# Connecting small-scale farmers in Grabouw, South Africa to formal markets: an assessment of the key constraints

Supervisor: Dr. CJP (Kees) Burger

Development Economics Group

Course code: DEC 80433

Martijn Hendriks

Master Thesis

*International Development Studies*

December 2014

WAGENINGEN UR
For quality of life

# Abstract

In South Africa, small-scale farmers are often not connected to (formal) markets and sell their production inefficiently. Extensive research has been conducted to find the constraints faced by the South-African farmers to connect to markets. However, in general little progress has been observed that enabled the small-scale farmers to connect to the markets. This thesis aims to establish the main constraints that limit the small-scale vegetable farmers in Grabouw, South Africa, to connect to the Cape Town Market. Data were collected during two months fieldwork in Grabouw, both observations and interviews were conducted. The findings are compared to prior studies among small-scale farmers and market connections. The recommendations resulting from this thesis are compared to earlier recommendations in a similar South-African case. Transport costs are identified as a key constraint for the farmers in Grabouw, other important constraints are language barriers, illiteracy, the self-consumption of the production, and a preference for quick (but smaller) profits. The main recommendations resulting from this study are organizing cooperative transport between the farmers and enabling value-adding activities such as grading and packing vegetables.

*Key words: Small-scale farmers, market connection, vegetable farming, economic development, Grabouw, South Africa,*

*Image cover page: farmers connected to the Elgin Learning Foundation in Grabouw, South Africa. From [http://www.elf1.co.za/csi.php](http://www.elf1.co.za/csi.php)*

# Table of Contents

# 1. Introduction & background information

## Introduction

Small-scale farmers in Grabouw have minimally evolved during the previous century. Their production output has increased minimally and new marketing techniques are not applied. The produce is sold on informal markets in Grabouw, which mainly consists of neighbouring households. Commercial farmers however, have greatly evolved and currently maintain a sophisticated marketing and production system and is supported by quality infrastructure. Their produce is supplied to various formal markets, including the Cape Town Market, which is the largest fruit-and vegetable market in South Africa. Therefore, questions arise if opportunities exist for small-scale farmers in Grabouw to supply their products to this market as well and which obstacles withholds them from supplying?

This first chapter contains the background information, including information about the sector, area of interest and demographics. It is followed by the methodology used. Chapter 4 explores the different existing challenges and opportunities, identified by different literature. The chapters 5, 6, 7 and 8 continue to project these findings on the case of small-scale farmers in Grabouw. Chapter 8 compares an extensive research project, which also explores market connection opportunities for small-scale farmers, to this thesis. The findings in the research are compared and discussed to other existing literature as well as to this thesis. Ultimately, the discussion appears in chapter 10.

## 1.1 Sector information

South Africa's agriculture sector is characteristic by dualism (Agriseta, 2014). The sector recognizes two contrasted types of farms: the first one is the "commercial farm". Generally, it is a well-established farm which enforces a sophisticated agricultural marketing system with infrastructure supporting agricultural production and marketing (Van Schalkwyk et al., 2012).The commercial farms have almost monopolized the entire agriculture markets, as these farms produce almost all marketed agricultural production (Vink & Van Rooyen, 2009). In 2002, these large farms received 99.7 per cent of all profits made from farming in South Africa (Makgetla, 2010).

*Figure 1.1. A commercial farm*

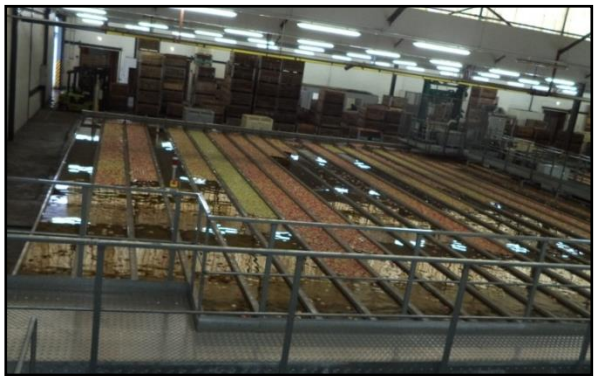

*Figure 1.2. Commercial Farm 'Fruitways', processing apples*

The second type is the "small-scale farmer", which is defined as follows: "a small farmer is one whose scale of operation is too small to attract the provision of the services he/she needs to be able to

significantly increase his/her productivity"(Kirsten & Van Zyl, 1998). The estimated number of small-scale farmers in South Africa is 3 million (Biénabe et al., 2011). In comparison with commercial farmers, small-scale farmers experience an inferior productivity and the production quality is also flawed: small-scale farmers' production does not meet the market standards, due to lacking resources and knowledge (Van Schalkwyk et al., 2012). The knowledge of these farmers is lacking because of weak management and technical skills, poor access to information and in some cases, illiteracy (Fayet & Vermeulen, 2012). Moreover, small-scale farmers are inadequately able to develop their farms due to ineligibility to acquire credit from financial institutions (Van Schalkwyk et al., 2012). Other difficulties small-scale farmers face are lack of access to high-value reliable markets, lack of appropriate and affordable means of transport (Antwi & Seahlodi, 2011) and high transaction costs (Van Schalkwyk et al., 2012).

Although the current dualistic economy in South Africa enforces agriculture policies which benefit the commercial farms (e.g. through subsidized interest rates, tax concessions and price supports) (Ortmann & King, 2007) the government is reworking its policies to accomplish an increasing favor towards small-scale farmers (South African Agriculture, 2013). However, attempts have yet been unsuccessful. Additionally, land reforms in favor of small-scale farmers progresses slowly (O'Laughlin et al., 2013).

*Figure 1.3. A small-scale farm in Grabouw*

Access to formal markets becomes increasingly difficult for small-scale farmers. The changing markets in South Africa in the previous century involved a rise of supermarkets and wholesalers, who introduced tough quality and safety standards (Weatherspoon & Reardon, 2003) and volume and consistency demands (Louw et al., 2008). Meanwhile, the small-scale farmers did not or minimally adapt their farming practices and now face difficulties to supply their products these newly established markets. Small-scale farmers however, continue to supply to informal markets, mostly in urban areas. The consumers in these areas have a strong preference for traditional foods and the demand for food in urban areas is limited due to low purchasing power(Louw et al., 2008). Additionally, small-scale farmers utilize their production to feed themselves, as food security is a major problem which is largely caused by chronic poverty and unemployment (Altman et al., 2009)

## 1.2 Area of interest

This research focuses on small-scale farmers in Grabouw, South Africa. Grabouw is the most populous city (population ~40.000)(Financial and

Fiscal Commision, 2014) in the Theewaterskloof Municipal area. Grabouw is located in the Western Cape, about 70 km distanced from Cape Town. Grabouw is located near the Hottentots Holland mountain range, which represents one of the protected areas of the world heritage site (Jacobs, 2009). The Theewaterskloof Municipal area is an agriculture intensive region: 41% of the region's economy is contributed through agriculture (Financial and Fiscal Commision, 2013). The area has an unemployment rate of 14,9 % (Statistics South Africa, 2011), though the off-season unemployment rate is around 40% (Financial and Fiscal Commision, 2013). A large part of the region's population is employed on (commercial) farms, but job offers are unstable throughout the year, because harvesting seasons require a higher number of workers than other seasons. Due to the high demand for agricultural land within the municipality, prices of land are high: currently for sale is a farm of 36 hectare ground, including a family home, 4 guesthouses, barns and storage facilities for R 9.200.000 (Private Property, 2014) (~$883.625) which is R 255.555 per hectare. In comparison, in the Northern Cape, South Africa, an equally priced (R 9.000.000) and facilitated farm offers 4681 hectare, which is R 1922 per hectare (Pam Golding Properties, 2014).


## 1.3 Demographics

*Population*

Small-scale farming in Grabouw is mostly practiced by an older generation workers: around 50% of small-scale farmers are over the age of 65. Additionally, because the agriculture sector in South Africa is declining (South African Agriculture, 2013), the average age of farm employees is increasing. The guesstimated small-scale farmer's population in Grabouw is between 40 and 100, which is based on guesses of locals, small-scale farmers and their educators. It is challenging to determine the exact number, because many small-scale farms can be mistaken for homegrown gardens and the other way around. Additionally, man small-scale farms are "hidden". They are usually not registered into the Companies and Intellectual Property Registration Office (CIPC) and are often located in or near home gardens

*Employment and income*

Small-scale farming is considered as a part-time employment, as only 40% of small-scale farmers' total income is generated from farming activities (Nagayets, 2005). Between the planting and harvesting seasons, the farmer has much free time to spare and is regularly employed elsewhere, usually on commercial farms. Though mostly, farmers are jobless. During harvesting and planting

seasons, the farm requires additional laboring and the farm worker often receives additional assistance from friends or family workers.

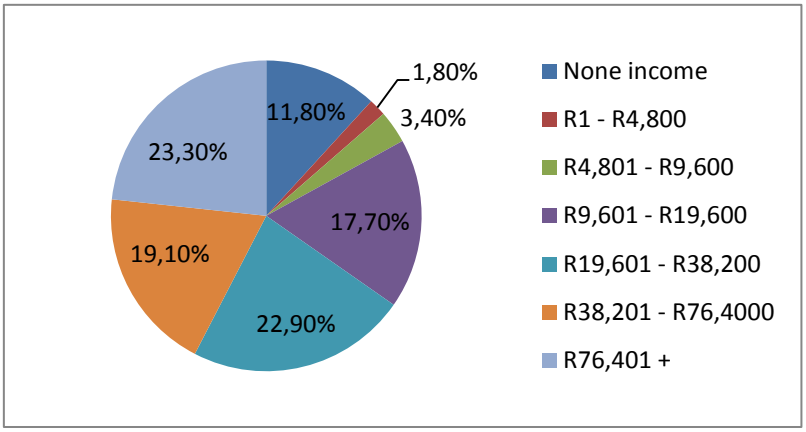


*Figure 1.4. Household income in 2011 in the Theewaterskloof region. Source: South African Statistics (2013)*

For retired small-scale farmers (age 65 and up), small-scale farming is their only job and additional income is acquired from the government through a retirement grant. An exception are the livestock farmers (not including the rabbit breeders). Their agriculture practice requires full-time attention on a daily basis.

| **Retirement Grant** (SSA, 2013) | |
|---|---|
| Age | Granted income per month |
| 60-74 | R 1.200 |
| 75+ | R 1.220 |

The official unemployment rate in Grabouw is 14,9% (Statistics South Africa, 2011). However, the actual unemployment rate is around 40%, due to the high seasonal employment (Financial and Fiscal Commision, 2013; Schrader, 2013).

The high unemployment rate and low incomes often result in (extreme) poverty, which is a typical characteristic for small-scale farmers in Grabouw. Many small-scale farms are also located in the neighborhood Rooidakke, which is listed among the top 25% most depraved areas in the Western Cape (Western Cape Government, 2011).

# 2. Problem statement

As discussed in the background information, small-scale agribusinesses have not evolved, while the market has. Demands regarding safety, quantity, produce quality and consistency are required which small-scale farmers are unable to meet. Farmers continue to farm the way they have always been doing and live in poverty. Therefore, questions arise why these farmers are not evolving and what are their main obstacles to connect to formal markets? This research will identify the major obstacles for these farmers and searches for opportunities. For vegetable farmers in Grabouw, the closest and accessible formal market for vegetable farmers in Grabouw is the Cape Town Market, a large host for many agriculture producers and buyers. The main research question is therefore:

***Which factors constrain aspiring small-scale vegetable farmers in Grabouw, South Africa from selling their products on the Cape Town Market?***

The purpose of the upcoming sub-research question is to search existing literature for constraining market factors, to clarify what has been researched so far. Established theories will also be linked to observations in this thesis.

SRQ1: What are the main factors that constrain market access for small-scale vegetable farmers identified by existing literature?

The next three research question operationalize “factors” into three categories: production, behavior factors and marketing. Each question discusses to which extent small-scale vegetables are obstructed into connection to the Cape Town Market. These factors have been chosen due to mentioned relevance in existing literature. The next research question assumes that lower productivity de-motivates farmers to supply to the Cape Town Market. The details are discussed in chapter 6.

SRQ2: Which factors distort small-scale vegetable farmers in Grabouw from achieving optimal productivity?

SRQ3: Which behavioral factors influence small-scale farmers in selling their products at the Cape Town Market?

SRQ4: Which marketing factors influence small-scale farmers in Grabouw in selling their products at the Cape Town Market?

The next question compares the case of small-scale farmers in Grabouw to another, similar research. The findings from the similar research are discusses and compared to this research.

SRQ5: What are the main similarities and differences between this case study and former research on small-scale farming in South Africa?

# 3. Research methodology & background

In this chapter the research location is described, as well as the data collection method and the sources used.

## 3.1 Research location & background

The upcoming chapter will describe how and from whom information is gained for this research. The Sources and data collection methods will be thoroughly described.

*The Elgin Learning Foundation (ELF)*

The backbone for this thesis was created during an internship at the Elgin Learning Foundation (ELF). In the period of August-September2003, data was collected which was used to write both the internship report and a thesis.

ELF is a local NGO whose mission is to actively promote rural development, through "providing training and development support built on community participation" (Elgin Learning Foundation, 2013). ELF offers community services, mentoring and practical development in different types of training programs who aim to support the (local) community. Examples are programs about topics such as health, technical trades and agriculture. In recent years, the training program regarding agricultural development has been inactive, as ELF is currently restructuring its training program: new learning materials, updating pervious short courses and realigning product offers are developed. For the internship assignment, a written research report about small-scale farming in Grabouw was expected. ELF would use the collected data to establish training and other capacity building programs for small-scale farmers.


To acquire the data for both the internship report and the thesis, a case study was conducted. Information was obtained from farmers: both from vegetable and livestock farmers and from large-scale (commercial) and small-scale farmers. Various farms had been visited and small-scale working methods had been observed. Moreover, information was gained from trainers of small-scale farmers, employed by a governmental organization or the Elgin Learning Foundation. Information were also obtained from consultants (experts), who possessed knowledge about South African agriculture policy towards small-scale farmers. Additionally, the Cape Town Market was explored, in which the area was explored and traders and farmers were interviewed. Finally, information was gained from supermarket managers and vegetable shop owners.

