Contract farming and access to formal credit in South Africa: A case of small-scale sugarcane growers in the Felixton Mill area of KwaZulu-Natal

By

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DECLARATION

I, Sandile Bongani Sifundza, declare that this dissertation, which I submit for the degree MSc Agriculture (Agricultural Economics) at the University of Pretoria, is my own work and has not previously been submitted for a degree at this or any other university.

Signature: _____ Date: _____

DEDICATION

I would like to dedicate this work to the Almighty God for the gift of life, and for giving me strength and courage to work hard each and every day towards accomplishing this dissertation. This dissertation is also dedicated to my late uncle, Mzwandile Cyril Gina, for being a role model in my life and for his advice in coming up with this research. Rest in Eternal Peace ‘Magadlela’.

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ABSTRACT

Sugarcane farming is one of the most important agricultural enterprises in South Africa and most of the people working in the agricultural sector are employed in the sugar industry. Sugarcane farmers and sugar mills contribute significantly to the economic survival of rural communities and towns where sugarcane is grown, in terms of employment opportunities. However, in the rural areas of KwaZulu-Natal, smallholder sugarcane farmers are faced with a serious problem of low productivity, partially caused by lack of access to formal credit. Formal financial institutions do not adequately provide credit to smallholder farmers, since they are considered to be non-creditworthy and lack the required collateral. In the agricultural sector, one of the alternatives in solving the problem of inability to access formal credit is contract farming.

Therefore, the main purpose of the study was to investigate the role of contract farming in improving access to formal credit for small-scale sugarcane farmers in the Felixton mill area in the KwaZulu-Natal province. The specific objectives were to (a) determine the status of access to formal credit for smallholder sugarcane farmers; (b) identify factors that determine smallholder sugarcane farmers' access to credit from formal financial institutions; (c) identify factors that may lead sugarcane farmers to participate in contractual agreements; and (d) determine whether participating in contracts promotes access to formal credit for smallholder sugarcane farmers.

In total, 220 small-scale sugarcane farmers were sampled for the survey, using a proportional stratified random sampling procedure. In analysing the data, both descriptive analysis and an econometric model were used in the study. The data were analysed using Statistical Package for Social Sciences software (SPSS 20.0). Two logistic regression models were estimated. One was estimated to identify the factors and characteristics that influence access to formal credit for smallholder farmers. The other was estimated to identify the different factors that influence smallholder sugarcane growers to participate in contractual arrangements with other value chain players.

The results of the study indicate that most of the small-scale farmers in Felixton were credit constrained, as only 19% of the farmers had access to credit from formal credit sources. A majority of the farmers (94%) engaged in contractual agreements with other actors in the value chain. The results of the logit model revealed that engagement in contractual agreements by small-scale sugarcane farmers was statistically and positively influenced by farmers' age, gender and whether or not they had received training in sugarcane production. Engaging in contract farming was also statistically, but negatively, influenced by access to the market and access to formal credit. On the other hand, access to formal credit by smallholder sugarcane farmers was statistically and

positively influenced by the farmer's experience in using credit from formal sources, the age of the farmer, the farmer's level of education and access to off-farm income.

Access to formal credit had a statistically significant negative influence on a farmer's involvement in contractual agreements. This means that a farmer who is credit-unconstrained has a lower likelihood of engaging in contracts than a farmer who is credit-constrained. However, participating in contract farming has a statistically non-significant effect on access to formal credit. The implication is that engaging in contracts with other players in the value chain does not enhance access to credit from formal credit sources.

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ABBREVIATIONS AND ACRONYMS

AgriBEE	Agricultural Black Economic Empowerment
DAFF	Department of Agriculture Forestry and Fisheries
DTI	Department of Trade and Industry
FAO	Food and Agriculture Organisation
FSM	Felixton Sugar Mill
GDP	Gross Domestic Product
GSO	Grower Support Officer
Ha	Hectares
KZN	KwaZulu-Natal
LSGs	Large-Scale Growers
MAFISA	Micro-Agricultural Finance Institution of South Africa
MGB	Mill Group Board
NGOs	Non-Governmental Organisations
RV	Recoverable Value
SACGA	South African Cane Growers Association
SACCO	Savings and Credit Cooperative
SACU	South African Customs Union
SASA	South African Sugar Association
SASMAL	South African Sugar Millers Association Limited
SASRI	South African Sugarcane Research Institute
SPSS	Statistical Package for Social Sciences
SSCs	Small-Scale Contractors

SSGs	Small-Scale Growers
UAF	Umthombo Agricultural Finance

CHAPTER 1

INTRODUCTION

1.1 Background

Smallholder farmers require access to production credit in order to increase their productivity and to develop the agricultural sector as a whole. According to the Department of Agriculture Forestry and Fisheries (DAFF) (2012), about 70% of the poor population in South Africa live in rural areas, and these areas are characterised by high levels of poverty and unemployment (DAFF, 2012). These people are subject to constrained income because the rural economy cannot fully provide for self-employment opportunities. Growth in the agricultural sector has been hindered by different factors, such as high costs of production, uncoordinated policies and natural risks such as climate variability. Smallholder farmers can contribute significantly to creating employment opportunities and improve household food security for the poor in rural areas. Therefore, in order to ensure long-term food security, there needs to be a significant increase in the productivity levels of smallholder farmers (DAFF, 2012).

Sugarcane farming is one of the most important agricultural activities in South Africa. Sugarcane is mostly grown in three provinces, namely Mpumalanga, the Eastern Cape and KwaZulu-Natal (KZN). According to the South African Sugar Association (SASA) (2016), the annual income generated by the sugar industry is estimated to be R8 billion, with a nominal gross domestic product (GDP) of R2.4 billion. This means that the industry contributes 0.5% to 0.7% to the GDP. A majority of the people working in the agricultural sector is employed in the sugar industry in South Africa, both directly or indirectly. Approximately 79 000 workers are employed by the industry directly through sugarcane production and processing and 350 000 workers are indirectly employed through other support services such as input suppliers (SASA, 2016).

Therefore, one can argue that sugarcane farmers and sugar mills contribute significantly to the economic survival of rural communities and towns. A study by Maloa (2001) concluded that sugarcane farming areas and milling towns in South Africa have lower levels of unemployment. The per capita income in these towns is also higher than in other towns and farming areas.

According to SASA (2016), approximately 29 130 registered sugarcane growers and six milling companies are responsible for the manufacture of sugar. The sugarcane growing areas are operated by 14 sugar mills. As a major crop grown in the KZN and Mpumalanga provinces, sugarcane generates approximately 50% of farming income from field crops in these provinces. Sugarcane production for the entire industry per season stands at 2.3 million tons. However, during the 2015/2016 season the industry recorded a decline of 1.6 million tons in sugarcane production (SASA, 2016). This may be attributed to different factors, such as the recent drought, which affected mostly the central and eastern parts of South Africa and was declared the worst drought since 1992.

The sugar industry in South Africa seems to be shrinking, and this is a matter of concern, given its importance. According to SASA (2016), the total area under cane was 419 465 ha in the 2006/2007 season and this decreased significantly to 370 336 ha in the 2015/2016 season. Records show that there was also a major decline in small-scale sugarcane production during the same period. In the 2006/2007 season small-scale growers (SSGs) produced a total of 2 030 443 tonnes of cane and this decreased to 1 410 472 tonnes in the 2015/2016 season (SASA, 2016). According to Thabethe (2013), smallholder sugarcane farmers experienced lower productivity due to poor education and limited resources. Inadequate market information, poor infrastructure, technical inefficiencies and high input costs are also major causes of low productivity among smallholder farmers. SSGs lack access to formal financial markets and services, mainly credit, and this has a negative effect on

their productivity. Credit provision for rural communities such as the rural areas of KZN is essential to enhance agricultural productivity and raise the growers' levels of income. Such credit would allow small-scale agricultural producers to start production and sustain their marketing activities. Formal financial institutions do not provide adequately for credit for smallholder farmers (Jabbar *et al*., 2002), since they are considered poor or non-creditworthy and lack the required collateral. Most SSGs in African developing countries still lack access to formal finance to increase agricultural production (Masuku, 2010).

Credit provision is essential for rural development and for the growth of the economy as a whole. Credit allows smallholder farmers to purchase production inputs easily, and thus contributes to sustainable growth in agriculture. Smallholder farmers are also able to adopt improved agricultural technologies through access to credit, hence increase production of their agricultural enterprises (Binswanger and Khandker, 1995). According to FinMark Trust (2011), the uncertainty in agricultural production has made it much more difficult for formal institutions to give credit to smallholder farmers for large-scale investments. This credit constraint issue has affected agricultural growth and poverty eradication measures by smallholder farmers in rural areas.

Smallholder sugarcane farmers in rural areas of South Africa still lack the necessary inputs and access to formal financial markets to obtain credit. Some do not have guaranteed markets for their produce, have limited production land and suffer high transaction costs in production.

1.2 Problem statement

Many studies have been carried out in an attempt to deal with the issue of access to formal credit in a developing economy. These include supplier-led approaches to credit, which have not been successful; the developing world is still in search of improved alternatives to enhance access to

formal credit by small-scale farmers (Stiglitz, 2002 and Meyer, 2002). Many argued that in order to promote rural economic development, there has to be a change in the lending terms of financial markets in the rural areas.

In the rural areas of KZN, smallholder sugarcane farmers are faced with a major constraint of increasing productivity, partially caused by lack of access to formal credit. Hence, there is continued research into identifying better measures that can improve smallholder farmers' access to formal credit. Masuku (2010) noted that in order to help smallholder farmers to gain access to credit, there has to be a change in the lending terms and conditions for smallholder farmers from formal financial institutions.

In the agricultural industry, contract farming is considered one of the alternatives to solving the problem of smallholder farmers' inability to access formal credit. A study by Warning and Key (2002) has indeed confirmed that smallholder farmers' engagement in contract farming has improved their access to credit. The benefits derived from contract farming depend mostly on the behaviour of contractors, socio-economic factors and the business' sector in the industry. A study by Slangen *et al*. (2008) confirmed that contract farming has enabled farmers to gain access to many different services that would be difficult to obtain, including access to formal credit, improved technologies, new markets and risk aversion strategies.

Although contract farming can promote access to credit, little research has been carried out on the role of contracts in promoting access to credit from formal credit institutions for small-scale sugarcane farmers, especially in South Africa. Studies carried out focus mainly on the production and marketing aspects of the small-scale farmers' products, as opposed to access to formal credit by small-scale sugarcane farmers. A study was conducted by Masuku (2011) in Swaziland on the

role of contractual agreements in sugarcane production, but did not highlight how engaging in contract farming promotes access to formal credit for smallholder farmers. Wainaina *et al.* (2012) and Musara *et al*. (2011) conducted studies on contract farming and its effect on smallholder farmers' income, but did not discuss how contract farming enhances access to formal credit. Other similar studies on contract farming were carried out by Kirsten and Sartorius (2002) and Rehber (1998). These focused mainly on agri-food systems development and agribusiness linkages and contract farming, but did not discuss whether the contracts improved access to formal credit, thus increasing the productivity of smallholder sugarcane farmers. Therefore, analysing the role of contracts in promoting access to formal credit is essential for the formulation and implementation of strategies and policies aimed at developing smallholder sugarcane farming.

1.3 Study objectives

The overall objective of this study was to investigate the role of contracts in improving access to formal credit for small-scale sugarcane farmers in the Felixton mill area in the KZN province.

The specific objectives of the study were to:

1. Determine the status of access to formal credit for small-scale sugarcane farmers;
2. Identify factors that determine small-scale sugarcane farmers' access to credit from formal credit institutions;
3. Identify factors that may lead sugarcane growers to participate in contractual agreements; and
4. Determine whether participating in contracts promotes access to formal credit for smallholder sugarcane farmers.

1.4 Research questions

The research questions were:

1. Do small-scale sugarcane growers have access to formal credit from formal financial institutions?
2. What are the characteristics that determine small-scale sugarcane growers' access to formal credit?
3. What are the factors that determine smallholder sugarcane farmers' participation in contract farming?
4. Does participating in contractual arrangements increase the smallholder farmer's chances of gaining access to credit from formal credit markets?

1.5 Research hypotheses

The hypotheses put forward and tested in this study are:

1. Smallholder sugarcane farmers in KZN do not have access to formal credit from formal financial institutions.
2. Farmers' age, level of education and experience in using credit from formal sources determine their access to formal credit.
3. Smallholder sugarcane farmers' level of education, farm size and membership of a farmers' organisation determine participation in contract farming.
4. Smallholder sugarcane farmers' engagement in contractual agreements enhances access to formal credit.

CHAPTER 2

SMALLHOLDER FARMING AND THE SUGAR INDUSTRY IN SOUTH AFRICA

2.1 Introduction

In this chapter a review of literature on smallholder farming and the challenges faced by smallholder farmers in most developing countries in Africa is presented. The South African sugar industry is also discussed in this chapter, in terms of its structure, performance, socio-economic importance and its contribution to the agricultural sector and to the economy of the country as a whole. Furthermore, the general organisation of cane deliveries in the Felixton mill area, and the type of contractual arrangements in which the SSGs engage are outlined.

2.2 Agriculture in South Africa

2.2.1 The importance of agriculture

The agricultural sector contributes significantly to creating employment opportunities and to ensuring food security in South Africa. This sector contributed approximately R58.2 billion, which was equivalent to 2% of the GDP, in 2012, and created 7% of formal employment in 2013 (GreenCape, 2016), hence it is regarded as a catalyst for economic growth. However, there was a decrease in the number of people employed in the agricultural sector in 2014, from 742 000 in 2013 to 670 000 in 2014. During this period KZN alone experienced a decline of 11 000 jobs in agricultural employment (DAFF, 2014). In Africa, most people living in the rural areas depend on agricultural activities to earn a living, as agriculture contributes 86.6% to total employment and 35% to employment opportunities in the world at large (Naamwintome and Bagson, 2013). Proctor and Lucchesi (2012) noted that the agricultural sector ranks as the second highest source of employment worldwide after the services delivery sector. According to the Department of DAFF

(2016), almost 86% of the 122 million hectares of total surface area is used for agricultural production in South Africa.

Even though agriculture plays an important role in alleviating poverty and creating employment opportunities, more than 14 million people still lack access to sufficient food and are vulnerable to hunger in South Africa. Machethe (2004) highlighted that in developing countries the issue of the most appropriate methods of alleviating poverty is still debatable. In a study conducted in 2003 on different sources of household income, the results showed that farming contributes significantly to household income for rural communities (Machethe, 2004).

2.2.2 Smallholder farming

Many African economies are driven by smallholder farmers, even though less attention is paid to this sector. The role played by smallholder farmers is significant in that they contribute approximately 90% of agricultural output in many developing countries (Kang'ethe and Serima, 2014). Ortmann and King (2007) noted that small-scale farmers in South Africa have constrained access to credit and information, have limited factors of production, and face high transaction costs and inadequate property rights, which often constrain markets. Most smallholder farmers have limited cultivation land and their activities are subsistence farming in nature. Some grow one or two cash crops and rely mostly on family labour (DAFF, 2012). According to Manganhele (2010), most smallholder farmers do not have irrigation infrastructure and depend on rainfall as their main source of irrigation. They also employ traditional farming methods, such as manual cultivation techniques, and use low-yield seed varieties.

Most rural households depend on smallholder farming for their livelihood. Smallholder production plays a significant role in household food security, even though this sector is characterised by low productivity. Manganhele (2010) further noted that poor access to crop management techniques,

low yield crop varieties and policy constraints have greatly affected smallholder farmers' productivity and prevented them from accessing improved markets. Thus, most urban and rural households are discouraged in agricultural production by poor yields and this leads to food insecurity. Therefore, to ensure long-term food security, smallholder farmers need to increase their productivity significantly.

2.2.3 Constraints faced by smallholder farmers in agriculture

Relative to their commercial counterparts, smallholder farmers in South Africa face many difficulties in the agriculture industry. These challenges affect their growth and their strength to conquer food insecurities (DAFF, 2012). According to Moyo (2014), high transaction costs and imperfect information make it difficult for smallholder farmers to access farming inputs and markets. Generally they operate from government-owned and communal land and do not have title deed to the land. This makes them unable to invest in proper farm infrastructure and may lead to crop failure, thus affecting their productivity (Moyo, 2014).

According to DAFF (2012), lack of access to proper roads is a limiting factor in the farmers' ability to transport inputs and produce and to access information. This hinders their participation in potentially lucrative markets. Another factor that constrains the growth of smallholder farmers is high transaction costs, which may frequently be attributed to poor infrastructure in remote rural areas of South Africa. This may have an effect in acquiring efficient information and may result in institutional problems such as unavailability of formal markets (DAFF, 2012).

In most rural areas, smallholder farmers do not have reliable markets to sell their produce. This compels them to sell their produce at local markets and at their farm gates, resulting in them receiving low incomes for their products. However, if these products were to be sold at competitive markets, the smallholder farmers would have received higher incomes. DAFF (2012) also cited

lack of human capital as a major constraint faced by smallholder farmers in South Africa. Most lack technological skills and are illiterate. They do not have the proper financial and marketing skills and this hinders their ability to meet the quality standards set by food processors and fresh produce markets.

According to Moyo (2014), lack of basic production inputs such as water, capital assets and land causes the smallholder farmers to produce poor quality products, which are unacceptable in output markets. Lack of basic inputs also causes the smallholder farmers to be inconsistent in their production and in supplying their products to fresh produce markets.

