both family and hired labour. The large variance in

standard areas for the two provinces shows that incomes are highly variable depending on the source and also whether the wages are from on-farm or off-farm incomes.

Infrastructure and urban development in the KwaZulu-Natal led to the growth of better opportunities, increasing the labour out-flow from rural areas of KwaZulu Natal Province, which is one of the hypothesized causes of decline in sugarcane and other crop production (Masuku *et al.*, 2001). Benefits from infrastructure and urban development in the Umkhanyakude were apparent especially support from Umfolozi Sugar Mill and also the Department of Agriculture Extension Offices. The share of non-farm wage employment (including salary) in the Eastern Cape was higher as shown by the standard errors in Table 7.6 compared to that of KwaZulu-Natal Province.

7.5 Incomes received by farmers

While farming still remains important for rural households, people in rural areas are looking for diverse opportunities to increase and stabilize their incomes. Therefore rural livelihoods are based not solely on agriculture but on a diverse array of activities and enterprises (Chapman and Tripp, 2004). The extent of dependence on non-farm income sources varies across countries and regions. Evidence from a study in rural villages of Tanzania (Ellis and Mdoe, 2003; Chapman and Tripp, 2004) shows that, on average, half of household income came from crops and livestock and the other half from non-farm wage employment, self-employment and remittances. In this study the results show that incomes improve significantly as a result of external support from both public and private sectors. The high incomes from agricultural activities are a result of improved quality and volumes that are sold to competitive markets. The proportion of non-farm income was higher for upper income groups than for the lowest income groups. The poorest households without support from external organizations were therefore more reliant on agriculture for subsistence than non-farm activities in these rural areas.

Sources of income determine the livelihoods of people in communal areas of South Africa and many other developing countries as incomes have an impact on different socio-economic activities in the livelihoods of farmers. Once individuals have incomes this means that they are able to purchase non-agricultural goods and services that they may require in their households (Vink and Kirsten, 2003). The average income derived from agricultural wage employment in the OR Tambo district was close to that of the Amathole district while the incomes for farmers in the KwaZulu-Natal Province were lower compared to the Eastern Cape. This is shown in Table 7.7 by the average incomes being almost half of those in the Eastern Cape Province. The Eastern Cape Province has a source of cheap labour for citrus and pineapple production (Mujikanovic, 2005). Some of this labour found its way into secondary production processes such as pack houses in the Eastern Cape and sugar milling companies (Umfolozzi Sugar Mill) in the KwaZulu-Natal Province.

Table 7.7: Household income composition from agriculture and nonfarm employment

(Income in Rands)	Eastern Cape				KwaZulu Natal			
	OR Tambo		Amathole		Umkhanyakude		Umgungundlovu	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE
Crops	1650	13.6	1500	32.6	950	17.3	795	36.2
Livestock	1250	10.4	800	13.0	600	13.4	580	23.6
Off-farm income	600	16.4	975	23.4	460	26.8	400	42.9
Agricultural wage	1200	14.2	1250	19.1	700	16.8	640	6.50
Non-agric wage	1400	15.9	1700	43.1	320	230	300	10.4
Not defined	200	65.2	326	19.7	250	23.6	150	46.1
N	17		28		22		22	

SE = standard error

The income that is not defined is income coming in the form of grants and remittances. Rural households tend to rely on cash sent by relatives working in urban areas and also from part time jobs around the rural areas. Usually this income is not formal as it comes when there is

a part time job. These jobs include repairs of farm assets, cleaning and doing voluntary work for people in rural areas.

Thus non-farm employment is more likely to compete directly with the farm sector for unskilled labour. Households involved in the nonfarm self-employment were less likely to invest in farm production as most of the income was used for household consumption smoothing (Masuku *et al.*, 2001). On the other hand, they were also less likely to accept work in the agricultural wage sector as the work done there is laborious, since earnings in the non-farm self-employment sector were higher than the agricultural wage. Table 7.7 depicts that the agricultural wage for both crop and livestock farming in the OR Tambo and Amathole districts is double that of the Umgungundlovu, thus farmers would rather invest their time on non-agricultural activities than be labourers in a non-paying sectors which is a result of failing to enter formal markets that are better paying. Salaried household members and those involved in high wage labour activities were more likely to make savings, invest in farm assets and hire labour for farm production. Findings therefore suggested that the farm sector in the KwaZulu-Natal Province was more likely to have limited access to both family and hired labour than in the Eastern Cape Province.

7.6 Fertilizer use

Use of inputs was reported to be very high in most parts of the Eastern Cape Province and KwaZulu Natal Province (Matshe, 2009). The high input use was inorganic fertilizer which used in the citrus, sugarcane and vegetable production. The reason for this is the poor soils in the Eastern Cape that require fertilizer replenishing from one season the next. Figure 7.2 depicts that about 18 smallholder farmers in Amathole district use inorganic fertilizer and this is highly subsidized and supported by assistance from the government (RECAP) and also from Riverside Pack House (which is a company mandated by IDC to mentor citrus smallholder farmers with extension, marketing and administrative services to access

markets), which is one of the most likely technologies to improve soil fertility (Pender *et al.*, 2001). Smallholder farmers have also received input support for both crops and livestock from institutions such as MAFISA and CASP. Estimates show that smallholder farmers in South Africa apply, on average, only 1 kilogram of soil nutrients per hectare (FAO, 1999), which is well below the average reported for sub-Saharan Africa according to Heisey and Mwangi (1996). Use of organic inputs, among the sampled farmers, was also low (Figure 7.2). The proportion of households that used manure was higher in Umgungundlovu than the other districts in the two provinces especially for farmers that did not have agricultural support.

Farmers in the Umgungundlovu used approximately twice the amount of organic fertilizer used in the Umkhanyakude district. The trends in use of other organic amendments (grass mulch and crop residues) were similar to that of animal manure in both provinces. However, the proportion of farmers that used mulch was lower and the quantity used was also lower as explained by the farmers. This could be attributed to increasing population pressure on land in most of these rural areas, which has resulted in a declining farm size and thus makes grass mulch being less available (Gold *et al.*, 1999).

Farmers who had no access to farmer support programmes highlighted that they are more dependent on crop residues for manure than any other organic materials. These farmers could not afford inorganic fertilizer due to the costs associated with purchase and transportation to their homes. The farmers highlighted that it is costly to buy individual bags of fertilizer than to buy a larger quantity. Figure 7.2 depicts that farmers in Amathole and Umgungundlovu use more organic fertilizer than in OR Tambo and Umkhanyakude districts. These could be farmers who have no support to purchase inorganic fertilizers and have limited or no assistance from farmers support organizations. Crop residues were from maize,

cabbages and spinach stocks left on the farms after harvesting. These crop residues were ploughed back on the field to make the soils fertile for the next crops.

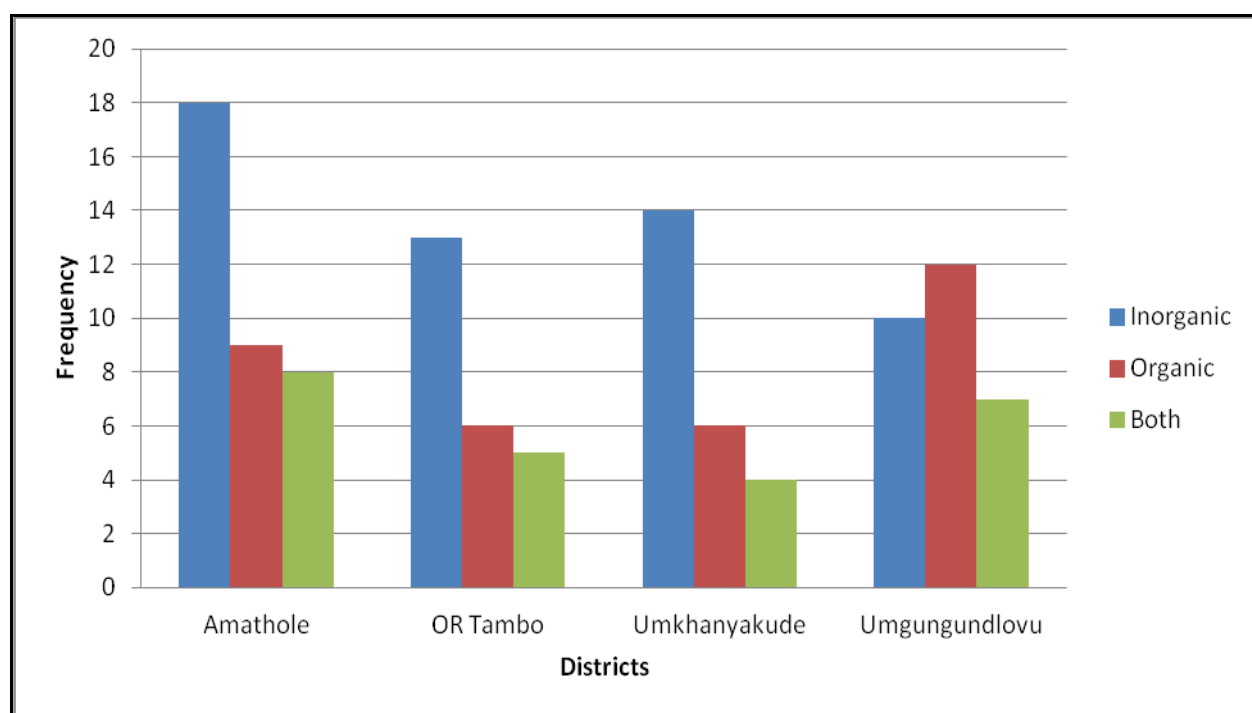


Figure 7.2: Use of fertilizer by smallholder farmers in crop production

On the other hand citrus farmers use crop residues from butternuts planted under their citrus trees to improve the nutrient availability to citrus fruits. The quantity used was also higher for the Umkhanyakude where sugarcane production is dominant. Generally, more farmers used inorganic fertilizer than any of the other soil amendments.

The results depicted in Figure 7.2 can also be compared to the fertilizer requirements of crops that have been researched extensively in South Africa and used by farmer support organizations to give advice to smallholder farmers. The first systematic field calibration work, with field trials on the response of cereals to applied nutrients, was initiated in the early 1970s by the Department of Agriculture in Cedara. This study was conducted by Farina *et al.* (1992) on maize and showed that maize output could double in quantity. Maize trials were

first tested and this information was disseminated to smallholder farmers as input packages to increase crop production. This research was later extended to include also soybeans and other crops.

The above results are also supported by extensive research done by the South African Sugar Research Institute (SASRI, previously SASEX) which is responsible for soil fertility research on sugarcane, including the economics of fertilizer use. Extension officers have used these recommendations to assist smallholder farmers who are into sugarcane production in rural areas of KZN. Efficient fertilizer practices have contributed greatly to the productivity of sugarcane farmers in KZN (Meyer *et al.*, 2004).

In a nutshell, fertilizer demand is a derived demand for food and future growth and its use depends on this demand by the farmers for increased productivity. Nearly half of South African households are vulnerable to food insecurity. Through these support programmes farmers have been able to increase production from the technical and mechanization support they receive from these organizations. Growth in the demand for food, and therefore growth in fertilizer demand, has to come from the alleviation of poverty. While poverty alleviation and job creation are important priorities in the government's agenda, the situation cannot be expected to change rapidly unless continuous support is given to smallholder farmers. There are, however, some positive signs about these interventions though very little is known about their impact on farmers.

7.7 Training, technical and business support to smallholder farmers

Farmer training workshops are often used to educate farmers on technical skills that can improve the quality of produce from smallholder farmers. They can be functional and practical techniques for educating the older farmers on advanced methods of production. The results in Table 7.8 below shows the services that smallholder farmers receive from

various organizations and on various aspects such as training, technical and business support. Table 7.8 only covers the farmers that received support from organizations such as government, commodity organizations, private sector, mentors from different organizations and non-governmental organizations.

It is also important to note that an individual farmer or cooperative could have received support from a number of organizations. Results on access to training and technical skills (Table 7.8) indicate that most of the farmers under the farmer support programmes received support from the government.

Table 7.8: Training and technical skills received by farmers

Training received	Eastern Cape				KwaZulu Natal			
	OR Tambo		Amathole		Umkhanyakude		Umgungundlovu	
	N	%	N	%	N	%	N	%
Government	20	38.5	8	15.4	2	3.9	22	42.3
Commodity	16	50	14	43.8			2	6.2
Organization								
Private	7	63.6	2	18.1	1	9.1	1	9.1
Mentor	6	35.2	9	52.9	2	11.8		
NGO	15	40.5	2	4.4			20	42.6

Source: Data survey

The results in table 7.8 included smallholder farmers who are into vegetable, citrus, sugarcane and cattle farmers farming. Commodity organizations such as Poultry South Africa (PSA), Potato South Africa (PSA), BKB and Wool Growers Association also support farmers with both technical and workshops to improve the farmers produce and market access. Farmers in the sheep industry are assisted with shearing sheds and their wool is bought by these companies and sold to competitive markets. The main aim of these support services is to enhance markets access for smallholder farmers through training on skills to produce good quality and increased volumes.

Even though a reasonable percentage of farmers know about the training services, not all of them attend. Some farmers argue that they cannot attend workshops because they are held far from their homes such as those done at agricultural colleges such as Fort Cox College of Agriculture and Forestry and Tsolo Agricultural College. Thus, it is important to find strategic areas to hold workshops in order to accommodate the farmers. There are, also, some farmers who indicated that they do not attend workshops because they are old, have knowledge on farming and are not willing to learn new things. This scenario explains that informal institutions (norms, tradition, beliefs) have an impact on agriculture.

In Amathole and OR Tambo District a high proportion (approximately 70%) of the farmers surveyed received business support training from the government and NGO's. Business skills included recording keeping and understanding of financial statements on the farms. Smallholder farmers have problems maintaining consistent records and interpreting them. Mentors from organizations and extension officers from the government have held workshops with farmers on how to keep records farm equipment, labour and inputs used on their farms. The situation in Umkhanyakude District is similar although the percentage of farmers that have received this business support would appear to be less because of the enterprises that are prevalent in the area.