## 3.2 Qualitative Data Analysis

In this chapter detailed information is provided about the data analysis. The used sources and methods are described. Additionally, the sample selection method and the processing method of the field notes are explained.

To acquire the collected data, a "Qualitative Data Analysis" (QDA) had been conducted. Research units have been approached to provide information including knowledge, opinions and interpretations about certain subjects. This information was often linked to explanatory economic and development theories, for instance, to explain certain difficulties faced by small-scale farmers. Moreover, interpretation of the researcher was used to establish theories and conclusions.

### 3.2.1 Sources

The following research units were included:

| Research unit | Frequency people or organizations included |
|---|---|
| Small-scale vegetable farmers | 15 |
| Small-scale livestock farmers | 11 |
| Commercial farmers | 2 |
| Agriculture consultants | 2 |
| (Ex-)Trainers small-scale farmers | 4 |
| Manager supermarket | 3 |
| Farm store-restaurant manager | 1 |
| Hawkers | 3 |
| Traders Epping Market | 6 |

The small-scale farmers are the target group of this research and are therefore obviously included as a research unit. The same goes for trainers of small-scale farmers. Trainers are (or recently were) directly involved in the lives of small-scale farmers. Their job is to increase the knowledge of small-scale farmers and therefore making it possible for them to develop their farms. They also assist about financial and law-related issues. Agriculture consultants have been selected for the same purpose. Consultants are not directly involved in the lives of small-scale farmers and/ or possess market information. However, they are well educated and experienced towards the subjects.

Commercial farmers, hawkers, traders from the Epping Market, managers of supermarkets and the farm store-restaurant, were included in this research to provide information about existing markets near Grabouw. The information was utilized to determine existing value-chains and gain insight for small-scale farmers to optimize their position within these value chains.

### 3.2.2 Methods

Three types of data collection methods were applied: interviews, focus group discussions and information collected from observations on site- visits:

| Research method | Frequency applied |
|---|---|
| Interviews | 36 |
| Focus group discussions | 2 |
| Site-visits | 16 |

*Interviews*

In total, thirty-six interviews have been conducted:

| **Interviewee** | **Frequency** |
|---|---|
| Small-scale vegetable farmers | 11 |
| Small-scale livestock farmers | 4 |
| Commercial farmers | 2 |
| Agriculture consultants | 2 |
| Trainers small-scale farmers | 4 |
| Supermarket managers | 3 |
| Farm store-restaurant manager | 1 |
| Hawkers[1] | 3 |
| Traders (Epping Market) | 6 |

The interviewing method conducted for all interviews was the semi-structured interview. The created topic lists were updated continuously as new information was provided. Initially, for each of the above approach interviewee groups a different topic list had be created

*Focus Group Discussions*

Two Focus Group Discussions had been conducted: one on a group of small-scale livestock farmers and another on a group of vegetable farmers. All discussers knew each other thoroughly, either through work or personal affairs.

*Observations*

Interviewees were observed during the interviews: non-verbal and verbal communication mainly helped to establish an image about the interviewee; for instance, about their passions and displeasures regarding a certain subject.

Many small-scale farms and farmers were overtly observed during “site-visits”. In these site-visits, the area of interest was explored. Additionally, pictures of the area were taken. Some of them can be viewed in this thesis. Additionally, farmers provided information about their working method(s). During at least half of these site-visits, agriculture trainers were also present and provided agriculture related information (e.g. criticizing the working method of the farmer because a vegetable had decayed). Often the trainer provided ideas for (minor) improvements on the farm, such as methods on how to cultivate vegetables more successfully.

Besides ten site-visits on small-scale farms, two commercial farms were visited, the working method of three hawkers was observed and the Epping market in Cape Town was visited. These site-visits helped to create an image how the trading process was established in the area of Grabouw.

*Sample*

[1] Chapter 8 provides more details

The sample method used to obtain interviewees and opportunities for site-visits are the convenience and snowball sampling method. Interviews and site-visit appointments were acquired through contact information passed on by friends, associates, (ex-) colleagues, etcetera of interviewees.

The total sample size was determined through the grounded theory. When no new information was gained from a specific set of interviewees (e.g. livestock farmers), a different group of interviews was approached. This process repeated itself until all groups of interviewees were approached.

*Translation*

About 50% of the Afrikaans and all Xhosa speaking interviewees did not comprehend basic English skills. During these interviews, a translator was present.

*Processing field notes*

Three interviews were recorded on tape, while the rest was recorded by using a notebook. The outcomes of the interview were (partially) written down and later on reworked into a report.

# 4. Literature findings about market connection for small-scale farmers

The upcoming chapter serves as a literature backbone for chapters 5,6,7 and 8. It will discuss the literature findings regarding obstacles which influence small-scale farmers into connecting to formal markets. Additionally, opportunities are looked into for small-scale farmers who aspire to connect to formal markets.

## 4.1 Economies of scale and farming

The economies of scale theory states that costs decline for each extra unit produced. This implies that efficiency gains are made once a business grows. Thereby, large farms are favored over small-scale farms. The upcoming chapter will explore the economics of scale theory regarding three subjects: production, behavioral factors and marketing and to which extent it influences small-scale farmers into connecting to markets.

*Production*

A lack of access to credit is noticeable for daily expenditures in an agribusiness. Working capital is often lacking in small-scale businesses (Eswaran & Kotwal, 1986). Especially in the period between planting and harvesting, small-scale agribusinesses have little working capital available, because a great part of their savings has been spent on farm inputs. Funds, which can be used to, for instance, clear the lands or repair security equipment, is often non-existent. Lacking capital makes the farm also more prone to shocks (Collier & Dercon, 2013). Additional disadvantages for small-scale farmers are the inability to invest in capital intensive equipment such storage equipment, traceability systems, process monitoring systems and (repeated) capital investments to satisfy the (evolving) quality and safety requirements of buyers (Poulton et al., 2010).

Mostly due to this lacking financial capital, large scale agricultural businesses can generally produce at a higher efficiency rate because they have the advantage of being more capital intensive and have increased possibilities to mobilize funds (Collier, 2008b). Small-scale farmers often do not have access to credit, because sufficient collateral is lacking to acquire loans (Eswaran & Kotwal, 1986). Therefore, moneylenders rather provide capital to large firms than small firms (Simmons, 2002). Farms often spend this capital on lumpy investments (e.g. machinery, oxen) which enhances production efficiency (Collier & Dercon, 2013). Additionally, capital is necessary to impose technological changes (Collier, 2008b), which implies that large-scale farms are more technologically evolved than small-scale farms. Examples of recent technological changes in agriculture are crop breeding and tillage. These technological changes initiated especially large efficiency gains for labor supervision (Deininger & Byerlee, 2012)

In contrast to small-scale farms who rely on family labor, large farms also have the ability to employ highly trained managers, who can gain them efficiency advantages under conditions of rapidly changing markets and technologies (Deininger & Byerlee, 2012).

*Behavioral aspects in farm management*

Besides a financial capital advantage, large-scale agribusinesses have certain organizational advantages over small-scale businesses. In a larger organization, spreading of knowledge and internal schooling may be organized more systematically. Consequently, farms can develop to diffuse knowledge much more cheaply, effectively and quickly. It is especially beneficial towards logistic processes (e.g. transport and storage), but also towards marketing processes (e.g. establishing business relations with traders). These organizational advantages realize higher efficiency gains in comparison with small-scale farms (Collier & Dercon, 2013).

Many of these organizational disadvantages are explained through behavior economics. A study showed that small-scale farming behavior causes inferior yields. In Kenya, small-scale farmers' fertilizing purchasing behavior was observed. The study concluded that many small-scale farmers refused to purchases fertilizer, even though it could increase their net income by 36%. Additionally, the fertilizer was readily available and could be purchased in small quantities. Also, the farmers were aware of its positive effects (Datta & Mullainathan, 2014). Therefore, it was concluded that a behavior effect caused these outcomes. One possible explanation is the "procrastination effect": farmers plan to act tomorrow, rather than today, even when the planting season has already started. The result is that these delayed actions causes farmers to fail to take advantage of profitable investments and decreases their yield potential (Datta & Mullainathan, 2014).

Another explanation is the lack of self-control. When a farmer has just harvested his products he will have earned a considerate amount of money. The farmer is then likely tempted to spend this money on several things, not necessarily on business expenditures. However, when the planting season arrives, the same farmer will need to buy fertilizer but notices that money is no longer there (Brune et al., 2011). Because of lacking self-control, the farmer is less habited to spend income on savings and business expenditures.

A third behavior factor involves an absent-minded behavior. This type of behavior is caused by pressure constraints. Small-scale farmers face competing pressures and issues which causes them to simply forget to purchase fertilizer at the beginning of the season (Duflo et al., 2009). Farmers can for

instance, worry about problems at home and cannot fully focus on their job. Worrying about for instance, a child's sickness, water that might run dry at the end of the day, and lacking money to purchase basic household necessities causes reduced productivity (Banerjee & Mullainathan, 2008).

The fourth behavior factor involved a scarcity of attention. Small-scale farmers frequently fail to adopt new farming technologies. One cause is their lacking financial resources, but a study showed that learning a new technology might also have something to do with it. For instance, at the start of a planting season, a farmer must decide on the timing of planting, the depth and spacing of seeds, the amount of fertilizer to use, when to use it and so on (Hanna et al., 2012) Because such a process involves handling a large bulk of information, the farmer could not pay attention to every aspect. This results in a failed attempt to maximize productivity (Datta & Mullainathan, 2014).

*Marketing*

Small-scaled agribusinesses encounter higher transaction costs than large scale agribusinesses. The high Transaction costs are a large source of farmers' poverty and missing links to the market. Beside their scale disadvantages, these transaction costs are exacerbated by small-scale farmer's poverty, health uncertainty, lack of access to capital and low levels of education. Additionally, poor communication systems and low density of economic activity in the poor areas where they predominate further increase the transaction costs (Poulton et al., 2010).

Especially regarding marketing, large firms have increased opportunities to gain higher profits. Firstly, the market share of small-scale farmers has weakened because of an increased establishment of supermarkets during previous decennia in South Africa. These supermarkets established value chains which weakened the business relationships with small-scale farmers. Nowadays, supermarkets look for relationships with producers who can produce significant and regular quantities of a certain range of products (Reardon et al., 2003) Additionally, supermarkets require producers to respond rapidly to consumer changes (Reardon et al., 2005). Unfortunately, small-scale farmers cannot meet there demands and consequently, Small-scale farmers struggle to enter existing value chains (Reardon & Berdegue, 2002)

Secondly, Small-scale farmers can be victims of opportunistic behavior of traders. Farmers are often cheated out of a profit; for example, in cases of adulteration of inputs, "fixing" of scales or measures by traders (Poulton et al., 2010). The weak market position of small-scale farmers can be exploited. Additionally, large companies can have more bargaining power. This can reduce their input price and increase their output prices. In Argentina, a study on this subject recorded a reduce in input price and increase in output price between 10 and 20% (Poulton et al., 2010).

Thirdly, large scale businesses have increased opportunities to gain profits on markets, as these businesses can react faster to evolving market demand. Large scale businesses can organize more efficiently and have increased access on working capital (Collier, 2008a). This can result in increased profit potentials.

The next table provides a summary weather certain transaction costs favors small or large farms:

| | **In favor of** | |
|---|---|---|
| **Transaction costs** | **Small farms** | **Large** |

| | | farms |
|---|---|---|
| Unskilled labor supervision, motivation, etc. | x | |
| Local knowledge | x | |
| Skilled labor | | X |
| Market knowledge | | X |
| Technical knowledge | | X |
| Inputs purchase | | X |
| Finance and capital | | X |
| Output markets | | X |
| Product traceability and quality assurance | | X |
| Risk management | | X |

Source: Poulton et al. (2010)

## 4.2 Farming opportunities

The theories in paragraph 3.1 implied that large farmers can potentially produce more efficient than small-scale farmers. However, other sources claim that small-scale farming can be equally or more successful. Small-scale farms should be able to produce at least as efficient as commercial farms, but the policy framework in South Africa, mainly regarding to regulations involving access to markets, input services and credit, favors large scale farms (Kirsten & Van Zyl, 1998). By alleviating the market barriers, reducing the transaction costs and providing improved access to credit, small-scale farms will increase in popularity (Kirsten & Van Zyl, 1998). A likely possibility to justify the South African policy in favor of large scale firms is a believe that large scale agriculture firms are more beneficial to economic growth than small scale firms. However, this is not necessarily true. Although the number of small-scale farmers decreases rapidly when economic growth occurs, it could also be a consequence that small scale farmers find better paying jobs. Additionally, in contrary to large- scale farming, small-scale farming has a greater contribution to create employment and improves food security (Hazell, 2011). Small-scale farming knows great possibilities and the upcoming chapter will discuss literature findings about several opportunities: on production, behavioral and marketing level.

*Production*

While transactions costs are generally lower when the scale of an operation increases, large scale farms create higher labor costs. Employees on small-scale farms mostly exist of family workers who are highly motivated to maximize their collective production. Large scale farms lack these incentives and need to hire supervision staff. Additionally, the monitoring cost of hired labor arises more than proportionally when the farm increases in scale (Feder, 1985).

Small-scale farming can be (highly) rewarding and there are many opportunities available. Generally, small-scale farmers choose to increase crop efficiency by apply labor intensive farming methods. Land prices nearby Grabouw can be high, which makes intensive farming more attractive than purchasing additional land. A farmer could boost the growth time of the vegetables by using produce enhancing methods such as soil erosion control, chemical fertilizers and insecticides. Product intensification could be applied to particularly increase his produce quantity. Examples of product intensification methods are double dug beds, adding vegetables torice bunds, digging a fishpond, kitchen gardens, gully cropping and silt traps (Ramírez, 2002) and hydroponic (tunnel)

farming (ARC, 2014). Additionally, heavy technological reliant agriculture practices, such as “no-till”, are especially beneficial for small-scale farmers because of high labor intensity requirements (Ekboir, 2002). Organic farming can also be applied: due to its labor intensive character it is especially beneficial for small-scale farmers (UNCTAD, 2013).