Addressing all these challenges requires a supportive structure from government and the private sector. The government should intervene by solving the problems of market failure and design proper institutions and infrastructure, which would help reduce transaction costs. This would increase agricultural productivity and agricultural growth as a whole, thus contributing to growth in income and food security.

2.3 The South African sugar industry

Given its foreign exchange earnings, industrial and agricultural investments, and its employment rate, the South African sugar industry plays a major role in boosting the economy of the country. The South African sugar industry is ranked in the top 15 out of more than 120 countries where sugarcane is produced worldwide and is the largest sugar industry in Africa (SASA, 2016). According to SASA (2016), the South African sugar industry produces approximately 2.3 million tons of sugar per season. The sugar industry comprises six milling companies and 14 sugar mills, which are responsible for the production of sugarcane to produce raw or refined sugar, syrup and other sugar by-products. There are about 29 130 registered sugarcane farmers, with 22 500 predominantly operating in the KZN province, and the remaining few operating in the

Mpumalanga and Eastern Cape provinces. The sugar industry employs more than 429 000 people directly and indirectly through a number of support industries (SASA, 2016).

During the year 2015/2016 the industry produced 46 826 tons of sugar for international markets; this amount was 9.8% lower than in the previous year (SASA, 2016). This decrease may be caused by different factors, such as rising input costs, the recent drought that was considered the worst in 30 years, high transport and fuel costs and land reform uncertainty. Based on SASA (2015) estimates during 2015/2016, a total of 1.65 million tons of sugar was supplied by the industry to the South African Customs Union (SACU). Again, this represents a 4.6% decrease from the amount that was supplied in the previous year. An annual average direct income of R8 billion was generated by the sugar industry, based on revenues obtained from sugar exports to world markets and sales in the SACU region.

The South African sugar industry has taken the initiative to support SSGs to improve their sugarcane productivity. The following divisions have been established in the industry with the aim of providing support services to the smallholder farmers: the South African Sugar Association (SASA), the South African Cane Growers Association (SACGA), the South African Sugar Millers Association Limited (SASMAL) and the South African Sugarcane Research Institute (SASRI). Sibiya and Hurly (2012) noted that SSGs were yet to improve their sugarcane production, even though they were supported by many sugar industry organisations.

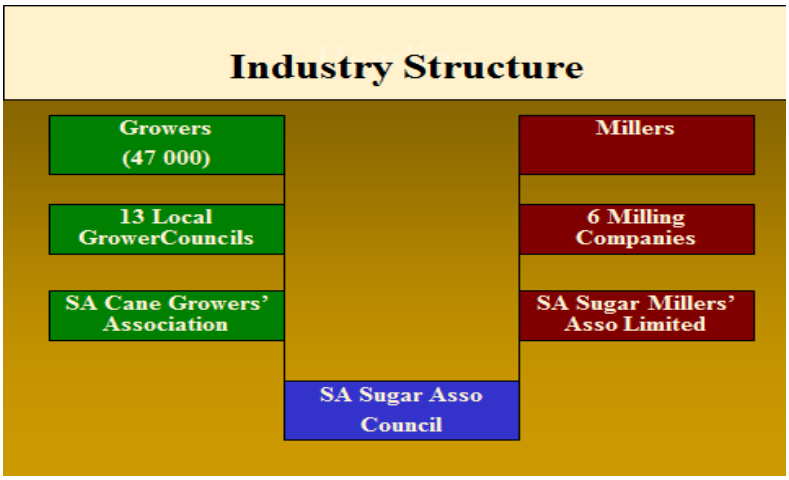

Figure 2.1: Organisation of the South African sugar industry

Source: SASA (2016)

2.3.1 South African Sugar Association

SASA is the mother organisation formed by SASMAL and SACGA. SASA is responsible for administering the partnership between these two associations. Since they are equal partners, each member is responsible for electing 11 councillors to sit on the SASA council. The chairman and vice-chairman of the council usually rotates between the growers and millers every two years (SASA, 2016). SASA is not regulated by the government. It operates in terms of the Sugar Industry Agreement and the Sugar Act, thus making the sugar industry self-governed. Revenue generated from the sale of local and exported sugar is used to finance the industrial and administrative activities of the association.

2.3.2 South African Cane Growers Association

SACGA is a non-profit organisation established in 1927, and is responsible for serving the interests of individual sugarcane growers. It provides services such as extension services and agricultural economic advice through grower support officers (GSO) as a means of encouraging SSGs to make informed financial and farming decisions. It also protects the interest of every cane grower through

lobbying and makes sure that the cane grower receives a fair value for his produce. SACGA is made up of member organisations from 26 grower groups. Each member organisation is represented by a local grower council in each mill area (SASA, 2016). Every individual grower has an equal chance of being elected to the local grower council. The local grower councils then elect representatives to the centrally based congress of growers, which in turn elects the board of directors (SASA, 2016).

2.3.3 South African Sugar Millers' Association Limited

The major objective of SASMAL is to address the interests of sugar refiners and millers in the South African sugar industry. Its main responsibilities are to carry out scientific and technological research, provide support for training, deal with legislative measures that impede the industry and cater for administrative matters involving partnerships in the industry. There is a high level of interaction between SASMAL and other stakeholders, such as SACGA, to discuss matters that affect the sugar industry. SASMAL is made up of six members, namely Gledhow Sugar Company (Pty) Limited, ILLOVO Sugar Limited (South Africa), RCL Foods Sugar and Milling (Pty) Limited, Tongaat Hulett Sugar Limited (South Africa), UCL Company (Pty) Limited and Umfolozi Sugar Mill (Pty) Limited.

2.3.4 South African Sugarcane Research Institute

This research institute consists of professional researchers in the agricultural sciences field. The institute provides knowledge on sugarcane production to cane growers through their extension division. Being declared Africa's leading sugarcane research institute, SASRI is known worldwide for its research on improving crop management and farming systems and for the development of new sugarcane varieties (SASA, 2016). SASRI also provides training courses on sugarcane production and on business skills. A joint venture agreement was establish between SASRI and

the KZN Department of Agriculture and Rural Development with the main aim of providing special support to SSGs.

2.4 Small-scale growers in Felixton mill area

According to Nothard (2011), in the sugar industry an SSG is defined as someone who delivers not more than 225 tons of recoverable value (RV). This is equivalent to 25 hectares of irrigated cane area or 40 hectares of rain-fed cane area. SSGs in Felixton mill area grow sugarcane on tribal or communal land with farm sizes ranging from less than 1 to 20 hectares, with an average production of 30 tons per hectare. These growers do not own any farm equipment and depend entirely on services from contractors for planting, harvesting and cane haulage. According to SASA (2016), the area under small-scale cane production in the Felixton mill area in 2016 was 7 981 hectares, of which 6 047 hectares was area harvested. SSGs delivered a total of 238 507 tons of cane to the Felixton sugar mill (FSM), which is owned by Tongaat Hulett sugar company. Table 2.1 shows the number of SSGs, tonnage and area under small-scale cane production in the Felixton mill area from 2014 to 2016.

Table 2.1: Felixton grower numbers, area under cane and tonnage

Period	Felixton SSGs		Area (Ha)		Tons of cane harvested
	Registered growers	Who delivered	Area under cane	Area harvested	
2014	5 109	3 262	7 650	6 592	332 091
2015	5 088	3 527	7 601	6 038	332 810
2016	4 579	3 327	7 981	6 047	238 507

Source: SASA Statistical Data Book (2016)

As indicated in Table 2.1, only 3 327 of 4 579 SSGs delivered sugarcane to the FSM in 2016. This shows a decline in the number of registered growers and those who actually delivered cane in the

area from the previous season. According to Hurly *et al*. (2015), the decline in the number of SSGs is perpetuated by a combination of different factors rather than lack of industry support. These factors include rising input costs, poor contractor performance, failure to capitalise on economies of scale, which may be attributed to small plot size, high contractor rates and limited access to capital or credit. Ntshangase (2016) also cited lack of management capacity, inadequate irrigation infrastructure and high input costs and transportation as contributing factors, which led to a decline in the number of SSGs.

2.5 Nature of the contractual arrangement and cane supply in the Felixton mill area

2.5.1 General organisation of cane deliveries

Before the cane from SSGs is transported to the mill, it passes through loading zones where it is stored for a while. These zones are managed by sub-committees, which are made up of representatives elected by the SSGs. Each sub-committee receives daily allocations from the mill that have to be met by the zone. Once cane is ready for harvest, the grower contacts the chairperson of the sub-committee to book a ticket, which is offered by the mill. This ticket acts as an agreement between the grower and the mill that guarantees the grower a market for his cane, hence allows him to burn the cane. The SSGs rely on the services of small-scale contractors (SSCs) for cutting and transportation of cane to the loading zones. After obtaining the ticket, the grower then contacts the contractor and once an agreement has been reached and a date has been set, the cane is burnt, cut and packed into stacks of two to six tons. The cane is then loaded onto a trailer and transported to the loading zone. At the loading zone, cane belonging to each grower is piled separately and a tag is attached to each pile, bearing the grower's information. Rates charged by the SSCs are agreed upon by the contractors and the SSGs' sub-committees beforehand, even though the SSGs complain that the rates are too high. These rates are charged based on the task performed on the

field, number of tons of cane and distance from the farmer's field to the loading zone and to the mill. From the loading zone the cane stockpiles are then loaded onto trucks, using cane loaders, and transported to the mill. Once the grower's delivery has filled the truck, he is given an estimate of the sucrose percentage of his cane; otherwise, the average rate for the zone is applied. The sub-committees in each zone play a significant role in regulating the individual grower's cane from the moment the cane ripens in the field until it reaches the sugar mill. This is possible through efficient coordination between all the stakeholders involved in the process. Figure 2.2 illustrates a typical cane supply chain, which is similar to the one followed in the Felixton mill area.

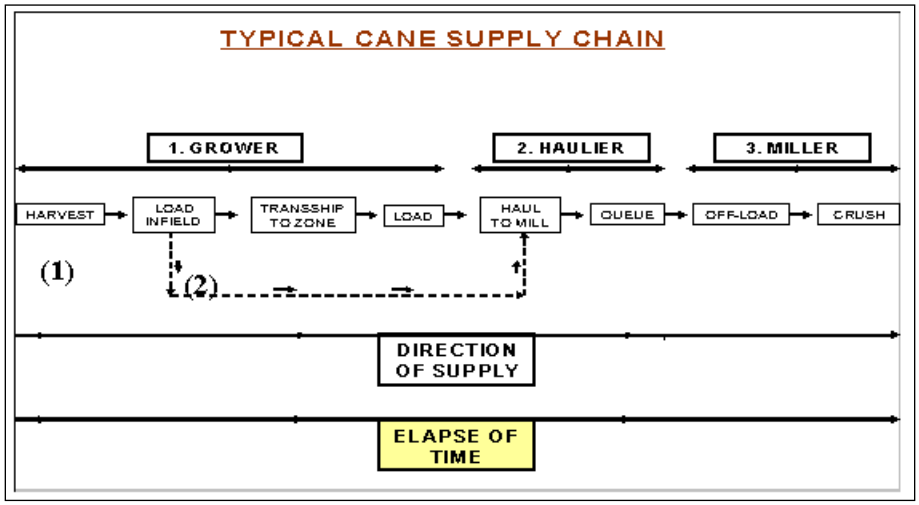

Figure 2.2: Illustration of a typical cane supply chain followed in Felixton

Source: Perry and Wynne (2004)

2.5.2 The role of the Mill Group Board

The Mill Group Board (MGB) is a committee that is made up of growers and millers' representatives, and its function is to administer the supply of cane. Chairmanship of the committee alternates between the growers and the millers every year. According to SASA (2016), part of the function of the MGB is to set the starting date and the length of the milling season, based on estimates of the amount of cane to be crushed that season. The MGB ensures a reliable supply of

cane to the mill. In order to come up with the decision on how much sugarcane to process that season, the MGB uses field estimates provided by the growers. Scouting of the fields by mill personnel and forecasts from crop models are also used to reach the decision. In addition, a liaison officer is employed by the MGB to visit the areas for the purpose of cane estimates. Wynne (2001) highlighted that even though this system is intended to help the grower, many growers do not meet their targets, especially at the beginning of the season. Most growers battle to deliver their sugarcane towards the end of the season because they like to deliver at the same time.

2.6 Access to credit in the sugar industry through engagement in contracts

Small-scale sugarcane farmers who engage in contractual agreements with other players in the industry, such as the sugar mill, have better chances of accessing credit compared to those who do not. Umthombo Agricultural Finance (UAF), under the finance division of SASA, caters for the financial needs of SSGs. According to SASA (2016), UAF provides retention savings facilities and loan administration for the growers. Each individual grower who is contracted to the sugar mill and UAF has two accounts, namely the savings account and a loan account. UAF uses the savings accounts to retain some of the growers' money when the mill pays out the grower (SASA, 2016). Hurly *et al*. (2015) noted that money withdrawn from the savings accounts helps the grower maintain the crop the following season, and it is carefully monitored that it is used for the right purpose. UAF also provides loan facilities to the small-scale farmers through the Micro-Agricultural Finance Institution of South Africa (MAFISA) fund (which is a government fund under the DAFF). According to Hurly *et al*. (2015), the role of UAF is to act as a financial intermediary by screening the farmers and approving the loans on behalf of MAFISA. A total value of R14.9 million was allocated to small-scale sugarcane growers as loans by the fund during the 2013/2014 season.

Ntshangase (2016) observed that farmers who are contracted to the sugar mill receive money from the mill equivalent to R3 500 per hectare once their cane reaches four months. This money is for compensating the growers for the production inputs used during planting and to encourage them to produce more so that the mill has more cane to process. Hurly *et al*. (2015) further noted that growers who delivered cane to the mill in the previous season receive a pay-out called the supplementary payment fund (SPF) from the industry in March each year. This money is usually from profits made by the sugar industry from selling sugar to the international market (Hurly *et al*., 2015).

2.7 Summary

An overview of smallholder farming and the challenges faced by small-scale farmers, the South African sugar industry and the general organisation of contracts in the industry were discussed in this chapter. Small-scale farmers in South Africa face a number of challenges, such as constrained access to credit and information, have limited factors of production, and a majority operate from government-owned or communal land. Lack of title deed to the land makes it difficult for them to invest in proper farm infrastructure, leading to crop failure. However, the South African sugar industry, through UAF and the MAFISA fund, provide financial services to small-scale contracted sugarcane farmers. These services come in the form of retention savings and loans aimed at helping the farmers to purchase production inputs and to hire contractors. In addition, a pay-out called the SPF from the sugar industry is paid in March each year to every grower who delivered cane to the mill.

CHAPTER 3

IMPORTANCE OF ACCESS TO CREDIT, ITS DETERMINANTS AND CONSTRAINTS FOR SMALL-SCALE FARMERS

3.1 Introduction

The importance of access to credit mainly for agricultural development is outlined in this chapter. Literature on agricultural lending in South Africa, with regard to formal financial channels available to small-scale farmers is also reviewed. Lastly, factors that determine access to credit for small-scale farmers, and the challenges faced by the farmers in trying to access agricultural credit are also discussed in this chapter.

3.2 Access to credit and agricultural development

One of the determining factors in improving smallholder agricultural productivity and alleviating poverty is improving access to credit. Zeller and Sharma (1998) argued that access to credit can help small-scale farmers establish small businesses and expand farming enterprises. Improved access to production credit would enable small-scale farmers to invest in agricultural technology, since they have limited assets. It would allow them to purchase agricultural inputs easily, such as chemicals, fertilizer and high-yielding seeds, and facilitate hiring of labour. Smallholder farmers also require short-term savings to cater for consumption and basic needs between agricultural seasons when they face temporary income shortages (Manganhele, 2010). Thus, credit plays a crucial role in pulling smallholder farmers out of poverty and in increasing their income levels.

Access to credit eliminates liquidity constraints faced by smallholder farmers, creates employment opportunities, equips farmers with new skills and contributes to economic development as a whole. Murdoch and Haley (2002) argued that access to credit helps farmers to cope with risks associated

with negative income shocks, and also smooths consumption flows and income. According to Zeller and Sharma (1998), more resources should be directed at credit-based programmes, as this reduces poverty more than other poverty reduction programmes.

Zeller and Sharma (1998) highlighted evidence from different studies, which showed that improved credit access for small-scale farmers had positive effects in Asia and Africa. Small-scale farmers' access to credit in Bangladesh had a positive impact on school enrolment, food security and households' assets holdings, and reduced the fluctuations in the weights of pre-school children. In Peru, children from credit-constrained families are most likely not to attend school, but go to work in order to smooth consumption. In Ghana, access to credit in women's groups plays a major role in improving household food security and in improving children's nutritional status. Further, it results in increased off-farm income derived from micro-enterprises. Lastly, in China, Pakistan and Bangladesh, there has been an increase in total food expenditure due to access to credit.

3.3 Overview of agricultural lending in South Africa

Constrained access to credit for agriculture is identified as the main factor that hinders the development of small-scale producers in South Africa (Mohamed, 2013). Marketing and production risks in agricultural production make lending in the agricultural sector more costly and difficult. Moreover, since agriculture is predominantly practised in rural communities where there is poor infrastructure, underdevelopment in general and low population densities, the lender's transaction costs for searching and monitoring clients increase. Apart from the marketing risks involved, farmers are subject to environmental risks such as unpredictable weather conditions. All these challenges make it difficult for formal credit lenders to extend agricultural loans in the sector (Sibiya and Hurly, 2011).