The proportion of farmers surveyed that have received support was similar in Amathole District, although this support was provided more by the government than the private sector. These private sectors include Non-governmental organizations (NGOs) and Industrial Development Corporation (IDC) who have developed initiatives aimed at improving smallholder access to international markets. These organizations have assisted farmers in rehabilitation of both crop and livestock farms, production, marketing and logistics (Magingxa and Kamara, 2003).

Table 7.9: Business support provided to smallholder farmers

Business support received	Eastern Cape				KwaZulu Natal			
	OR Tambo		Amathole		Umkhanyakude		Umgungundlovu	
	N	%	N	%	N	%	N	%
Government	13	27.1	22	45.8	8	16.7	5	10.4
Commodity Organization	10	41.7	6	25.0	7	29.1	1	4.2
Private	3	14.3	16	76.2	1	4.8	1	4.8
Mentor	15	75.0	1	5.0	2	10.0	2	10.0
NGO	10	31.3	21	65.6			1	3.1

Source: Data survey

The small samples of farmers surveyed in Umgungundlovu were largely being supported by the government through the Department of Social Development and Department of Agriculture. It must be noted here that a number of these farms were in the process of receiving substantial infrastructural support from government and these farmers will most probably require technical and managerial support if they are to be successful.

Tsolo Agricultural College in OR Tambo was cited by a number of the farmers as a college that provided farmers with training and technical support about 27.1% of the farmers. Smallholder farmers around OR Tambo receive short courses on both crop and livestock production systems. Most of the support comes from government and the private sector (76.2%), there is very little support coming from non-governmental organizations as shown in Table 7.9. Part of these support programmes has been to develop fresh produce markets for smallholder farmers in most of these districts so that farmers can market their produce through them. For example in Mthatha there is Kei Fresh Produce market which works closely with smallholder farmers distributed around Mthatha District. Initially, satellite collections centres for farm produce from smallholder farmers were set across the whole of

King Sabata Dalindyebo (KSD). These satellite markets would receive produce from farmers and then sell it to urban supermarkets on their behalf leading to better market access.

7.7.1 Extension support

According to study carried by the Plead Foundation in Cape Town, the organization observed that while there are many farmers who require support services the personnel required to train them is still limited. Data from Stats SA (2010) also explains the challenges that smallholder farmers are facing in rural areas in accessing extensions and training services.

Aliber and Hall (2011) argue that the majority of smallholder farmers in South Africa have limited access to extension services. This data depicted in Table 7.10 show the number of farmers who are agriculturally-active who cite having received any form of training or extension support services in the year 2011 in the two provinces.

Table 7.10: Farming households receiving extension support

Type of Farming	Eastern Cape		KwaZulu-Natal	
	N	%	Number	%
Vegetables	11	44	14	56
Citrus	8	100	0	0
Livestock	9	64.3	5	35.7
Sugarcane	0	0	7	100
Total	28		26	

Source: Data survey

Reasons for this situation are given by Aliber *et al.* (2010) who refer to data from a 2008 Department of Agriculture Report which shows that South Africa has only one-third of the required number of extension officers to meet its development targets, and that 80% of the current extension staff are not adequately trained in technical and farm management skills

that benefit smallholder farmer. This goes on to show that currently the Eastern Cape and KwaZulu-Natal have the highest shortfalls of extension personnel. Table 7.10 depicts that farmers do receive extension services but to what extent they receive current information about agricultural development is what is required to be determined. Most farmers highlighted that they hardly see extension officers on their farms especially the citrus farmers in the Eastern Cape Province, reasons being that the extension personal has little knowledge about citrus farming. Farmers that highlighted they have frequent visits from extension officers are those who are into vegetable and livestock faming in both provinces.

In recognition of the severity of the problem, in 2007/08 the Department of Agriculture initiated the Extension Recovery Plan which aimed to hire over 5,000 new extension officers as well as to intensify training and visibility. Given the enormity of the mismatch between current supply and demand of extension officers, Aliber and Hall (2011) regarded this plan as fairly insignificant relative to the scale required to accommodate smallholder farmers in South Africa.

It is into this void that private and NGO sectors have come up with initiatives to assist smallholder farmers with extension services to help farmers access to both local and international markets. Fair-trade is another initiative that has been brought by non-governmental organizations and supermarkets in the developed countries to assist smallholder farmers with markets access, competitive incomes and rural development from their produce. Aliber *et al.* (2010) conclude by stating that there is a growing, even exponential, mismatch between land acquisition targets and available capacity to support people once they have acquired land for agricultural purposes.

7.7.2 Purpose and income sources for smallholder farmers

An analysis of income sources and the purpose of farming adds further insight into the income generation processes. Household income and reasons why these smallholder farmers venture into agriculture determines the livelihoods of people in rural areas as they affect their well-being in rural areas. Once individuals have incomes this means that they will have access to food and are able to purchase other non-agricultural goods in their households. Results from this study show that smallholder farmers have several sources of incomes as shown in Table 7.11. Most of farmers found in the Eastern Cape highlighted that the purpose of farming is basically to meet household needs while others highlighted it was for the market. Those that had access to support services produced for the local or international markets as in the case of citrus farmer and sugarcane producers in KZN.

Table 7.11 classifies the incomes according to the purpose and income sources so that a comparison can be made between the different farmers.

Table 7.11: Income received by smallholder farmers

Income Source	OR Tambo		Amathole		Umkhanyakude		Umgungundlovu	
	N	%	N	%	N	%	N	%
Purpose for farming								
Mainly for home consumption	2	9	6	26	9	41	9	41
Consumption and for sale	13	59	9	39	2	9	8	36
Mainly for sale	7	32	8	35	11	50	5	23
Total	22	100	23	100	22	100	22	100
Sources of income								
Formal employment	6	20.7	2	6.9	9	30.1	12	41.3
Self-employment	8	27.6	10	34.5	7	24.1	4	13.8
Farming	15	19.2	24	30.8	19	24.4	20	25.6
Remittances	3	9.1	12	36.4	11	33.3	7	21.2
Social Grants	12	23.1	9	17.3	16	30.8	15	28.8
Donations								
Other	2	12.5	4	25.0	3	18.8	7	43.8

South Africa has a fairly well-developed public welfare system that includes the provision of old-age pensions, disability grants and child support grants. In many rural areas, claiming against the state is the main source of income. The current situation is that many people residing in the rural areas no longer have livelihoods that are based on the utilization of rural resources such as land and vegetation for agricultural production (Mangisoni, 2006). Instead they obtain income through remittances from family members who have urban employment or from claiming against the state (Social Grants), despite the availability of land for farming (Ngqangweni, 2000; Mpolase, 2011). This raises the question as to what extent making available additional land will contribute to improved livelihoods. It also explains why several reports have emphasized the need to explore the potential of backward and forward linkages to primary production to generate rural economic development by the creation of jobs because of an apparent lack of interest by many rural people in becoming farmers. Only a tiny fraction of the farmers surveyed could be regarded as subsistence farmers who are only producing for their own household needs. The majority of the farmers that are not supported by these farmers organizations (FSP) either produce for household consumption or partly for sale. In most cases, farming does provide the main source of income although many of the farmers do have alternative incomes often in the form of social grants or pensions.

7.7.3 Market information

Market information is important for market participation behaviour of emerging and smallholder farmers. Availability of market information boosts confidence of farmers who are willing to market their produce. In other words, market information allows farmers to take informed decisions. Thus, farmers who are more informed are more likely to participate in marketing activities as shown by the high frequency of farmers who have access to market information in Table 7.12. Also of equal importance is the source of market information

because it determines accuracy of the information. Table 7.12 shows that farmers receive market information from many sources such as government extension officer, commodity markets, private organizations, mentors and non-governmental organizations.

As shown in Table 7.12, most of the farmers who are under the farmer support programme receive market information from these organizations. Farmers highlighted that they receive markets information from the government through extension officers, followed by commodity organizations and private organizations. Mentors and non-governmental organizations also provide the farmers with information on prices and where to source their inputs. The information provided to farmers include production and marketing of crop and livestock products in the Eastern cape Province and in Kwazulu-Natal Province sugarcane farmers receive their information from sugar companies and also from extension officers.

Table 7.12: Sources of market information

Variable	Eastern Cape				KwaZulu Natal			
	OR Tambo		Amathole		Umkhanyakude		Umgungundlovu	
	N	%	N	%	N	%	N	%
Access to market information	19	33.9	20	35.7	12	21.4	5	9.0
Sources of market information								
Government	17	30.9	12	21.8	12	21.8	14	25.5
Commodity Organizations	6	22.2	17	63.0	2	7.4	2	7.4
Private	8	27.5	19	65.5	1	3.5	1	3.5
Mentors	6	22.3	17	62.9	3	11.1	1	3.7
NGO	16	64.0	1	4.0	3	12.0	5	20.0

Source: Data survey

With such information farmers are more likely to participate in marketing because they are informed on the prevailing market conditions. With the given resources, these farmers can produce and provide the right type of goods that are required at the market. However, not all

of these farmers receive the information in time. Mostly those that have received support especially on vegetable, citrus, sugarcane and cattle farmers get market information in time. The farmers who do not receive information in time are as good as those who do not have access at all because the information may be useless by the time they receive it. Market information is readily available to most citrus farmers because they are frequently informed through their mentors who are from pack houses. Apart from the citrus farmers, it can be claimed that sampled farmers still find difficulties in accessing market information.

7.7.4 Market participation of smallholder farmers

Farmers were divided into different farming types before analysis on how they market their produce in the two provinces. This section gives attention to the marketing channels used by smallholder farmers to access different markets in communal areas in the two provinces. Figure 7.3 shows the various marketing channels chosen by smallholder farmers in the two provinces. Marketing of products in these areas was mainly dependent on the commodity that was being sold. Products such as vegetables in the Eastern Cape and KwaZulu-Natal Provinces had a number of channels which include *bakkie*¹⁰ traders and the local community. Vegetable farmers sell their produce mainly at the farm gate, around the village and at the roadside in most of these districts. Farmers who sell at the farm gate, around villages and at the roadside explained that they prefer selling from there because there is no transportation cost incurred. The transactions costs faced by these smallholder farmers are much lower compared to those who sell to fresh produce markets, processors and retailers. In OR Tambo District most farmers do not have formal markets and sell their products within the local community (including schools, sports events and pension pay points) and to informal traders.

¹⁰ Bakkies are small trucks that people use to go and buy produce from the farms.

The farmers also highlighted that it is convenient to sell from their farms or homesteads because they did not have access to marketing infrastructure. When asked on their knowledge of produce grades and standards, it was found that farmers who are into vegetable, citrus and sugarcane knew about grades and standards, whereas the others used their own knowledge for grading their produce for the market.

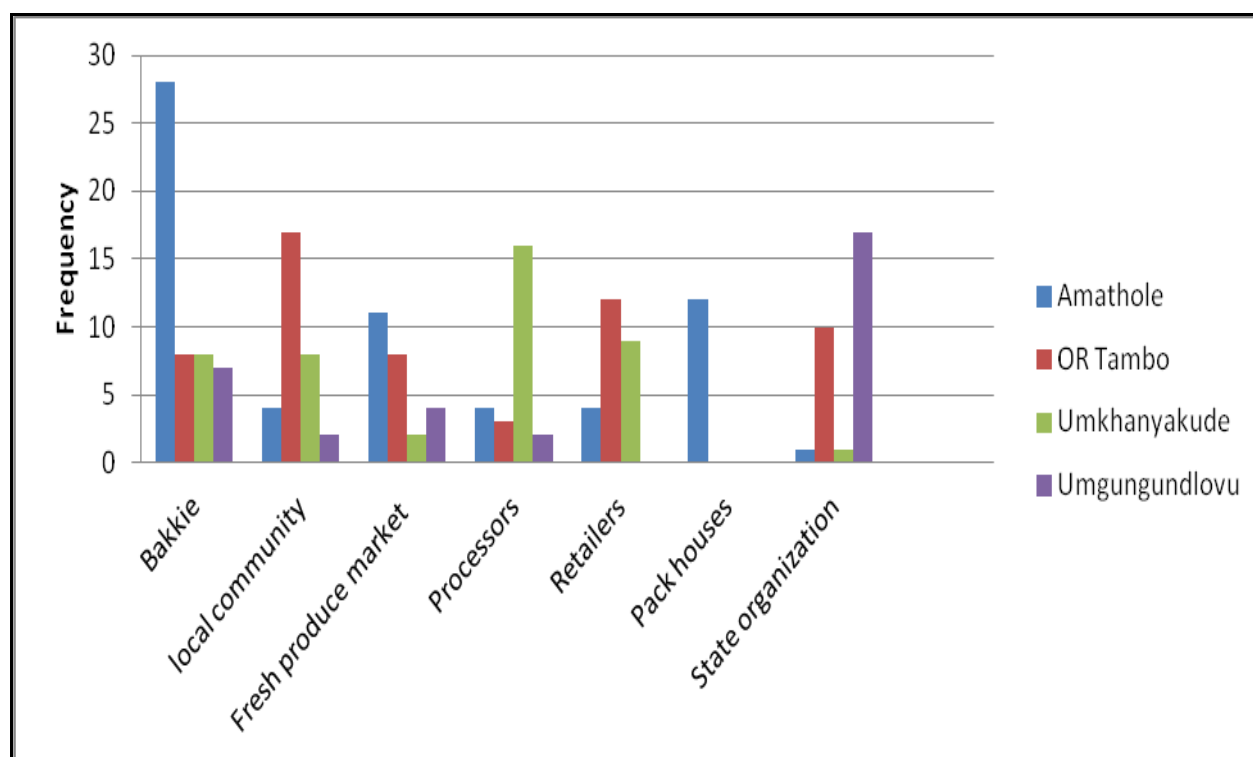


Figure 7.3: Markets for products

However, the situation was different for high income crops such as citrus and sugarcane that were sold to processors and pack houses for local and export market. This type of market channel was found to be sophisticated and complex compared to other channels since citrus fruits are exported to international markets as these market required crop certification in terms of phytosanitary and sanitary standards¹¹.