*Figure 3.1. Hydroponic farming*

*Figure 3.2. Gully cropping: applying a large gully to control erosion*

Intercropping is a labor intensive farming method which can conclude far greater yields when compared to a sole crop. A study on intercropping in which sixteen different types of carrots and lettuce were matched concluded profit increases between 35,46 and 51,6 % when compared with sole crops (Neto et al., 2010). Another advantage are the reduced pest and disease incidents (Van Wolfswinkel, 2013). However, intercropping is very skill- dependent and labor needs to be well-trained. The method is very sensitive to labor mistakes and can have negative yield consequences. Additionally, yields overall are inconsistent (Pridham & Entz, 2008).

*Behavior & organizational aspects*

In the previous chapter, it was mentioned that procrastination causes small-scale farmers to achieve declining yields. However, other sources mention that employees of small-scale agribusinesses are less inclined to procrastinate. Mentioned is that a lack of motivation might result in procrastination and small-scale businesses are actually very motivated businesses. Small-scale businesses are mostly family owned businesses who employ highly motivated laborers (Mohamad & Yahya, 2010). Because of their motivated employees, small-scale businesses are less likely to procrastinate and can deliver a higher quality produce (Poulton et al., 2010).

Farm management on large scale farms is more time consuming In comparison with small scale farms. The management of large scale investments, especially decisions which require participatory of consultations are highly time consuming (Alden Wily, 2010). Large scale farms also have higher chances of engaging in negative externalities. It could happen for instance, that investor proposals are non-viable or inconsistent with local visions and/ or national plans for development and cause a conflict (Tamrat, 2010).

*Marketing & sales*

Additionally, recent market changes provide opportunities for small-scale farmers. The demand for organically farmed products is globally rising. Additionally, organic farming is arguably a costly farming method for large commercial farmers, as it requires a higher degree of manpower. It could therefore be an opportunity for small-scale farmers (Biénabe et al., 2011). However, different markets might need to be approached and certificates need to be acquired to maximize profitability.

Unfortunately, as discussed before, many small-scale farmers lack financial capital. Therefore, to apply (one of) these methods, it is very likely that assistance or aid is required. For most of these methods financial and technological investments are necessary, but also investments in human capital. It is especially beneficial for farmers if they possess the knowledge and skills to apply these methods (FAO, 2012).

## 4.3 Conclusion

The economies of scale theories suggest that on production level, an increased financial capital leads to a higher level of technology and technological advancement which conclusively leads to increased efficiency in production. Small-scale agribusinesses are also prone to behavior aspects in managing their farms. Consequently, the production output is harmed and less financial capital is available for business investments. Moreover, small-scale agribusiness generate extra costs, in relation to large-scale farms during marketing activities. Transaction costs are, minus a few exceptions, higher for small-scale farmers.

Though the cost per produced unit are higher for small-scale farming businesses, there are also existing advantages. Small-scale farmers could exploit their low labor costs and apply labor intensive farming methods. New marketing opportunities could also be created by applying, for instance an organic farming establishment. However, investments are required and it is questionable weather small-scale farmers are able to overcome this barrier.

# 5. Small scale farming in Grabouw: preliminary information

The upcoming chapter serves as a preliminary reading for the upcoming three chapters. In this chapter, a distinction is made between different types of farmers, the types of land used are described in detail and information about the nearest accessible market (the Cape Town Market) is discussed.

*Figure 4.1. Small-scale cultivation in Grabouw*

*Figure 4.2. Small-scale farm plot Grabouw*

## 5.1 General information

*Land type*

As mentioned in the background information, small-scale farmers in Grabouw struggle with high land prices. Consequently, the plots of land they own or lease are vastly inferior to the lands of commercial farms. The size of these lands varies between 40 and 100m2, though 13 out of 15 farms are sized between 80 and 100 m2.These farms are located inside (low-income) neighborhoods in Grabouw or on lands within one kilometer outside of Grabouw. The farms are located nearby backyards, rivers, waste fields or roads.

Small-scale farmers are unable to purchase (additional) land due to lacking financial capital. However, the municipality of Grabouw is operating in a land restructure program: it divides plots of inferior land (varying between 80 and 100 m2) within the region of Grabouw. However, it is a lengthy and costly program and creates uncertainty for farmers who question their eligibility to acquire these plots of land. The current criteria used by the local government to acquire a plot of land, are unknown by small-scale farmers. However, the farmers and trainers of these farmers believe that their eligibility depends on personal factors such as farming experience and the size of their currently owned land. It also depends on public factors, such as the development plan. Additionally, political connections are a determining factor.

Three different types of farm ownership are distinguished:

- Single proprietorship: it is owned by one household and labored by a single farmer. However, in the cultivation season it is common that family members assist;
- Partnership: a farm which is owned (or leased) by two or three farmers. It is owned and labored by family relatives or friends;

- Community: a farm which is owned (or leased) and labored by a large group of people, varying greatly in number; approximately between four and ten farm workers.

*Employment information*

The owners (and laborers) of the vegetable farms in Grabouw are all within the age group of 50-75 years old, of which approximately 50% is over 65 years old. Livestock farmers are within the age group of 30-75 years old. The owners and laborers on the small-scale farms in Grabouw are all men, except for those on the community owned farms. Especially the vegetable farmers have many years of experience in the farming business, as they have been involved in their entire life: it varies from laboring on family or friend's owned farms, on their own farm or on commercial farms.

The small-scale farmers in Grabouw consider themselves as part-time employed on their farm, as the farmers have an abundance of time to spend on non-farm related activities. Additionally, farm income is not enough to pay for basic necessities (e.g. house rent, electricity) so farmers are obligated to search for other sources of income. For instance, it is common that apple, pear and grape producing commercial farms nearby Grabouw employ small-scale farmers in their peak season.

*Financial status*

The farmers over 65 years old receive a retirement grant in addition to farm income and the farmers under the age of 65 years gain additional income through other jobs. However, it is very difficult to find employment in Grabouw, as jobs are scarce and because the main employers are large commercial farms, the off-season unemployment rate is 41%.It is therefore no surprise that small-scale farmers in Grabouw encounter difficulties to pay for basic of life necessities. Materialistic goods, such as cars are non-existent and farmers live in low-income neighborhoods, such as Rooidakke and Snake Park.

Due to a lacking income, small-scale farmers are incapable to invest in their farming business. Small-scale farmers are unable to purchase agriculture inputs, such as seeds and harvesting equipment. Farmers who aspire to take up a loan are unable, as banks demand collateral in exchange and small-scale farmers are unable to provide this as the lands they own are too small in size. Receiving financial aid through other channels is in some cases occurring: the South African government aids aspiring farmers mostly through farming inputs, e.g. seeds and security equipment (fences). Donor agencies have also previously provided financial assistance to small-scale farms. However, the amount granted usually does not exceed ZAR 500 (~€ 43) per farming business. Trainers of small-scale farmers have experienced that this amount is inadequate to support the long-term development of a small-scale farm. Other financial services such as microcredit are non-existent in Grabouw

*Produce and methods*

Vegetable farming in Grabouw is carried out with great variety. Approximately 50% of the small-scale farmers cultivate multiple (3-10) different types of vegetables. The other 50% cultivate only one or two types of vegetables. Though the cultivated product differ among these farmers, the cultivated products are usually of nutritious characteristics (e.g. cabbage, potatoes and carrots).Other cultivated products are: Spinach, onions, radish, green peas, lettuce, beets and flowers. Carrots are the most cultivated product, only two farms did not cultivate this vegetable.

The products these farmers produce are on average of lower quality than the products offered at formal market (e.g. Cape Town Market), though exceptions are existent. Examples of quality decreasing factors (which are discussed in chapter 6) are: wrong use of agriculture techniques, animals which have eaten or trampled (parts of) the vegetables and a lacking prevention against weather extremities

Vegetables are planted manually or by using inexpensive equipment, such as shovels. Small-scale farmers do not own machinery such as tractors or cars. Product enhancers such as fertilizer and insecticides are also not utilized. In two cases, compost was used.

Another common type of farmer in Grabouw is the livestock farmer. These farmers own a large and different variety of animals: while one farmer owns only pigs and cows, others own many kinds of animals, such as: sheep, chicken, cows, geese, goats and pigs. The livestock farmers sell their animals (alive) to inhabitants of Grabouw. In addition to selling these animals, the farmers produce goods, such as milk, wool and eggs. These goods are processed at the farmers' home and self-consumed or sold to surrounding households.

Small-scale livestock farmers in Grabouw do not own any piece of (grass) land on which their animals can graze. Consequently, these farmers move throughout Grabouw with their livestock and exhaust public grass lands. These farmers do however, own barns which shelter the animals during the night. It is possible for one livestock farmer to own many different barns, which are spread throughout Grabouw. Unlike the vegetable farmers, the livestock farmers are full-time employed and farming income generates enough to pay for their basic necessities. However, like the vegetable farmers, livestock farmers are minimally able to invest in their business as usually every penny earned is spend on household necessities. There are approximately 20 of these farmers represented in Grabouw. In addition, there are also a few (±6) small-scale farmers who breed one type of animal, either chicken or rabbits. In contrast to the other livestock farmers, these farmers have land available to breed their animals.

*Figure 4.3. Livestock farming (poultry) in Grabouw*

*Figure 4.4. Livestock farming(cattle) in Grabouw*

*Degree self-consumption*

Small-scale farmers frequently self-consume (parts of) their harvest. The degree of self-consumption however, differs among the farmers. The small-scale farmers can be divided into three groups:

1. 100% self-consumers. A group of farmers (±10) in Grabouw used all of the farmland to feed multiple households. None of the harvest was sold. This farmer also cultivated a great variety in vegetables. Up to nine vegetables and flowers were cultivated;
2. Undefined self-consumers. The main purpose of approximately 35-45% of the small-scale farmers in Grabouw is to feed their own households and sell the left-overs to surrounding neighbors or local shops. These farmers cultivate multiple vegetables, varying between three and ten types of vegetables. The degree of self-consumption differs among the farmers, but also differs at each harvest, as a disappointing harvest will lead to an increase percentage used for self-consumption;
3. Minimal self-consumers. The main purpose of these small-scale farmers is to sell their produce. A minimal percentage is self-consumed. These farmers only grow one or two vegetables. The guesstimated number of farmers in this group is between 30 and 40 farmers, which is approximately 45-60% of all small-scale farmers in Grabouw. This guesstimation is based on the participants in multiple training programs offered by the Elgin Learning Foundation.

## 5.2 Farmer's markets

*Market failure*

Small scale vegetable farmers in Grabouw experience market failures. The farmers do not transport their products to the nearest formal market (Cape Town Market), but choose to self-consume their product and/or sell it to surrounding households instead. Additionally, two substitute markets have been created. The first one is called (by locals) a "local shop". It is a small store, ranging in about 5-20 m2 in size. It is typically located in low-income neighborhoods. Local shops sell many convenience type products, such as snacks and cigarettes but also sell vegetables. The vegetables sold to these local shops are (far) below market prices. Farmers and their trainers mention that farmers can demand twice the price they currently demand at different, existing markets, such as the Cape Town Market. The local shop does not buy products from livestock farmers.


*Figure 4.5. A local shop in a low-income neighborhood in Grabouw*

Another alternative market for small-scale farmers in Grabouw is basically a self-established flea market for agriculture products. Farmers display their products in front of their homes and buyers approach the farmers and negotiate about the price of the product. The products are usually sold to surrounding households.

*Market suppliers*

The vegetable (and fruit) markets in Grabouw are a buyer's market. A great number of diversified suppliers trade products on several locations. Besides the supply to local shops, products are also supplied to supermarkets; namely to large supermarket chains such as Spar and Shopright. Also the local supermarket, Village offers a great diversity of agriculture products. Moreover, a couple smaller supermarkets which offer basic groceries are also located in Grabouw.

"Hawkers" also sell vegetables at several locations in Grabouw. Hawkers are considered traders who also transport their products. These products are usually sold at a large marketplace in Grabouw, where multiple hawkers trade their products. For transport, hawkers generally use pick-up trucks (such as one on the picture below) to move their products. They mostly sell their products to (low-income) consumers, but occasionally also to restaurants. Hawkers maintain a flexible buy-sell system, in which the lowest price is their absolute objective. For instance, if the prices on the Cape Town Market are too high, they are willing to obtain products from different sources; for instance, directly from small-scale or commercial farms.


*Figure 4.6. A hawker in Grabouw*

*Market for livestock farmers*

Livestock farmers in Grabouw (excluding the rabbit and chicken breeders) are currently unable to distribute their products to existing markets, as they violate health regulations. The South African government requires animals to be kept in a controlled environment and the processing of animals such as butchering need to be practiced inside a production facility, as defined in the "regulations governing general hygiene Requirements for food premises and the transport of food" (Ministry of Health, 2002). Similarly hygiene requirements are demanded for dairy products in the "regulations relating to milk and dairy products"(Ministry of Health, 1999). Livestock farmers in Grabouw are unable to meet these regulations and can therefore not sell their products at formal markets. In addition, certificates (e.g. for butchery) are also required to obtain. The livestock farmers in Grabouw breed and process several animal products (e.g. milk, meat) without any certificate. Consequently, government officials frequently hand out fines and confiscate animals. There are no formal markets available for livestock farmers to sell their products on, unless they invest heavily. Additionally, these farmers are not or minimally receiving aid from the government. The livestock farmers themselves can be an interesting topic for further research. Topics such as such as creating possible market opportunities, instituting a cooperative process facility (e.g. shared processing of animals), or

perhaps it can be investigated if the livestock farmers face a dying business. However, because the vegetable farmers differ greatly (in respect to connecting to markets) from the livestock farmers, this research will focus only on vegetable farmers.