Most small-scale farmers in South Africa live in areas characterised by high production risks, coupled with limited banking services (Nothard, 2011). Though the country continues to develop and implement different strategies to mitigate these problems, supply of production credit remains a major challenge, especially because agricultural production is seasonal in nature (Vink and van Rooyen, 2009). Small-scale farmers in South Africa continue to face challenges in every aspect in the agricultural industry. The Land and Agricultural Bank of South Africa (Land Bank) was established in an attempt to enhance access to agricultural finance for smallholder farmers in the country. It provides smallholder farmers with loans at a lower interest rate compared to other financial institutions. Some parastatals in the different government departments also offer services that are directed at helping small-scale farmers, such as technical advice, loans and business development services. The establishment of MAFISA came as a relief for many small-scale farmers in terms of supply of credit.

Despite all these innovations, smallholder farmers still face the challenge of limited access to agricultural finance, especially access to production credit. It is very complex to quantify the actual impact of the programmes mentioned above on the development of smallholder farmers and on the development of the industry as a whole. Machethe *et al*. (2004) argued that small-scale agricultural finance should be provided in line with broader investment flows involving agriculture and rural development.

3.3.1 Formal credit channels for smallholder farmers in South Africa

In South Africa, private sector institutions dominate agricultural lending in the formal financial sector. These include agricultural cooperatives and commercial banks. A few public sector institutions also provide production loans to smallholder farmers. Commercial banks involved in agricultural finance in South Africa include FNB, Standard Bank, Absa Bank and Nedbank.

However, their services are mostly channelled to large-scale farmers. Examples of agricultural cooperatives that extend credit to farmers are Senwes, Bedryf, Beperk, Afgri, and Kaap Agri.

3.3.1.1 Private sector institutions

South African commercial banks provide adequate financial services, and compare well to their counterparts in developed countries (Mohamed, 2003). However, agricultural lending in these commercial banks constitutes a smaller portion of their total loans and customer advances. One of the characteristics of commercial banks is that they lend mostly to commercial farmers. Small-scale agricultural lending from commercial banks has nevertheless really improved in South Africa. This improvement may be attributed partly to the development of the financial sector charter, AgriBEE that was proposed in 2008 and targets the financial needs of black small-scale farmers. Lending to black farmers by commercial banks has also improved in recent years. According to Nedbank (2011), AgriBEE received R11 million from commercial banks in 2005. In 2008, this figure had grown to R339 million and by 2010 it stood at R408 million. Partnerships from public and private sectors, such as corporate companies, government and industry bodies, played a major role in increasing these figures and improving small-scale agricultural financing.

As a vehicle to promote agricultural development, the government of South Africa has been trying different strategies to transform small-scale farmer organisations into cooperatives (Ortmann and King, 2007). The Department of Trade and Industry (DTI) (2011) reported that the total number of registered cooperatives in the Registrar of Cooperatives increased significantly between 2005 and 2009. By the end of 2009 there were 22 619 registered cooperatives nationwide (38% from KZN, followed by the Eastern Cape with 19%, Gauteng with 10% and lastly Limpopo with 8%). DTI further notes that most cooperatives (25%) came from the agricultural sector, compared to other sectors. Unfortunately, according to Chikazunga (2012), many of these cooperatives have

collapsed for different reasons, including free-riding, infighting and power dynamics. This collapse hinders farmer development, since in a cooperative farmers are able to access different services, including credit, and are able to capitalise in economies of scale to reduce transaction costs.

3.3.1.2 Public sector institutions

It is generally believed that promoting small-scale farmers' access to finance raises their agricultural productivity, thus improve food security and contribute significantly to poverty alleviation measures. Studies by Sibiya and Hurly (2011) and Nothard (2011) cited lack of finance as a major constraint that limits smallholder productivity and rural economic growth. In 2004, a new agency, called MAFISA, was established by the government of South Africa to help close the lending gap. The government continues to seek ways to address the issue of inadequate financial services, especially in the remote areas of the country. An institution called the South African Microfinance Apex Fund, which provides financial services to micro, small and medium enterprises, was also established. However, the Land Bank remains a major role player in providing agricultural finance to both commercial farmers and smallholder farmers in South Africa.

Smallholder farmers in South Africa also receive financial and technical support from several provincial parastatals in the various provinces of the country. These include the Mpumalanga Economic Development Agency, which provides agricultural credit to small-scale farmers. The programme also provides non-financial support services to promote sustainable economic growth in the area (DAFF, 2012). The Free State Development Corporation was also established with the main aim of facilitating trade, investment and economic development as a whole in the province.

This corporation provides many economic services in the agricultural sector, including development finance for agro-processing activities (DAFF, 2012).

In KZN, Ithala Development Finance Corporation is considered the most prominent parastatal that offers agricultural finance to small-scale farmers. It offers a wide range of financial products, including savings, credit and insurance, and has 51 branches spread throughout the province (Ithala, 2017).

3.4 Determinants of smallholder farmers' access to credit

Many rural areas in the developing economy have constrained access to financial services, such as credit and savings from formal financial institutions. Smallholder farmers in these rural areas usually do not have the required collateral demanded by the formal financial institutions. They cannot afford the high interest rates charged by these institutions either. In the credit markets, formal lenders incur high costs when assessing whether the smallholder farmers are creditworthy or not, yet they receive very low returns, since the loans involved are too small.

Studies carried out by Mohamed (2003) and Manganhele (2010) established six common socio-economic characteristics that determine small-scale farmers' access to formal credit. These are level of education, level of income, gender, age, knowledge of readily available sources of credit and credit terms and conditions. Manganhele (2010) further argued that women are more deprived of access to credit than men because of the extent to which they are capable of making decisions. Mohamed (2003) supported this finding by noting that even though most micro-credit programmes are targeting women, men benefit more from these services. It is evident that most of these credit systems are weak, since women comprise a majority of rural small-scale farmers in most African developing countries, yet they are more disadvantaged compared to men.

Yehuala (2008) conducted a survey in Ethiopia to determine factors that affect formal credit access by small-scale farmers and found that farmer's experience in using formal credit, livestock owned, total land cultivated, the farmer's membership of cooperatives and collateral greatly influence smallholder farmers' access to formal credit. Chauke *et al.* (2013) noted that other factors determining smallholder farmers' access to credit were how the farmer perceives loan repayment and lending procedures, extension services received and the total value of assets the farmer possesses.

Etonihu *et al.* (2013) conducted a study in Nigeria and applied a stepwise linear regression model in determining the link between farmers' socio-economic characteristics and the rate at which they access agricultural credit. The study concluded that the type of credit sources, proximity to the credit sources and level of education greatly influence a farmer's chances of accessing credit. Similarly, Dzadze *et al.* (2012) conducted a study on access to credit for smallholder farmers and used a binary logit analysis, which revealed that possession of a savings account, education level and extension contacts significantly influence access to credit by smallholder farmers. Results from a study by Muhongayirea *et al.* (2013), which also used a logistic regression analysis, revealed that off-farm income, agricultural extension services and education increase the likelihood that the farmer will participate in formal credit markets, yet the probability declines with the availability of informal financial services in the neighbourhood. Porteous (2003) observed that in South Africa smallholder farmers' chance of accessing formal credit is limited to workers who receive salaries, in a way excluding the poor, self-employed and unemployed.

3.5 Factors limiting smallholder farmers from accessing formal credit

In many developing countries, including South Africa, different factors constrain smallholder farmers from accessing credit. Such factors include credit rationing problems, institutional challenges, market failures and inappropriate lending policies (Manganhele, 2010).

Failure of competitive markets to deliver efficient credit services brings about market failure Besley (1994). When demand for and supply of financial services do not match, this usually results in market failure. Though, in South Africa, the financial market has tried to cater for smallholder farmers' need, there are still some challenges in accessing credit for some smallholder farmers, especially those situated in the rural areas. Formal financial intermediaries like banks should extend their services to a large variety of clients, such as poor smallholder farmers.

Credit rationing for smallholder farmers by financial providers is another factor limiting access to credit. Gonzalez-Vega and Graham (1995) argued that market imperfection (adverse selection, moral hazards and asymmetric information), caused by information and incentive problems, induces credit rationing. Moreover, screening and monitoring costs of borrowers increase owing to market imperfection and this leads to credit rationing. Zeller and Sharma (1998) argued that imperfect information prevents commercial banks from providing financial services to the rural poor.

Institutional challenges develop as a result of inability of formal financial service providers to provide appropriate financial services to smallholder farmers. Smallholder farmers usually require credit for investment purposes, but financial institutions such as non-governmental organisations (NGOs) that operate in rural areas usually provide credit for trading purposes (Manganhele, 2010)

Manganhele (2010) also identified the following factors that hinder smallholder farmers from obtaining appropriate financial products and services from formal financial institutions:

1. There is lack of physical infrastructure due to low population densities in the rural areas.
2. Lack of guaranteed security when transferring cash to branches (which hinders banks from operating commercially) is problematic.
3. Transaction costs are usually high, since most smallholder farmers borrow more frequently, whereas they use small instalments to repay the loan.
4. Apart from agricultural loans, small-scale farmers may require finance for other needs, e.g. for health, funerals and marriages, resulting in difficulty in designing the contracts.

3.6 Summary

In this chapter, literature on the importance of access to credit for agricultural development, the different credit channels available to smallholder farmers in South Africa and the factors that determine access to credit from formal credit sources was reviewed. Constrained access to credit for agriculture was identified as the main factor that hinders the development of small-scale producers in the country. Credit helps farmers cope with risks associated with negative income shocks, and also smooths consumption flows and income. In South Africa, the Land Bank and MAFISA fund were established to provide loans to smallholder farmers at a lower interest rate. Despite all these measures, however, smallholder farmers still face challenges in accessing credit from these and other institutions. In the literature reviewed, access to credit by smallholder farmers was found to be influenced by the age of the farmer, level of education, extension contacts, proximity to the credit sources, possession of a savings account, off-farm income and availability of informal financial services in the neighbourhood.

CHAPTER 4

IMPORTANCE OF CONTRACT FARMING IN PROMOTING ACCESS TO FORMAL CREDIT

4.1 Introduction

In this chapter literature on agricultural contracts in Africa is reviewed, with emphasis on the types and nature of agricultural contracts. Contract farming models in which smallholder farmers can engage are also discussed. Furthermore, the benefits of contracts for smallholder farmers and agribusiness firms are also outlined. Lastly, factors that determine smallholder farmers' participation in contract farming are also discussed.

4.2 Overview of agricultural contract farming in Africa

According to Minot (2011), contract farming is agricultural production that involves an agreement between a farmer and a processing or marketing firm (buyer), which places conditions on the supply of the agricultural product. In contract farming the agent or agribusiness is able to control production indirectly without having to own the land.

Different agricultural commodities are regulated by different contractual agreements in Africa. Contract farming plays a major role in linking smallholder farmers and markets through the provision of various services, such as credit to acquire production inputs so as to raise the farmer's income, technical advice and access to markets for their produce (Mwape *et al.*, 2005). Studies conducted on contract farming by Kokeyo (2013), Jaleta *et al*. (2009) and Will (2013) confirmed that farmers who participate in contract farming have higher income levels than those who do not. Therefore, many of the development problems engulfing the agricultural sector in Africa can be tackled through well-managed contract farming.

Contract farming as an institution can help smallholder farmers overcome the issues of entry into the agribusiness industry. Contracts need to be enforced to minimise the rate of default from both parties and to reduce transaction costs, and this requires taking strict measures (Sartorius *et al*., 2003). Farmers usually default in their contractual agreements through side-selling their produce to competing buyers, and sometimes even default on their loan repayment. Another form of default by farmers is when they deliver poor quality and quantity of produce, deviating from what was agreed upon in the contractual agreement (Kokeyo, 2013). Contractors too default by buying less of the product or by not paying the initial price agreed upon. Mwape *et al*. (2005) argued that contractual agreements are associated with many problems, such as exploitation of the farmers. This happens mostly where the farmers have no alternative markets or cannot easily switch to alternative crops, for instance in the case of sugarcane and tree crops. Exploitation of farmers occurs in the form of overpricing of inputs, overcharging of interest and assigning lower grades to the farmers' produce in order to pay less.

Contractual problems are being experienced in many developing countries in Africa, e.g. in Zambia, where there are weaknesses in contract enforcement because of the long litigation process followed when contracts are breached (Likulunga, 2005). Likulunga (2005) further argued that in Malawi, failure of the legislative and regulatory environment to enforce contracts has given rise to high levels of poverty and food insecurity. Weak contract enforcement mechanisms in Ethiopia have resulted in diversionary sales (i.e. side-selling), especially concerning food crops, thus giving rise to high transaction costs of trade (Jaleta *et al*., 2009).

In the case of South Africa, most agricultural commodities are procured by some form of marketing and production contracts. Sartorius and Kirsten (2006) noted that the supply of sugarcane, timber, tobacco, meat, cotton, poultry and eggs is 100% secured by contractual agreements, whereas

78.5% of fruit and vegetable procurement falls under contracts in South Africa. However, South Africa too still experiences some contractual constraints that jeopardise the yield, price and quality of the produce.

4.3 Nature and types of agricultural contracts

Contract farming as a form of participating in the futures market is characterised by shifting of risk from the producer to the processor. Sugarcane production is characterised by the presence of production and price risks. One of the major reasons for contracting is to gain access to credit. Studies by Kokeyo (2013) and Will (2013) emphasised that smallholder farmers engage in contract farming to improve their chances of accessing agricultural credit. In contract farming, the contract can act as collateral for the smallholder farmer to obtain credit from formal financial institutions. The smallholder farmer can also access credit in the form of advances from the contracting firm, through the contractual arrangement (Tongchure and Hoang, 2013).

Producers and market intermediaries usually engage in two forms of contractual agreements, namely formal and informal contractual arrangements. Generally, formal contracts are written contracts, which clearly define the duties and rights of each party, whereas informal contracts are unwritten (verbal) agreements between the two parties. This could be in the form of an agreement between the farmer and an association to which he/she subscribes, on the marketing of output or the provision of inputs (Catelo and Costales, 2014).

According to Baumann (2000), three types of contract farming exist in agriculture. These are resource-providing contracts, market-specific contracts and production management contracts. The resource-based contract provides agricultural credit, which comes as production inputs and at times working capital. The production inputs could comprise seeds, fertilizer, farming implements, etc. The costs are usually deducted at the end from the sale of the produce. This type of contract

could also provide the smallholder farmer with managerial support and supervision, such as extension services and technological transfer. In a market-specific contract, the farmer is guaranteed a market for his produce, provided he meets the product quality specified by the agribusiness firm or contractor. Both parties agree on the market place and the price before the product is ready for marketing. In this form of contract agreement the farmer is responsible for most management decisions and the agribusiness only intervenes in the grading of the product at the marketing stage (Little and Watts, 1994). Lastly, the production management contract combines the resource provision and the market specification contracts (Rehber, 1998).

4.4 Models of contract farming

Will (2013) identified five models of contract farming in agriculture. These are the informal model, intermediary model, nucleus estate model, multipartite model and centralised model.

4.4.1 Informal model

In this model small agribusinesses contract with farmers informally on a seasonal basis. The agribusinesses mainly intervene in sorting, grading and packaging of the agricultural product, since they are mainly concerned with quality (Bijman, 2008). The informal model is characterised by high default risks from both parties and government plays an important role in providing technical services (Will, 2013). The informal model is mainly used by farmers to access credit from informal credit providers.

4.4.2 Intermediary model

The intermediary model is a combination of a centralised and an informal model, which brings together three parties, namely the farmer, the buyer and a middlemen. According to Will (2013) and Bijman (2008), vertical coordination problems might arise, which hinder the farmer from

gaining technology transfer and from taking advantage of better market prices owing to the presence of a middleman who tries to maximise his gains.

4.4.3 Nucleus estate model

In the nucleus estate model, a buyer who carries out production on his/her own farm contracts other smallholder farmers as a way of supplementing his/her processing. This is observed mainly in Hulett Sugar in Zimbabwe.

4.4.4 Multipartite model

This model might involve various organisations, such as private agribusinesses and farmers, government, NGOs and financial organisations (Moyo, 2014). These organisations work together in trying to bring about cooperation between the farmers and the buyers.

4.4.5 Centralised model

Finally, the centralised model involves many smallholder farmers who have a contractual agreement with the same processor or buyer. This model is characterised by formal contractual agreement and a high level of vertical coordination, specifying quality demands (Will, 2013). Vertical coordination can be in the form of provision of extension services, input finance and transportation of produce.

4.5 Benefits of engaging in contracts

As a risky enterprise, agriculture limits the flow of production resources between farmers and agribusiness firms. Therefore, these parties engage in contractual agreements to smooth production and marketing of the agricultural commodities, which theoretically benefits the farmer and the agribusiness firm (Prowse, 2012). It has been observed that engaging in contractual agreements lowers the transaction costs for both parties. Contracts lower production costs and provide

incentives for the farmer, and also deliver products satisfying specific quality requirements. According to Ruben *et al.* (2007), contracts bring about coordination in the production stages by improving access to credit, improving the flow of information, adopting new technologies and delivering the right quality and quantity of produce. Contract farming also acts as a risk-sharing mechanism for both parties, in a way increasing agricultural productivity and thus eliminating poverty among the poor (Will, 2013).