¹¹ These standards are set by European countries to monitor the quality of fresh fruits and vegetables imported by these countries to monitor food safety and public health issues (Weatherspoon and Reardon, 2003).

The results from this study show that markets access plays a very important role in smallholder farming. Machete *et al.* (2004) highlighted that it is crucial to improve the productivity of subsistence agriculture and market access, as it serves two purposes: (1) alleviating food deficiency at household level of the rural population, and (2) improving the incomes of smallholder farmers in South Africa.

In Umkhanyakude and Amathole District there are a number of farmers that do access more formal markets in the form of processors and pack houses (sugarcane and citrus fruit), although there are also a number of farmers that are producing for the informal market.

In Umgungundlovu District, the informal market dominates although a number of farmers highlighted selling their produce through fresh produce markets which require good quality produce. The study also showed that some farmers who use the state organizations for accessing the markets claimed that they are poorly organized as compared to other markets and have very little influence on their production and marketing activities.

Livestock are kept for a number of reasons, such as ritual slaughter, draught power, home consumption, savings and sales, and other traditional reasons. However, the study found out that from the sampled farmers, a higher percentage of the farmers regard selling as the most important reason for keeping cattle, even though the other uses are also important.

The study revealed that smallholder farmers use a number of markets which include private sales, butcheries, speculators, auctions and abattoirs when selling their livestock. Use of both private channels and speculators is unlike the use of butcheries, abattoirs and auctions where cattle are graded before they are sold. The issue of grading explains the few farmers who make use of these channels because most of the animals tend to be very old and have less value.

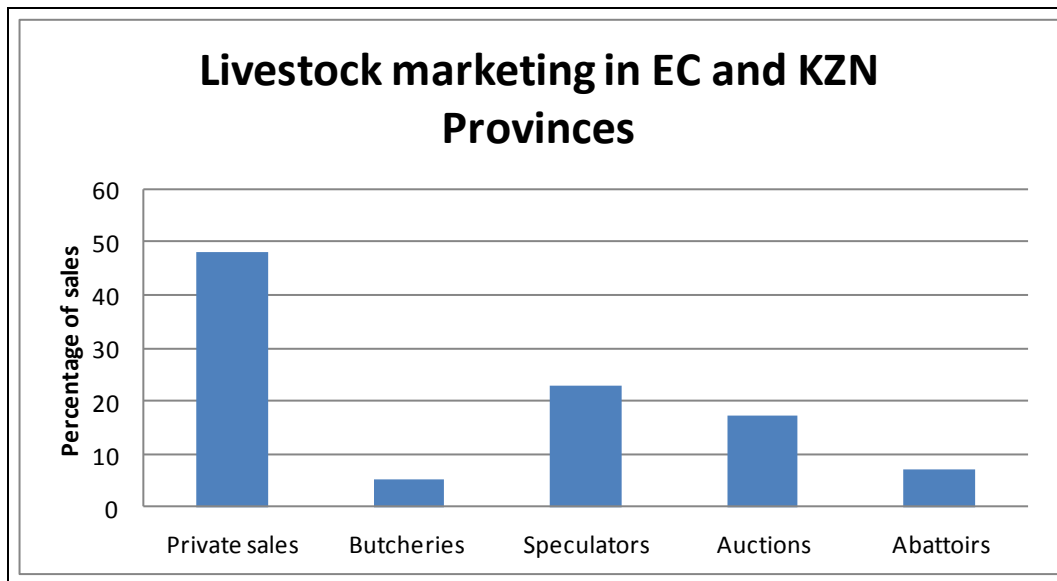


Figure 7.4: Livestock marketing channels

Figure 7.4 highlights that the most used cattle marketing channel is private sales which involves selling to people around the community who can be friends or relatives, with 48% of the farmers making use of them. The farmers who use this channel explained that they sell through this channel because they know the people and have built trust relationships over many years and there are no costs involved. The second used channel is through speculators, shown by 22% of the farmers. Farmers cited that they use speculators in selling because they pay in cash, overcome the transport cost and are not strict with cattle grading of livestock. Butcheries (4%), abattoirs (8%) and auctions (18%) were found to be least used marketing channels as they require the livestock to be graded before they are sold. Most smallholder farmers did not use these as their livestock would fetch low prices and lower their incomes.

7.7.5 Financial support to farmers and information access

Farmers in both provinces received some form of support from various organizations which include the Department of Social Development, Department of Agrarian and Land Affairs, Siyakula, Siyozondla, CASP and several Non-governmental organizations. Table 7.13 shows that most of the farmers in the Eastern Cape received a higher proportion of grants and loans compared to the KwaZulu-Natal farmers. That is for farmers that were under the farmer support programmes in both provinces.

Table 7.13: Financial support to farmers

Financial assistance	Eastern Cape				KwaZulu-Natal			
	Amathole		OR Tambo		Umkhanyakude		Umgungundlovu	
	N	%	N	%	N	%	N	%
Loans	9	40.9	3	13.6	6	27.3	4	18.2
Grants	6	37.5	5	31.2	2	12.5	3	18.8
Total	23				15			

Source: Data survey

From the farmers interviewed in KwaZulu-Natal most of them did not have financial support, partly because most of them were producing for subsistence while the sugarcane farmers were being supported by the Department of Agriculture through input supplies. The proportion of farmers that did receive grants or loans was also higher for the Eastern Cape with 6 and 5 for Amathole and OR Tambo respectively, being more than double that for KwaZulu-Natal farmers. Farmers in the KwaZulu-Natal Province were least supported when compared to the Eastern Cape farmers mainly because of the nature of the enterprises and also the level of production on the farms. Those that received support were mostly farmers visited by extension workers who recommended them for financial support because they had the potential to produce and market their products.

The majority of the farmers in OR Tambo, Amathole and Umgungundlovu Districts have benefitted from the various financial support packages, although as can be noted from the summary of observations and findings in Table 7.13 there is still much financial support funding required for these farmers such as for irrigation, farm equipment and fencing. Smallholder farmers are unable to access loans from banks and other organizations because they did not have collateral. In the Eastern Cape most of the farmers in the citrus industry had access to loans because of the nature of their business, while sugarcane smallholder farmers and vegetable producers in KwaZulu-Natal have minimum support. The farmers in Amathole District were producing for formal markets and have received the highest number of loans, although as noted in later sections the debt levels of these farmers are often high because of the low quality and volumes produced by these farmers. Reardon and Berdegue (2002) and IFAD (2003) argued that in developing countries several aid agencies assisted farmers in need of credit by offering matching loans and administrative support and training but, again, they are usually only interested in offering this help to properly constituted groups of borrowers who they pre-qualify.

In spite of these requirements, most smallholder farmers are still failing to penetrate high value markets because of the challenges that they face in production and marketing of their produce (D'haese and Van Huylenbroek, 2005).

7.7.6 Challenges faced by smallholder farmers

Subsistence and smallholder farming in South Africa is saddled with constraints in limited purchasing power, inadequate infrastructure and limited access to support services including effective extension, high input prices and poorly functioning output markets. These have tended to counter balance efforts by many organizations, government, parastatals, commercial producer organizations and the private sector firms that include the fertilizer

companies aimed at increasing the productivity of subsistence and smallholder agriculture. General acceptance of yield enhancing inputs such as fertilizer, hybrid seeds and plant protection products and application thereof in practice, are still a long way off.

The major constraints cited by the farmers across the two provinces are inability to access finance and this stands out as the largest constraint, inability to raise finance for production activities, lack of planting material such as seeds and seedlings, lack of tools and equipment, and pests and diseases.

Table 7.14: Constraints on farming operations at smallholder farms

Variable	Eastern Cape				KwaZulu Natal			
	OR Tambo		Amathole		Umkhanyakude		Umgungundlovu	
	N	%	N	%	N	%	N	%
Pests and diseases	19	34.6	17	30.9	14	25.5	5	9.0
Lack of planting material	11	22.9	14	29.2	19	39.6	4	8.3
Lack of tools and equipment	17	37.8	12	26.7	12	26.7	4	8.8
Low prices	11	190.	24	41.3	15	25.8	8	13.8
In-adequate knowledge	8	26.7	11	36.6	9	30.0	2	6.7
No ability to access markets	15	27.8	17	31.5	18	33.3	4	7.4
No ability to raise finance	16	27.1	22	37.3	16	27.1	5	8.5

Source: Data survey

According to Van Rooyen *et al.* (1997), many smallholder farmers do not have proper and protected places for keeping and selling produce such as vegetables and fruit. The lack of infrastructure makes the farmers victims of the harsh weather conditions that affect the quality of their products. The lack of tools, equipment and storage facilities is another problem which contributes to insufficient market access as highlighted in Table 7.14. This

explanation also agrees with the work of Coetzee *et al.* (2004) who highlighted that storage facilities hinder smallholder farmers from accessing profitable markets. Some of the products need storage before they are sold, but due to this lack of storage facilities. The products get spoiled especially the perishable products. This problem of poor quality products makes it difficult for the farmers to have access to profitable markets.

Mahabile *et al.* (2002) stated that the lack of marketing facilities imposes a serious constraint on the marketing of agricultural products like livestock. The National Department of Agriculture (2005) also pointed out that most of the producers who are beneficiaries of farmers support programmes are located in areas remote from the major markets, where there is a serious lack of both physical and institutional infrastructure. Table 7.14 shows that farmers have problems accessing markets with the higher percentages in Umkhanyakude (33.3%) and Amathole districts (31.5%) followed by OR Tambo (27.8%) and finally Umgungundlovu districts (7.4%). The high percentages for Umkhanyakude and Amathole districts are the product itself which is sold to better paying markets in local and international markets. Farmers who highlighted that they had problems with planting materials include those in Umkhanyakude who grow sugarcane and field crops having a higher percentage (39.6%) higher than the other districts.

In developing countries like South Africa, lack of knowledge is particularly common in rural areas because of the unavailability of marketing facilities that disseminate information regarding agricultural activities. As shown in Table 7.14, a large number of farmers highlighted that they do not have access to information and were not aware of market prices thus restricting them to markets access for some of the commodities that they produced. The average percentage for all the districts was 25% for inability to access better paying markets in both provinces. Thus, Delgado and Siamwalla (1997) conclude that promoting growth in smallholder agriculture through participation in world markets (by selling high value-added

items) will require significant vertical integration of smallholder farmers to processing and marketing firms. In addition, smallholder farmers will need to gain access to assets, information, infrastructure and remunerative markets.

7.8 Summary of the chapter

The results presented in this chapter show a fair distribution of gender in both provinces among the smallholder farmers, with males being slightly out-numbering females. However, it has been shown that males and females practice different farming types, with males mainly being cattle or cash crop farmers and females being vegetable farmers. There are both young and old smallholder farmers, where many older farmers (usually pensioners) are in cattle farming. Education among the sampled farmers is still minimal, especially among the KwaZulu-Natal farmers in Umgungundlovu than the rest of the districts. The level of education has an impact on farm decisions and markets access as shown by the results.

Based on evidence from the chapter and trying to answer the first objective of this project on characterization of production systems, challenges and assessment of the performance of the smallholder farming, it can be concluded that the smallholder farmers in the Eastern Cape and KwaZulu-Natal Provinces face challenges in asset ownership, infrastructure development and access to information. Also, it has been noted that smallholder farmers participate in both crop and livestock production, even though they lack substantial amount of land and education. In marketing, the majority of the sampled farmers still perform individually because they are not exposed to various marketing channels due to disadvantages associated with selling as individuals in these rural areas. Moreover, most of the commodities from smallholder farmers are sold at the farm gate as shown in Figure 7.3, in an effort to reduce transportation costs and minimize transactions costs.

The results showed that citrus smallholder farmers are more knowledgeable on grades and standards since the fruits are sold to better paying markets such as EU and US markets. A higher percentage of these farmers are still facing a number of challenges in both production and marketing as shown in Figure 7.3, Table 7.13 and 7.14. The analysis also showed that in both provinces farmers require both technical and marketing skills to enter these high value markets. Thus, their performance is still limited in terms of the resources that are available to them and the support they receive from both private and public organization in these rural areas of South Africa. Smallholder farmers require such kind of knowledge because lack of knowledge on grades and standards deters the farmers from entering into more profitable marketing channels. Based on this argument, smallholder farmers still face the challenge of market access and these challenges will continue to grow unless the farmers have some form of external assistance to aid them to supply these profitable markets. In addition, they face increasing competition from commercial farmers who produce larger volumes and consistent supply to these markets.

Apart from the problems highlighted above, more organized farmers in farmer organizations have better access to assets and information. Also, these farmers are not confined to one marketing place, they can reach diversified markets because they receive support from their organizations. As such, it can be concluded that the smallholder farmers can widen their marketing by being part of these farmer groups or cooperatives.

CHAPTER 8

Empirical Results and Discussions

8.0 Introduction

In this chapter estimated results of the econometric models are presented as described in Chapter 7 by category of dependent variable. In particular, the determinants of household livelihood strategies, land management practices, and use of labour and external inputs, and the impacts of these decisions on agricultural productivity and income are investigated. First the results of econometric analysis, which show propensity score matching, partial effects of each variable on the response or outcome of interest, controlling for other factors are presented, then the total predicted impacts of selected changes in policy variables and other explanatory factors follow. The results focus on factors that are statistically significant at the 10% level or better, unless otherwise noted.

The results are presented according to the research questions stated in Chapter 1, where results of household characteristics were presented in Chapter 7. The next section discusses the results of each model and how they address the research questions b, c and d as follow up from the Chapter 7. Particular methods or techniques have been used to answer these questions based on econometric models that fit best these analyses, although the different models can be used to answer the same research questions.