## 5.3 Cape Town Market "Epping"

The Cape Town Market, also called "Epping" is situated in Cape Town, about 70 kilometers distanced from Grabouw. It is the largest fruit- and vegetable market in South Africa and hosts for 5500 producers. The products sold on the market originate from many different regions in South Africa. The market acts as a host for many different (selling) companies, as well as individual traders. The market consists of a part of exclusive business to business selling (inside the factory hall) and a part where products are sold to both companies and consumers. The latter is named: the People's market (Cape Town Market, 2014).

*Figure 4.7. Building of the Epping Market*

*Figure 4.8. Sales on the Epping Market*

*Figure 4.9. Epping: the People's market*

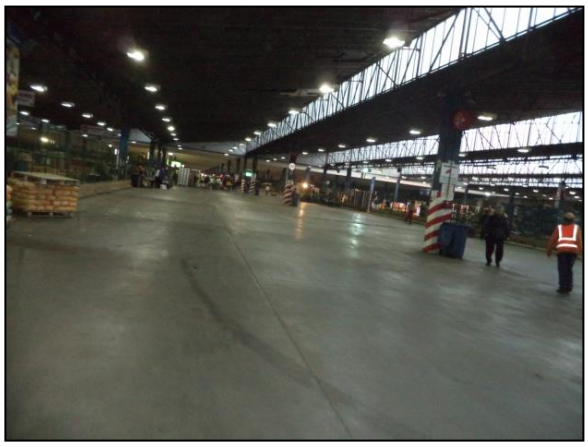

*Figure 4.10. Epping factory hall*

The market offers many different services, such as security, storage of products, quality checks and a mediation service in case of disagreements between customers. Epping also provides locations inside or outside the factory hall where companies can sell their products. Moreover, the market provides transport vehicles and personnel to transport products from transport vehicles to sales companies. Also, the company provides administration services, such as the screening of suppliers.

*Figure 4.11. Storage facilities Epping Market*

*Figure 4.12. A sales man and his trade on the People's Market*

Inside the factory hall many trading companies are present. These companies are selling products on behalf of producers, rather than owning the products themselves. These companies call themselves "middlemen" and exclusively act as salesman for the producers. Situated just outside the factory hall is "the people's market". In contrast to the salesmen inside the factory hall, the salesmen on the people's market own their products. Many of these salesmen are speculators. They acquire products from a company inside the factory hall and sell it to other companies or consumers for a profit.

Various small-scale farmers sell products at the Cape Town Market, Some small-scale farmers combine their produce while transporting to lower the transportation costs. Like hawkers, small-scale farmers mostly use pick-up trucks for transport. Though small-scale farmers operating in Grabouw have not been spotted

*Prices*

The Cape Town Market enforces a price mechanism based on supply and demand. Consequently, the prices of fruits- and vegetables vary daily. The fluctuation rate is high: even the current weather is a price-determining factor (less producers supply products on rainy days and therefore raise the prices (temporarily) of existing products on the market). The prices are determined by the Cape Town Market and published on their website to be viewed for anyone who is interested. When products are sold, the market receives 5% of the selling price as a commission fee. An exception are potatoes, which attracts a lower commission fee (Cape Town Market, 2014).

The companies inside the Cape Town Market who are occupied with selling and buying the vegetables, maintain a common commission fee of 7,5%. This commission fee is maintained by all these companies, though some companies offer quantum discounts. The existing nine companies generally distinguish themselves from each other through service and product specialization.

*Entry barriers*

A middleman inside the Cape Town Market quoted*: "everything of 1 box and up will be accepted".* He mentioned that any type of producer, large or small, is welcome to supply products on the market, as long as they offer one box of a certain product. One box contains about 25 average sized carrots. Additionally, producers can deliver an inexhaustible quantity of goods.

The Cape Town Market accepts different quality products. The markets generally categorizes fruits and vegetables into three quality degrees (1=high, 2= average, 3= low), though different products can maintain different quality degrees.

*Figure 4.13. A pallet containing several boxes of fruits*

The middlemen do not maintain any type of contracts with their suppliers. Their motivation originates from the fluctuating pricing system. Consequently, each business transaction is unique as different product prices are demanded. The transactions mostly take place inside the Cape Town Market, but are also conducted through e-mail or phone calls. The producer and trading company often make agreements about quantities and the time of delivery. However, it is common that companies are not able to meet the agreements. It happens often that products are delayed or a different than agreed quantity is delivered. However, the company will always be willing to conduct business, even with those who cannot keep true to their agreements.

*Final note*

The Cape Town Market enforces low entry barriers and offers many services for buyers and sellers alike. The market determines the price level, cultivates the quality of the products and protects the products against theft. It also saves the buyers on administrative procedures, such as traceability. Because of these low entry barriers and convenient services, a question arises why small-scale vegetable farmers in Grabouw are not (or minimally) utilizing this market. What are their main motivations? Additionally, several other small-scale farmers (from other regions) have been spotted selling vegetables at the Cape Town Market, indicating that, at least for them, it can be profitable to sell products at the Cape Town Market. The upcoming chapters continue to answer these questions.

# 6. Production in Grabouw

The upcoming chapter explores which factors distort the maximum productivity of small-scale farmers and to what extent. Assumed is that, at a lower production level, the farmer is less motivated to sell his products on the Cape Town Market, as the transport costs and efforts used per unit sold increase. Additionally, when the product quality is affected by production related factors, fewer profits are gained (e.g. the farmer produces an increased level of class 2 carrots rather than class 1 (explained in section 5.3)). Also in this situation, the transport costs per unit sold increase. If the farmers choose to sell products on informal markets in Grabouw, the transport costs are avoided

The upcoming chapter first explores the maximum yield small-scale farmers in Grabouw can achieve and under which circumstances. Also, the production costs are summarized and discussed. The chapter continues to described obstacles which harm the maximum productivity and to what extent.

## 6.1 Production yield

To provide an indication about small-scale farmers' yields, the medium-sized carrot is used as example. Carrots are a very popular product: all but two small-scale farmers in Grabouw cultivate this nutritious vegetable. The carrot is exceptionably favorable because these vegetables are little depended on weather influences. They are suitable to cultivate in seven months per year in Grabouw because of its Mediterranean climate (Gardenate, 2014). This makes carrot harvests of at least twice a year possible. Carrots are also less prone to diseases and pests in comparison with other vegetables (Almanac, 2014) which makes small-scale farmers less dependent on insecticides.

By calculating the maximum produce, a plot of 100 m2 is used as an example. The plot is flat and does not contain holes or objects. A fully cultivated land can contain 13 beds of carrots which can yield a total of 975 bunched carrots (75 bunched of carrot per bed) per harvest (Ncat, 2012). One bunch of carrots weighs on average 500 gram (Countryfarm, 2014).

The prices on the Cape Town Market (not including the commission fee) on 27-06-2014 for medium sized carrots were as follows:

| **Prices mid-sized carrots Cape Town Market 27-06-2014** | | |
|---|---|---|
| Quality | Price per crate (5KG) | Price per bunch (500 GR) |
| Class 1 | ZAR 16,59 | ZAR 1,659 |
| Class 2 | ZAR 10,00 | ZAR 1 |

*Table 5.1. Prices for carrots on the Cape Town Market*

Assuming farmers produce class 2 medium-sized carrots only, the turnover minus a total commission fee of 12,5 % (section 5.3) is ZAR 853,13. Assuming farmers produce class 1 medium-sized carrots only, the total profits are ZAR 1415, 34.

The information about the yields is however, based on a maximum production output. Production flaws (e.g. product spillage and a different seed germination rate per season) are not taken into account. Moreover, the farmer will encounter packing costs, as carrots need to be packed in boxes (see figure 4.13). In addition, small-scale farms in Grabouw encounter other obstacles which deny

them from reaching their maximum production capacity which will be discussed later on in this chapter.

Moreover, the mentioned prices are retrieved from a formal market and are approximately twice as high as the prices of carrots on informal markets in Grabouw and small-scale farmers are habited to sell on informal markets (though there are a few exceptions). This will be further discussed in chapter 7.

*Production costs*

The production costs for a small-scale carrot farmer producing on 100 m2 land are:

- Seeds: 0,03 kg is required per harvest (based on 3kg per hectare)(Almanac, 2014).
- Irrigation costs
- Land lease costs
- Labor costs

The following optional investments are only used by approximately half of the small-scale farmers. In practice however, every farmer has access to these investments due to network connections with other farmers or are lent by (local) NGO's or governmental organizations.

- Soil amendments
- Tools (e.g. Shovels)

Other production input such as fertilizer, insecticides etcetera, are not applied. Similarly, modern agriculture techniques (intercropping, gully farming, hydroponic farming etcetera) are also not practiced by small-scale farmers in Grabouw.

In practice however, the production costs for small-scale farmers in Grabouw are minimal. Farmers can receive free-of charge seeds from the (local) government. However, many farmers will still have to invest in seeds as not all farmers are privileged to receive seeds. The selection criteria why certain farmers are privileged are unknown. Also, the quantity seeds received is according to the farmers, invariable and is often not sufficient to cultivate their entire farmland. Additionally, irrigation costs are very low: farmers use their household water supply and thus installing irrigation systems is avoided. Moreover, the labor costs for the farmers are non-existent as it is always carried out by friends and family workers. Additionally, the land lease costs are also alleviated due to a monthly financial reimbursement, provided by the South African Government.

## 6.2 Inferior Farm locations

*"I am happy with my land, but cows often visit and it is dirty because of trash from the river" (quoted by a small-scale farmer in Grabouw who's land is located next to an open grassland and a small river).*

As previously discussed, small-scale farmers cultivate inferior lands due to the high land prices. Examples of inferior lands are: lands next to waste yards, rivers or roads. Characteristics such as unclean lands or (heavy) objects located on the lands are common. Small-scale farmers lack capital (and possibly knowledge) to successfully clean their lands. Additionally, at least one third of the

farmers is unable to remove heavy objects from their lands and requires heavy machinery (e.g. a tractor) to remove these objects.

*Figure 5.1. This farm was recently acquired by a small-scale farmer. The land was completely ridden in rocks, trash and (dead) trees.*

To which extent unclean grounds and undesirable objects disturb the total production of small-scale farmers differs greatly. While some lands are nearly spotless, other lands contain many heavy objects and/ or undesirable objects. One farmer's land is located next to a river and he frequently (almost daily) experiences that garbage, mostly household waste, washes ashore and spoils his carrot production. Two other farms are situated next to an open grassland which is intended for public use. Livestock farmers in Grabouw make great use of these lands and unfortunately, their animals often visit the farms of these vegetable farmers. Consequently, many vegetables are subject to gluttony or are trampled. Therefore, an individual examination is necessary to determine how much the farm location influences the production output.

## 6.3 Lacking agriculture inputs & investments

*"I have exactly ZAR 320 (~€25) in the bank as live savings. How am I supposed to invest money?" (A farmer was asked if he planned to invest money into his business).*

As explained in section 4.1, due to lacking financial capital, small-scale farmers have reduced access to (lumpy) investments and are not able to adapt to technological changes as fast as large-scale farmers. For farmers in Grabouw this is definitely applicable. Banks are unwilling to supply to loans to small-scale farmers due to their lack of collateral they can offer. The farmers even face difficulties towards purchasing basic agriculture inputs. Besides acquiring financial capital from other sources, small-scale farmers are incapable to invest in their own business. Savings are non-existent because when the farmer does receive an income, every penny needs to be spend on household expenditures (e.g. food, electricity and alcohol). Consequently, basic investments are lacking. Examples are: fences which contain numerous holes and/ or are unfinished, lands which are uncultivated because financial capital for seeds was not acquired. In a Focus Group Discussion, a group of farmers was asked if they planned to invest money into their business. All farmers replied similarly by stating that they could not save money, because they need all of their income to fund household expenditures such as food, electricity and water.

Though these poverty trap scenarios are a huge problem for all small-scale farmers, it does not necessarily mean that their production output will significantly deteriorate. One example is a farmer

who used compost instead of fertilizer. Additionally, free-of charge seeds can be acquired from the local government and basic agriculture equipment, such as shovels, buckets, etcetera can be lend from other farmers. Local NGO's, such as The Elgin Learning Foundation also provides assistance: they aid farmers by lending out farming equipment such as shovels. The Elgin Learning Foundation makes it also possible to use heavy machinery, such as a tractor.

However, the techniques and methods, mentioned in section 4.2 to increase production efficiency are currently not utilized by any small-scale farmer and it seems unlikely that this is going to happen in the (near) future, unless financial capital is provided. As previously discussed, these techniques and methods require financial capital which small-scale farmers in Grabouw lack. Additionally, farmers need to be educated towards applying these methods and techniques.

It should also be taken into account that the investments costs of such techniques are high. Even for a relatively low capital investment method such as intercropping. An example: intercropping can achieve additional profits between 35% and 52% compared with sole crop (e.g. carrot with lettuce), mentioned in section 4.2. Assuming a small-scale farmer achieved a maximum production of 975 bunched carrots and gained an additional profit on his carrots on the Cape Town Market on 27-06-2014 (Figure 5.1) he would achieve an additional profit between ZAR 346,74 and ZAR 503,10

It is however, questionable if the profit gains of ZAR 346,74 per harvest exceed the costs that need to be invested. The abundance of labor in Grabouw (all farmers are willing and able to spend more time on their farm) relieves the extra labor requirements which intercropping demands. However, the educational costs will be high as intercropping is a very skill- dependent method. It is questionable if small-scale farmers are suitable to implement this method. Firstly because farmers lack most basic agriculture knowledge (section 5.4) and will therefore require even more effort to comprehend an "advanced" agriculture technique. Secondly, the high learning curve of intercropping will lead to disappointing yields during the first couple harvests and will result in and out of proportionally high effort to low benefit ratio. It is especially difficult for farmers who face a poverty trap. Thirdly, there are several behavioral factors involved (discussed in chapter 7) which decrease the chance of success of such an educational program.