A study carried out by Masakure and Henson (2005) on contract farming in Zimbabwe concluded that most farmers engage in contracts because of income benefits, market uncertainty, intangible benefits and indirect benefits, e.g. to acquire knowledge. Will (2013) came to the same conclusion, but added access to credit, extension services, production inputs and training as other motives for smallholder farmers to engage into contracts.

Table 4.1 shows the benefits derived by both the farmer and the agribusiness from the contractual agreement.

Table 4.1: Benefits of contract farming

Benefits to the farmer	Benefits to the agribusiness firm
Risk-sharing and management tool	Risk-sharing and management tool
Access to farming inputs and extension services	Ability to enforce quality standards through indirect control of the production process
Exposure to markets	Assurance of raw materials supply
Access to new technology and skills	
Easy access to working capital	Easy manipulation of the production plan (Prowse, 2012)
Possibility to use contract as collateral to access credit	
Increase in earnings through mutual arrangements	Reduced transaction costs and information asymmetry problems
Encourages crop diversity	Enjoys lowered transaction costs for small-scale farmers
Ability to meet quality standards for export markets	Circumvents land constraints where the matter is highly politicised

Source: Moyo (2014)

4.6 Determinants of smallholder farmers' participation in contracts

Sharma (2008), Tongchure and Hoang (2013), Catelo and Costales (2014) and Musara *et al.* (2011) conducted studies to identify determinants of participating in contract farming for smallholder farmers. Most of these studies focused mainly on participation in formal contracts, with a few focusing on determinants of participating in informal contracts by smallholder farmers. A study conducted by Catelo and Costales (2014) on contract farming in dairy production in India indicates that most dairy farmers switch from contract farming to being independent farmers once they acquire more knowledge of the production process. Therefore, the authors concluded that more

experience in dairy production in India is the farmers' human capital asset, which most contractors desire.

According to Musara *et al.* (2011), smallholder cotton farmers' participation in contract farming in Zimbabwe is greatly influenced by years of schooling, land size, age of the farmer, dependency ratio and crop duration. The study also found that small-scale farmers with access to more off-farm income have less interest in contract farming, since, they can easily finance their farming activities.

A multinomial logit model and a simple probit model were employed by Catelo and Costales (2014) in a study on factors that determine participation in contractual agreements in pig production. The probit model was estimated specifically to identify the different farmer characteristics that influence participation in informal contracts, while the multinomial logistic model measured the likelihood of the farmers' engagement in informal or formal contracts. In relation to formal contracts, the logit model revealed that older and more educated farmers, with large production land, who devoted more time to pig production, have a higher probability of engaging in formal contractual arrangements. The finding from the probit model showed that participation in informal contracts for smallholder farmers is significantly influenced by years of formal education, location of the farm, other occupation and access to credit from formal sources and access to other production inputs. The implication is that farmers with limited access to production inputs (including credit) are highly likely to engage in contracts with other players in the industry.

Tongchure and Hoang (2013) employed a logit analysis in a study on contract farming in cassava and the results indicated that household members' education, machinery and input costs, gender of the household head, income from cassava, number of agricultural cooperatives involved in and

access to credit significantly affected contract participation. This is in line with findings from the study by Catelo and Costales (2014), which indicated that farmers who face challenges in accessing credit from formal credit institutions are more likely to engage in contractual agreements than those who have such access. Both studies highlighted that the smallholder farmers used these contracts as collateral to obtain loans from banks or credit agencies.

Sharma (2008) employed a two-stage Heckmann model, which showed that farm size, education, access to credit, membership of an organisation, age and source of off-farm income were the socio-economic characteristics that influenced participation in contract farming. The study had hypothesised that human capital, farm size and limited credit would have an influence on the likelihood of participation in contracts.

However, Simmons (2002) argued that contracts could be awarded to large-scale farmers instead of smallholder farmers owing to selection bias by contractors or agribusiness firms. This is in line with what Swain (2012) found, that large-scale farmers who can access institutional credit and have high non-farm income, bigger families and better irrigation facilities, are more likely to participate in contracts for their production. In this situation, contract farming may result in high inequalities, more especially in the agrarian population.

4.7 Summary

In this chapter findings from different studies on contract farming and the different factors that lead farmers to engage in contracts were presented. Contract farming as an institution can help smallholder farmers overcome the issues of entry into the agribusiness industry. It plays a major role in linking smallholder farmers and markets through the provision of various services, such as credit to acquire production inputs. The contract can act as collateral for the farmer to obtain credit from formal credit sources. The farmer can also access credit in the form of advances from the

contracting firm through the contract. According to the literature reviewed, different farmer characteristics, such as age, farm size, level of education, dependency ratio and limited access to credit and production inputs, significantly influence participation in contracts.

CHAPTER 5

METHODS AND PROCEDURES

5.1 Introduction

The methods and procedures that were used in investigating the importance of contract farming in improving access to formal credit for small-scale sugarcane farmers in KZN are outlined in this chapter. Firstly, a description of the study area, including its physical location and climatic conditions is presented, followed by the sampling procedure used to come up with the sample. The data collection methods that were used in the survey are also discussed. Lastly, the data analysis techniques employed in analysing the data are also discussed.

5.2 Description of study area

This study was conducted in the Felixton mill area, which is under King Cetshwayo Municipality on the northern coast of KZN. The topography of the area ranges from lowlands to steep hills, including wide and deep valleys. The area is characterised by mean annual rainfall that ranges from 810-1152 mm and the temperature conditions are slightly above average (SASRI, 2016).

The SSGs in this area still grow sugarcane individually on freehold and communal land, which is rain-fed. According to SASA (2016), the total area under cane production in Felixton in 2016 was 29 985 ha, of which 24 142 ha was area-harvested. SSGs accounted for 26.6% (7 981 ha) of the total area under cane production in Felixton. This area was chosen because it still possesses the characteristics of a rural settlement, such as large household sizes, average plot sizes and very few employment opportunities. In addition, the area has relatively good soil for sugarcane production, and it is close to the FSM where the SSGs deliver their sugarcane after harvesting. Figure 5.1 shows the sugarcane growing areas in South Africa, including the Felixton mill area.

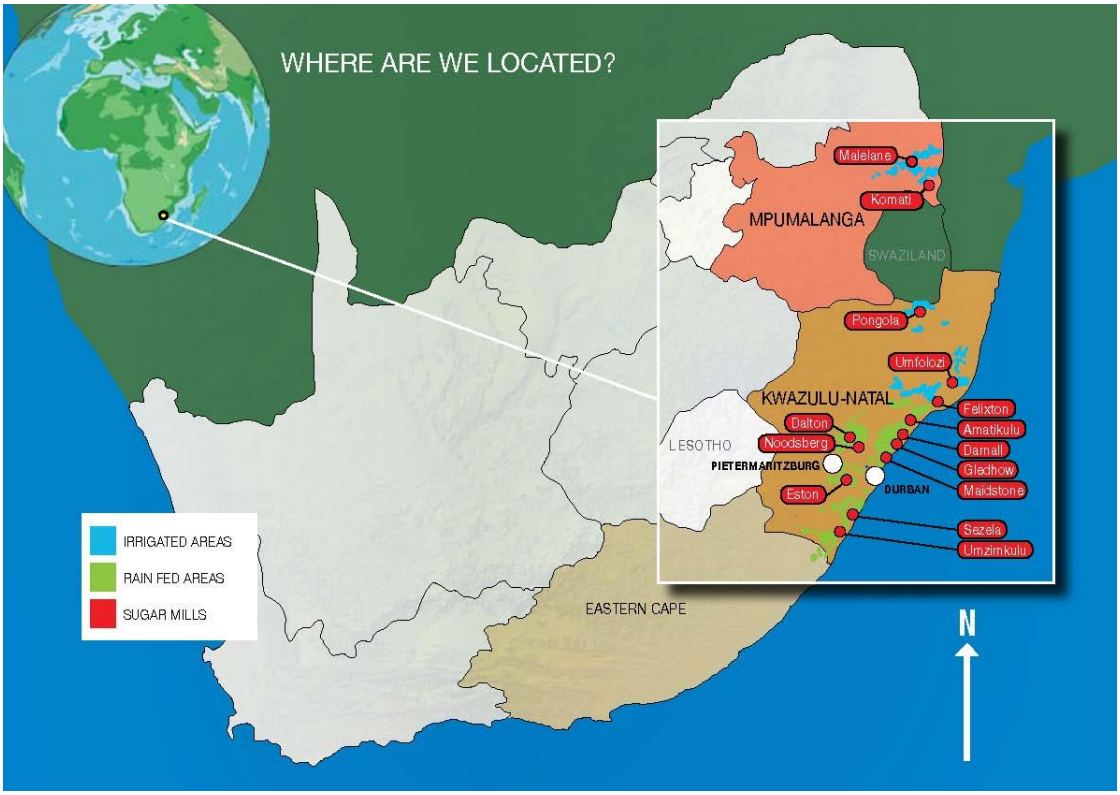

Figure 5.1: A map showing sugarcane growing areas in South Africa.

Source: SASA (2016)

5.3 Sampling procedure

A proportional stratified random sampling procedure was used to sample the sugarcane farmers in the Felixton mill area. In stratified random sampling the researcher divides the entire population into different smaller groups or strata, then randomly selects the sample from each stratum in a proportional manner. The list of SSGs in the area was obtained from the SACGA database and from the FSM. In total there were 3 327 SSGs who delivered cane to the FSM in 2016. These were divided into ten local associations, and in total 220 farmers were sampled. Table 5.1 shows how the farmers were stratified.

Table 5.1 Strata of SSGs in the Felixton mill area

Stratum	Population	Percentage (%)	Sample size
Mzimela	1 039	31.23	69
Mkhwanazi	787	23.65	52
Mthethwa	441	13.26	29
Khoza	333	10.01	22
Zungu	275	8.27	18
Cebekhulu	154	4.63	10
Dube	107	3.22	7
Mbonambi	79	2.37	5
Mthembu	58	1.74	4
Mthiyane	54	1.62	4
Total	**3 327**	**100**	**220**

5.4 Data collection

The study made use of both primary and secondary data sources. The primary data were collected by means of structured questions in the form of questionnaires (Appendices A and B), which allowed uniformity in terms of the questions asked. This helped to gather information on the farmers' participation in contractual agreements with other value chain players and access to credit from formal sources. For the benefit of clarification and explanation of the industry terminology that the farmers could not be able to understand if they were to answer the questions themselves, face-to-face interviews were used to administer the questionnaires. The researcher scheduled appointments in advance to ensure the availability of the respondents, and the interviews were conducted at venues convenient to the respondents and at local growers' offices (resource centres). Primary data were also gathered through observation, and by means of face-to-face and personal interviews with other players in the industry, such as personnel from the sugar mill, SASA,

SACGA and UAF. Secondary data were sourced from publications from DAFF, SASA, SACGA, SASRI, FSM and from internet publications.

5.5 Data analysis

In analysing the data, both descriptive analysis and an econometric model were used in the study. Descriptive analysis involves percentages, means, frequencies and standard deviations. The data were analysed using Statistical Package for Social Sciences software (SPSS 20.0). Demographic characteristics of the smallholder sugarcane farmers, such as level of education, marital status, family size, off-farm income, age, gender, farming experience, level of output, contract agreements, access to formal credit and farm size, were analysed using descriptive analysis. The study employed logistic regression analysis to analyse the influence of different independent variables (farm size, gender, age, level of education, access to market, access to extension services, access to a bank account, access to market information, association membership, loan facility and off-farm income) on a discrete dichotomous (binary) dependent variable, for access to formal credit and for participation in contract farming.

Two logistic regression models were estimated. One was estimated to identify the factors and characteristics that influence access to formal credit for small-scale sugarcane farmers, and the other was estimated to identify the different factors that influence the growers to participate in contractual arrangements with other value chain players. Given a set of explanatory variables, the logistic regression model allows one to estimate the likelihood of a certain event occurring by predicting a binary dependent outcome (1 if yes and 0 if no). Therefore, the dependent variables from these models indicate the probability that the sugarcane grower has access or does not have access to formal credit, and/or participates or does not participate in contractual agreements with other actors in the industry, respectively.

Therefore, the logit model used in the study takes the following functional form:

$$Y_i^* = \beta_0 + \sum_{i=1}^{n} + \beta_i X_{ki} + \varepsilon \qquad (1)$$

where:

Y^*: represents the binary dependent variable participating in contract farming and/or access to formal credit, for the i^{th} farmer (taking the values 0 or 1).

$X_1, X_2, X_3,\ldots,X_{ki}$: explanatory variables

$\beta_1, \beta_2, \beta_3,\ldots,\beta_i$: coefficients to be estimated

ε: error term.

Therefore, the probability that the i^{th} farmer will engage in contractual agreements and/or have access formal credit, given the different independent variables (X_i), is given by:

$$P_i = \frac{e^{Ui}}{1 + e^{Ui}} \qquad (2)$$

where P_i is the probability that contract farming and/or access to credit is 1, while $(1 - P_i)$ is the probability that it is 0. The odds are calculated as a ratio of the two probabilities, i.e. $P_i/(1 - P_i)$. If one takes the natural log one obtains the following prediction equation:

$$Y_i^* = \ln (P_i/(1-P_i)) = \ln \text{odds} = \beta_0 + \sum_{i=1}^{n} + \beta_i X_{ki} + \varepsilon. \qquad (3)$$

5.5.1 Contract farming model

This model was estimated to identify the different characteristics that determine SSGs' participation in contractual agreements with other players in the industry. Studies indicate that farmers engage in contracts with the aim of having access to production inputs, training/extension facilities and marketing information, thus improving sugarcane production. The dependent variable is a binary dependent variable for contract farming (1 if the farmer participates in contract farming and 0 if not).

It takes the form:

$$\text{Logit (Participation in contract farming)} = \alpha + \beta_1 Age + \beta_2 Gender + \beta_3 Education + \beta_4 Training + \beta_5 Credit + \beta_6 AM + \beta_7 Familysize + \beta_8 OI + \beta_9 Fsize + \beta_{10} FA + \varepsilon.$$

Description of variables and prior expectations

Participation in contract farming: This is the dependent variable for the model, and it denotes whether the farmer engages in contractual arrangements with other actors in the sugar industry or not.

The independent variables for this model are:

Farmer's age (Age): It is hypothesised that younger farmers are more likely to engage in contractual agreements with other stakeholders compared to their older counterparts. This is in line with findings from a study conducted by Musara *et al*. (2011) on smallholder cotton farmers' participation in contract farming. However, in the Felixton mill area most of the sugarcane farmers are aged 40 years and above. Thus, age is hypothesised to have a negative effect on contract farming.

Gender: Most of the SSGs in Felixton are males, therefore, a positive effect is expected when they are compared to their female counterparts. This is attributed to the fact that males can access land more easily than females, hence they are more active in agricultural activities (Tongchure and Hoang, 2013).

Training: One expects a positive effect from farmers who receive more training on sugarcane, since there is a high probability that they engage in contracts. According to Swain (2012), farmers who receive training are more likely to participate in contract farming. This may be attributed to the fact that training provides the farmers with the latest information, latest technology and crop varieties, which would increase their productivity.

Level of education of household head (Education): Education is hypothesised to influence participation in contract farming positively. Studies by Tongchure and Hoang (2013), Catelo and Costales (2014) and Musara *et al*. (2011) confirmed that the number of years of schooling has a positive effect on farmers' participation in contract farming. This is because education broadens the farmer's knowledge, improves his farm management skills and makes him understand the benefits of contract farming better, hence improving sugarcane productivity.

Access to production credit (Credit): The hypothesis is that farmers with better access to formal credit are less likely to engage in contracts. This is in line with findings from a study by Catelo and Costales (2014), which indicated that farmers who have access to production credit feel discouraged to engage in contracts. Therefore, access to credit is expected to influence participation in contract farming negatively.

Access to market (AM): Farmers with guaranteed access to market are less likely to engage in contractual arrangements with other players in the industry, since they can easily sell their products

(Moyo, 2014). In this case, access to market will have a negative influence in participation in contract farming. However, in the case of sugarcane farming access to market is expected to have a positive influence in participation in contract farming. This is because most farmers sell their cane directly to the sugar mill after harvesting, thus, are compelled to engage into contractual agreements with the sugar mill, like in the case of the SSGs in the Felixton mill area.

Family size: One expects family size to have a negative effect on farmers' involvement in contracts. Musara *et al*. (2011) noted that the dependency ratio plays a significant role in agriculture, since family labour can be used to reduce the costs of hiring contractors to perform some of the activities. Sugarcane farming is a labour-intensive enterprise and requires high labour demand during planting, weeding and harvesting activities. Therefore, a farmer with a large household size is less likely to participate in contract farming.

Off-farm income (OI): SSGs with more off-farm income are less likely to engage in contractual agreements, since they can easily cater for their production costs. A study by Wainaina *et al*. (2012) came to the same conclusion: that a negative relationship exists between off-farm income and participation in contract farming. Therefore, a negative relationship is expected between off-farm income and participation in contract farming.

Farm size (Fsize): A farmer with more production land is assumed to be more productive, hence more likely to engage in contractual agreements in order to benefit from these contracts. Therefore, one expects a positive relationship between farm size and contract farming.