8.1 The effects farmer support programmes on smallholder farmers

This is an ex-post impact¹² assessment because the farmers support programmes were initiated several years ago. This research intended to assess the aggregate benefits of these

¹² For an example of an ex- ante impact assessment of an anti-poverty program see Ravallion (1999).

programmes (government, non-governmental sectors and private sector) by evaluating the impacts of these programs on incomes and the incidence of welfare gains of the participants and non-participants in smallholder farming. To evaluate the impact of farmer support programme (FSP) on smallholder farmers the Propensity Score Matching estimator is used to evaluate farm level data. The propensity score is estimated using various socio-demographic characteristics of farmers, namely: age, years of education, cohort dummies, gender and together with some higher order terms (like age and education squared) and interaction terms (age interacted with gender). Table 8.1 shows the results for the participation and non-participants of the FSP model.

The results presented in the Table 8.1 summarise the outcomes of the propensity score matching (PSM)¹³ technique estimates of the treatment effects which indicate that the estimated effects are robust to the changes in the econometrics approach. The results from the probit model are significant at 10% and 5% significance level. Table 8.1 shows that education of household head and income from agriculture are significant at 10% and 5% respectively, which means there are difference between farmers who have support and those without support services in the Eastern Cape and KwaZulu-Natal Province at the particular significance levels. The result of the PSM is in line with explanation in Chapter 7 about the impact of farmers support organization. Looking at the standard errors (shown in parentheses) participation is clearly (non-linearly) related to education, age, and that individuals without high education level have a higher probability of receiving FSP, although the number of years of education appears not to be significant.

¹³ Is a statistical matching technique that attempts to estimate the effect of a treatment, policy, or other intervention by accounting for the covariates that predict receiving the treatment (Heckman *et al.*, 1997).

The results are robust to the different estimation techniques and alternative models specifications. The findings imply that participation or access to FSP significantly contributes to better incomes. The income effect is larger for farmers who are under these FSP than those who are not. Being a member (i.e. participation of) or having support from a FSP is relatively larger for smaller farms in terms of efficiency and is biased towards smallholders farmers with larger pieces of land while participation leads to better agricultural output and better incomes.

Table 8.1: Probability of a farmer being a member of a support programme (Probit)

Description of covariates	With FSP support	Without FSP support
Dummy for male household head	0.45(0.34)	-0.04 (0.35)
Age of household head (years)	0.02(0.67)	0.12 (0.07)
Education of household head (years)	0.23(1.03)**	0.35 (0.33)
{Education of household} ²	0.36(0.06)	0.45(0.03)
Household size (no. of members)	1.13 (1.08) *	0.12(0.17)
{Household size} ²	0.01(0.07)	0.20(0.10)
Dependency ratio (children/adults)	0.12 (0.07)	-0.00 (0.00)
Fixed arable land (hectares)	-0.01 (0.05)	0.19(0.48)
Income from agriculture	0.02(1.01)**	0.60(0.84)
Distance to nearest market	0.09(0.40)	0.36(0.16)
No. of observations	49	40
Pseudo R ²	0.31	0.62
Log-likelihood	-143.56	-86.07
Correctly classified observations	76%	81%

Standard errors in parenthesis (), *, **denotes significance at 10% and 5% level respectively.

Thus, the probability of being assisted under the farmer support programme increases as the size of allocated land increases, up to a given threshold (approximately 2.5 hectares which is the average farm size for smallholder farmers in both provinces) after which the relation

becomes negative. This is because farmers are constrained by resources that force them to reduce production or completely not be involved in farming. As the average land size in our sample is approximately 2.5 hectares, this finding indicates that farmers with small pieces of land are more likely to be members of the FSP as they are able to make use of all their land than farmers with larger pieces of land (as also suggested by Bernard *et al.*, 2008). Although smallholder farmers need assistance from farmer support organizations more than large commercial farmers to overcome high transaction costs, large farmers appear to have easier access to markets because of good quality products and huge volumes from their produce. It is also important to note that the insignificance of all other variables in explaining access to support services is crucial to these smallholder farmers and should be interpreted as a positive result, suggesting that the only observables in which farmers with access to resources or FSP and control farmers differ is land size. This confirms the validity of the control group (which is farmers who have not received any form of assistance from these organizations).

Household size measures the size of the household. Since family labour is the major source of labour for households, larger families with more labour supply would be expected to be willing to participate in farming and also produce for marketing. Large families are also more likely to face lower per-capita land availability and high dependency ratios for food requirements (Adesina and Djato, 1996; Adesina *et al.*, 2000). The results show that household with more family members are better than those with few members. The labour requirements play a significant role in agriculture and employment level in rural areas.

The positive impact of market access on smallholder farmers or collective action in the case of cooperatives involve the implicit cost-saving and risk-sharing devices of collective marketing especially for farmers who belong to cooperatives or market their products in groups (collectively), as supported by numerous studies (Stringfellow *et al.*, 1997;

Stockbridge *et al.*, 2003). On the other hand, potential reasons underlying the insignificant impact of all cooperatives on farm output to market access involve the 'defensive' attitude, related to prevalent rent-seeking behaviour, typical of non-marketing cooperatives. Table 8.2 shows the impact of these support programmes with regard to the nearest neighbour in producing better produce when compared to those assisted and those that are not supported.

The second part of the results (Table 8.2) reveals the average effect of the treatment on the treated (ATT), i.e. the difference in the level of support between participants and non-participants, after PSM differs. In particular, Table 8.2 shows that the level of support of FSP does differ significantly from the level estimated for individual farmers as this is significant at 5% level. This finding is in line with the evidence presented by Bernard *et al.* (2008), also suggesting that South African farmers have a significant impact on market access if they are supported with agricultural input and output markets.

However, the analysis suggests also that farmers engaged in marketing as individuals or cooperatives have a significantly higher degree of market access than farmers without support services (17-33 percentage points higher) than individual farmers. In other words, the analysis points out that the significant impact reported for these farmers can be explained from the existence of a farmers support services and collective actions (almost 50 percent of the farmers and cooperatives sampled) that provides services for output marketing to their members. The impact of the FSP overshadows the positive impact of marketing cooperatives. In brief, the establishment of agricultural cooperatives is not sufficient to link smallholder farmers to competitive markets but rather an instrument that can be adopted to increase farmers' participation to profitable markets, unless these cooperatives involve activities for collective output marketing. The robustness of these findings is supported by the fact that the Tobit regressions presented in Table 8.3 reports

very similar results. The results also agree with findings from Chirwa *et al.* (2005) who also looked at the impact of FSP on smallholder farmers in Malawi.

Potential reasons underlying the positive impact of marketing cooperatives on smallholders' market access involve the implicit cost-saving and risk-sharing devices of collective marketing, as documented in numerous studies (Bonin *et al.*, 1993; Helmberger and Hoos, 1995). On the other hand, potential reasons underlying the significant impact of FSP on market access is the farm output sold to better paying markets and involves the "defensive" attitude, related to prevalent rent-seeking behavior, typical of non-participants of the FSP.

Table 8.2: The impact of farmers support programmes (FSP) on farmer's income (PSM)

Category	Matching technique	
	Kernel	Nearest neighbour
[FSP members] – [Non FSP farmers]	0.43 (0.03)	0.02 (0.08)
	<i>48 members</i>	<i>40 members</i>
	<i>41 individuals</i>	<i>33 individuals</i>
[Marketing members] – [Individual farmers]	0.18 (0.06)**	0.33 (0.04)**
	<i>42 member</i>	<i>22 members</i>
	<i>28 individuals</i>	<i>25 individuals</i>

Average effect of the treatment (ATT) in bold, standard errors in parenthesis (), number of observations per group in italics.

*denotes significance at 10% level, **denotes significance at 5% level.

While the main role of farmers support programs is to assist smallholder farmers to access market through individual or marketing cooperatives to reduce transaction costs and improve bargaining power of smallholders' vis-à-vis the market, the role of cooperatives or coordination approach among farmers in rural areas is to reduce transactions costs and increase bargaining power of smallholders. The results in Table 8.2 depicts that FSP members constitute about 48 members while the nearest neighbour is about 40 farmers, which gives the impression that FSP farmers are better off in terms of markets access by

looking at the standard errors in parenthesis. Farmers under the FSP are closely linked to markets than non-FSP farmers showing that there significant difference between the two sets of farmers. The various services these cooperatives or individual farmers receive from these various organizations are incentives provided to farmers to help them access competitive markets and get out of poverty.

There is also a significant difference between marketing members and non-marketing farmers. The average treatment of 0.18 compared to 0.33 shows the level of dispersion among the farmers and the standard errors also confirm this result. Thus, there is a potential for these smallholder farmers to sustaining market access pathways and not just as a matter of cost sharing mechanisms or taping economies of scale. Farmer support programmes help deal with the dynamics of innovation and learning by doing and with different organizations getting involved for capacity building, priority setting, negotiation and also that the farmers speak with one voice when marketing their produce.

The results in Table 8.3 show that household size is significant for both farmers with or without FSP support at 5% significance level, which could mean that the household size contributes to labour on the farms. Smallholder farmers in rural areas are mostly dependent on household labour for production purposes and thus are said to be economically efficient in labour use (Ellis, 1998). Education is another variable that was found to be significant at 1% level under the supported farmers. The result could mean that educated farmers can be easily trained on various methods of farming through extension services and workshops which enhances their capability to access information on markets and markets access in rural areas. The standard errors also show that there is a significant difference between educated and non-educated farmers.

Income from agriculture was found to be significant at 5% for farmers with FSP at and not for those without FSP assistance. This result could mean farmer support programmes have a

way of introducing farmers to new techniques of farming thereby improving their quality and volumes and promoting markets access. Potential reasons underlying the positive impact of incomes on FSP participants involves the implicit cost-saving and risk-sharing devices of collective marketing, as documented in numerous studies (Bonin *et al.*, 1993; Helmberger and Hoos, 1995). Potential reasons underlying the significant impact of income of FSP on market access is generally the quality and volumes produced by farmers while non-participants have a 'defensive' attitude, related to prevalent rent-seeking behavior.

Table 8.3: The impact of FSP on market access (Tobit)

Dependent variable:	With FSP support	Without FSP support
Farmer support programme membership	0.14 (0.10)	0.26 (0.10)
Fixed arable land (hectares)	0.05 (0.05)	0.02 (0.05)
{Fixed arable land} ²	-0.00 (0.00)	0.00 (0.00)
Household size (no. of members)	0.05 (0.06)**	0.07 (0.03)**
{Household size} ²	-0.17 (0.38)	-0.16 (0.39)
Education of household head (years)	0.05 (0.03)*	0.03 (0.03)
{Education of household head} ²	-0.00 (0.00)**	-0.00 (0.00)
Age of household head (years)	0.01 (0.02)	0.01 (0.02)
{Age of household head} ²	-0.00 (0.00)	-0.00 (0.00)
Dummy for male household head	0.01 (0.13)	0.03 (0.13)
Household income from agriculture	0.23 (0.07)**	0.04(0.01)
Distance to nearest market (km)	-0.03 (0.04)**	-0.03 (0.00)*
{Distance to nearest market} ²	0.00 (0.23)**	0.00 (0.00)**
No. of observations	49	40
Pseudo R ²	0.1768	0.1674
Log-likelihood	-294.73	-254.16
Left censored observations	84	86
Uncensored observations	79	75
Right-censored observations	43	38

*, ** and *** denotes significance at 10%, 5% and 1% significance level respectively.

It is also interesting to note that the findings of the PSM and the Tobit regression analysis partly agree with the results of the t-tests for the comparison of means presented in Table 8.3. Using t-tests, access to profitable markets is found to be significantly higher among cooperative/group members and individual farmers with access to FSP, regardless of the type of cooperatives. In other words, the results between participants of the FSP and non-participants of the FSP might be naïve comparisons which may lead to wrong conclusions and confirm the need of using methods that control for diffusion effects and self-selection, and take control variables into account that could result in spill over of information between the participating and non-participating groups of farmers.

Another variable that was significant is the distance to the nearest market. Most smallholder farmers in the two provinces are located in deep rural areas where there is only public transport and it is very difficult to access markets in urban areas. Farmers who had support were better off than non-supported farmers in terms of markets access. Results in Table 8.3 indicate that distance to the market was significant at 5% level, this illustrates the importance of distance to better paying markets. The shorter the distance to the market the lower the transaction costs.

8.2 Strategies adopted by smallholder farmers to access markets

A multinomial logit model¹⁴ was used to identify the main determinants of household-level livelihood strategies and how farmers access markets in communal areas of South Africa. The model included both biophysical and socio-economic explanatory variables as explained in the Chapter 6 (Equation 7). Bio-physical variables included in the model represent

¹⁴ A multinomial logit model (Greene 1990; Verbeek, 2008) is appropriate when the dependent variable consists of multiple categories (e.g., livelihood strategies) and in our case relates the probability that a household chooses a given livelihood strategy to a number of asset-related explanatory variables.

household's natural capital and include the amount of land that is owned by the household and access to water for farming as important indicators of agricultural production potential. The model includes the amount of land owned by the different farmers as explanatory variables. Ownership of land is expected to stimulate on-farm activities whereas a lack of own land can be expected to stimulate a household to look for off-farm work. The expected effects of land to farmers are important in terms of trying to get credit from financial institutions (Fraser 1991; Makhura, 2001). Land that is titled can be used as collateral and therefore may stimulate livelihood strategies that require larger amounts of financial capital. Farmers may also be willing to invest more in land that is titled than in land that has no title, even though this may be true for any land that is owned, with or without formal title.

The socio-economic explanatory variables included in the model have influence on market access and welfare of the farmers. Not all types of capital assets in smallholder farming are included because of concerns that these may be endogenous to the choice of strategy or channel to access the market. Improved market access can be expected to stimulate production of cash crops as farmers have assets to produce better quality and consistent output (Pender *et al.*, 2004). Higher road densities tend to lead to improved market access and are expected to stimulate cash crops. Moreover, better road connections are also expected to facilitate off-farm work.