In conclusion, farmers lack agriculture inputs, but they are able to acquire these inputs (even heavy machinery), though other channels. Lacking agriculture inputs will therefore minimally affect their production output. Applying an agriculture technique to increase the production efficiency such as intercropping, requires investments which farmers lack. Additionally, it is questionable if the benefits of such a technique will surpass the costs, as great efforts and high education costs are required.

## 6.4 Lacking (basic) agriculture knowledge

*"We do not know how we should grow our vegetables" (A small-scale farming community knows it is possible to increase their production, but does not know how to).*

Knowledge about (basic) agriculture techniques (how to maximize produce efficiency) such as planting vegetables in the suitable seasons, efficient soil use, clearing agriculture land, improving soil quality and irrigation techniques are not or partly applied by small-scale farmers in Grabouw. Consultants and trainers of small-scale farmers mention that the small-scale farmers are minimally educated towards these subjects. Though in general the farmers lack knowledge, there are still large

differences between the farmers regarding agriculture knowledge. Examples are: different soil use for similar products, different vegetable planting method (e.g. a calculated planting distance or random planting).

*Figure 5.2. Randomly planted vegetables are a common sight in Grabouw*

*Figure 5.3. This crop should have been harvested earlier by the farmer.*

During site-visits on several small-scale farms, cases were observed in which quality and production efficiency could be improved through improved knowledge. For instance, more than half of the observed farmers planted their vegetables completely random on their farming land. The distance between the vegetables was not calculated and therefore the production output can be increased. Other examples are: inefficient soil use and over-ripened vegetables.

In conclusion, lacking basic agriculture knowledge can (greatly) influence the yield outcome of small-scale farmers. The production output can be increased through more efficient farming and the product quality can be improved. However, since 2013, farmers who are interested can receive personal assistance from trainers. These trainers basically educate and mentor farmers to maximize their production and improve their product quality. Examples are: efficient soil use, farm irrigation, and efficient, calculated vegetable planting. The trainers also assist in several administrative matters (e.g. signing contracts with lease agencies and registering the company in the South African Companies and Intellectual Property Registration Office (CIPC). Due to these educational and mentoring services, it is expected that the maximum production and the quality of the products improve. However, the trainers experience that information transferal is difficult and slow. Sections 7.1 and 7.2 will further discuss this issue.

*Figure 5.4. A recently transformed farm with aid of an agriculture trainer*

## 6.5 Produce opportunity costs

*"We grow beets, carrots, onions, radish, spinach, cabbage peas, lettuce, beets, potatoes and flowers",*

*replied a farmer who owns 90 m2 land (A small-scale farmer enthusiastically explained which products he cultivated).*

Small scale vegetable farmers in Grabouw do not efficiently cultivate (small) pieces of land. Farmers in Grabouw prefer to cultivate nutritious vegetables (e.g. potatoes, cabbage) and neglect to grow cash vegetables (e.g. lettuce, cucumber, tomatoes). Their preferable product choice is also uninfluenced by varying circumstances such as a different climate or different soil types. One example was a farmer, who according to a trainer, cultivated cabbages throughout the entire year. Even in the summer season, when the dry and warm climate is unsuitable for this vegetable. Additionally, about half of the vegetable farmers grew several types of vegetables, varying from six to ten types of crops on a plot of 80-100 m2. The other small-scale farmers either specialized in cultivating one or two types of vegetables.

An explanation for a choice to not cultivate the highest value product is food security. To be able to feed themselves and their families, the farmers choose to be partly self-sufficient and prefer to grow nutritious vegetables instead. The degree of self-consumption varies greatly among every small-scale farmer and is therefore difficult to determine, though, it is minimal for farmers who specialized in growing one or two vegetables. However, the latter group also does not specialize into cultivating products with the highest added value.

Another explanation is lack of education: though farmers in Grabouw have many years of farming experience, similar products have been cultivated each harvest. They are inexperienced towards cultivating different, higher value added products (e.g. mushrooms and lettuce). Growing these products requires different techniques which farmers in Grabouw are unfamiliar with.

To summarize this chapter, the small-scale farmers do not cultivate the highest value added products. Instead, nutritious vegetables are preferred. Possible reasons are self-consumption caused by food security and lack of education.

## 6.6 Farm Intrusion

*“I am lucky to live next to my farm”* (*A small-scale farmers regards the high theft level in Grabouw and explains that he is able to self-secure his farm, because he lives right next to his farm).*

Small-scale farmers are commonly duped by theft. About 50% of the farmers mentioned that theft had occurred on his farm within the last two years. When theft occurs on a small-scale farm (e.g. vegetables get stolen), consequences are severe. The farmer suffers a loss of income and food security. Re-seeding the farm is sometimes a problem because funds for new seeds are often lacking. Consequently, the farm (or parts of) is left uncultivated after the looting. Farmers lose not only their current produce, but also future production is disturbed. A farmer explained that in 2013, thief’s intruded his farm, excavated and stole almost all of his carrots and potatoes from his land. The same scenario happened twice in six months. The farmer felt helpless as he lost the greatest part of his income and could not afford to buy security equipment to keep these intruders out. Subsequently, the farmer got caught in a vicious poverty trap as saving money was not possible as the farmer needed to spend every dime he had for household necessities. In September 2013, the greatest part of his farm was left uncultivated. The farmer even lacked financial capital to rebuild his farm (e.g. new seeds).

*Figure 5.5. The quality of this fence is so poor, even the dog can enter the farm*

In addition to theft, about 50% of the small-scale farmers mentioned that loose running animals, mostly dogs, visit their farms and eat their vegetables. Three farmers are also bothered by animals from herding livestock farmers in Grabouw: they mention that their cows and pigs trample and devour their vegetables. One small-scale farm is located next to a grass field, on which animals frequently graze. The farmer mentioned that in six months' time, cows completely trampled his harvest and ruined a great part of his income.

An explanation why theft and animal intrusion is common on small-scale farmers is the inability to keep intruders out: security equipment to protect the borders of the farm, such as barbed wire and fences, are existent on most small-scale farms, but often lack in quality. The existing security equipment often contains holes, is unfinished and is weak.

Not all farmers are duped by theft and animal intrusion. Approximately 50% of the farmers mentioned that theft and animals which harm their harvest are uncommon. A reason why this group of farmers is not targeted is because they live within viewing distance of their farms and are able to protect the farm. In contrary, the farmers who do not live within viewing distance of their farm, were bothered by thieves and intruding animals.

*Figure 5.6. Because the wealth of this farmer was shortcoming, he could not afford to buy a fence. Instead, he placed plastic bottles on his farm to keep unwanted animals (e.g. dogs) from visiting: at night, these bottles reflect moonlight, which according to the farmer frightens dogs.*

The effects of (animal) intrusion on the production output are random, but it can have severe consequences, such as losing (almost) the entire yield. Subsequently, the occurrence increases the possibility to cause and/or maintain a vicious poverty trap cycle as less money can be spend on inputs and investments. (Animal) intrusion makes yields outcomes very unpredictable: animals can eat only a few vegetables, but can also trample great parts of the harvest. Exceptions are made for farmers who live near their farm. Theft seems less common on these farms and the farmers can react faster against intruding animals. Therefore, these farmers are less prone to risks and yield are more predictable.

The effects of intrusion can also influence the farmer to decide whether the harvest should be transported to a formal market, such as the Cape Town Market. Firstly, an unpredictable harvest makes it harder to establish agreements. For instance, a farmer agrees with a hawker that 900 bunched carrots will be picked up from the farm at a specific date. However, a herd of cows trampled half of the harvest and therefore the farmer cannot fulfill the agreement. Other examples of agreements are: combined transport with other farmers and agreements with buyers or transport companies. Secondly, when the vegetables are ready to be harvested, the intrusion vulnerable farmers will have a higher preference to sell on informal markets, as this guarantees a secure profit. In contrary, when the vegetables are sold on a formal market, the farmer needs to store or keep the vegetables longer in the ground because of logistic processes. One example is combined transport with other small-scale farmers (section 8.1). The farmers are dependent on each other regarding the transport dates and times. Another example is that arranging transport with buyers such as hawkers can take up time. Selling on an informal market will grant them lower profits per unit sold, but will also decrease the chance that (a part of) the harvest gets stolen. Thirdly, farmers who are duped by intrusion will have less income to spend on transport costs and will also encounter increased transport costs per unit sold in comparison with farmers who are not duped by intrusion. Intrusion occurrence(s) will increase the farmers' preference to sell on informal markets in Grabouw instead, so the transport costs are avoided. Therefore, it can be concluded that intrusion vulnerable farmers have a higher preference to sell on informal markets than the farmers who are not vulnerable to intrusion.

## 6.7 Weather extremities

*"In the summer I bring buckets of water from my home to irrigate my farm" (Quoted by a small-scale farmer who lacked resources and knowledge about farm irrigation).*

Because Grabouw is subjected to heavy rainfall in the winter and draughts in the summer, small-scale farmers are vulnerable towards the effects of these extreme weather influences. An example is a farmer who explained that he recently endured a great storm which ruined his cabbage produce. He did not possess capital to prevent such a storm and so he decided to create a dam by himself. However, his self-constructed dam did not prevent the excessive water from flooding his farm. During the site-visit on this farm two days after the storm had occurred, parts of his farm were still flooded and the farmer lacked financial resources to rid himself of the excessive water. Additionally, financial resources to rebuild the farm were lacking.

In the summer season, periods of draughts are common as rainfall is rare in this season. Unfortunately, small-scale farmers do not possess financial resources to irrigate their farms and this can have dreadful consequences. A farmer explained that he irrigated his farm by bringing water from his home. However, his farm needed more water than he could acquire: he used up more water than his household was allowed so the government shut down his home water supply. Consequently, the farmer was allowed to use water from his neighbors for personal use. However, he was unable to further irrigate his farm and his produce completely dried up.

Protecting against these types of weather extremities is troublesome for small-scale farmers as resources and knowledge are lacking. The effects on the production output are random and it is no exception that a complete harvest can be destroyed. Unfortunately, small-scale farmers are not

insured against the effect of weather extremities and therefore it creates a heavy income shock when it occurs.

## 6.8 Summary

Small-scale farmers in Grabouw are not efficiently using their farming lands. The traditional farming techniques used, lacking basic agriculture knowledge and inability to grow the highest value added products leads to an inferior yield and quality of the produce. Moreover, externalities such as theft, farm location, animal intrusion and weather extremities destroy or weaken the quality of the produce. These negatives externalities also make it difficult to meet agreements if arrangements are made to sell to hawkers or on the Cape Town Market. A high risk of production theft also demotivates the farmers to sell at the Cape Town Market: selling the produce as fast as possible reduces this chance.

| **Production obstacle** | **Target group** | **Conclusion** |
|---|---|---|
| Inferior farm location | All small-scale farmers in Grabouw | Inferior lands make it difficult to maximize production. The land quality and location type differs per farmer |
| Lacking inputs & investments | Al small-scale farmers in Grabouw | Lacking basic inputs minimally harms the total production output. Farmers are however, unable/ incapable to use investment heavy techniques to increase production. |
| Lacking knowledge | All small-scale farmers in Grabouw, though the knowledge level differs greatly per farmer | Farmers are currently being trained and it is expected that farmers will be able to increase the production output and quality |
| Opportunity costs | All small-scale farmers in Grabouw | Farmers do not grow the highest value added products and prefer nutritious products |
| Intrusion (theft and visiting animals) | Farmers whose homes are not located within viewing distance of their farm (approximately 50%) have an increased risk. | (Parts) of the harvest gets stolen, eaten or trampled. It possibly causes income shock with severe consequences for both the farmers' household and his farming business. Installing security equipment (e.g. fences) Can reduce this risk |
| Weather extremities | All farmers in Grabouw | Weather extremities possibly cause severe income shocks. Protection against it is possible through education and investments |

# 7. Behavioral aspects

The upcoming chapter explores how agribusiness related decisions and actions from small-scale farmers in Grabouw are affected by behavioral factors and to which extent these decision aspects have an (indirect) effect on connecting to the Cape Town Market. The following behavioral aspects are discussed: knowledge transfer, language barriers, entrepreneurship attitude, procrastination and will also shortly mention two other behavior aspects which influences small-scale farming.

## 7.1 Knowledge transfer

*"When I try to teach them how they should plant their crops, they respond by saying that they have forty years' experience in farming*" (Quoted in an interview *with an agriculture trainer, who failed to transfer knowledge to a group of Xhosa speaking small-scale farmers).*

As a part of a project of the South- African government, agriculture trainers from NGO's and governmental organizations assist small-scale farmers in increasing their revenues. Examples of assistance are: improving production efficiency, increasing the economic value added and increasing access to (formal) markets. The substance of assistance mostly involves educational services. For instance by educating farmers how to produce more efficiently, they are taught how to effectively irrigate their farm, which soil to use, efficient vegetable planting etcetera. The trainers can also assist on other (personal) affairs such as buying or selling a farm, administrative procedures (e.g. bookkeeping) and jurisdictional affairs. This training is offered through both personal assistance and classroom teachings. All small-scale farmers are eligible to receive these forms of assistance at free of charge. Most farmers (about 80%) are making use of at least some of these services. The other 20% do not receive assistance in any form. The likely reasons will be discussed later on in this chapter.

Unfortunately, the trainers experience that transferring their knowledge is troublesome and the success rate differs. Roughly there are two groups of farmers: on the first group (roughly 20% of the small-scale farmers in Grabouw), assistance has no or minimal effect. This group continues to farm the way they have always been doing. This group does not seem to take an interest in adapting their agribusiness. Sequentially, these farmers stop attending any training sessions and stop receiving (personal) assistance.

The other 80% of the farmers are trying to improve their knowledge (e.g. about increasing productivity and or learning marketing techniques). These farmers take part in the educational services offered by local NGO's and also receive personal assistance from trainers. However, the trainers experience that information transferal from trainer to farmer is slow and often troublesome. For example, one agriculture trainer repeatedly informed a farmer how he should plant his vegetables and which time is the most suitable for harvest. However, even though the farmer seemed motivated to adapt his practice, the farmer continued the way to farm he had been doing and adopted minimal changes. Another example is a carrot farmer in Grabouw. He has been attending several training sessions of a local NGO on how to increase his productivity. However, the farmer kept using inefficient soils for his vegetables. These type of examples happen regularly.