Farmers' association (FA): It is expected that farmers who subscribe to farmers' associations or any other farmers' groups will engage in contract farming. Thus, membership to a farmers' association is hypothesised to affect participation in contract farming positively. This is attributed

to the fact that farmers are able to reduce transaction costs and attain better economies of scale through collective action (Tongchure and Hoang, 2013).

Error term (Ɛ): The error term is assumed to be normally distributed; it has a constant variance and zero mean, and is uncorrelated with the independent variables. It represents the unexplained variation in the dependent variable.

5.5.2 Access to credit model

This model was estimated to identify the factors that determine access to formal credit for the SSGs. It presents the significant factors that determine whether the financial provider will supply credit to the farmer. The dependent variable for this model is access to formal credit, which takes two values, 1 if the grower has access to formal credit and 0 if not.

The model has the form:

$$\text{Logit (Access to formal credit)} = \alpha + \beta_1 Age + \beta_2 Education + \beta_3 Fsize + \beta_4 OI + \beta_5 AMI + \beta_6 CF + \beta_7 Experience + \beta_8 Distance + \beta_9 BA + \beta_{10} IFS + Ɛ.$$

Description of variables and prior expectations

Access to formal credit: Access to formal credit is the dependent variable in this model and it measures the likelihood that the credit provider will supply credit to the farmer.

The independent variables for this model are:

Farmer's age (Age): Older farmers are believed to be risk-averse and to be more efficient in using and allocating resources than younger farmers, hence formal financial institutions are more willing to provide credit to older farmers (Manganhele, 2010). Therefore, age is expected to influence access to formal credit positively.

Level of education of household head (Education): Education is hypothesised to influence farmer's access to credit from formal sources positively. According to Muhongayirea *et al*. (2013), education increases the likelihood that the farmer will participate in formal credit markets, yet the probability declines with the availability of informal financial services in the neighbourhood. Education broadens the farmer's knowledge, improves his farm management skills, and gives him better understanding of the requirements and channels to follow to obtain formal credit.

Farm size (Fsize): It is assumed that the larger the farm is, the more productive the farmer is, hence he can easily obtain loans (credit) from financial institutions. Therefore, farm size is expected to influence access to formal credit positively.

Off-farm income (OI): Zeller and Sharma (1998) noted that farmers who receive a consistent income from other businesses can easily access credit from formal credit institutions, as they will be able to service the loan, regardless of whether the intended enterprise fails or prospers. Thus, one expects off-farm income to affect access to formal credit positively.

Access to market information (AMI): One expects a statistically significant positive relationship between access to market information and access to credit from formal credit sources, for the SSGs. A study by Chauke *et al.* (2013) concluded that availability of market information increases the chances that the farmer will have access to credit.

Participation in contract farming (CF): Engaging in contractual agreements with other players in the industry increases the chances of accessing formal credit. According to Tongchure and Hoang (2013), farmers can even use these contracts as a form of collateral to access credit (loans) from formal financial providers. Hence, one expects engagement in contracts to affect access to formal credit positively.

Bank account (BA): Farmers who have bank accounts are hypothesised to be more likely to access formal credit than those who do not. This is in line with a study conducted by Dzadze *et al*. (2012), which revealed that possession of a bank account significantly influences access to credit for smallholder farmers. Therefore, having a bank account is expected to influence access to formal credit positively.

Experience in using credit from formal sources (Experience): It is hypothesised that formal financial institutions, such as banks, are more willing to give credit to farmers who have more experience in using credit from formal financial institutions. Yehuala (2008) came to the same conclusion: that farmers with more experience in using formal credit have better chances of accessing it. Thus, experience is expected to influence access to credit from formal lenders positively.

Proximity to formal credit source (Distance): This variable is hypothesised to have a negative effect on access to formal credit, since farmers who live very far from formal credit sources such as banks are disadvantaged and will be discouraged from travelling long distances to seek credit. Findings from a study by Etonihu *et al*. (2013) point to the same conclusion: that proximity to the credit source influences the farmer's chances of accessing credit negatively.

Availability of informal financial services in the neighbourhood (IFS): If there are more informal financial services available, farmers will see no need to seek credit from formal financial services (Muhongayirea *et al*., 2013). Therefore, this is hypothesised to affect access to credit from formal credit institutions negatively.

Error term (Ɛ): The error term is assumed to be normally distributed; it has a constant variance and zero mean, and is uncorrelated with the independent variables. It represents the unexplained variation in the dependent variable.

5.6 Summary

In this chapter the methods and procedures used in investigating the importance of contract farming to promote access to formal credit for SSGs were outlined. A description of the study area, sampling procedures used and the data collection instruments used for the survey were also presented. This study employed two logit models to analyse the data, one model for contract farming and the other for access to formal credit. Given a set of explanatory variables, the logit regression model allows one to estimate the probability of a certain event occurring or not, by predicting a discrete dichotomous dependent outcome. Therefore, the first model estimated the probability that the farmer would participate in contract farming, and the other model estimated the probability that the farmer would have access to formal credit.

CHAPTER 6

DEMOGRAPHIC AND SOCIO-ECONOMIC CHARACTERISTICS OF THE SMALL-SCALE GROWERS IN FELIXTON

6.1 Introduction

In this chapter the descriptive characteristics of the smallholder sugarcane farmers in the Felixton mill area are presented. These include the demographic characteristics of the farmers, such as age, gender, family size and level of education. Sugarcane production aspects such as farm size, production per hectare and tons delivered by each individual grower to the mill are also presented. Lastly, the status of access to credit and access to services for the SSGs in the study area are also outlined.

6.2 Demographic and socio-economic characteristics of the farmers

6.2.1 Farmers' age

Most smallholder sugarcane farmers in the Felixton mill area are above 35 years old and are thus regarded as old. The average age of a sugarcane growers in Felixton is 54 years. The results in Table 6.1 indicate that the highest proportion of SSGs, namely 56.3%, were aged 36 to 60 years, while 35% were aged above 60 years old. Ntshangase (2016) described youth as people between the ages 14 to 35 years. In Felixton, the survey found that people in this age group accounted for less than 9% of the total number of SSGs. A study conducted by SACGA in 2011 on SSGs growing areas indeed showed that the youth do not participate in sugarcane production. Hence, there is a need to encourage the youth to participate in sugarcane farming to ensure long-term sustainability of the SSGs sector and the sugar industry as a whole.

Table 6.1: Demographic and socio-economic characteristics of the SSGs

Variable	Definition	Percentage (%) n=220
Age	35 years and below	8.7
	36 to 60 years	56.3
	Above 60 years	35.0
Gender	Male	66.8
	Female	33.2
Family size	6 members and less	30.9
	7 to 10 members	42.3
	11 members and more	26.8
Level of education	No school	27.3
	Primary (Grades 0 to 7)	40.5
	Secondary (Grades 8 to 12)	31.7
	Tertiary	0.5
Farm size	Less than 4 ha	70.5
	4 to 10 ha	22.7
	More than 10 ha	1.8
	Do not know	5.0
Sugarcane yield	Less than 60 tons	29.5
	60 to 120 tons	39.1
	More than 120 tons	25.0
	Do not know	6.4
Production/ha	Less than 20 tons/ha	7.7
	20 to 40 tons/ha	69.1
	More than 40 tons/ha	15.9
	Do not know	7.3

6.2.2 Gender of the respondents

According to the results in Table 6.1, 66.8% of the farmers in the Felixton mill area were males, while there were only 33.2% female SSGs. Though they form a smaller portion of the SSGs,

women contribute significantly to agriculture and rural livelihood, and to nurturing communities (FAO, 2009). Sibiya and Hurly (2011) argued that women's participation in agriculture is hindered by a number of factors, such as unavailability of land, lack of credit, lack of inputs, lack of training and information, compared to males who at times have more access to such resources.

6.2.3 Family size

The results in Table 6.1 indicate that 42.3% of the SSGs had family sizes ranging from seven to 10 members, while 30.9% had family sizes ranging from one to six members. Only 26.8% of the farmers had family sizes consisting of 11 members or more. This raises the hope that very few farmers have the pressure of leaving their homes to seek employment opportunities in order to support the large number of dependants because of limited income obtained from small-scale cane farming. In contrast, a large family size can be an advantage in sugarcane farming, as some of the family members can provide cheap family labour. This would reduce the costs of hiring contractors to perform every activity on the farm, thus reducing the costs of production.

6.2.4 Level of education

Education and a skilled workforce are key to the success of every sector of the economy, including agriculture. The evaluation of the farmers' level of education in Table 6.1 shows that most of the farmers (40.5%) have been to school and attended at least Grade 0 to Grade 7. It is important to note that most of the respondents only attended the lower grades of primary education, that is, Grades 1 to 3. Of the total number of SSGs surveyed in Felixton, 27.3% have never been to school at all. This is of great concern, considering the fact that agriculture has become more sophisticated. These farmers are expected to read and understand their cane payment statements, understand their cane RV% and payment system, and attend training where they have to read and understand course notes, all of which becomes difficult without education. The results also indicate that 31.7% of the

farmers attended secondary education (Grades 8 to 12), while only 0.5% had a tertiary qualification. Ntshangase (2008) argued that education is a critical element, as it contributes to sustainability in agricultural production and encourages innovation.

6.2.5 Farm size

Knowing the area under cane production is very important for every grower in order to be able to correctly estimate the inputs required for every hectare of land, and the expected output. Generally, the smaller the area, the higher the costs of production are, while large areas are associated with higher revenues. As indicated in Table 6.1, 22.7% of the SSGs in the Felixton mill area had sugarcane plots ranging from 4 to 10 hectares, while most of the growers (70.5%) had plots smaller than 4 hectares. Less than 2% of the growers had sugarcane plots bigger than 10 hectares. It is surprising to note that 5% of the SSGs indicated that they did not know the sizes of their sugarcane plots. This implies that the SSGs cannot adequately measure their level of input, which makes it difficult to calculate the profit or loss the farmer makes.

6.2.6 Sugarcane yield

According to the results in Table 6.1, 29.5% of the sugarcane farmers delivered less than 60 tons of sugarcane to the FSM during the 2015/16 production season, while 39.1% of the farmers delivered sugarcane yield ranging from 60 to 120 tons. Obviously, the number of tons delivered to the sugar mill by each individual grower is affected by a number of factors, such as the size of the sugarcane plot and production per hectare. The bigger the sugarcane plot is, the more the farmer is going to produce, assuming that he follows good management practices. The results also indicate that 25% of the growers delivered more than 120 tons of cane to the mill. Again, 6.4% of the growers could not recall how many tons of cane they had delivered to the sugar mill the previous season.

6.2.7 Production per hectare

After recording the farm sizes and the yield produced by each individual grower, the production per hectare for each grower was calculated. This was obtained by dividing the yield by the size of the farm. This is a crucial measure, since it allows for benchmark comparison, to check whether the grower produces above or below the average yield for the area. According to Sibiya and Hurly (2011), the average yield per hectare in the Felixton mill area is 30 tons/ha. The results in Table 6.1 indicate that most of the farmers in Felixton, that is 69.1%, fall within this average yield per hectare, as they produced 20 to 40 tons/ha. 15.9% of the SSGs produced more than 40 tons/ha, while 7.7% produced less than 20 tons/ha. There is a huge gap in average yield produced per hectare between SSGs and large-scale growers (LSGs). According to Eweg *et al*. (2009), LSGs in South Africa produce an average of 65 tons/ha, which is more than double than that produced by SSGs. This yield gap between LSGs and SSGs has never been proven scientifically, but is based on a number of assumptions.

6.3 Access to services for small-scale growers

Results of SSGs' access to services such as extension, training, market and market information, farmers' organisations, electricity and water supply are presented in Table 6.2. According to the results presented, only 31.4% of the SSGs are members of a farmers' organisation or cooperative. This shows that most cane growers in the Felixton mill area still do not understand the importance of forming grower cooperatives in their local zones. Farmers are able to acquire new technologies, reduce transaction costs, and attain better economies of scale through collective action. It also becomes easier for the government and other organisations to extend services, such as credit, to farmers who work in groups than to individual farmers.

Table 6.2: Access to services for SSGs in the Felixton mill area

Variable	Definition	Percentage (%) n=220
Member of a farmers' association	Yes	31.4
Access to electricity	Yes	98.2
Access to consistent water supply	Yes	91.8
Sources of water	Tap	77.3
	River/stream	8.2
	Well	0.9
	Dam	9.1
	Borehole	4.5
Access to extension services	Yes	80.9
Access to training on cane production	Yes	74.1
Sources of training	Tongaat Hulett sugar mill	30.0
	DAFF	12.8
	SASRI	17.1
	SACGA	30.6
	Other sources	9.5
Access to produce market	Yes	94.1
Access to market information	Yes	84.1
Sources of market information	Mill extension services	23.6
	Local growers' office (GSO)	31.0
	Local/national newspapers	6.9
	Radio programmes	15.4
	Television programmes	2.4
	Other cane growers	12.8
	Other sources	8.0

The results show that 98.2% and 91.8% of the SSGs had access to electricity and a consistent supply of water, respectively. More than 77% of the farmers used pipes or taps as their main source of water. The entire water system is provided by the KZN Department of Agriculture and Rural Development. However, it is worth noting that the SSGs only use this water for domestic purposes, not for irrigation of their sugarcane fields. They rely on rainfall for irrigation purposes. Access to extension services plays a critical role in sugarcane farming. According to the results in Table 6.2, 80.9% of the surveyed SSGs had access to extension services. The sugarcane farmers received these services mainly from extension officers from the FSM and from GSOs from SACGA. The officers from both departments regularly visited the SSGs in their fields and homes to provide them with advice on cane production. The results of the survey also show that 74% of the farmers acknowledged receiving training on sugarcane production; 30% and 30.6% of the farmers indicated that they received training services throughout the year from the FSM and SAGCA, respectively. Lessons covered in these training sessions include sugarcane planting, weeding, chemical application, disease control, harvesting and record-keeping. SASRI also offers training to the SSGs, mostly on the types of sugarcane varieties suitable for each specific area, and training on weed and disease control; 17% of the SSGs acknowledged receiving such training from SASRI. The results in Table 6.2 also show that 94% of the farmers had access to market for their produce after harvesting, while 84% had access to market information. The farmers cited mill extension services, the local growers' office, radio programmes and other farmers as their main sources of market information.

6.4 Access to credit

Credit plays a crucial role in pulling smallholder farmers out of poverty and in increasing their income levels. Access to production credit enables small-scale farmers to invest in agricultural

technology and allows them to purchase agricultural inputs easily, such as chemicals, fertilizer and high-yielding seeds, and facilitates hiring of labour. According to the results of the survey in Table 6.3, only 19% of the SSGs in the Felixton mill area had access to credit from formal sources. This shows that most of the sugarcane farmers in the area still lack access to formal credit to support sugarcane farming. Of the 19% SSGs who had access to formal credit, only 13% had access to loan facilities. The major sources of these loans were UAF and banks, with 9.1% and 3.6% of the farmers receiving loans from these institutions, respectively. Only 0.5% of the farmers, who had access to formal credit, received loans from a savings and credit cooperative (SACCO).

The results in Table 6.3 show that 78.2% of the SSGs had never bothered themselves requesting a loan from formal financial institutions. These farmers cited lack of appropriate security/collateral, the feeling that their requests would be rejected and the fact that credit costs too much as the main reasons for not borrowing money. This is in line with findings from Chisasa (2014), who concluded that smallholder farmers do not borrow from banks because of the difficulty and lengthy application process, high transaction costs and high interests rates and because they are afraid of losing the assets they used as collateral. The results of the survey indicate that 94% of the sugarcane farmers had access to bank accounts. This high percentage does not come as a surprise, since the farmers receive their payments from the mill through the bank; it is therefore a requirement for every farmer who delivers cane to the mill to possess a bank account. Only 33.2% of the SSGs had access to an insurance policy through their banks, though these policies did not cover sugarcane production (they were non-agricultural).

Table 6.3: Access to credit

Variable	Definition	Percentage (%) n=220
Access to credit	Yes	19.1
Access to loan facility	Yes	13.2
Sources of loan	Bank	3.6
	UAF	9.1
	SACCO	0.5
Applied for formal credit	Yes	21.8
Reasons for not applying for formal credit	Felt the request would be rejected	26.4
	Credit costs too high	25.9
	Lacked appropriate security/collateral	11.4
	Do not like incurring costs	8.2
	Had access to another source	7.3
Access to bank account	Yes	94.1
Access to insurance policy (non-agricultural)	Yes	33.2
Access to informal finance	Yes	23.2

6.4.1 Types of funds used to finance sugarcane production

The different sources of funds used by the SSGs in the Felixton mill area to finance sugarcane production are illustrated in Figure 6.1. The figure shows that about 34.3% of the farmers used their personal savings to finance production activities, 16.3% used retained profits from sugarcane sold the previous season, while 12% relied on pension/disability grants from the government as sources of finance. Approximately 20% of the farmers relied on informal savings groups and

family members/relatives to finance production at the start of the season. Other sources of funds used by the SSGs to finance their sugarcane production are income from other farm activities, loans and wages.