Other variables in the model include household size, gender and age of the household head, proportion of adults in the household who are female, and the education of household heads. Size of the household determines the availability of family labour and as such is expected to influence both livelihood strategy and technology use. For example, to maximize employment for its members, large households may want to adopt a livelihood strategy that centres on working on the own farms. They may also find it easier to adopt labour-intensive production technologies that lead to improved market access. On the other hand, a high

dependency ratio may be indicative of labour shortage, which may stimulate livelihood strategies that require less family labour. Given a number of specific characteristics of female headed households and the many competing demands on the time of female household heads, gender of the household head is expected to influence the choice of market channel as most of the time females attend to household activities which include preparing meals and taking care of children. Female household heads tend to produce vegetables because they are easily sold at farm gate than other cash crops. A higher proportion of female adults in the household decreases the availability of non-domestic labour (the fact that most female adults have children restricts their options for non-domestic work) and therefore may influence the household's choice of livelihood strategy as well as technology choice. Finally, households in which the average level of education is higher can be expected to have more members working off-farm or affiliated to farmer support programmes (often in better remunerated occupations) and be more receptive to new technologies.

8.2.1 Results of the multinomial regression

The results of our multinomial logit model are presented in Table 8.4. The coefficients represent the effect of each explanatory variable on the ratio of the probability of the household selecting the particular market channel to enhance the livelihood in rural areas, relative to the probability of selecting a particular arrangement is shown in Table 8.4. The results suggest that livelihood strategies are associated with differences in both biophysical conditions (farm assets) and socio-economic conditions that jointly determine the way in which an individual household put these assets to use to access better paying markets (Ellis and Mdoe, 2003). Note that there is little difference between the mean proportions of each choice of market channels chosen by individuals who market their produce and the mean

predicted probabilities of each channel or strategy used, indicating good fit of the model to the data. To ease interpretation of the model results, the marginal effects of the explanatory variables on the probability of each strategy that these farmers adopt to access the markets are reported in Section 8.8.2.

Some of the strategies that farmers adopt include coming together by pooling all their resources and marketing their produce together. Collective action has worked for some smallholder farmers but there are a number of issues that are involved which include trust, group size and social cohesion among the farmers all of which need to fit. While, farmers are dynamic in nature, some differences in objectives tend to have an influence on market access especially when farmers are constrained by resources. Households that own less land tend to produce for consumption unlike those with bigger fields who produce for both household consumption and for sale.

Gender of household also has an important role in market access. If the household head is female, or younger, they are more likely to sell their produce at farm gate level, while males will venture into cash cropping or livestock and sell their produce to better paying markets. Women are more risk averse than man, they may prefer to sell their produce locally (around rural households, school teachers and at farm gate) because they are afraid to take their produce to distant market due to high transaction costs. In general, subsistence production is the dominant livelihood strategy in more marginal and land-scarce areas, and among poorer and younger households. Table 8.4 shows that gender is statistically significant under partnerships, membership to an organization and collective action categories at 10%, 1% and 10% respectively. The coefficients are negative meaning that females play a crucial role than males. This means that most of these households are run by female heads as men could be employed in lucrative jobs in urban areas and only contribute to household income through remittances.

Table 8.4: Multinomial logit model results

Explanatory variables	Partnerships		Membership to an organization		Collective action		Individual	
	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE
Title of land	−1.00209	1.15818	1.48094	1.04121	0.82708	1.19322	−0.74270	0.91573
Land size	0.00095*	0.00127	0.00214**	0.00091	0.00067	0.00086	0.00059	0.00092
Farm assets	0.20251***	0.05255	0.02727	0.11059	0.52985*	0.02757	0.52985*	0.05277
Age of household head	0.00332**	0.02173	0.00336*	0.02309	0.02956	0.01983	0.06815***	0.01724
Education	0.07184**	0.21005	0.29940*	0.18422	0.17611**	0.17871	0.23879	0.16939
Household size	0.10445	0.12784	0.01362	0.16298	−0.03015	0.10747	−0.00991	0.10817
Gender (household head)	−0.39686*	0.78423	−3.96464***	1.50166	−1.29206*	0.85613	−3.71278***	0.92736
Female adults (%)	1.57140	1.77866	1.05151*	2.97171	2.53423*	1.81363	4.52182**	1.97987
Extension services (dummy)	−0.08178	0.25495	0.85183**	0.33211	0.51997**	0.21144	0.31098	0.21955
Networks (dummy)	−0.00805	0.00630	0.02907***	0.00858	0.00429*	0.00414	0.01523***	0.00503
Market information (dummy)	0.13767*	0.07121	0.12030	0.07902	0.09003**	0.05954	0.09858	0.06820
Distance to the market	−0.08178	0.25495	0.85183**	0.33211	0.51997**	0.21144	0.31098	0.21955
Intercept	3.45762	2.99668	0.24639	2.98190	3.05683	2.40960	−9.31718	3.08394
Number of observations	21		19		23		26	
Proportion of observations	0.1791		0.0845		0.2142		0.3231	
Mean predicted probability of livelihood	0.1791		0.0845		0.2142		0.3231	

Coefficients and standard errors adjusted for sampling weights and stratification, and are robust to heteroskedasticity. See Chapter 6 for definitions of explanatory variables. *, **, *** mean statistically significant at 10%, 5%, and 1% level, respectively. **Mcfadden** $R^2=1-\log L_1/\log_0 = 0.4137$

Households that own less land tend to produce for consumption unlike those with bigger fields who produce for both household consumption and for sale. The average land size that was found to be operated economically from this study was two and half hectares which shows the importance of land size to smallholder farmers. The results in table 8.4 show that people operating under partnerships and those who are members to organizations make best use of their assets on large pieces of land. Land size was significant at 10% and 5% level with positive coefficients for partnership and collective action respectively. The result suggests that farmers with access to more land produce more crops and usually have sell excess produce to the market.

Household size usually plays an important role in terms of providing labour to rural communities. In this study household size was found to be insignificant which could possibly mean that now that farmers are slowly being mechanized, less labour is required for activities such as ploughing since tractors can be used by those farmers who can afford or are under some farmer support programme. This results contracts with results from the propensity score matching results which were exactly the opposite. Technological innovation could be slowly replacing human labour as most farmers in rural areas hire out tractors especially those under the FSP. Examples include farmers in the Eastern Cape who hire tractors from government to plough for them and also those who are into citrus farming. In KwaZulu-Natal, farmers that required tractors were those that grew sugarcane in the fields and the Masibuyele Emasimini Programme in KZN might have contributed to this result. Recent studies in South Africa have shown a decline in use of ox-drawn ploughs to cultivate their fields due to shortage of draught power in rural areas (Collins-Luswet, 2000).

Education has long been recognized as a central element in the socio-economic evolution of less developed countries Bembridge (1987). According to Bester *et al.* (1999), illiteracy has

been noted as one of the factors that limits development in less developed countries. Educational considerations generally influence the adoption of new behaviour of farmers. Education was found to be significant at 5% for farmers who are into partnership arrangements, 10% for farmers under memberships and 5% for those farmers under collective action. The result means that most of these farmers are literate and are able to read and write. This illustrates that the farmers are knowledgeable and have no difficulty in understanding market information and technologies used in farming. This result agrees with (Bembridge, 1987) who highlights that smallholder farmers with some form of vocational training are more likely to be more progressive farmers than those without vocational training. Farmers who have received some form of training are more likely to respond and benefit from new innovations. Extension services or farmer training workshops can be used to educate farmers on farming practices. These workshops can be functional and practical techniques for educating the farmers on the advanced methods of production. Results on access to training services (Table 7.8 and Table 8.4) indicates that a higher percentage of smallholder farmers have access to technical training and business planning or management training from these farmer support programmes on various aspects which include vegetable, sugarcane, citrus and cattle production.

Table 8.4 shows that smallholder farmers who are in partnerships with different organizations are better off in terms of markets access as they have support from these organizations to produce and markets their products. These partnerships which come in the form of FSP give farmers an opportunity to produce quality that is demanded by the markets, while those farmers who produce on their own and have no support hardly access better paying markets but sell to local market or at farm gate. Some of the factors that contribute to market access are education of the farmers. FSP farmers find it easier to market their produce as they are aware of what is demanded on the markets and are able to make rational decisions.

Farm assets were found to play an important role in markets access as shown in Table 8.4. Farm assets such as infrastructure and equipment determine the level of produce that is marketed to both local and the international market. For an example in the Eastern Cape, citrus smallholder farmer have irrigation equipment and have mentors that assist the farmers with technical, managerial and financial skills. Smallholder citrus farmers are able to sell their produce to both local and international markets as they produce good quality produce, with the right grades and standards demanded by the market.

Crop and livestock farmers tend to sell their produces locally and also to distant markets depending on availability of resources such as transport and storage facilities. In the previous chapter the study showed that livestock farmers sell their animal through various channels which include auctions, butcheries, private sales and speculations. Farmers are reluctant to sell their livestock especially cattle because they are used a sign of wealth and also used for cultural ceremonies such as weddings and funerals. While small livestock is used for traditional ceremonies such as the time when the boys come from circumcision or when people have to slaughter sheep during the initiation school of spiritual healers in communal areas.

Membership to a producer organization has a significant impact on farmers, explained by them being well connected for enhanced access to better markets. The variables in the model such as age, gender extension services and distance to the markets are statistically significant. Table 8.4 shows that being a member to any producer organizations rewards the smallholder farmer's skills transfer that enables them to produce better quality produce and access profitable markets easier, thereby improving their incomes. These findings are consistent with the theory of comparative advantage, farmers who are into associations or

into cooperatives are more profitable relative to individual farmers in areas of marginal rainfall and limited resources such as land, labour and capital.

Individual farmers face a number of constraints in marketing their produce. Smallholder farmers use traditional methods of agriculture and this results in low productivity hence their low margins of error and also because these methods have been refined and improved in the country through their use over many generations. Here, mistakes are less likely to be made in repeating familiar tasks than in applying new technologies in farming. For example, to an inexperienced user of chemical herbicides, their method of weed control would be more risky than hand weeding in the sense that the risk of damaging the crops would be higher. Similarly, in adopting new crop varieties which, under experienced management, are capable of producing better yields than the traditional varieties, an inexperienced farmer might suffer a lower yield, or even a complete production failure due to mismanagement. This might not be the case for all individual farmers producing crops and livestock, only a handful make it to these better paying markets. Most smallholder farmers usually sell their produce at farm gate or to *bakkie* traders in these rural areas.

Strategies employed by farmers appear to represent one destination in a household's life cycle as households become more mature and acquire more land, they seek and are able to diversify into off-farm activities as well as cropping and livestock. The opportunities for such diversification are greater in areas of higher agricultural potential because the main opportunities for off-farm employment are in agricultural activities on other farms, and such opportunities are likely to be more available in areas of higher agricultural potential.

Few factors are statistically significant predictors of the probability of either the smallholder farmers are associated with these partnerships or not, in order to improve their welfare through improved incomes at household level. Household size has a weakly significant

positive association with all the strategies that farmers try to enhance their incomes and markets access. This association could reflect reverse causality as household size is normally a contributory factor of increased production due to abundant labour and distribution of roles in the household.

8.8.2 Marginal effects of the explanatory variables

The interpretation of coefficients in a multinomial logit model can be difficult. The problem is compounded by the fact that the coefficients do not indicate what the net impact of a change in any explanatory factor on the probability of any particular category would be, as they do not account for the fact that the probability of the various categories or strategies that the farmers adopt to market their produce can change as a result of changes in the explanatory variables. The marginal effects reported in Table 8.5 address these problems, as they represent the marginal change in the probability of each category that are caused by a marginal change in the explanatory variable. In the case of dummy variables (e.g., gender of household), the marginal effect in Table 8.5 represents the change in the probability of the category from changing the variable from zero to one (e.g., from male to female headed household).

To calculate the direct effects on the probabilities of the different variables in Table 8.4, marginal effects in Table 8.5 are used. These marginal effects were applied on sample means to determine the effect of each variable on the choice that the smallholder farmer made in order to access markets.

Household income was hypothesized to depend on the household's strategy to make a choice among the four conditions set in Table 8.5 and asset portfolio of the smallholder farmers. Compared to the multinomial logit model used in the previous section (Table 8.5) tries to explain the household's marketing channel choice, in this study the data was

expanded so that a set of asset-related explanatory variables were analysed in a number of ways.

Assets included physical capital (i.e., the number of the farm machinery, equipment, and transportation assets owned by the household and the number of livestock kept by farmers) in the set of explanatory variables in the income regressions. All these factors determine the transaction costs of smallholder farmers. Asset ownership such as a motor vehicle (*bakkie*) is regarded as one of the factors determining market participation. Barriers to market entry are reduced when farmers possess assets. According to Pote (2007) poor smallholder farmers were unable to participate in lucrative agricultural markets due to lack of household specific productive assets. Other related to the explanatory variables include participation in training which were explained in the Chapter 7, where the farmers who received support were significantly different from those who had not received support. Separate variables for training or access to extension services were used to determine their role it plays in promoting market access among smallholder farmers in rural areas of South Africa. Household participation in producer organizations enables them to access technological skills such as improved use of inputs that produce better quality.

Non-governmental organizations are also involved in programs that assist smallholder farmers to access markets, especially farmers who are into fruits and vegetable production in developing countries. In the case of these two provinces results show that farmers who have been supported in terms of inputs and credit are able to access better paying markets than farmers who have not received any support. Some farmers are assisted to export their produce to European (EU) and United States of America (US) markets while for some farmers there is a Fair Trade initiative by NGOs and supermarkets from developed countries to allow produce of smallholder farmers to reach supermarkets in developed countries (Freeman, 2004). In this study Fair Trade was not investigated simply because the results of

the analysis would be affected by the impact Fair Trade has on smallholder farmers. In South Africa, Fair Trade is another avenue that smallholder farmers can explore to improve their incomes and develop their rural areas.

Two different model specifications were run, one with and the other without interaction variables. The model specification without interaction variables indicates which of the variables are most significant and therefore require better understanding regarding which household types should be targeted when launching intervention programs that address the challenges that smallholder farmers face in improving their incomes and market access. The model with interaction variables was used to isolate and identify household types that would benefit most from such intervention or support programmes (either government or NGOs) to improve the welfare of smallholder farmers.