The trainers are not sure why the knowledge transfer is troublesome. They experience communicational failures: a headstrong behavior is encountered and the farmers are difficult to

convince of adapting their agribusinesses. The trainers believe that the large age differences and experience is a major factor of this headstrong behavior. The attending trainers in Grabouw are between 25 and 35 years old while the small-scale farmers are within the age group of 50 – 75 years old. Additionally, many trainers have never actually worked on a farm, while the small-scale farmers are on average at least twenty years in business. Therefore, accepting teachings from people much younger and inexperienced creates a strange balance.

Another explanation for the troublesome knowledge transferal is absent minded behavior. As discussed in section 4.1, farmers cannot fully focus on their jobs if they are prone to pressure constraints. The small-scale farmers in Grabouw can be subjected to these pressure constraints due to their high level of poverty. For instance, the farmer that was robbed twice in 2013, (section 6.6) can worry about for instance, feeding his family, or what would happen if he gets robbed another time. The absent-minded behavior will make the farmer prone to make mistakes. Additionally, farmers who are pressured by food security will self-consume parts of their harvest and therefore neglect to cultivate the highest value added products.

A third explanation is scarcity of attention. Handling a large bulk of information, mainly in the planting season (see section 4.1) can be difficult for farmers. For small-scale farmers it is difficult to adopt teachings, especially for those who are completely transforming their farms (e.g. cultivating different products, using different soil, timing of planting). By handling these large bulks of information, farmers can forgot about the teachings and can therefore continue to farm inefficiently.

In conclusion, the troublesome information transferal has a negative impact on the amount produced and the quality of the produce. As discussed in chapter 6, when the production output is negatively affected, small-scale farmers are more likely to sell their products on informal markets in Grabouw.

## 7.2 Language barrier

*“Writing down his name took him one minute.” (A small-scale farmer was observed while he was writing down his own name).*

For the greatest part (80-90%) of the famers in Grabouw, their home spoken language is Afrikaans. The other part consists solely of Xhosa speaking inhabitants. All of these farmers exclusively speak Xhosa. English or Afrikaans is not or minimally comprehended by them. Interviewing this group of people was also only possible when a translator was present. The lack of spoken English obstructs this group of Xhosa speaking farmers who aspire to conduct business. Though English is only the fifth most spoken language in South Africa, it is their official language. Business contracts, laws etcetera are conducted in the English language. On formal markets such as the Cape Town Market, English is the applied language, though salesmen also comprehended Afrikaans. Currently, these Xhosa speaking farmers only trade with other Xhosa speaking inhabitants and trading with others is difficult due to the language restriction.

Additionally, this language barrier imposes difficulties towards transferring knowledge (section 7.1). A representative of a Xhosa speaking farming community mentioned his difficulties to understand educational trainings: he and other Xhosa speaking farmers attended several training sessions offered by a local NGO. They did not (fully) understand the lecturer and were not able to

comprehend the learning material. Consequently, this group of Xhosa speaking farmers continued the way they have been farming like they have before without adopting new techniques and/ or methods.

Elementary skills are also lacking among small-scale farmers in Grabouw. Trainers believe that approximately 50% of the small-scale farmers (including all Xhosa speaking farmers) are illiterate and do not comprehend basic mathematics. This greatly hinders the currently offered educational services (which are not exclusively vocal). Additionally, illiteracy imposes a dependency on others in regard to reading and/ or writing business contracts, administrative and jurisdictional procedures.

The lack of spoken English and/or Afrikaans and illiteracy will harm the farmers who aspire to produce for formal markets (e.g. The Cape Town Market). It will make these farmers depended on translators. Additionally, for the Xhosa speaking farmers it will be difficult to trade products outside of the Xhosa community. However, there are possibilities for farmers to become literate and/ or learn additional languages. A local NGO (The Elgin Learning Foundation) offers several free-of-charge elementary courses (including reading and writing) for adults. It is therefore a profitable opportunity for ambitious farmers to learn English and expand their trade network.

However, if this group of farmers has no such ambitions, the benefits of comprehending another language will not be worth the efforts as the profit gains will be none. For example: farmers who exclusively produce for local markets: trading is conducted vocally and generally conducted with traders of the same cultural background. For these farmers, the language course is a burden: the farmer needs to spend time and transport costs to participate in training sessions while taking these courses will not increase their profits.

## 7.3 Entrepreneurship attitude

*During an interview with a small-scale farmer, the following question was asked to the interviewee: "what would you do if you were offered a larger piece of land?"* The interviewee replied: *"it would help me, but I do not have seeds to plant on that land."*

Besides lacking resources to build a farming business, small-scale farmers in Grabouw are also unaware how to successfully run (or increase the success of) their agribusiness. The most obvious example was observed in the expenditure pattern of small-scale farmers: when the vegetables are harvested, the farmer prefers to secure a quick income and sells the vegetables as fast as possible to local households or a local shop. The latter can be easily realized because local shops are willing to buy almost anything if the price is right. Local shops also demand very little regarding quality, quantity and consistency on agreements (e.g. delivering on time). Vegetables are also quickly sold to surrounding households. Subsequently, the farmers are habited to spend all of their earned money exclusively for household expenditures (e.g. food, electricity and alcohol). They do not or barely save money for business savings and/ or expenditures.

Another example is the profitable opportunity to store and transport vegetables in combination with other farmers to the Cape Town Market (section 8.1). Storage costs are low, as carrots for instance, can easily be kept in the ground for a while after they have reached maturity However, small-scale farmers prefer make a lower profit without investing extra efforts than the opposite.

Additionally, small-scale farmers are (financially) depended on the (local) government and this has negative consequences for their entrepreneurial attitude. For instance, a vegetable farmers basically waited for the government to provide them land and seeds before undertaking any investments himself. He quoted: "*We want to harvest more vegetables, but we have no seeds."* This farmer receives monthly a certain amount of seeds from the government. However, the profits which results from planting those seeds are exclusively used for both household consumption and selling purposes (to e.g. local shops and the Cape Town market). In addition of purchasing seeds themselves, the received seeds from the government could also be utilized to create more seeds. The latter is not taking place at all. Small-scale farmers do not seem to save money and invest it for future purposes. It is especially disappointing when certain pieces of land are left uncultivated. According to an agricultural consultant, seeds are very cheap and even the poorest farmers can afford them. The acknowledgement of a "business attitude", as this consultant quoted, seems to be lacking. The necessity to surrender a certain amount of money to receive higher returns at a later stage is an unfamiliar concept to them.

In conclusion, because of their government dependency and the need to secure quick profits, the small-scale farmer does not necessarily make the "best" business decisions. He neglects to look for profitable other alternatives. An explanation for this type of behavior is their lack of self-control. In section 4.2 was explained that great revenue spikes (such as after selling the harvest), the farmer is tempted to spend a considerate amount of money and not necessarily on business expenditures. This can explain why farmers in Grabouw lack agriculture inputs. High risks (e.g. theft and weather extremities) can explain why the farmers choose to sell their produce as soon as possible: the farmer prefers a lower but secure profit over a probable higher profit. A third explanation is lacking knowledge. Though farmers realize they can make higher profits selling at formal markets, they do not know how to realize it. Additionally, farmers could be taught about the importance of business savings. Poverty is a fourth explanation: farmers experience income spikes as only 2 to 3 times a year their harvest is sold. If the farmer has a desperate need to feed his family, pay off debts or satisfy an addiction, the farmer might choose a quick low profit over a slow but higher profit.

## 7.4 Procrastination

*"Can we meet two hours later? And can we meet in another location?" (A farmer changed the place and time one hour before the initial interview would take place. The new location turned out to be a church).*

Small-scale farmers In Grabouw show signals of procrastination. The first signal was observed during the planning of interviews with small-scale farmers. It happened in at least 50% of the cases that a farmer turned up at least an hour later than planned at the interview location. Moreover, in three cases the interview was postponed by the farmer to a later time, without mentioning clear reasons. Additionally, it was also necessary to confirm the occurring interview at a later occasion (mostly a couple hours before the interview took place), because the interviewee would easily forget about the meeting. Such behavior can for instance, also harm traders who value consistency in a their agreements (e.g. delivering the products on time)

Another effect was noticed during a site- visit on a small-scale farm after it had rained almost non-stop for six days. The rain had destroyed a great part of the harvest and standing water covered at

least a third of the farm. A trainer, who was also present during this site- visit, mentioned that the destruction could have been prevented by digging a gully and/ or building a dam. A fair assumption is that the farmer procrastinated and refused to work in the rain. However, an alternative is that the farmer lacked knowledge how to properly ward his farm against heavy rainfall.

A third effect was observed on a small-scale farm which was owned by a small community of Xhosa speaking women. A small plot (~$2m_2$) of vegetables (possibly cabbage) had gone to decay due to over ripening. An agriculture trainer, who was present during that time, mentioned that the vegetables should have been harvested three weeks ago.

These examples show that farmers are prone to the procrastination effect in which farmers prefer to act tomorrow, rather than today. However, in section 4.2 was also mentioned that procrastination effects are small in small scale businesses due to their motivated employees. This is also a fair assumption, as all small-scale farms in Grabouw are either family or friend owned businesses. Subsequently, the production output of the small-scale farm has a direct effect on the income of its employees.

In conclusion, small-scale farmers in Grabouw show several sigs of procrastination, even though they have high incentives not to procrastinate. To which extent procrastination effects harm their businesses could be a viable future research subject.

## 7.5 Other behavioral factors

There are other behavior-related factors which influence the decisions and actions made by small-scale farmers. For instance, a trainer experienced a case when a small-scale farmer made a weak business because he was shy and easily intimated: a local business owner was interested into buying the business of a small-scale farmer. The small-scale farm made decent profits its future prospect looked promising. The business owner offered to buy the farm far beneath its true value and the farmer accepted the deal. According to a trainer, the small-scale farmer was shy and intimidated and therefore subdued into taking the deal. Additionally, the farmer did not realize the value of his farm. From the farmer's point of view, it looked like a huge sum of money was offered: something he had never seen before in his entire life. Another behavior factor is a culture bias: The Afrikaans speaking farmers strictly trade and network with other Afrikaans speakers. Xhosa speakers only trade with other Xhosa speakers. The culture bias therefore limits their trade options

## 7.6 Summary

Chapter 7 discussed to which extent behavior factors influence decisions and actions made by small-scale farmers. Various effects were discussed, though the impact on the amount of production and the quality were the most common and concurring consequences at every subchapter. Other mentioned effects mentioned were: limited trade possibilities due to language barriers or illiteracy, increased negative effect from weather extremities and inconsistency towards agreements due to procrastination. Additionally, the future growth and possibly sustainability of the farms are harmed due to a lacking "entrepreneurial attitude".

The following table provides a summary of all behavior obstacles and its conclusions:

| Behavior/ educational obstacle | Target group | Conclusion |
|---|---|---|
| Transferring knowledge | All small-scale farmers in Grabouw | Information transferal is slow and/or has minimal effect. . Has negative effects on the production output and quality. |
| Not comprehending the English and/ or Afrikaans language | All Xhosa speaking farmers (~10-20% of the farmers in Grabouw | Entering new (formal) markets, reliant on translators and others regarding e.g. business contracts, administrative and jurisdictional procedures. |
| Illiteracy | Approximately 50% of the small-scale farmers in Grabouw | Entering new (formal) markets, reliant on others regarding e.g. business contracts, administrative and jurisdictional procedures. |
| Entrepreneurship attitude | All small-scale farmers in Grabouw | Weakened business decisions decreases profit and growth potential of the farm |
| Procrastination | All small-scale farmers in Grabouw | Weakened business decisions negatively influence profits gained |

# 8. Marketing influences on small-scale farmers

Section 4.1 discussed that small-scale farmers encounter high transaction costs when products are sold on formal markets. For farmers in Grabouw this is no exception: The transport costs per unit are higher than their competition, market knowledge is lacking and their transaction methods are inefficient. The upcoming chapter discusses to which extent these factors influence small-scale farmers and their connection to the Cape Town Market.

## 8.1 Transport costs

*"We transport our money vegetables to the Cape Town Market and earn a lot of but we also lose a lot" (quoted by a representative of a small-scale farming community)*

For small-scale vegetable farmers in Grabouw the nearest (accessible) formal market is The Cape Town Market, which is located about 70 km from Grabouw. The connecting roads mainly consist of a highway (N2). Though these roads are arguably suitable for transport, small-scale farmers in Grabouw prefer to sell products at their own created markets. The high transport costs are a major reason: small-scale farmers often do not own transport vehicles and patrol is expensive. Additionally, the quantity produced is too low: when farmers choose to transport their produce, the transport costs often exceeds the profit gained from selling the products at the Cape Town Market. Cooperative transport with other farmers is solution which could dramatically decrease the transport costs per unit sold.

For small-scale production, the pickup truck is a popular transportation vehicle. On the Cape Town Market, the vehicle is used by several small-scale farmers and hawkers. Pick-up trucks or "bakes" are rented out by several companies nearby Grabouw. The car rental company Avisvanrental, displays that the cheapest pickup van, a half ton Utility Van can be rented at a price of ZAR 433 (€ 29,91) per day. (patrol and insurance included) (Avisvanrental, 2014).

*Figure 7.1. A pick-up truck; or as South Africans call it: "a bakkie".This vehicle was used by 3 small-scale farmers to transport cabbage.*

*Figure 7.2. A "bakkie", the Toyota Hillux 1 ton open petrol*

Assumed is that the maximal total carrot harvest of 487 KG can be transported by this van. If two small-scale farmers are able to combine their transport, the Toyota Hillux is the cheapest alternative, which rent is ZAR 588. Obviously, to transport larger quantities, largers vehicles are required.