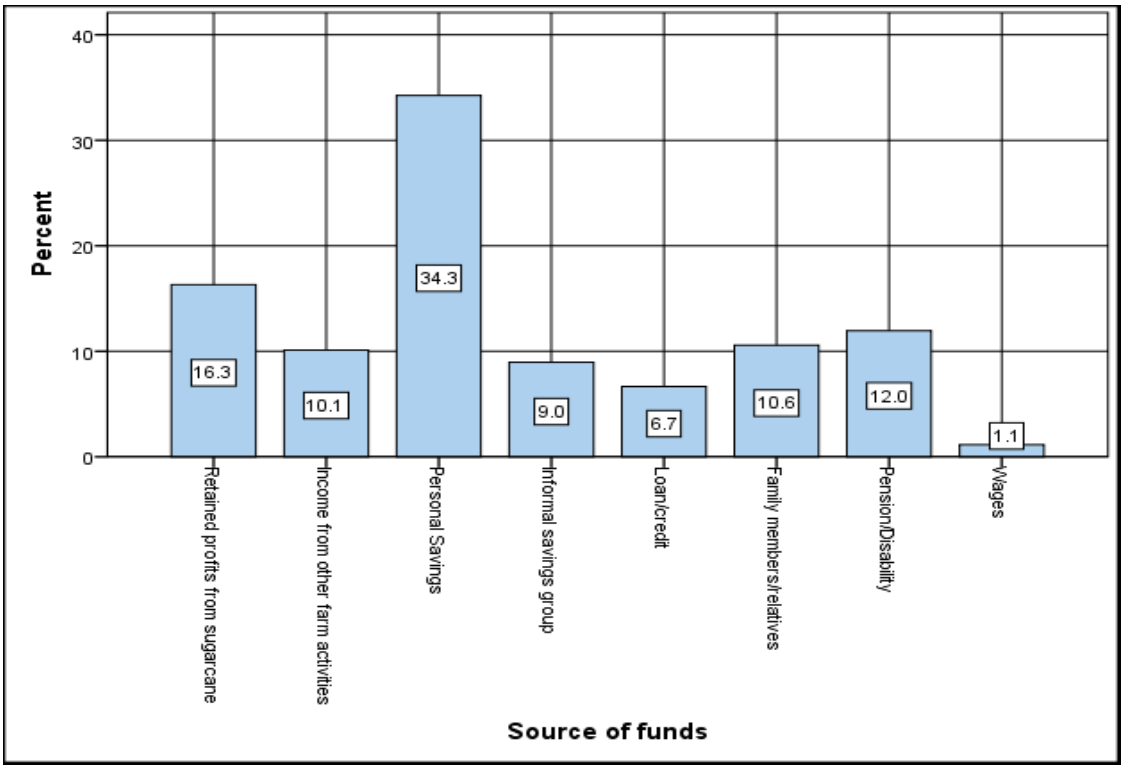

Figure 6.1: Types of funds used by SSGs to finance sugarcane production in Felixton

6.4.2 Source of off-farm income

The results of the farmers' sources of off-farm income are presented in Figure 6.2. According to the results, of the 82% of the farmers who had off-farm income, 25.4% obtained their off-farm income from pension/disability grants from the government. Another 14.6% and 11.4% of the SSGs indicated that they derived their off-farm income from own businesses and sales of other crops, respectively.

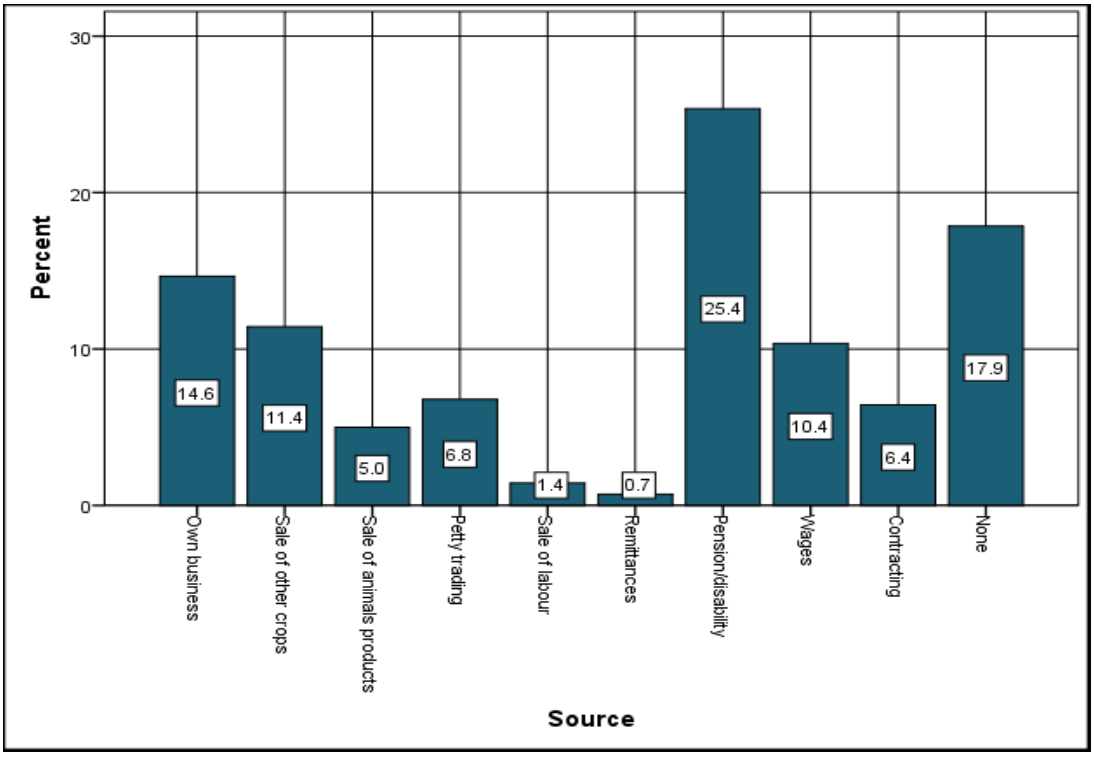

Figure 6.2: Different sources of off-farm income for the small-scale growers

Only 10.4% of the growers indicated wages as their main source of income. This shows that most of the farmers were unemployed and only relied on government grants and other sources if the sugarcane crop did not do well. Other sources of off-farm income available to the SSGs in the Felixton mill area include sale of animals and their products (e.g. chickens, milk, and eggs), sale of labour, remittances and contracting. Approximately 18% of the farmers indicated that they did not have any form of off-farm income.

6.5 Summary

The demographic characteristics of the sugarcane farmers and aspects of sugarcane production in the study area, the level of access to formal credit and different services available to the SSGs were presented in this chapter. The results show that the SSGs were on average 54 years old and most of the farmers were males. Most of the farmers did not attend school at all or had only primary education. Very few farmers had attended secondary education or had a tertiary qualification. Most

SSGs in the Felixton mill area had plot sizes smaller than 4 hectares and produced 20 to 40 tons of cane per hectare. This is in line with the area's average yield of 30 tons/ha. The survey results also indicate that few farmers (31%) were members of a farmers' association or cooperative, while a majority of the SSGs had access to other services, such as electricity, water, extension services, market for produce, market information and training on sugarcane farming. Small-scale sugarcane farmers in the Felixton mill area still lack access to formal credit to support sugarcane farming. The results of the survey indicate that only 19% of SSGs had access to formal credit. This has a negative effect on the sustainability of small-scale sugarcane producers and the growth of the industry as a whole. Hence, the issue of lack of access to credit requires imminent intervention by both the government and private sector organisations.

CHAPTER 7

RESULTS AND DISCUSSION

7.1 Introduction

Improving access to credit is instrumental in raising agricultural productivity and in improving the welfare of small-scale farmers. Findings from studies by Hurly *et al*. (2015), Chisasa (2014) and Chikazunga (2012) indicate that small-scale farmers in South Africa still have limited access to credit and other factors of production. Engaging in contract farming is viewed as one of the alternatives in mitigating the problem of limited access to credit. Therefore, in this chapter the results of two logistic regression models analysis that were used to identify socio-economic factors that influence engagement in contracts, and factors that determine access to formal credit for small-scale sugarcane farmers are presented. Based on the findings of the study and past studies reviewed, an argument on whether participating in contract farming really improves access to formal credit or not is also presented.

7.2 Factors influencing farmers' participation in contract farming

In this section, the results of a set of demographic and socio-economic characteristics that influence participation in contract farming by SSGs in the Felixton mill area are presented, using logistic regression analysis. The logit model estimated the probability that a given farmer would participate in contractual arrangements, given a set of independent variables. The results of the logistic regression model are presented in Table 7.1.

Overall, the model indicates a moderate relationship between the dependent variable and the independent variables. The value of the Nagelkerke R square is 43.3% (with a p-value of 0.000), which indicates that the model is statistically significant overall. According to the survey results,

94% of the smallholder sugarcane farmers engaged in contractual agreements with contractors in the industry. The model was able to classify 99% of those who engaged in contractual agreements and 23% of those who did not. The overall accuracy or percentage of correct prediction of the model was 94.5%. The full model (with all the independent variables) was tested against the model with the intercept only, and it showed a higher level of statistical significance (p=0.000) with a value of Chi-square = 37.501 and 10 degrees of freedom. This indicates that the independent variables fit the model well.

Table 7.1: Factors that influence farmers' participation in contracts

Variable	Coefficient (B)	S.E.	Significance	Odds Ratio
Age	2.859*	1.628	0.079	17.442
Gender	2.456***	0.866	0.005	11.654
Level of education	-0.138	0.470	0.770	0.872
Off-farm income (OI)	1.492	0.991	0.132	4.448
Training	1.983***	0.759	0.009	7.265
Member of farmers' association (FA)	-1.183	0.898	0.188	0.306
Access to market (AM)	-3.207***	0.849	0.000	0.040
Access to formal credit (Credit)	-1.054**	1.382	0.049	0.869
Farm size (Fsize)	-2.326	2.644	0.379	0.098
Family size (Famsize)	0.020	0.034	0.559	1.020
Constant	-1.137*	4.386	0.079	0.321

# of observations	: 220	Nagelkerke R square	: 0.433
-2 Log likelihood	: 61.261	Significance	: 0.000
Model Chi-square	: 37.501	Overall correctly predicted	: 94.5%

Note: *, ** and *** denote statistically significant at 10%, 5% and 1% probability levels, respectively.

According to the results of the logistic regression model in Table 7.1, the significant variables in explaining whether or not a farmer will participate in contract farming are the age of the farmer, gender, whether or not the farmer has received training on sugarcane production, access to market for produce and access to production credit. The other variables (level of education, off-farm income, membership to a farmers' association, family size and farm size) were not significant in explaining the farmer's participation in contract farming. Age was statistically significant at 10% level, access to credit was statistically significant at 5% level while gender, training and access to market were significant at 1% level of significance. This indicates that gender, training and access to market had the greatest influence in determining the farmer's participation in contract farming. All the independent variable coefficients possessed the hypothesised direction of influence on the dependent variable, except for age, off-farm income and farm size.

Farmers' age has a statistically significant positive effect on smallholder farmers' participation in contract farming, i.e. the older the farmer is, the higher the chances are that he engages in contractual agreements with contractors. The odds ratio for age is 17.442, which implies that a one year increase in the farmer's age increases the probability that the farmer participates in contract farming by 17.4. The positive effect of age on contract farming was not expected. It contradicts findings by Musara *et al.* (2011), who concluded that younger farmers are more likely to engage in contracts, since they are innovative and willing to try new ideas, compared to their older counterparts who are more risk-averse and tend to avoid the risks that come with the initiative. However, the positive sign on age is in line with findings from a study by Catelo and Costales (2014) on factors that determine engagement in contractual agreements in pig production, which concluded that older farmers have a high probability of engaging in contractual agreements.

The results in Table 7.1 also show that the gender of the farmer and participation in contract farming have a statistically significant positive relationship. The odds ratio for gender is 11.654, which implies that a male farmer is 11.7 times more likely to participate in contract farming compared to a female farmer. The finding is in line with *prior* expectations. This may be attributed to the fact that males can access land more easily compared to females, hence they are more active in agricultural activities. In general, female farmers tend to be more risk-averse than male farmers and would try by all means to avoid the risks associated with contract farming. This means that the probability of female farmers engaging in contractual agreements is reduced compared to male farmers.

Training has a statistically significant positive effect on participation in contract farming. The odds ratio for training is 7.265, implying that a farmer who has received training services on sugarcane production is 7.3 times more likely to engage in contracts than a farmer who has not. This is in line with *prior* expectations. This is because training provides farmers with the latest information, latest technology and crop varieties that would increase their productivity. The small-scale sugarcane farmers received training on cane production mostly from the sugar mill and from SACGA. Therefore there is a higher probability that they engage in contractual agreements with these bodies. These findings contradict results from a study conducted by Wainaina *et al.* (2012) in terms of the sign for training. The training variable had a negative sign, meaning that farmers who received training on sugarcane production from the sugar mill or other government agents were less likely to engage in contracts. This may be attributed to the fact that they are well informed about better production techniques and alternative markets for their produce.

The value of access to market has a statistically significant negative influence on the farmer's involvement in contract farming. This means that a farmer who has access to market for his

produce is less likely to engage in contractual agreements with other players in the industry. The negative relationship between access to market and contract farming is inconsistent with *prior* expectations. The odds ratio for access to market is 0.040, implying that a farmer with access to a guaranteed market is 0.04 times less likely to engage in contractual agreements than a farmer who has no market access. One of the reasons farmers engage in contracts is to have a guaranteed market for their produce once it is ready for harvesting. If the farmer already has a market for his produce, he would see no need to participate in contractual agreements.

Similarly, access to formal credit has a statistically significant negative effect on a farmer's involvement in contractual agreements. The finding is in line with *prior* expectations, meaning that the probability of participating in contracts decreases with increasing access to formal credit. The odds ratio for access to formal credit is 0.869, which implies that a farmer who can easily access credit from formal sources is 0.9 times less likely to participate in contracts than a farmer with no access to formal credit. Access to credit is viewed as one of the major reasons farmers engage in contractual agreements. The credit enables the farmers to purchase production inputs and increase their productivity. Therefore, if a farmer can easily access formal credit he will see no need to engage in these contracts. This contradicts findings from a study by Swain (2012), which came to the conclusion that farmers with better access to formal credit are highly likely to engage in contracts to enable them to purchase transport and storage facilities required by contractors before engaging in a contractual agreement.

Thus, the study concludes that the factors that positively influence participation in contract farming by small-scale sugarcane growers in the Felixton mill area are the age of the farmer, gender and training on sugarcane production. Access to a guaranteed market for produce and access to formal

credit have a statistically significant negative effect on the smallholder farmers' engagement in contractual agreements.

7.3 Factors influencing farmers' access to formal credit

In this section, the results of the logistic regression model that was estimated to determine the factors that contribute significantly to small-scale farmers' access to credit from formal sources are presented. The logit model estimated the probability of a given farmer having access to credit from formal financial institutions, given a set of independent variables. The results of the logit model are presented in Table 7.2.

Overall, the model indicates a moderate relationship between the dependent variable (access to formal credit) and the independent variables. The results of the Nagelkerke R square indicate that the independent variables are responsible for 54.9% of the variation in the dependent variable. According to the survey results, only 19% of the smallholder sugarcane growers had access to credit from formal financial sources. The model was able to classify 54.8% of those who had access to formal credit and 98.3% of those who did not. The overall accuracy or percentage of correct prediction of the model was 90%. The full model (with all the independent variables) was tested against the model with the intercept only, and it showed a higher level of statistical significance (p=0.000) with a value of Chi-square = 92.105 and 10 degrees of freedom. This indicates that the independent variables fit the model well.

According to the results of the logit model in Table 7.2, the significant variables in explaining whether or not a farmer has access to formal credit are experience in using credit from formal financial institutions, the farmer's age, level of education and access to off-farm income. Experience and off-farm income were statistically significant at 10% level, while age and education were significant at 5% level of significance. Most of the variables in the model, that is,

farm size, access to a bank account, distance to a formal credit source, availability of formal financial services in the neighbourhood, access to market information and participation in contract farming, were not significant in explaining farmers' access to formal credit. Though not significant, access to a bank account and access to market information are the only variables in the model that did not possess the hypothesised direction of influence on the dependent variable. This contradicts findings from studies by Chauke *et al*. (2013) and Dzadze *et al*. (2012), which concluded that these two variables influence access to formal credit positively.

Experience in using credit from formal financial institutions has a statistically significant positive influence on farmers' access to formal credit, i.e. farmers who are more experienced in using credit from formal sources are more likely have access to formal credit. This finding is consistent with *prior* expectations and with results from a study by Yehuala (2008). The odds ratio for experience is 1.544, which implies that one more year of experience increases the probability of the smallholder farmer's access to credit by 1.5. Formal credit institutions such as banks are very reluctant to give credit to a farmer who has no credit history, since there are high chances that he may default. A farmer who has a good credit history is less likely to default on the loan, hence formal institutions are more willing to extend credit to that farmer.

Similarly, farmer's age has a statistically significant positive effect on smallholder farmer's access to formal credit, i.e. the older the farmer is, the higher the chances are that a financial credit provider will supply credit to the farmer. The odds ratio for age is 1.497, implying that one year increase in a farmer's age increases the probability of accessing formal credit by 1.5. The result is in line with *prior* expectations and findings from a study by Mohamed (2013), which identified farmers' age as a socio-economic characteristic that influences access to formal credit by smallholder farmers. Generally, older farmers are perceived to be more risk-averse than younger

farmers. This means that there is a higher probability that they will have access to formal credit than their younger counterparts.