Two different test specifications were carried out on the Multinomial logit regression to determine the model without interaction variables, the results of which are shown in Table 8.5. The two specifications of the multinomial logit model include an ordinary least squares (OLS) model and an instrumental variables¹⁵ (IV) regression (because of potential endogeneity of some of the explanatory variables). Each of these specifications carries its own potential problems. The OLS model is likely to have some endogenous explanatory variables and the IV model may be influenced by weak instrumental variables which may contribute to why smallholder farmers access different markets. In the latter model, the predicted values from the multinomial logit regression were used as instrumental variables for the different strategies adopted by smallholder farmers to enhance their capabilities of accessing-better-markets.

¹⁵ In the IV regression, instrumental variables include predicted probabilities of strategies used by farmers to access markets and predicted probabilities of participation in programs and organizations from multinomial logit model including as explanatory variables participation in training, participation in animal or crop production organizations and existence of an NGO program in the community were used to assess which variables have a influential role in the multinomial logit model before it was regressed. The variables indicating the type of strategy selected by the different farmers were also included separately as instrumental variables, in addition to being used to predict probabilities of participation.

Table 8.5: Marginal effects of explanatory variables (based on regression in Table 8.4)

Explanatory variables	Partnerships		Membership of an organization		Collective action		Individual	
	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE
Title of land	−.000219	0.00016	0.00209	0.00002	−.000336	0.00012	0.00349	0.00001
Land size	0.00084*	0.00021	0.00051**	0.00005	−0.00182	0.00015	0.00177	0.00026
Farm assets	0.07132***	0.00295	−0.01451	0.00102	0.024181***	0.00598	0.022069***	0.00587
Age of h/hold head	−0.01975**	0.02500	−0.05031*	0.00416	−0.26726	0.02195	−0.00216***	0.00362
Education	0.01675**	0.00025	0.05031*	0.00416	0.20726	0.02195	0.48691	0.03063
Household size	0.01618	0.01643	0.00898	0.00153	−.001294	0.01306	0.14767	0.02007
Gender (h/hold head)	−0.275381*	0.16437	−0.01415	0.00861	−0.78361**	0.17184	0.00889***	0.00473
% of female adults	−0.03317	0.24489	−0.023678	0.03917	−0.44707*	0.28223	−0.34193*	0.06317
Extension services (dummy)	0.08525	0.00678	0.03191**	0.00061	0.13339**	0.00944	0.00028	0.04387
Networks (dummy)	−0.51271	0.03436	0.01392*	0.00437	0.07264*	0.04409	0.01951	0.00367
Market information (dummy)	0.06731*	0.00102	−0.00899	0.00016	0.01735**	0.00072	−0.02907	0.00123
Distance to the market	0.60304	0.11968	0.03431**	0.01472	0.378361**	0.11906	−0.63628	0.10311

Smallholder farmers in both crop and livestock (n = 89). Coefficients and standard errors adjusted for sampling weights and stratification, and are robust to heteroskedasticity. *, **, *** mean statistically significant at 10%, 5%, and 1% level, respectively.

The predicted probabilities of participation for training and extension programs from Probit regressions in Table 8.5 and presence of organizations in the community as instrumental variables for the organizational participation, partnerships or participation in these support programmes has an effect on the predictor variables. The instrumental variable technique (IV) procedure confirmed the significance of the instruments for all endogenous explanatory variables such as household assets, extensions service and distance to the market.

To check if these variables were consistent with results from the multinomial logit regression a Hansen's J test of over-identifying restrictions was found not to be significant and therefore confirms the validity of our instrumental variables in Table 8.5. On the other hand, the Hausman test indicates that the (more efficient) OLS model is preferred to the IV model and thus supports exogeneity of the potentially endogenous explanatory variables. As a result, in Table 8.5 on marginal effects reported are only the OLS version of the model with interaction variables is significant.

The results do not find households that operate as individuals doing very well in terms of their incomes unless otherwise supported by the FSP (although there is a weakly statistically significant positive effect in the model with interactions in Table 8.5), possibly because these households still depend heavily on farm gate and *bakkie* traders for their market.

Gender and education variables have significant association with household income as shown in Table 8.5. With respect to gender (female headed households), the results suggest a positive significant influence on markets access for farmers who are into partnerships, collective action and individuals. Gender is significant at 10%, 5% and 1% for the different arrangements adopted by the farmers. The coefficients are all negative meaning that for every unit decrease in male headed households, there is an increase in participation of women in the farmer support programmes holding other independent variables constant. Female headed household tend to concentrate more on farming for family consumption

while male headed households tend to produce crops for commercial purposes. The results in Table 8.5 show that female heads play an important role in collective farming or group farming compared to man, while farmers who operate individually tend to rely on man for household decision making. Nevertheless, they still may have indirect impacts, via their effect on the above mentioned strategies to access markets. The two regression specifications (OLS and IV) indicate a strong and significant positive effect of exogenous variables on income and markets access, and again there is also an indirect effect through the livelihood strategies because access to farm size and assets are (weakly) associated with agricultural production and its contribution to market access among smallholder farmers.

Interestingly, land ownership has a statistically insignificant association with choice of marketing channel in all specifications, suggesting that greater land ownership alone does not guarantee higher income as farmers are risk averse when it comes to investing in land that does not belong to them. Nevertheless, land ownership indirectly affects income through its effect on these strategies adopted by smallholder farmer, though these effects are mixed. More land significantly increases the probability of a household following a strategy that contributes to better incomes as membership to an organization or partnerships will require the farmer to produce more crop or livestock produce to meet the market demand. According to the results in Table 8.5 no statistically significant direct or indirect effects of land ownership on household income was found.

Regarding physical assets, ownership of machinery and equipment has a significant positive association with income in both OLS and IV regressions. The magnitude of the coefficient in the OLS suggests a high rate of return to investment in machinery and equipment, probably because the utilization of machinery and equipment increases the productivity of both labour and land, the former by speeding up agricultural operations and the latter through facilitating

the adoption of improved production technologies which lead to market access. The role of these farmer support programmes can be assessed through this result. Without this support smallholder farmers would be in a worse situation that could probably force them out of agriculture. Table 8.5 shows that farmers who had access to assets were better than those who did not, especially for farmers under partnership, collective action and those that operated as individuals. The level of support from these FSP could have had a significant impact on production and marketing. Further, equipment for storing, processing, and transporting agricultural products facilitates the marketing of agricultural products.

Household size, on the other hand, does not have a statistically significant association with household income. The limited apparent impact of household size on income may partially be due to high variance in estimated incomes.

Market information and networks were found to be significant as this information sharing contributes to farmers having access to input and output markets. The lack of social capital for example networks and information sharing can be the constraints for market access. Social capital plays an important role in fostering the social networks and information exchange needed to achieve collective action and in sustaining a social and institutional environment that is ready to adapt and change. Market information sharing is statistically positive with markets access as shown in Table 8.5. As a result of weak social, smallholder farmers are trapped and continue to operate within the given market constraints and they do not receive rewarding incomes from their agricultural activities. The results also confirm farmers who are members of various organizations and those farmers that come together to market their produce are significant at 10% for those under partnerships and 5% for farmers under collective action. The significance of this result is that it highlights how important information sharing is important in smallholder farming. The marginal effects on the strategies that the farmers adopted showed that there is a significant difference between

those farmers who share information and are well connected to others. One reason for this may be the generally low levels of education in the rural areas of South Africa and the relatively limited variation in education levels among households through these networks farmers are in a better position to get a market for their produce.

Infrastructure is considered as one of the key factors for development, smallholder farmers are situated in the rural areas where there is poor infrastructure hence this leads to less access to profitable markets. Because of Apartheid government, black communities were displaced far away from the urban areas and that separated the far away from the bigger markets (Bienabe *et al.*, 2004). Thus, distance to the market was found to be significant in this study as many smallholder farmers are challenged by physical assets such as transport to get their produce to the market. The greater the distance at which the farmers are located in relation to market place, the fewer the farmers would want to participate in marketing activities. These results suggest that for every unit increase in the distance of the market place, there will a significant decrease in market participation by smallholder farmers in rural areas. Most of these farmers rely on *bakkie* traders to get their produce to the market while other farmers depend on their mentors for transport to the market or pack house as in the case of citrus smallholder farmers in the KAT River basin. In KwaZulu-Natal smallholder sugarcane farmers were dependent on transport from the sugar milling company (Umfolozi Sugar Mill) which would collect their produce from designated collection points in the villages. In these areas farmers organized themselves so that they could reduce transactions costs of marketing and transporting their sugar cane to the milling company in Umkhanyakude. Farmers producing vegetables sell their produce at the farm gate or street vendors in the city who sell on the road sides. Most of these farmers have failed to access supermarkets because of the quality that they produce which does not match with the supermarket requirements.

There were robust statistical evidence that membership in NGO programs, producer organizations, or rural financial institutions have significant impacts on market access and household income. In the model with interaction terms the impacts of machinery/equipment and agricultural training vary across the different strategies were investigated to help assess whether targeting of particular interventions to particular strategies would be warranted. It was confirmed that the positive impact on households that are affiliated to these organizations as they are able to access machinery and equipment, produce better quality and volumes for the markets thus improving their welfare.

8.3 The probability for smallholder farmers to engage in output marketing activities

The objective of this part of the research was to investigate the role that cooperatives have in assisting smallholder farmers to access markets in rural areas of South Africa. A number of selected individual farmers from twenty six (26) cooperatives¹⁶ were investigated to access the probability of these in engaging in output marketing activities over time, given the market and governance environment prevailing in South Africa. Smallholder farmers in South Africa market their produce as individuals or collectively to access the market. Most of these farmers are organized into various institutional arrangements which include partnerships, membership to producer organizations, collective action or individually marketing.

Table 8.6 presents the results of the probit estimation, looking at the exposure of smallholder farmers to collective action (cooperatives) and development of smallholder farmers in rural areas of South Africa. Results suggest that the local municipalities of OR Tambo and UMkhanyakude offer better environments indeed for agricultural cooperatives to embark in

¹⁶ Chairpersons from the 26 cooperatives were investigated about how they access the markets in rural areas under the different farmer support programmes. The most active cooperatives were found in OR Tambo and Umkhanyakude Districts, while a few were found in the Amathole and Umgungundlovu districts.

collective marketing activities. Farmers in these two local municipalities have 15-23 % more probability to engage in collective marketing than in the other two local municipalities (Amathole and Umgungundlovu). Smallholder farmers organized into groups are able to access domestic markets, especially supermarkets, which are growing in number in developing countries, especially in urban areas (Weatherspoon and Reardon, 2003). While most of these supermarkets prefer to deal with larger and medium farmers, there is a potential for small farmers to access these markets if they can successfully deal with economies of scale (volume) and co-ordination issues. This is where collective action in form of farmer organizations can help smallholders to satisfy the stringent requirements to become part of these procurement systems.

Empirical findings reveal that there is a significant difference at 5% level for cooperatives that were established by the farmers themselves compared to those introduced to farmers by either government, private parastatals or NGOs. The probit estimation shows that there is a positive relationship between cooperatives established by farmers with a probability score of 0.42 which is significant at 5% level. Newly established cooperatives were also found to be significant at 10% level, this result could be aligned to the support that these cooperatives get from FSP. Table 8.6 shows that cooperatives that are old (number of years in operation) have better experience in accessing markets than those that are new because of more exposure (knowledge) in agribusiness and entrepreneurial skills over years.

Table 8.6 shows that the probability to be engaged in collective marketing with the cooperative having the first chairman selected by the cooperatives members performs better than when a chairman is puts him/herself in a position. Chairperson chosen by cooperatives members tend to be educated and skilled and are able to make informed decisions as they are selected on merit. The results shows that chairperson chosen by the members tend to have an influential leading role and proper management of the cooperatives. The results

shows that maturity or development of the cooperative depends on the type of leadership which is shown by probability of 0.23 and positive marginal effect of 0.27. This means for ever unit increase in chairperson chosen by the members there is a 0.19 increase in probability of accessing the market.

Another important finding from these results was that the regions where the cooperatives are situated play a very important role; this is basically because of level of support from government, private parastatals and NGOs. The climate in these regions also plays a vital role in terms of agricultural potential for smallholder farmers in both provinces. The KwaZulu-Natal Province is well endowed with agricultural potential for farmers compared to the Eastern Cape, thus production in KwaZulu-Natal is consistently much higher than the Eastern Cape Province.

The distance to the market was calculated on the number of kilometres to the nearest market. Table 8.6 shows that distance to the market was significant at 5% proving that cooperatives located close to urban markets are better off than cooperatives located in distant areas. Farmers that were found to be located in distantly from markets had very little market participation compared to those that were located near markets. In this case, most cooperatives supported by NGOs performed better as they were directly linked to both local and international supermarkets.

Contrary to the conventional view that local markets fail to source produce from smallholders, SPAR and Pick 'n Pay for example do undertake local procurement largely from smallholder farmers. This shift away from centralized procurement allows some smallholder farmers to participate in mainstream markets, but their potential is limited by the difficulties of maintaining quality and consistent supply. NGOs and private parastatals try to bridge this gap for smallholder farmers to access these profitable markets in rural areas of South Africa.

Table 8.6: Endogenous and exogenous variables explaining market participation (Probit)

Dependent variable: dummy for cooperatives that engaged in collective marketing in the last year (2010-2012)¹⁷	Probit estimation	Marginal effects
Cooperatives established on farmers' initiatives		
Cooperatives age	-0.88 (0.20)*	-0.27 (0.18)*
Cooperatives age ²	0.56 (0.15)	0.46 (0.20)
Cooperatives age ³	0.42 (0.32)**	0.02 (0.43)**
Cooperatives with 1st chairman selected by farmers		
Cooperatives age	-0.03 (0.19)	-0.17 (0.05)
Cooperatives age ²	0.23 (0.39)**	0.19 (0.27)**
Cooperatives age ³	0.62 (0.01)	0.27 (0.074)
Distance to the market		
Distance to the market	0.00(0.29)*	0.03 (0.33)*
Distance to the market ²	0.31 (0.15)**	0.26 (0.10)**
Distance to the market ³	-0.10 (0.00)	-0.64 (0.01)
Spatial effects¹⁸		
Cooperatives in Amathole ^a	-0.11 (0.16)	-0.00 (0.31)
Cooperatives in OR Tambo ^b	0.39 (0.06)*	0.12 (0.01)*
Cooperatives in Umkhanyakude ^c	0.20 (0.05)*	0.31 (0.21)*
Number of observations = 26	Correctly classified obs. = 58.7%	
Log Pseudo likelihood = -234.08	Pseudo R ² =0.49	

Note: Standard errors in parenthesis () **, * indicates statistical significance at 5 and 10% respectively.