However, the transport costs per unit decline and will yield a higher revenue per farmer. The table below shows the costs and the revenues of combined transport.

| Number of Farmers | Total production weight | (Combined) Transport costs | Revenue per farmer |
|---|---|---|---|
| 1 | 487 KG | ZAR 433 | ZAR 542 |
| 2 | 975 KG | ZAR 588 | ZAR 681 |
| 3 | 1462 KG | ZAR 941 | ZAR 661,33 |
| 4 | 1950 KG | ZAR 1099 | ZAR 700,25 |
| 5 | 2467 KG | ZAR 1099 | ZAR 755,20 |
| 6 | 2925 KG | ZAR 1099 | ZAR 791,83 |
| 7 | 3412 KG | ZAR 1409 | ZAR 773,71 |
| 10 | 4875 KG | ZAR 1409 | ZAR 834,10 |
| 11 | 5357 KG | ZAR 1534 | ZAR 835,55 |
| 16 | 7800 KG | ZAR 1534 | ZAR 879,12 |

When a total production of 5000 KG is accomplished (combined produce of 11 small-scale farmers) the transport costs stabilize. At a total production of 16 small-scale farmers the transport costs are the lowest per unit.

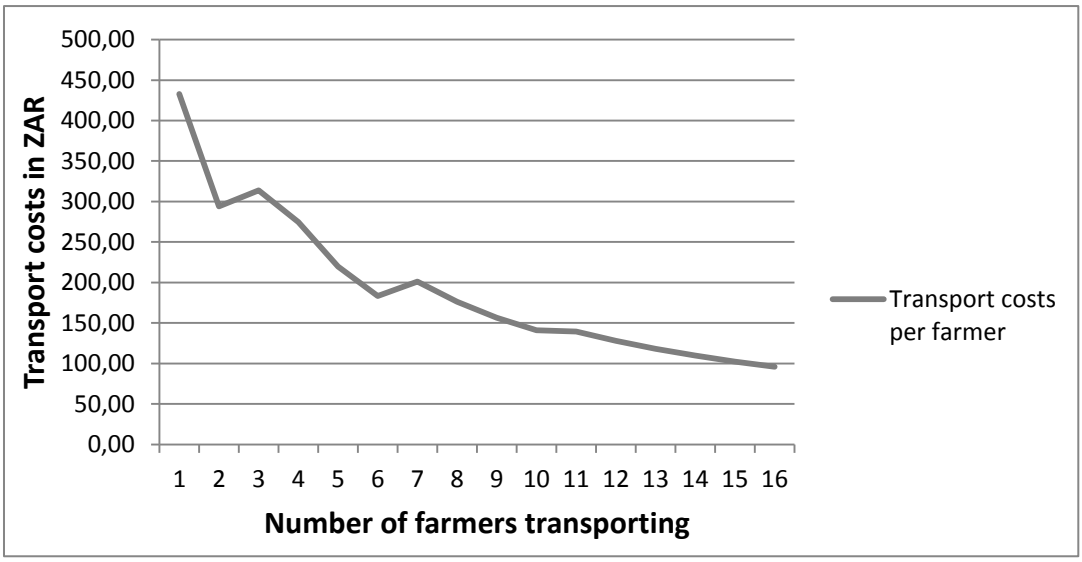


*Figure 7.3. Transport costs decline when farmers combine their transport*

The graph shows that transport costs are strongly declining first and stabilizing slowly when farmers are transporting in cooperation. In practice there might be cheaper methods to obtain transport vehicles. Possibly through using the vehicles from other farmers, family or friends. Perhaps cars could be rented for more favorable terms (e.g. renting for only half a day or a few hours instead of a whole day) could be possible.

According to trainers of small-scale farmers at the Elgin Learning Foundation, profits can roughly be doubled on the Cape Town Market in comparison to selling on informal markets in Grabouw. To determine which of these markets is the most profitable option, the following equation is suggested:

$P1 - P2 \geq TTC/Q$

*Where P1 = Epping market price*
*P2 = local market price*
*TTC = total transport costs*
*Q = quantity of products/carrots sold*

By assuming that farmers will receive ZAR1 per bunched carrot on the Epping market (figure 5.1), the breakeven point is reached at a quantity of 866 bunched carrots. When a single farmer accomplishes a maximum production of 975 bunched carrots on 100 m2 land, as discussed in section 6.1, it is hardly rewarding to sell his products at the Cape Town Market rather than on local markets in Grabouw. When also the production challenges (chapter 6) are taken into account which devaluate the maximum production, the transport costs per unit sold will increase and the farmers realize higher profits on informal markets in Grabouw. Additionally, small-scale farmers are habited to self-consume (undefined) parts of their harvest.

As established in section 6.3, farmers greatly lack money for investments and inputs. Logically, it can be concluded that farmers have troubles to pay for transport costs (before acquiring the profit).

In conclusion, it is hardly rewarding for a single farmer to sell his produce on the Cape Town Market as the transport costs will degenerate the profit gained on this market. It is understandable, that when also the production challenges, mentioned in chapter 6 are taken into account, that a single farmer prefers to sell his products on informal markets in Grabouw. However, when multiple farmers are willing and able to combine transport, selling on the Cape Town Market becomes very profitable. Additionally, as described in chapter 5, there are small-scale famers who already implemented this idea. However, they originate from other regions and might therefore encounter lower transport costs.

## 8.2 Marketing knowledge

*Farmers can easily double their profits (Quoted by an agriculture trainer).*

As mentioned before, Small-scale farmers in Grabouw prefer to sell their products on informal markets in Grabouw. Formal markets such as the Cape Town Market are avoided. The upcoming paragraph will discuss to which extent lacking marketing knowledge is a determining factor towards their distribution preferences.

*Distribution*

As discussed in section 4.1, the markets in South Africa have evolved and Small-scale farmers have not yet adapted. Small-scale farmers do not understand why their produce cannot be sold by simply "*knocking on the door of the supermarket*". This was quoted by an agriculture trainer who experienced that small-scale farmers do not understand that the way they wish to sell their products can be unrealistic. Otherwise, small-scale farmers are unaware of realistic market connection opportunities, such as the Cape Town Market. The latter is however changing. Currently, trainers of small-scale farmers inform farmers about realistic distribution possibilities.

Small-scale farmers also lack knowledge about distribution processes; especially about activities that successful farmers (e.g. commercial farmers) undertake to distribute their products. Examples are:

value chain information, market demands and business methods (see section 8.3). Administrative barriers such as product traceability and company registration also hinder small-scale farmers from entering existing markets. For instance, all small-scale farmers have difficulties registering their company into the Companies and Intellectual Property Registration Office (CIPC) which is necessary to for instance, acquire a tax number. These difficulties are likely to exist due to missing knowledge. Fortunately, trainers are able to assist small-scale farmers regarding these administration procedures.

An opportunity involves undertaking value added activities for farmers who aspire to sell their products at the Cape Town Market. Consumers at businesses at the market require their products to be packed and graded before goods exchange ownership. It is especially beneficial for small-scale farmers, as they are time-abundant and these activities impose little extra costs.

Another possible opportunity for small-scale farmers, mentioned in section 4.2, involves the production of organic vegetables. Technically, all small-scale farmers already produce (exclusively) organic products. However, the farmers lack knowledge towards about these possibilities and do not know how about distribution possibilities. In addition, certificates need to be acquired for which the farmer need organizational assistance and financial capital.

*Price knowledge*

Farmers are not always aware of the prices they could get when their products are sold on different markets. In consequence, the products are often sold for prices (far) beneath the market value. An example is a carrot producing farmer. He usually sold his carrots to a local shop for ZAR 1 apiece. However, when an agriculture trainer confronted him and told him that he could earn twice the price at the Cape Town Market, the famer stated his unawareness. In addition, small-scale farmers are possibly not aware why prices fluctuate. Mainly the concept of supply and demand is unfamiliar to them. An example is a small-scale farmer who purchased cabbage on The Cape Town Market to feed his livestock. The price of cabbage had recently gone up which truly inconvenienced him. The farmer quoted: *“If the white man is in a bad mood I need to pay more”.*

Opportunistic behavior from traders, mentioned in section 4.1, can influence the transaction details for uninformed small-scale farmers. Farmers in Grabouw are easily subjected to it because of lacking knowledge. On the informal markets in Grabouw, it is therefore very well possible that farmers are being cheated out of profits. However, opportunistic behavior should not be common on the Cape Town Market, as the established prices on this market are based on supply and demand and are published (daily). Because these prices are transparent, cheating (new) suppliers will be difficult.

Lacking marketing knowledge influences the farmer in his decision whether he should distribute to formal or informal markets. Missing knowledge about existing markets and transactions (e.g. distribution processes, business methods and contracting) creates extra obstacles to connect with the Cape Town Market. This makes selling the production to local shops and/ or neighbors more attractive. In addition, the lacking of (continued) price information takes away the ability to choose the most attractive distribution opportunity which influences their profits made. For instance, if the prices on the Cape Town Market are not favorable, the farmer can choose to distribute his products via other channels, such as hawkers or informal markets.

## 8.3 Transaction methods

*"If customers want to buy something, they can come to me when I am working on my farm" (Quoted by a small-scale farmer who explained the method which he uses to sell his vegetables to customers).*

The current used transaction methods of small-scale farmers are traditional. Instruments such as e-mail and telephone are not utilized and almost each transaction is unique, as the transaction details differ at almost every agreement. Small-scale farmers lose time and money by continuously negotiating with buyers. These inefficient transactions take place on three different locations:

1. On-farm
2. Self-established markets
3. Local shops

When products are bought on-farm, the buyer approaches the farmer when he is laboring on his farm. The transaction will take place on the same location. Buyers are mostly consumers and it is no exception that the price for every vegetable is negotiated. Small-scale farmers do not or minimally maintain long-term price and quantity agreements with their buyers. Consequently, product prices are never fixed and negotiating is a necessary continuity.

On the self-established market, the farmer installs himself at a certain location, mostly nearby his home and displays his products. Similarly to on-farm selling, buyers will approach the farmer and negotiate about the transaction details. The vegetables are usually sold to surrounding households.

When products are sold to local shops, the farmer will approach the shop owner and offers to sell his products. Similarly to on-farm selling and selling on self-created markets, the transaction details are negotiated at every transaction. However, the time spend on the transaction is less. Due to on-going relationships, previous applied transaction details can be re-enforced. Additionally, a higher quantity of vegetables can be sold in comparison to the other market locations. A small-scale farmer explained that a local shop owner was willing to buy any vegetable he offers (as long as the price is right).

On the Cape Town Market, an inexhaustible quantity of vegetables can be supplied. The prices are established by supply and demand and change once or twice a day. Because the prices are established publically, time will be saved on negotiating. Moreover, the details of the transaction (vegetables are supplied in boxes and pre-graded) are identical at each transaction. Suppliers can receive discounts when a certain quantity is met. However, the exact quantity is unknown as it differs per transaction and different sales companies maintain different discounts. It is however, unlikely that individual farmers are eligible to receive a discount when their maximum produce is sold. This possibly changes when farmers decide to cooperate.

In conclusion, contract costs can be reduced when products are sold on the Cape Town Market. However, it is likely that opportunity costs remain constant when the products are sold on this market: most small-scale farmers are unemployed or retired and therefore the benefits of the time saved on contracting will not be gained elsewhere.

## 8.4 Summary

Chapter 8 discussed to which extent marketing factors are a determining factor whether the farmer is willing and able to sell his production on the Cape Town Market. Three subjects were discussed: transportation costs, marketing knowledge and market techniques.

The transport costs to the Cape Town Market are high. In spite of gaining double profits at the Cape Town Market in comparison to informal markets, the farmer will lose a significant amount to transportation costs. Consequently, almost all of the additional profit gained at a distanced market will be lost. Combined transport with other farmers is a possible alternative which can be lucrative, as this lowers the transport costs per unit produced.

Lacking marketing knowledge, mainly towards distribution, price and market knowledge is a major barrier for small-scale farmers who aspire to sell at the Cape Town Market. The lacking knowledge also disadvantages farmers who sell their products on informal market, as they are more prone to opportunistic behavior.

The current used transaction methods by small-scale farmers are traditional and inefficient. However, time is abundant and because small-scale vegetable farmers in Grabouw are either unemployed or retired, the benefits that will be gained from applying other techniques will be minimal.

The following table displays a summary regarding marketing and its obstacles:

| **Marketing obstacle** | **Target group** | **Conclusion** |
|---|---|---|
| Transport costs | Farmers who transport to the Cape Town Market | The transport costs per unit produced are high. The costs can be lowered when multiple farmers combine transport |
| Marketing knowledge | All small-scale farmers, though a part (unknown number) is currently being educated by trainers. | Weakened education creates an entry barrier for the Cape Town Market and can also negatively affect the profits earned |
| Transaction Methods | All small-scale farmers | Farmers lose time by conducting inefficient transaction methods. However, it has a minimal effect on their profits gained. |
| Opportunistic behavior from traders | All small-scale farmers | Farmers can be cheated into accepting unfavorable transaction details. Opportunistic behavior is minimal on the Cape Town Market. |

.

# 9. A case study comparison

So far, the case of enhancing market access for small-scale farmers in Grabouw has been discussed and possibilities were explored to distribute their products to the market. The relatively low barrier Cape Town Market was exemplified due to its high level of accessibility. The upcoming paragraph will take a different approach and compare the case of small-scale farmers in Grabouw with a review of relevant and recent literature. A comparison will be made between the case study conducted in this thesis and several studies carried out by Van Schalkwyk et al. (2012). The relevance and trends in these studies will be discussed briefly. Subsequently, the presented recommendations in the literature are discussed and compared with the findings in this thesis. Conclusively, it will be explored (the question is raised) why many small-scale farmers have not connected to formal markets yet, which main obstacles they are facing, and what can be done about it.

## 9.1 Relevance

In "Unlocking markets for smallholders", Van Schalkwyk et al. (2012) explore opportunities to integrate small-scale farmers in South Africa into the national and international markets. They explore to which extent (institutional) reforms are necessary to enhance their effective and profitable participation in the regional economy. Additionally, opportunities to alleviate poverty and increasing socio-economic sustainability are discussed (Van Schalkwyk et al., 2012).