Table 7.2: Factors that influence farmers' access to formal credit

Variable	Coefficient (B)	S.E.	Significance	Odds Ratio
Experience	0.434*	0.229	0.059	1.544
Age	0.404**	0.196	0.040	1.497
Farm size (Fsize)	1.265	1.655	0.445	3.542
Level of education	3.088**	1.347	0.022	21.924
Bank account (BA)	-0.040	0.546	0.941	0.960
Distance	-0.001	0.030	0.964	0.999
Informal financial services (IFS)	-1.088	0.789	0.168	0.337
Off-farm income (OI)	1.295*	0.773	0.094	3.652
Access to market information (AMI)	-0.295	0.824	0.721	0.745
Contract farming (CF)	0.171	1.335	0.898	1.187
Constant	-5.195**	2.248	0.021	0.006

# of observations	: 220	Nagelkerke R square	: 0.549
-2 Log likelihood	: 122.412	Significance	: 0.000
Model Chi-square	: 92.105	Overall correctly predicted	: 90.0%

Note: * and ** denote statistically significant at 10% and 5% probability levels, respectively.

The results in Table 7.2 also indicate that there is a statistically significant positive relationship between level of education of the SSGs and access to formal credit. This means educated farmers have a high probability of accessing credit from formal credit institutions. Farmer's level of education has the highest marginal effect on access to credit, with an odds ratio of 21.924. This implies that an increase of one year of education will increase the probability of access to formal credit by 21.9. This is in line with *prior* expectations and findings by Nwaru *et al.* (2011) in a study

on determinants of credit demand and supply among food crop farmers, which came to the same conclusion that education has a significant positive influence on access to formal credit. This is because education broadens the farmer's knowledge, improves his farm management skills and makes him understand the requirements and channels to follow to acquire credit better.

Further, access to off-farm income has a statistically significant positive effect on access to formal credit. The implication is that there is a higher probability that the credit agent will provide credit to a farmer who receives income from other business activities. The odds ratio for off-farm income is 3.652, implying that a farmer who receives a consistent income from other enterprises is 3.7 times more likely to have access to formal credit compared to a farmer who does not. The finding is consistent with *prior* expectations and findings by Essien (2009) and Nwaru *et al* (2011). A higher level of off-farm income is associated with greater repayment capacity, hence it would enable the farmer to service the loan regardless of whether the intended business fails or prospers. Therefore, the study concludes that the factors that positively influence access to formal credit by SSGs in the study area are experience in using credit from formal credit institutions, the farmer's age, level of education and access to income from other business activities.

7.4 Enhancing access to formal credit through participation in contract farming

Contract farming plays a major role in linking smallholder farmers and markets through the provision of various services, which include access to credit (Mwape *et al*., 2005). This study shows that most smallholder farmers (81%) in the study area are credit-constrained. According to Tongchure and Hoang (2013) and Wainaina *et al*. (2012), most smallholder farmers engage in contract farming to obtain access to agricultural credit. Therefore, this study hypothesised that access to formal credit will be greatly enhanced if the farmers engage in contractual agreements with contractors in the industry. Studies conducted by Tongchure and Hoang (2013) and Sharma

(2008) highlighted that in many cases smallholder farmers use these contracts as a form of collateral to gain access to credit from formal credit institutions. The smallholder farmer can also access credit in the form of advances from the contracting firm, through the contractual arrangement (Tongchure and Hoang, 2013). A study conducted by Bijman (2008) on contract farming in developing countries confirms that farmers who participate in contract farming have higher income levels than those who do not.

The results of the logistic regression model, with participation in contract farming as the dependent variable, show that the variable 'access to formal credit' has a statistically significant negative influence on a farmer's involvement in contractual agreements. This means that a farmer who is credit-unconstrained is less likely to engage in contracts than a farmer who is credit-constrained. This contradicts findings from a study by Swain (2012), which came to the conclusion that farmers with better access to credit from formal institutions have a high probability of engaging in contracts in order to be able to purchase transport and storage facilities required by contractors before engaging in a contract agreement. Access to credit is viewed as one of the main reasons farmers engage in contractual agreements. The credit enables them to purchase production inputs and increase their productivity. Therefore, if a farmer can easily access formal credit, he will see no need to engage in these contracts. Different studies by Simmons (2002) and Hudson (2000) emphasised that the main reason smallholder farmers participate in contracts is to benefit from the contracts with regard to access to production credit.

In the logistic regression model with access to formal credit as the dependent variable, the variable participating in contract farming, though positive, had a statistically non-significant influence on access to formal credit. The insignificance of participating in contract farming in the model is inconsistent with *prior* expectations. The positive relationship implies that contract farming would

increase the chances of accessing formal credit for the SSGs. This finding contradicts findings from studies by Bijman (2008), Hudson (2000) and Simmons (2002), which all concluded that participating in contract farming indeed increases the probability that the farmer will access credit from formal financial sources.

Therefore, it is difficult to establish the cause of the insignificant relationship between access to formal credit and participation in contract farming in the study. This is due to the fact that most studies reviewed in the literature show a statistically significant positive relationship between these variables. This unexpected relationship in the study may be attributed to the fact that most financial institutions do not consider the contracts the farmers engage in as guaranteed or formal. This is because the farmers engage in contractual agreements with contractors, such as the sugar mill, tractor owners for ploughing, cane loader and truck owners for loading and transporting the sugarcane to the mill and contractors that provide labour during weeding and harvesting of sugarcane, most of which are informal in nature. Therefore, there is a high possibility that the farmer may default in these types of contracts. Another reason for such a relationship between access to formal credit and participating in contract farming in this study may be that most farmers access credit from informal financial sources, such as friends and relatives. These do not require the farmers to participate in contracts before providing them with loans or credit.

7.5 Summary

From the results of the study, one can conclude that participation in contract farming by smallholder sugarcane farmers is statistically and positively influenced by the farmer's age, gender and whether the farmer has received training on sugarcane production. This means that older and male farmers have a high probability of engaging in contractual agreements with other players in the industry. Also, a farmer who has received training on sugarcane production is more likely to

engage in contracts. Engaging in contract farming is statistically and negatively influenced by access to market and access to formal credit. This means that a farmer who has better access to market for his cane after harvesting and better access to formal credit is less likely to engage in contracts. This is because most farmers enter into contracts to benefit from the contract in terms of access to production credit and access to market for their produce. Hence, if the farmer already has access to such services, he will see no need to engage in contractual arrangements.

The study found that access to formal credit for SSGs in the Felixton mill area is statistically and positively influenced by the farmer's experience in using credit from formal sources, the age of the farmer, the farmer's level of education and access to off-farm income. This implies that experienced, older and educated farmers are highly likely to have access to formal credit. Similarly, a farmer who has better access to off-farm income is more likely to have access to credit from formal credit sources. The positive statistical significance of these variables is consistent with *prior* expectations of the study and with various studies reviewed in the literature.

According to the results of the logit model, with participation in contract farming as the dependent variable, access to formal credit had a statistically significant negative influence on a farmer's involvement in contractual agreements. The implication is that a farmer who is credit-unconstrained is less likely to engage in contracts than a farmer who is credit-constrained. Access to credit is viewed as one of the main reasons farmers engage in contractual agreements. The credit enables them to purchase production inputs and increase their productivity. In the model with access to formal credit as the dependent variable, though positive, participation in contract farming had a statistically non-significant influence on access to formal credit. The insignificance of participating in contract farming in the model was not expected. The positive relationship implies that access to formal credit would increase with participation in contracts. This unexpected

relationship may be attributed to the fact that most financial institutions do not consider the contracts the farmers engage in as guaranteed or formal. Hence, there is a high possibility that the farmers may default in these types of contracts.

CHAPTER 8

SUMMARY, CONCLUSION AND POLICY IMPLICATIONS

8.1 Summary of the study

Sugarcane farming is one of the most important agricultural activities in South Africa and most of the people working in the agricultural sector are employed in the sugar industry. In total, the industry employs 429 000 workers, both directly and indirectly. However, the industry seems to be shrinking and this is a matter of concern, given its importance. In recent years there has been a decline in small-scale sugarcane production in terms of area under cane production and tons delivered to the sugar mill. SSGs are faced with a major constraint on increasing productivity, partially caused by lack of access to formal credit. In the agricultural industry, contract farming is regarded as one of the alternatives in solving the problem of smallholder farmers' inability to access formal credit. Different studies confirmed that contract farming enables farmers to have access to many different services that would otherwise be difficult to obtain, such as access to formal credit, new markets and risk-aversion strategies.

Therefore, the main purpose of the study was to investigate the role of contracts in improving access to formal credit for SSGs in the Felixton mill area in KZN. The specific objectives were (a) to determine the status of access to formal credit for small-scale sugarcane farmers; (b) to identify factors that determine smallholder sugarcane farmers' access to credit from formal credit institutions; (c) to identify factors that may lead the SSGs to participate in contractual agreements; and (d) to determine whether participation in contracts promotes access to formal credit for the smallholder sugarcane farmers. The study made use of both primary and secondary data sources. The primary data were collected from 220 small-scale sugarcane farmers and from personal interviews with different personnel in the industry. The study employed logistic regression analysis

to analyse the influence of different independent variables on a binary dependent variable. Two logistic regression models were estimated. One was estimated to identify the factors and characteristics that influence access to formal credit for small-scale sugarcane farmers, and the other was estimated to identify the different factors that influence the growers to participate in contractual arrangements with other value chain players.

8.2 Conclusion

The results of the study indicate that most of the farmers (94%) in the Felixton mill area engaged in contractual agreements with other players in the sugar industry. The results of the logit model revealed that small-scale sugarcane farmers' engagement in contracts was statistically and positively influenced by the age and gender of the farmer and whether the farmer had received training on sugarcane production. This means that older and male farmers, and those who received training engaged in contracts more. However, it was statistically but negatively influenced by access to market and access to formal credit. The implication is that the farmers who had access to market for their cane after harvesting and access to formal credit were discouraged to engage in contracts. The study hypothesised that participation in contract farming will be enhanced by the farmer's level of education, farm size and being a member of a farmers' organisation/cooperative. All these variables were not significant in explaining the farmer's participation in contracts as discussed above, therefore, the researcher rejects the hypothesis. Though participation in contracts is influenced by the age and gender of the farmer and whether the farmer has received training, access to market and access to formal credit, lack of incentives and inappropriate institutional arrangements have affected implementation of successful contracts. The incentives include provision of subsidised fertilizer, seed and farming equipment, such as tractors for ploughing. During the survey, most of the farmers cited expensive production inputs and the high costs

incurred when hiring tractors and trucks as their main constraint, which they feel the government should address. The SSGs are always at loggerheads with contractors in the Felixton mill area owing to poor services rendered and the high rates charged by the contractors. This poor institutional environment discourages the farmers from engaging in contractual agreements with some contractors, which affects their productivity.

Access to formal credit is a major constraint faced by the SSGs in the Felixton mill area. The results of the study indicate that only 19% of the SSGs had access to formal credit. Moreover, of the 19% who had access to formal credit, only 13% had access to loan facilities. This has a negative effect on the sustainability of the SSGs and the growth of the industry as a whole. The logistic regression model revealed that access to formal credit by smallholder sugarcane farmers was statistically and positively influenced by the farmer's experience in using credit from formal sources, the age of the farmer, the farmer's level of education and access to off-farm income. This means that educated and more experienced farmers, with access to off-farm income had better chances of accessing credit from formal credit institutions. The hypothesis tested was that access to formal credit would be enhanced by the farmer's age, level of education and experience in using credit from formal sources. As indicated above, all these variables were significant, therefore the researcher does not reject the hypothesis. Even though access to formal credit is influenced by the factors discussed above, the researcher concludes that the SSGs in the Felixton mill area still lack access to formal credit owing to the strict requirements and high interest rates set by formal credit institutions. While conducting the survey, the farmers were asked why they did not apply for production loan/credit from formal credit institutions (refer to section 5.5 in Appendix A). Most of them cited lack of appropriate security, high interest charged for a loan and the feeling that their requests would be rejected as their main reasons for not applying for credit. The farmers in Felixton

do not have the necessary assets to use as collateral, which is required by these institutions as security for a loan. The farmers cannot even use the land as collateral, since it is classified as communal land and owned by the king.

Lastly, the study hypothesised that smallholder sugarcane farmers' participation in contract farming will enhance access to credit from formal credit institutions. However, the results indicated that there was no significant effect of participation in contract farming to access to credit. This implies that engaging in contracts with other players in the industry does not lead to improved access to credit from formal sources, therefore the researcher rejects the hypothesis.

8.3 Policy implications

Given the benefits derived from participating in well-structured contracts, small-scale sugarcane farmers should be encouraged to engage in contract farming. Unfortunately, in this study participation in contract farming did not promote access to credit for the SSGs. Therefore, in order to come up with efficient contracts and to improve the level of access to formal credit for the SSGs in the study area, the following policies and strategies should be adopted:

- The government should establish different support systems and incentives that would encourage formal credit providers to extend credit to the SSGs in the Felixton mill area. These include guaranteed and/or subsidised loans, so that the farmers are less reliant on informal sources of credit, which usually supply very low loan amounts.
- To encourage access to formal credit for the SSGs, efforts should focus on improving the level of education of the farmers. According to the survey results, most of the farmers had primary education or no education at all. Education broadens the farmers' knowledge, improves their farm management skills, and makes them understand the requirements and channels to follow in order to obtain access to formal credit better. Thus, the introduction

of adult education programmes in the area can greatly enhance access to formal credit for the SSGs.

- The issue of property rights on land in the rural areas should be addressed. The SSGs in the Felixton mill area could use the land as collateral or security when borrowing money from a formal credit lender, but only if they owned the land. The fact that the land does not belong to the farmers (it is held in trust by the king), prevents formal financial institutions from considering it as collateral that can be sold to recover the loan in case the farmers default. This means that strategies have to be developed in the rural areas to make it possible for the land holder to hold the title deed to the land and be able to sell it. However, if this were to happen, there is a greater risk that most rural people would be displaced from their land and become homeless.
- Poor physical infrastructure in some parts of the Felixton mill area contributes to high transaction costs of lending in the area. Transaction costs need to be reduced to increase the level of access to credit for small-scale farmers. Improving the quality of the physical infrastructure, such as roads and telecommunications, would attract formal credit institutions to establish branches in the area. Different studies on transaction costs theory suggest that transaction costs are reduced if farmers borrow credit in a group, thus it is also recommended that the SSGs should be encouraged to participate more in farmers' groups/associations.
- Contract terms and conditions should be reviewed so that they are attractive to both the farmer and the contractor. The SSGs complain that in most cases the contract terms favour the contractor as they charge very high rates for the tasks they perform, yet it is the farmer who does most of the job.

- When the truck contractors collect the sugarcane from the field, it should be weighed at the farm gate rather than at the sugar mill. This would reduce the post-harvest losses incurred by farmers as the sugarcane is being transported to the sugar mill. It would also eliminate conflicts between farmers and the contractors, since the farmers complain that they are usually not present when the sugarcane is weighed at the mill. Thus, there is a possibility of them being underpaid.

8.3.1 Limitations and areas for future research

The limitations or constraints faced by the SSGs, as well as areas for future research are presented below:

- The findings of the study are specifically relevant to the Felixton mill area on the northern coast of KZN, which may not be a representative of all sugarcane growing areas in the region. Therefore, it is recommended that for future research a similar study should be conducted in all the sugarcane growing areas in the region, and in other sugarcane growing provinces such as the Eastern Cape and Mpumalanga provinces.
- The research only sheds light on the determinants of participation in contract farming, but does not examine the benefits of contract farming for the contracted farmers compared to the non-contracted farmers. Similarly, the study only sheds light on the determinants of access to formal credit for the SSGs in the study area, but does not discuss the impact of lack of access to formal credit for SSGs. Hence, studies should be conducted in the future that would address the benefits of contract farming for the contracted farmers compared to the non-contracted farmers and also assess the impact of lack of access to formal credit on the productivity of the SSGs.

- Furthermore, informal credit sources such as relatives and friends, play a significant role in the provision of credit in the rural areas of South Africa. Yet, in this study, transactions involving this segment were of less importance. Studies that focus on the role of informal credit sources in improving access to credit for small-scale sugarcane farmers, most probably in the same study area, would be necessary in the future.
- Lastly, the gender composition of the surveyed farmers was dominated by males, as about two thirds of the farmers were males. A study with equal representation of males and females should be conducted in future.

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APPENDIX A

SMALLHOLDER SUGARCANE FARMERS' SURVEY

Contract farming and access to formal credit in South Africa: A case of small-scale sugarcane growers in the Felixton Mill area of KwaZulu-Natal

"We are part of a team from the University of Pretoria, who are studying aspects to do with sugarcane production in KwaZulu-Natal. Your participation in answering these questions is very much appreciated. Your responses will be ***COMPLETELY CONFIDENTIAL****. Results from the study will be used to inform the government on how to improve support services on sugarcane farming more especially creating sustainable credit markets for sugarcane farmers. The results will also help the sugar millers/companies on how to manage the sugar industry so that it remains competitive in the long run. If you have any questions or comments about this survey, you may contact the HOD, University of Pretoria, Dept. of Agricultural Economics, Extension and Rural Development, email: charles.machethe@up.ac.za,* ***Tel: 012 420 3251/3248****.*

1.0 HOUSEHOLD IDENTIFICATION

1.1 Survey date: (DD/MM/YYYY) **surdate:** _____

1.2 Enumerator name: **enuname**: _____

1.3 Household identification number **hhid:** _____

1.4 Respondent's name: **hhname:** _____

1.5 Mill area **area:** _____

1.6 Zone name **zone:** _____

1.7 Respondent's cell phone number **cell**: _____

Enumerator: only interview the household head, unless the sugarcane farming operations are mainly managed by another household member, in that case interview that person. Ensure that the main respondent is knowledgeable about the farm, sugarcane production and marketing operations. If not, postpone the interview and call back when a knowledgeable person is around.