In Table 8.6 differences in the establishment of cooperatives that are engaged in collective marketing between 2010 and 2012 and those that did not are compared to illustrate the

¹⁷ The probability for a cooperative to be engaged in collective marketing activities, given its age, is calculated using Locally Weighted Least Squares technique (default in STATA).

¹⁸ Spatial effects showing a, b, and c dummy variables for the location of these cooperatives in the two provinces.

significance of maturity of the cooperatives in terms of number of years that they have been operating. Table 8.6 suggests that marketing cooperatives are mainly found in Or Tambo and Umkhanyakude districts shown by the spatial effects of their location in the two provinces. Table 8.6 suggests also that cooperatives established upon members' initiative, with an initial chairman appointed by the government, are more likely to engage in collective marketing.

However, the analysis presented in Table 8.6 could be affected by selection bias due to the presence of cooperatives that did not engage in collective marketing because they were recently established and did not have sufficient time to set up marketing services as opposed to those that had FSP.

By contrast, governmental interference in cooperative management is insignificant in explaining collective marketing probability. However, the role of NGOs has a positive relationship with collective marketing.

Thus, cooperatives that have been operating over years have better experience than new cooperatives. However, the scenario presented in Table 8.6 could also be affected by selection bias since some cooperatives chairpersons may be selected ambiguously by the members in the cooperatives. Moreover Table 8.6 neglects potential differences across cooperatives. In particular, there might be a minority of cooperatives that are well organized and do engage in sustainable marketing activities because good chairpersons.

The role of external initiatives or support by external organizations has a very significant impact on collective marketing over time. It is clear that cooperatives established upon farmers' initiative are a more sustainable forms of business than cooperatives established on the basis of top down initiatives (by either the government or NGOs). But the role that the NGOs play in providing market access is significant when compared to the role played by

government. NGOs tend to link farmers with better paying markets when compared to government. This finding is largely supported in development and agri-business literature, which generally recognizes the voluntary and active participation of farmers as a key indicator of commitment to collective entrepreneurship. The literature appears to be fairly divided on the issue of public involvement in cooperative management and Non-governmental organizations. Empirical results suggest that governmental involvement in cooperative management has no significant impact in promoting collective marketing activities.

8.4 Summary of econometric results

First, the results from the PSM and Tobit regression analysis in section 8.3 highlight that having been involved with farmer support organization has a significant impact on the degree of market access. For members of marketing cooperatives and individual farmers, however, the degree of market access is between 12 and 28% higher than that of farmers who do not belong to a cooperative or have no access to these services. This study highlights that collective action involves collective marketing. Agricultural cooperatives may not help smallholders to access markets unless these farmers have some form of support to improve their quality and volumes. The robustness of these findings is supported by the fact that two separate estimation techniques (Tobit regression and PSM) yielded similar results.

The difference between the farmers who have had support and those who have not, is shown by the various effects on income and welfare in the two groups of farmers. Most of the farmers have better access to markets and this is explained by the heterogeneity in the responses of members to the cost-saving and risk-sharing advantages obtained through collective action. In particular, when facing a price increase smaller farmers (i.e. farmers with less land) tend to reduce the fraction of output marketed (i.e. sell less and consume more), whereas larger farmers tend to increase their produce and market high volumes. In particular

the distinction made between farmers with access to FSP and those that are not, allows us to advance and test the hypothesis that beyond heterogeneity in members' behaviour, heterogeneity in organizational behaviour among these farmers also plays an important role in determining the impact of these FSP in market access for smallholder farmers.

However, we observe that most of the smallholder farmers in rural areas of South Africa do not engage in collective marketing but rather serve as a shield to protect semi-subsistence farming systems from market competition. In order to put these smallholder farmers in the farming mainstream and achieve food security at household level, it is necessary that studies be further made on these FSP and their role in establishing cooperatives and support services to these smallholder farmers to achieve the objectives set by national public policy of improved market access.

Secondly, the results from the multinomial logit model show that the significant variables have an influence on which types of arrangements that these farmers chose to reach the market. While a number of variables are significant in explaining the farmer's choice of arrangement which include factors such as age, extension services and distance to the markets are significant. Age of the household head is one of the most important factors pertaining to the farmer's personality make-up, since their needs and the way in which they think and behave are all closely related to the number of years they have lived (Bembridge, 1987). Smallholder farmers are rational people who make their choices based on the constraints that they face. But, Seyoum *et al.* (1998) came up with an opposing hypothesis which said that older farmers are expected to have greater inefficiencies because they are less adaptable to new technological developments. Interestingly from their research on maize producers in eastern Ethiopia they found out that younger farmers were more efficient in maize production than the older farmers.

Gender of household head was found to be significant as the household head ordinarily makes decisions with regards to what has to be produced and sold. Also market choice is influenced by gender as females tend to sell their produce to local markets and males to distant markets. In KwaZulu-Natal sugarcane farmers tend to sell their sugarcane to mills which are very far and in the Eastern Cape most farmer produce high value crops such as citrus fruits and vegetables (chili pepper) which are also sold to competitive markets.

Extension services for many years have contributed to the development of smallholder farmers in rural areas. Extension officers disseminate new technologies from research stations or workshops to smallholder farmers in a form that is easy for farmers to understand. Farmers with access to government extension services explained that the extension workers are not consistent and some of them rarely visit their villages. Further investigation showed that the extension workers are biased towards farmer cooperatives, because farmers belonging to cooperatives mentioned that they had no problem with extension services especially in Umgungundlovu district in KwaZulu-Natal and Amathole District in the Eastern Cape Province. This also goes for distance to the market, most farmers highlighted that long distances are costly to them especially when they have to hire transport to carry their produce to the market.

The results for the multinomial regression are robust and statistically significant as evidenced that membership in NGO programs, producer organizations, or collective marketing have significant impacts on income. The multinomial regression investigated whether the impacts of gender, level of education, land size, machinery/equipment and agricultural training vary across the different strategies used to access, to help assess whether targeting of particular interventions to particular strategies adopted by smallholder farmers when trying to access markets would be warranted (Table 8.4). There is a positive impact of assets such as machinery and equipment in households pursuing strategies that

involve production of crops and livestock for the markets. The magnitude of the impact being largest for smallholder farmers with support services compared to those without.

Finally, in trying to investigate the role that collective action contributes to market access in smallholder farming. The empirical results from the probit model looked at the age of the cooperatives, distance to the market and the role that the private sector and non-governmental sectors play in addressing the challenges that smallholder farmers face in accessing these profitable markets. The results show that lack of infrastructure is considered as one of the keys for development, smallholder farmers are situated in the rural areas where there is poor road infrastructure. Lack of infrastructure leads to less access to profitable markets and this stems from historical apartheid government policies, black communities were displaced far away from the urban areas, further away from better markets.

Quality and volume supplied by smallholder farmers does not normally meet the market demand in urban areas. Produce from smallholder farmers does not meet certain market grades and standards because the farmers lack the knowledge and resources to produce to these standards which are set by supermarkets. In addition, institutions for determining market standards and grades tend to be poorly developed and private parastatals and NGOs have come up with technical skills to improve the quality of smallholder farmers so that they can sell their produce to profitable markets.

Market participation by smallholder farmers requires collective action and this can only be derived if there is social cohesion and trust among the farmers. NGOs and the private sector have managed to address such challenges while the government has failed due to the level of investment and effort required to support the smallholder farmers in rural areas of South Africa.

CHAPTER 9

SUMMARY AND CONCLUSIONS; POLICY IMPLICATIONS AND AREA FOR FURTHER RESEARCH

9.0 Introduction

This chapter summarizes the research findings from the two provinces that were investigated. The chapter gives a brief discussion of the results and conclusions of this research. The summary of the findings include a quantitative approach that was used in the empirical analysis, based on the research questions in the introductory chapter of this study on the role of farmer support programmes and how these contributes to markets access. This research was done to better understand how prospects for sustainable growth and poverty reduction can be stimulated in the rural areas of South Africa. Finally, the chapter looks at policy implications and areas for further research.

9.1 Summary

This section starts by addressing the statistical analysis describing the households' asset base, challenges and household income levels. To answer the research questions in Chapter 1, the first research question was addressed by looking at the household characteristics in the two provinces, the second research question was addressed by employing a technique "Propensity Score Matching" to assess the impact of farmer support services on smallholder farmers, the multinomial logit regression model was used to assess the main determinants promoting markets access as part of an integrated econometric framework analysing the complex relationships between households' asset portfolios, smallholder channel choices, memberships to organization, agricultural production, use of labour and external inputs, land management decisions, and income. Finally, results from these econometric models were used to bridge the gap of knowledge, on the challenges that

smallholder farmers are facing in market access and improving their welfare in rural areas of South Africa.

The results on the first research question shows those smallholder farmers are still in that dilemma of failing to produce good quality and higher volumes because of a number of constraints that are highlighted in Chapter 7. Smallholder farmers still have to overcome the challenges of having access to credit, access to land, access to production inputs and access to better paying markets. To a large extent, the study attributes productivity gains and quality losses to the fact that smallholder farmers need access to financial and infrastructural support in South Africa, which would ultimately promote farmers' adoption of new farming technologies. As smallholders become educated about new technologies in farming there could be shift from indigenous farming to improved farming in rural areas, so that yields improve to access better markets.

The second research question was to investigate the role of collective action in improving markets access among smallholder farmers. The results show that farmers that work collectively are better off in terms of market access and access to production inputs. Also farmer cooperatives that are supported by NGOs are better in terms of their continuity after the donors have pulled out than those supported by the government.

The third research question investigated the impact of farmer support organization on smallholder farmer and the results showed that there was a significant improvement in the incomes of the farmers. The proportion of farmers that received support showed that they could perform better than those without support from these organizations. Generally it can be concluded that this support is necessary to remove farmers out of poverty in rural areas.

Assets of smallholders and their livelihood strategies were assessed in this study to investigate if they contribute to markets access. The results showed that farmers who are well endowed with assets have better access to markets especially farmers in the citrus industry and those growing sugar cane. The support they get from these organizations makes them to be in a better position to access these markets and get better incomes compared to those farmers that are not supported.

In South Africa the role of NGOs and other support organizations in terms of agriculture has not been accessed to its full potential. South African smallholder farmers are witnessing the establishment of support services through various organizations such as IDC, MAFISA, CASP, Land bank and DBSA just to mention a few. In the Eastern Cape, citrus smallholder farmers are working closely with Riverside pack house which assists them with both technical and financial management skills. To a large extent the pack house staffs, are mentors to these smallholder farmers and Industrial Development Corporation (IDC) funds these farmers with productive loans. In other cases the NGOs such as Ulima, Siyavuna (KZN), Siyozondla (EC) have supported a number of farmers with inputs and output market access. This support represents a great opportunity to boost agricultural production and development in South Africa especially among smallholder farmers who have been deprived support since South Africa attained its democracy. With these outstanding equity issues most smallholder farmers have not been able to produce enough for markets to get out of poverty and improve their welfare. Agricultural growth and poverty alleviation are long standing priority issues in most rural areas. However, unless barriers to markets can be reduced, smallholder farmers will continue to remain at the margin of economic development and in dire poverty. For these reasons, NGOs and private parastatals and partly the South African government need to promote the formation of smallholders' cooperatives and farmer

support services to rural farmers as well as their close interaction with smallholder farmers mentorship programmes.

9.2 Conclusions

Smallholder farmers in KwaZulu-Natal, Eastern Cape Province and the rest of South Africa, in theory, sell their products to several types of markets: local (rural), emerging urban, regional, and international. Of these, local markets are the easiest to reach due not only to logistical pre-disposition, quality standards, and scale issues are less of a concern at the local level, but also because of less competition from larger domestic and international producers. The challenge that these farmers face can only be addressed if smallholder farmers in South Africa can form various forms of associations (or cooperatives) to solve their socio-economic problems. Most of these problems originate from institutional and technical challenges in accessing different markets. Agricultural cooperatives are clearly an institutional solution to support the livelihood and commercialization of smallholder farmers. This study suggests that agricultural commercialization through cooperatives faces a number of challenges in South Africa, there is an urgent need for external support from both NGOs and Private parastatals to South African cooperatives and individual farmers in order to sustain collective marketing activities over time so that internal problems such as free-rider or internal conflicts issues are addressed.

Collective action seems to be more sustainable in KwaZulu-Natal and a few in the Eastern Cape areas where market and/or governance conditions are more favourable. Furthermore, collective marketing activities appear to be more sustainable amongst group members or in cooperatives established on the voluntary initiative of farmers, than in cooperatives formed by top-down interventions (Government or NGOs). External interventions increase the probability for a cooperative to embark on collective marketing at an initial stage. However,

collective competitiveness decreases rapidly in cooperatives formed by the government than those formed by NGOs.

Support from the government to agricultural individual farmers and cooperatives should avoid direct interference with establishment and management processes, but should rather focus on building managerial capacity, so as to prepare cooperative members to confront the challenges coming from the market place. Smallholder farmers should be trained on business, logistical and technical skills to fit in these high value chains. Further research is required to identify good managerial practices to be applied by different typologies of cooperatives in different market environments.

The Agricultural Products Act of 1990 of South Africa called for agricultural products and other related products to conform to certain standards regarding quality, packaging, marking, and labelling if they are to be competitive at both domestic and international markets. In South Africa and the rest of the world supermarkets have become *de facto* governors of the countries food retail business. Supermarkets are bargain hunters, increasingly looking for smallholder farmers who can guarantee not only competitive pricing but also quality, quantity and consistency. Thus, restructuring processes should be allowed to accommodate smallholder farmers to supply local supermarkets and dominate fresh produce markets to cut on high transaction costs incurred in coordinating smallholder farmers in South Africa.