2.0 DEMOGRAPHIC CHARACTERISTICS OF HOUSEHOLD MEMBERS

2.1 Demographics

ID	First Name (Enumerator: list the head first, next spouse(s) and then all adult members followed by children	Member's Age	What is the sex of […….....]? 1=Male 2=Female	Relation-ship of [……..] to current head *(See codes below)*	Marital Status of […..…] *(See codes below)*	What is the highest level of education [……] completed? *(See codes below)*
mem	**Name**	**age**	**gender**	**Rshead**	**mstatus**	**education**
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						

Rshead		**Mstatus**	**education**
1=Head	8=Son/daughter-in-law	1=Single	99=No school
2=Spouse	9=Grandchild	2=Monogamously married	1=Pre-school
3=Own child	10=Other relative	3=Polygamously married	2=Primary/Grade 7
4=Step child	11=Unrelated	4=Divorced	3=Secondary/Grade 10
5=Parent	12=Brother /sister-in-law	5=Widowed	4=High school/Grade 12
6=Brother /sister	13=Parent-in-law	6=Separated	5=College Certificate
7=Nephew /niece	14=Worker	7=Other(s), specify_____	6=College Diploma
	15=Other(s), specify___		7=University
			8=Other(s), specify___

3.0 Distance to and access to important sugarcane production services

3.1 Distance to important agricultural services

From the farm, how far is it to the NEAREST […….]?		Distance (Km)
	keyserv	**distance**
Sugar mill	1	
Main town	2	
Bus stop/rail station where you can board public transport	3	
Formal financial institution (Banks/Micro Finance Institutions)	4	
Agro-input supplier	5	
Water source (Borehole/piped water/dam/well)	6	
Extension services	7	

3.2 Are you a member of a farmers' association(s)/cooperative(s)? *(1=Yes, 2=No → go to* 3.3*)* **FA** _____

3.2.1 If yes, in which year did you join the association(s)/cooperative(s)? **yrassn** _____

3.2.2 What is the name of the association(s)? **nassn** _____

3.3 Does this household currently have access to electricity (e.g. grid, generator, solar panel)? *(1=Yes, 2=No)* **electricity** _____

3.4 What is the major source of water available for your sugarcane production? *(1=River/Stream; 2= Well; 3=Dam/Lake; 4= Borehole; 5= Other(s) specify_)* **watersoc** ____

3.4.1 Is the water available from the major source all year round? *(1=Yes, 2=No)* **wateraval** ___

3.5 Have you received any technical guidance or training on sugarcane production in the past 3 years? *(1=Yes, 2=No → go to 3.6)* **training** _____

3.5.1 If yes, please describe the source and quality of training.

In which year did you receive this type of assistance? *(Enter year)*	Who were the suppliers/ providers of this advice assistance? *(See code below)*	Type of training received. *(See code below)*	Quality of the training *(See code below)*	Benefits acquired from the training *(See code below)*		
yrtrn	**trsorc**	**trtype**	**trqualty**	**benef1**	**benef2**	**benef3**

Trsorc		**trtype**	**trqualty**	**benef1- benef3**
1=Sugar Mill 2=Government Agent (DAFF) 3=Non-Governmental Organization (NGOs)	4=Farmers organization 5=Input dealer 6=Research organizations 7=Private individual/firm 8=Other farmer(s) 9=SASA 10=Canegrowers' 11=Other(s), specify_____	1=Sugarcane planting 2=Weeding 3=Fertilizer / chemical application 4=Disease control 5=Harvesting 6=Record keeping 7=Other(s), specify	1=Very poor, 2=Poor, 3=Good, 4=Very good	1=Increased productivity 2=Improved income 3=Education 4=Other(s), specify_

3.6 Do you have permanent employees working on your farm? *(1=Yes, 2=No → go to 3.7)* **permempl** _____

3.6.1 If yes, how many permanent employees do you have? **npermnt** _____

3.6.2 How many of your permanent employees have attended a training course in their area of responsibility/operation? **ntrained** _____

3.7 Did you receive extension services, more especially on sugarcane production, in the last 2 years*? (1=Yes, 2=No → go to 3.8)* **extension** _____

3.7.1 If yes, how many times does the extension officer visit your farm in a year? *(1=Less than 3 times, 2=between 3 and 5 times, 3=between 6 and 10 times, 4=more than 10 times).* **ntimes** ____

3.8 Participation in contract farming

3.8.1 Do you have a written contract or verbal agreement with the sugar mill for the purchase of your produce? *(1=Yes, 2=No → go to Section 4.0)* **CF** _____

3.8.2 If yes, what is the duration of the agreement (Yrs)? **duration** _____

3.8.3 Contents of the contractual arrangement.

Contractual arrangement		*(1=Yes, 2=No)*
	arrange	**arrange01**
Price fixed with the buyer at planting	1	
Quantity demanded fixed with buyer at planting	2	
Buyer/contractor requires grading	3	
Buyer/contractor schedules delivery	4	
Input supply fixed with the buyer	5	
Produce transported to milling plant by the buyer	6	
Free to deliver produce when ready	7	

3.8.4 How long does the miller take to pay (days)? **dayspay** ____

3.8.5 What is the mode of payment used? *(1=Cash, 2=Cheque)* **modepay** ____

4.0 Access to market and market information

4.1 Do you have access to markets for your produce (including the sugar mill)? *(1=Yes, 2=No)* **AM** _____

4.2 Where have you been selling your sugarcane produce in the last 5 years?

Year sold		Hectares Harvested	Tons harvested	1=Contracted, 2=Non contracted	Where sold to (See code below)
yrsold		**harvha**	**harvt**	**contract**	**wheresell**
1	2015/16				
2	2014/15				
3	2013/14				
4	2012/13				
5	2011/12				
wheresell: 1=Mill, 2=Spot market, 3=Middlemen, 4=Association/cooperative, 5=Other(s), specify____					

4.3 Does road networks/conditions affect transportation of produce to the market? *(1=Yes, 2=No)* **road** _____

4.4 Do you have access to sugarcane market information? *(1=Yes, 2=No → go to Section 5.0)* **AMI** _____

4.4.1 If yes, from which source do you access this market information? (Please rank them, from 1 upwards, starting with the most important source)

Source of information		1=Yes, 2=No	Rank
	info	**info01**	**info02**
Television programmes	1		
Radio programmes	2		
Local or national press	3		
Milling company	4		
Local cane growers' office	5		
Company extension service	6		
Other cane growers	7		
Internet	8		
Others(s), specify_____	9		

5.0 Farm income, credit and loan information

5.1 Do you have a bank account? *(1=Yes, 2=No)* **BA** ____

5.2 Do you have an agricultural insurance policy? *(1=Yes, 2=No)* **inspolicy** _____

5.3 Which source of funds do you use to finance the sugarcane enterprise?

Source of funding		In the last 5 years did you use [……] to fund the sugarcane enterprise? *(1=Yes, 2=No)*	In the last 12 months did you use [……] to fund the sugarcane enterprise? *(1=Yes, 2=No)*
	fund	**fund01**	**fund02**
Retained profits from sugarcane	1		
Income from other farm activities apart from sugarcane	2		
Personal Savings	3		
Informal savings group	4		
Customer advances	5		
Loan/credit	6		
Family members/relatives	7		
Government	8		
NGO/or project	9		
Other(s), specify____	10		

5.4 Have you ever applied for a production loan/credit from any formal financial institution, such as a bank or microfinance institution, in the last 5 years? *(1=Yes → continue to 5.5, 2=No → go to 5.6)* **credapp** _____

5.4.1 Did you received the production loan/credit from the formal financial institution? *(1=Yes, 2=No)* **LF** _____

5.4.2 If yes, please state the source of credit, amount received, usage and collateral requirements.

Source of loan /credit		Did you borrow money from … to support sugarcane production in the last 5 years *(1=Yes, 2=No → go to next Source)*	What was the Value (R) of this loan/credit requested, excluding interest? (Demand)	What was the Value (R) of this loan/credit received, excluding interest? (Supply)	What was the loan/credit used for? 1=Land acquisition 2=Ploughing 3=Planting 4=Weeding 5=Harvesting 6=Fertilizer/chemical application 7=Other(s), specify___	What guarantee/ security was required? 1=None 2=Livestock 3=Contract 4=Asset(specify) 5=Share of output 6= Other(s), specify___
	loan	**loan01**	**loan02**	**loan03**	**loan04**	**loan05**
Bank (specify)	1					
Micro Finance Institution (specify)	2					
Savings and Credit Cooperative (SACCO)	3					
NGO/project (specify)	5					
Government-run programme (specify)	6					
Village bank	7					
Agro-input dealer for sugarcane inputs	8					
Other (specify)_	9					

5.4.3 How many days passed between the application and receipt of the loan? **loandays** _____

5.4.4 For how long have you been receiving the production loan/credit from the financial institution above (years)? **experience** _____

5.5 If not in 5.4 above, state why you did not apply for the production loan/credit. *(1=Had sufficient savings, 2=Had access to another source of credit, 3=Felt the request would be rejected, 4=Did not have sufficient/appropriate security, 5=Credit costs too much, 6=Do not like incurring costs, 7=Other(s) specify_____).* **crednot** _____

5.6 How much did you spend on agricultural inputs in sugarcane production in 2015/16 season? Fertilizer: **fert**: R _____, Herbicides: **herb**: R_____, Pesticides: **pest**: R_____

5.7 What was the annual gross farm income generated from cane production in 2015/16 season? **grossinc**: R_____

5.8 Do you have any off-farm income? *(1=Yes, 2=No → go to Section 6.0)* **OI** _____

5.8.1 If yes, please indicate the sources and the amount of your off-farm income.

Source of off-farm income		Did you receive any off-farm income from […..] to support sugarcane production in the last 5 years? *(1=Yes, 2=No → go to next Source)*	What was/is the amount received per month (Rands)?
	source	**source01**	**source02**
Own business	1		
Sale of other crops	2		
Sale of animals and their products	3		
Petty trading	4		
Sale of labour	5		
Remittances	6		
Pension and disability	7		
Wages	8		
Contracting	9		
Other(s), specify_____	10		

6.0 Household resource endowment

6.1 Land holding and use

Types of field		Do you have any [….]? 1= Yes 2= No → go to next Field type	What area is under [……]? Area	Units 1= Acre 2= Hectare 3=Square meters	What is the tenure status of the […..]? 1= State land titled 2=Former customary land titled 3=Customary no title 4= Other(s) specify___	What are the main crops grown in [....]? 1=Food crops 2=Fodder crops 3=Sugarcane 4=Fruits 5=Vegetables 6=Other(s), specify__
	fieldtp	**field01**	**field02**	**field03**	**field04**	**field05**
Own crop fields	1					
Rented in cropped fields (cash/in-kind payments)	2					
Borrowed in cropped fields(without payment)	3					
Gardens	4					
Orchards	5					
Sugarcane production field	6					
Rented out fields	7					
Borrowed out fields(without payment)	8					
Virgin land(never cultivated)	9					
Other(s), specify____	10					

6.2: Physical assets owned (repairable non-livestock and livestock assets)

Physical asset owned		Does the household own […..]? *1=Yes* *2=No → go to the next ASSET*	How many [……] Does the household own?	Approx. what is the total value of […..] owned by the household (Rands)? *Enter "X"if does not know*
	asset	**asset01**	**asset02**	**asset03**
Tractor	1			
Truck	2			
Motor cycle (motor bike)	3			
Bicycle	4			
Tractor trailer	5			
Car	6			
Cattle	7			
Goats	8			
Pigs	9			
Sheep	10			
Village chickens	11			
Donkeys	12			
Sprinklers	13			
Water tank	14			
Computer	15			
Weighing machine	16			
T.V	17			
Radio	18			
DVD/VCD player	19			
Satellite Dish	20			
Cell phone	21			
Stove (Gas or elect)	22			
Refrigerator/Deep freezer	23			
Sewing machine	24			
Electric iron	25			
Non-electric iron	26			
Solar panel	27			
Generator	28			
Hammer mill	29			
Water pump	30			
Treadle (human powered) pump	31			
Borehole	32			
Planter	33			
Sheller/combined harvester	34			
Plough/harrow	35			

7.0 Perceptions and expectations

7.1 What is the main reason for growing sugarcane? **resgrow**_____

_____

7.2 What do you think the government should do to increase sugarcane productivity in your area?

incprod1_____

incprod2_____

incprod3_____

7.3 Compared to other farming enterprises, is sugarcane the most profitable crop in your area? *(1=Yes → go to 7.5, 2=No)* **crprof**_____

7.4 If no, which other crops are more profitable than sugarcane? (Please list them in order of priority starting with the most profitable one)

othcrpprof1 _____

othcrpprof2 _____

othcrpprof3 _____

7.5 Farmer's attitude to constraints faced by cane growers in the area in general.

Constraint		Attitudes 1=low 2=Medium 3=High
	Constraint	**const01**
Inadequate training/lack of information	1	
Lack of government intervention	2	
Inadequate rainfall	3	
High input costs	4	
Delays in input delivery	5	
Lack of equipment/machinery	6	
Lack of credit	7	
Delays in cane harvesting	8	
Market related problems	9	
Low produce price	10	
Pests and diseases	11	
Delayed payment for produce	12	
Scarcity of labour	13	
Cheating by middlemen/agency	14	
Buyer delays to collect produce	15	
Faulty grading by buyer	16	
Other, specify_____	17	

8.0 Farmer's attitude towards risk

8.1 How willing are you to take risk compared to other farmers in your area?

(1=Much more willing, 2=slightly more willing, 3=Similar, 4=slightly less willing

5=Much less willing) **willrisk _____**

8.2 Would you consider selling your farm to minimize losses during a financial crisis? *(1=Yes, 2=No)* **farmsel _____**

8.3 How would you respond to an unanticipated decline in annual gross farm income?
cop01_____

cop02_____

8.4 What risk management strategies do you use?

(1=Crop insurance, 2=Enterprise diversification, 3=Keep cash reserves, 4=Off-farm investment 5=Fire insurance, 6=Other(s), specify____) **riskstrt _____**

Thank you very much for your valuable participation. Your contribution is greatly appreciated.

APPENDIX B

SUGAR MILLER'S SURVEY (TONGAAT HULETT SUGAR MILL, FELIXTON)

Contract farming and access to formal credit in South Africa: A case of small-scale sugarcane growers in the Felixton Mill area of KwaZulu-Natal

"We are part of a team from the University of Pretoria, who are studying aspects to do with sugarcane production in KwaZulu-Natal. Your participation in answering these questions is very much appreciated. Your responses will be ***COMPLETELY CONFIDENTIAL****. Results from the study will be used to inform the government on how to improve support services on sugarcane farming more especially creating sustainable credit markets for sugarcane farmers. The results will also help the sugar millers/companies on how to manage the sugar industry so that it remains competitive in the long run. If you have any questions or comments about this survey, you may contact the HOD, University of Pretoria, Dept. of Agricultural Economics, Extension and Rural Development, email: charles.machethe@up.ac.za,* ***Tel: 012 420 3251/3248****.*

1. Name and physical address of the mill. **name**_____

   phyadd_____

2. What is the total farm size owned by the mill (Ha)? **milfsize**_____

3. What is your total sugarcane crushing capacity (Tons/day)? **crucap**_____

4. What is the total labour employed by the mill (both permanent and seasonal)?

   permlab_____ **sealab**_____

5. Do you provide training for your employees? *(1=Yes, 2=No)* **trempl**____

6. Do you have a contract with the cane growers for the purchase of their cane? *(1=Yes, 2=No*)

   cntr_____

7. If yes, do you provide credit to contracted sugarcane farmers? *(1=Yes, 2=No)* **crdt**_____

8. Does the mill provide extension services/training to the farmers? *(1=Yes, 2=No)* **ext**_____

9. Do you pay quality premium to the cane growers? *(1=Yes, 2=No)* **qltprem**_____

10. If yes, how much is the premium? **pramt** R_____

11. How long do you take to pay farmers (days)? **paysch**_____

12. How much do you pay per ton of sugar? **tonpr** R_____

11. How much does the mill generate from the sale of byproducts? **byprd** R_____

12. What safety measures have you taken to avoid environmental effects of waste water, and smoke from burning sugarcane and waste products? **safme**_____

_____

13. What do you think should be done to minimize the costs of production in the sugar industry?

mincst_____

14. How much surplus sugar do you export each year? **surexp** _____Tons

15. In which markets do you think your exports are competitive? **expcom**_____

_____

16. Which countries are South Africa's major competitors in different markets? **majcom**_____

_____

17. Does the government provide you with any export subsidies? *(1=Yes, 2=No)* **expsub**____

18. If yes, what type of export subsidies? **tyexpsub**_____

_____

19. Are you aware of the proposed Sugar-Sweetened Beverages (SSBs) Tax by the South African government? *(1=Yes, 2=No)* **ssbtax**_____

20. If yes, what impact do you think it will have on your annual gross income, and to the sugar industry as a whole? **impct**_____

_____

_____

Thank you very much for your valuable participation. Your contribution is greatly appreciated.