9.3 Policy Implications

The results of this study are somewhat disappointing in terms of showing giving a prescription on ways to improve per capita income in the rural areas of South Africa. This may partially be due to sample selection and small sample size which focused on number of rural communities and households that are quite poor and have limited resources to practice meaningful agriculture. However, the results demonstrate that there are no easy and straight

forward solutions to the poverty problem in smallholder agriculture in South Africa. The asset portfolios of many households in these areas is often largely limited to their (unskilled) family labour and land, and as a consequence these households have no other choice but to use their limited resources to produce food for household consumption and for the market if there is excess.

The fact that over the past 18 years agriculture has not been a strong engine of growth in rural South Africa presents a big challenge to policy makers and donor agencies alike. Many households in the rural areas seem to be locked into a vicious cycle of producing basic grains and vegetables mainly for subsistence consumption and using traditional production technologies that have low land and labour productivities. These production methods have not significantly improved farmers' income earning strategies that would possibly make them to get more profits.

This study makes clear that agriculture should form an integral part of the rural growth strategy in the former homelands of South Africa. High reliance, for rural households on agricultural and related incomes make it mandatory that any strategy targeted at these areas needs to build upon the economic base that is availed by agriculture. Even though agriculture alone cannot solve the rural poverty problem, those remaining in the sector need to be more efficient, productive, and competitive. The study results suggest a number of potential ways to break the vicious cycle and areas on which a public or private intervention may want to focus in order to achieve a significant positive impact on income, poverty reduction, and improved productivity and sustainability of agricultural production.

9.3.1 Invest in rural/road infrastructure

The study found evidence that infrastructure in rural areas is still a challenge and affect smallholder profits as it takes a big budget of their income after selling their produce. Transportation of produce for smallholder farming is still the most significant problem as most small-holder farmers do not own transport and must use infrequent and expensive taxi services to access markets. Alternatively they must hire vehicles from neighbours at very unaffordable rates.

Agricultural productivity is determined by markets access and incomes derived from sales. Roads may affect market access and both market access and roads increase off-farm employment opportunities for households with limited stock of land who are “pushed” to look for off-farm work. Thus, road development can stimulate livelihood strategies that emphasize off-farm work and at the same time reduce transactions costs for smallholder farmers.

9.3.2 Improve access to land

Improving access to land (not land ownership) can have an indirect positive impact on income by enabling households to pursue more remunerative livelihood strategies such as livestock production. Given the inverse farm size productivity relationship that results of the present study found, improved land access could also increase total crop production in rural areas by enabling more productive smallholders to expand their production. This could be achieved by improving the operation of land rental markets. Besides evidence of the inverse farm size productivity relationship, land redistribution programs seeking to increase smallholders' ownership of land may be justified on the basis of sustainability considerations, as adoption of certain soil conservation practices is more incentivised on owned land than on rental land.

9.3.3 Broadening physical asset base of smallholder farmers

Promoting investments in households' physical asset bases (particularly machinery and equipment), through savings and credit programs or other means, can increase the returns to land and labour resources and raise incomes. Such investments should have a primary focus on crop and livestock producers but perhaps with a special focus on households that have relatively high opportunity cost of labour who are involved in cash crop production.

9.3.4 Post-settlement support to smallholder farmers

Smallholder farmers in South Africa and the rest of developing countries have failed to access market opportunities in developed countries because of their failure to produce demanded quality and consistent volumes. Agricultural marketing systems have changed and continue to change as a result of globalization and liberalization as well as demographic factors, particularly urbanization. These changes have led to the emergence of new market players and created new market opportunities but have also exposed small producers to increased risks in terms of uncertain access to markets, price instability and the risk of counter party. To overcome these challenges of market access, both government and the private sector should inject sufficient capital on infrastructural development and market access for smallholder farmers if they are to be integrated easier with the more developed commercial agricultural sector. The other option would be to establish SMEs in rural areas to create markets for smallholder farmers' products which can then be sold to profitable markets.

There is an urgent need for more empirical research on this issue of farmer support programmes in the smallholder farming sector. Further research is particularly needed to identify key factors behind the choice of market, as well as governance and managerial

practices that maximize the sustainability of smallholder farms over time. Sustainability of productive smallholder farmers will lead to improved welfare through these farmer support organization.

9.4 Areas of further research

The potential for agricultural growth in smallholder farming is great provided that farmers are supported with basic inputs for agricultural purposes. Supermarkets in South Africa are spreading to rural areas and this is an opportunity that the government and the private sector can capitalize on in incorporating smallholder farmers to market access. This is an area that requires a lot of research and how smallholder farmers can be assisted to produce better quality at the level of their competitors such as commercial farmers and to also access better paying markets.

Another area that needs to be investigated is penetration to international markets, a number of studies in Madagascar and Ethiopia by Swinnen (2007) and Jaffee and Henson (2004) have shown significant increase in incomes of smallholder farmers. South African smallholder farmers can learn from these countries how to access better paying markets. With this regard, it will be interesting to investigate the impact of these FSP on individual farmers or cooperatives to assess their impact on welfare and market access.

The government and the private sector should develop models that incorporate smallholder farmers into high value chains like the case of Johannesburg Fresh Produce Markets (JFPM). There is also need of extensive support in terms of equipment and machinery for production purposes in smallholder farming.

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Appendix 1

THE IMPACT OF FARMER SUPPORT PROGRAMMES IN INFLUENCING MARKET ACCESS IN SOUTH AFRICA. THE CASE OF SMALLHOLDER FARMERS IN THE EASTERN CAPE AND KWAZULU-NATAL PROVINCES.

**UNIVERSITY OF FORT HARE
FACULTY OF SCIENCE AND AGRICULTURE
DEPARTMENT OF AGRICULTURAL ECONOMICS AND EXTENSION**

HOUSEHOLD SURVEY QUESTIONNAIRE

We are conducting a research on “The impact of farmer support programmes in influencing market access in the South Africa”. The research requires conducting interviews with various stakeholders including your family or household. The information hereby obtained is solely for academic purposes and all your response will remain confidential. We will share the results with you once completed. The questions are designed to help us understand how export standards and the chain structure affect the livelihoods of households in smallholder farming through understanding labour allocation and resource use patterns, farm and non-farm production, extent of market orientation of production, preference pattern for and participation in alternative marketing channels, the regulatory environment and constraints profile for the sector. We thank you for your time.

Identification

Household name/number :.....
Name of household head :.....
Name of the village :.....
Ward :.....
District :.....
Date of the interview :.....
Interviewer :.....

Important: Questions that need general household information may be answered by any available household member.

SMALLHOLDER FARMER QUESTIONNAIRE

1. Brief personal information

1.1 Farm Name:

1.2 Municipality:

1.3 GPS Co-ordinates:.....

1.4 Name of farmer:

1.5 Telephone no:

1.6 Gender: Male Female

1.7 Age:

1.7 Household size.....

1.8 Number of adults and children in a household

Category	Males	Females
0-15		
16-45		
46-65		
65+		

1.9 How many people in the household are formally employed?

Formally Informally

1.8 Level of education: Primary Secondary Tertiary

Other (specify).....

1.9 For how long have you been a farmer?.....

2. Area currently farmed on

Land and Agricultural Production

1. LAND

2.1 How much land do you own?.....(ha)

2.2 How much land (ha) is under citrus production?.....(ha)

2.3 How did you acquire the land? Please tick.

Bought	1	
Lease	2	
Rent	3	
Inherited	4	
Other (specify)	5	

2.4 What is the size of arable land that you have access to (in hectares)? Please provide an answer under the appropriate type of tenure system which you own the land.

Land tenure system	Size of land (ha)	The year the land was acquired?
Bought (Title deed)		
Lease State land		
Renting and/ share cropping		
Inherited		
Other (Specify)		

2.4 How many workers are employed on the farm?.....

2.5 Is there adequate water? Yes ☐ No ☐

2.6 What is the source of the water?.....

2.6 In the past 12 months, did this household grow food crops for sale or home consumption?

Yes 1 ☐

No 2 ☐

2.7 If yes, mention crops cultivated and harvested, sold, consumed and given away in the past year

Crop	Harvested	Consumed	Sold	Given away
Maize				
Butter nut				
Tomatoes				
Spinach				
Onion				
Other....				

2.7 Are you a member of any producer groups of commodity organisations?

Yes ☐ No ☐

If yes which ones:

2.8 What are the benefits and advantages of being a member of these organisations?

.....

.....

2.9 If you are not a member of a commodity organisation then why not?

.....

.....

3. Agricultural activities

3.1 Do you grow vegetable, cereal or sugarcane crops?

Yes ☐ No ☐

Which are the main crops grown and livestock kept? How many hectares are grown of each?

Crop	Ha	Harvested	Sold	Given away
Maize				
Butter nut				
Tomatoes				
Spinach				
Onion				
Other....				

3.2 Do you have fruit on your farm?

Yes ☐ No ☐

What are the main fruits grown? How many hectares are grown of each?

Crop	Harvested	Consumed	Sold	Given away
Citrus				
Peaches				
Apricot				
Banana				
Apple				
Other....				

3.3 Do you farm with livestock?

Yes No

Which livestock do you farm with? How many of each?

Livestock kept	No of livestock	No of livestock bought	No of livestock sold	Given away
Cattle				
Sheep				
Goats				
Pigs				
Chickens				
Horses				
Donkeys				

3.4 Do you receive any veterinary services?

Yes No

3.5 If yes, then from whom?

.....

3.6 What is the main purpose for farming?

Main purpose of farming	Tick
Mainly for home consumption	
Mainly for sale	
Partly for home consumption and partly for sale	
Other (specify)	

3.7 Do you have other sources of income?

Yes ☐ No ☐

3.8 Is farming the main source of income?

Yes ☐ No ☐

3.9 Do you know what the financial turnover was for last year?

Yes ☐ No ☐

3.10 Do you have audited financial statements?

Yes ☐ No ☐

4. Markets for products

4.1 How far (km) is the nearest market where you buy your farming inputs?.....

4.2 Do you sell your produce? Yes ☐ No ☐

If Yes, where do you sell it?

Bakkie trade ☐ Fresh Produce market ☐

Where do you sell it?	Tick	Which ones?
Processor		
Pack house		
Retailer		
Other (specify)		

4.3 Do you receive information about the market for your products?

Yes ☐ No ☐

If Yes, Who supplies you with this information?

Who supplies you with this information	Tick	Which ones?
Government extension officers		
Commodity organisations		
Private Companies		
NGO		
Mentor		
Other (specify)		

5. Training and support

5.1 What skills do you credit yourself (or other family members) with that you find useful in operating the farm?

.....

5.2 Do you receive skills training in farming?

Yes ☐ No ☐

Who supplies you with this training? (In order of importance – 1, 2, and 3)

Who supplies you with this information	Tick	Which ones?
Government extension officers		
Commodity organisations		
Private Companies		
NGO		
Mentor		
Other (specify)		

5.3 Do you receive technical support on farming methods?

Yes ☐ No ☐

Who supplies you with this technical support? (In order of importance – 1, 2, and 3)

Who supplies you with this technical support	Tick	Which ones?
Government extension officers		
Commodity organisations		
Private Companies		
NGO		
Mentor		
Other (specify)		

5.4 Do you receive business support?

Yes ☐ No ☐

Who supplies you with this technical support? (In order of importance – 1, 2, and 3)

Who supplies you with this Financial support	Tick	Which ones?
Government extension officers		
Commodity organisations		
Private Companies		
NGO		
Mentor		
Other (specify)		

5.5 What additional skills are required to be able to operate the farm successfully?

.....

.....

5.6 How do you keep yourself informed about latest agricultural information?

.....

.....

6. Financial support

6.1 Have you received financial support in the form of grants?

Yes ☐ No ☐

If Yes, from which organisations? And if No which programme (e.g. CASP, Ilima, Letsema)?.....

.....

.....

6.2 Have you received financial support in the form of loan?

Yes ☐ No ☐

If Yes, from which organisations?.....

7. Constraints on your farming operation

7.1 What are the three main problems that affect your farming production?

Who supplies you with this Financial support	Tick	Rank them with most serious?
Pests and diseases		
Lack of planting material		
Lack of tools and equipment		
Low prices received for product		
Inadequate knowledge		
No ability to access to markets		
No ability to raise finance		

8. Other comments

.....

.....

.....

.....

.....

Thank you very much for your participation in this survey.

Appendix 2



FACULTY OF SCIENCE AND AGRICULTURE
DEPARTMENT OF AGRICULTURAL ECONOMICS AND EXTENSION
FOCUS GROUP QUESTIONS

1. What is the name of the cooperative?
2. When was the cooperative started?
3. How many members are in this cooperative?
4. How does one become a member of the cooperative?
5. How are the chairperson selected in your cooperative?
6. How was the land acquired for production purposes?
7. Does the project keep some livestock?
8. Does the household have access to market its agricultural products?
9. What are marketing channels used to access by household to sell its products?
10. How does the co-op acquire its livestock?
11. What are the reasons for keeping livestock?
12. How do household members acquire other food products, besides the ones from own project production (other sources of food)?

13. Which type of food crop or food is mostly used by household members?
14. Are there any other people assisting in production, besides household/project/farm members?
15. Does the household have any agricultural implements?
16. How does the household/project/farm get agricultural implements during planting season?
17. Is the household/project/farm dependent on rainfall or irrigation for crops to be irrigated?
18. If household/ project/farm is using irrigation, which type of irrigation method used?
19. Does the household/project/ farmer receive visits and advise from Extension Personnel?
20. What is the frequency of Extension Personnel visits per month or per quarter?
21. Do you receive inputs?
22. From which organizations do your receive inputs from?
23. Do you attend information days? If yes how often, then if no why do you not attend?
24. Do you have enough resources for production/farming?

Thank you for your time