The authors base their information on a large range of existing literature and on two self-conducted studies.Their findings are combined into one book which ultimately imposes several recommendations. Each chapter in the book discusses a different topic in which one or a combination of the involved authors presented their findings.

The research conducted for this thesis is comparable to the study/studies carried out by (Van Schalkwyk et al., 2012). Comparably to "unlocking markets to smallholders", the market access constraints for small-scale farmers had been investigated. Therefore, the work by (Van Schalkwyk et al., 2012) forms a relevant source of comparison for the findings presented in this thesis. Additionally, "unlocking market to smallholders" is relevant literature because of complementary characteristics to this thesis. In both cases, the research was involved around resource poor farmers who mainly produced for informal markets. Moreover, the research did not focus on a specific crop, but took a general approach regarding production. Additionally, the research for this thesis could be viewed as a possible contribution to the findings and recommendations by (Van Schalkwyk et al., 2012). It explores constraints which are minimally explored in "unlocking markets to smallholders" (e.g. theft and animal intrusion). Other constraints are discussed in arguably higher detail; e.g. about the relevance of the explored constraints.

However, "unlocking markets to smallholders" is nationally focused, unlike this research and its operational scale was considerably larger, as it involves many aspects (e.g. historical aspects, supply chain governance) which have not been discussed in this research.

## 9.2 Literature discussion

To improve market access for small-scale farmers, the authors have stated the following recommendations:

1. Encourage need-driven empowerment and support of smallholders
2. Improve good agricultural practices and product quality
3. Encourage access to land, farm inputs, technical information, microfinance, means of transport
4. Encourage collective action of smallholders
5. Encourage value adding activities
6. Stimulate a safe operational environment
7. Encourage market transparency
8. Improve product traceability
9. Counteract monopsonistic situations
10. Encourage vertical coordination in the supply chain
11. Be pro-active with respect to developments in the retail sector regarding inclusion and exclusion of smallholders
12. Encourage investments in the rural infrastructure including markets for land, inputs, finance and outputs
13. Form a multi-institutional task force to improve market access in each agribusiness sector. (Van Schalkwyk et al., 2012).

For each recommendation, different stakeholders are involved, ranging from small-scale farmers, organizations of small-scale farmers, NGO's, and governmental organizations. A general comment on these recommendations is that they lack in details For instance, the authors mention that collective actions of smallholders should be encouraged. However, not much information is provided about the type of collective actions. Additionally, no information is submitted about possible obstacles which could be encountered (e.g. free-riding).

**(Van Schalkwyk et al., 2012) compared to prior research**

When these recommendations given above are viewed as possible ways to address the market access obstacles for small-scale farmers as discussed in chapter 4, several strong and weak points can be identified. Generally, the presented recommendations by (Van Schalkwyk et al., 2012) are highly relevant as they manage to address the problems described in chapter 4 and the background information. Subsequently, they present opportunities to counter these obstacles. For instance, in the background information was mentioned that farmers have poor access to information and therefore lack knowledge. (Van Schalkwyk et al., 2012)discuss that need-driven empowerment for small-scale farmers need to be supported. Moreover chapter 4 mentioned that small-scale farmers have difficulties to acquire capital. (Van Schalkwyk et al., 2012) discuss that stakeholders should encourage access to microfinance and farm inputs. Also, to gain increased access to formal markets, the authors suggest policy changes on existing markets such as encouraging market transparency.

Though the authors conducted abundance of research through both existing literature and two fieldwork studies, new, innovate and detailed solutions to the market connection obstacles for small-scale farmers are lacking. For example, the authors suggest to encourage collective actions of smallholders, though details about the type of actions are not included. Another example is to

improve good agriculture practices and improve product quality. However, the readers are left to their own imagination about the implication.

Additionally, the authors tend to focus around information on “obstacles” of market access. Little information can be found on how scale advantages can be utilized to increase market access Advantages such as cheap manpower can be utilized to perform labor-intensive practices such as intercropping and organic farming. Though the authors mention that value adding activities should be encouraged, no concrete information is provided about the type of value added activities. Instead, the authors provide examples about activities that could be considered.

**(Van Schalkwyk et al., 2012) compared to this research**

The information discussed in this research is compared by the recommendations of (Van Schalkwyk et al., 2012). Similarities in conclusions are discussed, as well as additional information and possible obstacles when the recommendation is implemented. Each recommendation (or two at the same time) will be discussed separately. The recommendations about macro-economic policy (11.12 and 13) are not discussed, as they are not within the scope of this research.

1. *Encourage need-driven empowerment and support of smallholders and*
2. *Improve good agricultural practices and product quality*

The authors state that smallholders should be offered vocational training to maximize their labor efforts. Details about the content of the trainings and how the information should be transferred (classroom teachings, personal training, personal assistance etcetera) and expected outcome of these need-driven empowerment and support of smallholders is not discussed in detail.

An agriculture labor program will benefit the small-scale farmers in Grabouw. As discussed in section 6.3, farmers do not comprehend basic agriculture (e.g. proper soil use and cleaning the farm land). The mentioned recommendation is therefore a logical consequence. A successful implementation of this recommendation results in an increased production and higher quality vegetables.

These training sessions will not naturally lead to significant changes towards farm efficiency, as small-scale farmers are resource poor and not able to invest. For instance, farmers that are taught how to apply fertilizer still might not be able to purchase fertilizer. Moreover, occurring income shocks as a result of weather extremities and/ or farm intrusion (theft and visiting animals) also dissuades farmers from investing. Additionally, behavior effects such as a lacking entrepreneur attitude and/ or procrastination influence if farmers are willing to invest.

Unfortunately, the authors did not take into account that government and NGO’s are currently training small-scale farmers. Since 2008 (or earlier), agriculture courses were offered by the Elgin Learning Foundation to train upcoming farmers the basics of farming. Therefore this recommendation is no valuable addition to South African policy makers and training organizations, as the recommendation itself provides little details about implementation.

Since 2008, Trainers in Grabouw have experienced difficulties in training the small-scale farmers. Information transferal fails or is slow. Trainers experience communication failures, as farmers are difficult to convince to adapt their currently applied farming methods. An explanation is the large difference regarding agricultural experience and the large age gap between the young trainers and

the significantly older farmers. It is understandable that a multiple decennia experienced farmer would be difficult to convince by someone who has little to no practical farming experience. Other obstacles regarding information transferal have occurred, such as a language barrier: as a small part of the population of Grabouw (10-20%) is not able to understand the teachers because the English and/or Afrikaans language is not comprehended. Other difficulties are lacking elementary skills, such as mathematics and illiteracy, which makes it difficult for small-scale farmers to understand class-room teachings.

3. *Encourage access to land, farm inputs, technical information, microfinance, means of transport*

To encourage access to land, farm inputs, technical information, microfinance and means of transport, the authors argue that markets need to operate properly. Institutions should take Initiative should take initiate, coordinate and monitor activities. The authors however, do not mention how the markets can operate (more) properly. Additionally, details about the initiatives and activities are lacking.

Institutes already are and will face difficulties to implement these ideas. Firstly there is a land issue. In September 2013 in Grabouw, the government was dividing limited plots of land (about 100 m2 per plot) to a selective group of small-scale farmers. However, land is very scarce which makes it an expensive project. Additionally, as discussed in section 8.1, a plot of 80-100 m2 yields a limited produce, which results in a high cost per unit produced if the products are transported to the formal market (Cape Town Market). Therefore, even though the government assists farmers in dividing these lands, farmers in Grabouw are likely to continue to sell their products on informal markets, because higher profits will be obtained. Obviously, projects can differ in other regions in South Africa, as land is cheaper. If similar budgets are available to local institutions in these regions, larger plots of land can be acquired.

Secondly, there are issues towards gaining an increased level of access to financial capital and (governmental) intervention is required. As discussed in this thesis, small-scale farmers are unable to acquire loans. Local banks demand collateral in exchange which small-scale farmers do not have, as their average land plots do not suffice. Private funding is therefore not possible, unless government interference takes place. Microfinance is a viable option, though further research is required. It also be mentioned that appropriate financial assistance does not necessarily benefit the farming businesses. For instance, small scale farmers are habited to spend their earned money directly and save little. Moreover, Small-scale farmers do not possess the knowledge to transform their current farm into a lucrative business and need to be educated. Similarly, small-scale farmers lack access to (technical) information, although governmental organizations and NGO's are currently educating small-scale farmers.

4. *Encourage collective action of smallholders*

The authors mention that collective actions of smallholders need to be promoted. This thesis does not discuss the collective action aspect, excluding section 8.1. It discussed that combined transport greatly increases the profits earned.

5. *Encourage value adding activities*

The authors mentioned that value adding activities can be encouraged by smallholders. A couple examples are provided, such as packaging, cutting and drying.

This research discussed repeatedly that small-scale farmers do not produce the highest value added products. Moreover, innovative techniques (e.g. intercropping, hydroponic farming are not adopted. It is therefore an opportunity for these farmers to adapt. However, small-scale farmers will encounter difficulties to change and/ or are unwilling. Firstly, their lacking (agriculture) knowledge is an obstacle, as different product cultivation requires different agriculture knowledge. Secondly, food security determines the product choice: Due to their low income level, a great part of the farmers' produce is self-consumed. Therefore, farmers prefer to cultivate nutritious product. Thirdly, the benefits need to exceed the costs. Intercropping (section 6.3) for example, requires, education, experience (A learning curve decreases the chance for the first few harvests not yield the maximum produce) and increased labor time. Other produce enhancing methods, such as hydroponic farming are not suitable to be adopted because of lacking financial capital.

Additional activities such as packing and grading vegetables are necessary if the farmer aims to trade at the Epping Market, because ungraded and unpacked vegetables are not accepted on this market. However, if the farmers continue to sell their products on informal markets, these additional activities have no added value as these consumers make less demands. These additional activities are therefore not worth the effort.

6. *Stimulate a safe operational environment*

The authors mention that adapted insurance service on health and theft disasters improve the safety of the operational environment.

This research strictly discussed risks which were caused by theft, intruding animals and weather extremities. Health related disasters were not discussed. Theft and intruding animals are a major problem for small-scale farmers, especially for those who do not live within viewing distance of their farm and therefore cannot protect the harvest. Weather extremities are also frequent in Grabouw and can destroy large parts of the harvest. Insurance against these risks is possible, though the frequent occurrences of these risks will enforce high risk premiums. The frequency of these occurrences can lowered, though financial capital is required. To discourage theft and protect against vegetable grazing and trampling animals, property security (e.g. fences) is an opportunity. For protection against weather extremities (e.g. dam building and gully digging), small-scale farmers require education.

7. *Encourage market transparency and*
8. *Improve product traceability*

The authors discuss that transparency of markets need to be improved and markets need to be freely accessible.

The Cape Town Market can be freely accessed for small-scale farmers in Grabouw, discussed in chapter 5, functions as an auction house, storage facility and offers additional services such as traceability and theft protection. Prices are transparent on the Cape Town Market, as these are published twice a day. Roughly, this market meets the recommendations suggested by the authors. However, no similar alternative market is closer distanced for small-scale farmers in Grabouw.

*9. Counteract monopsonistic situations*

Farmers (or their organizations) need to counteract monopsonistic situations.

Again, this recommendation is less relevant for small-scale farmers in Grabouw. On informal markets in Grabouw, monopsonistic situations occur, as well as opportunistic behavior (section 7.4). However, on the Cape Town Market these situations should not occur (much), as the prices are transparent and the sales companies enforce similar fees (section 5.3).

*10. Encourage vertical coordination in the supply chain*

Joint actions of both farmers and supply chain members are required.

The size of supply chains for mall-scale farmers in Grabouw are small, as products are sold directly to consumers on informal markets. Alternatively, products are sold to local shops or hawkers, who sequentially sell to consumers. Large scale farms engage in different types of value chains: products are directly sold to supermarkets. Alternatively, products are sold on the Cape Town Markets or over-sea traders. As discussed before, it is unrealistic for farmers to supply to other retailers, such as supermarkets, due their quantity, quality and consistency demands. The Cape Town Market, however, does not enforce such demands.

## 9.3 Conclusion

By comparing (Van Schalkwyk et al., 2012) and this research, many market connection constraint topics overlapped, such lacking financial capital, inability to connect to existing value chains and lacking (market) information. Additionally, the following overlapping conclusions occurred: encouragement of value added activities, encourage need-driven empowerment and support of small-scale farmers and encourage collective actions of smallholders (combined transport).

However, differences also occurred. The authors have taken a daring approach to project their findings on specific areas for the whole country, even though large differences between areas exist (e.g. regarding land prices, economic activity, cultures and infrastructure). Consequently, differences between the recommendations of the book and this research are also common, especially regarding the meso-economic information about markets and value chains. Additionally, this research provides less information and also few recommendations, though proves a higher detailed description about the implementation of the recommendations. Additionally, this researches focuses also on benefiting from opportunities for small-scale farmers (e.g. intensive scale farming), rather than focusing exclusively on constraints.

(Van Schalkwyk et al., 2012) managed to publish literature which provides a very strong introduction to the topic of market access constraints for small-scale farmers. Especially for students and others who are interested about the subject, the book is very informative. Abundant information is provided about many ongoing issues for farmers regarding market access. However, the book is less suitable for policy makers, as the suggested recommendations lack new and innovate ideas (perhaps due to its extensive scale). Details how to carry out the policy implementations are also lacking. Additionally, the book failed to capture information about newly established polies. For instance, the authors suggested need-driven support for small-scale farmers, while government and NGO employees were already implementing it.

# 10. Discussion

The Cape Town Market is an open market with low entry barriers. Delivery demands regarding quantity, quality, or consistency are minimal. Furthermore, the market provides services to convenience its suppliers, such as transparency in prices, storage and traceability convenience. Though these benefits are gained when producers sell at the Cape Town Market, small-scale farmers in Grabouw minimally supply to this market and tend to sell their produce on informal markets instead. Therefore, the following question arose:

"***Which factors constrain aspiring small-scale vegetable farmers in Grabouw, South Africa from selling their products on the Cape Town Market?***"

This research concluded that additional profit gained are the Cape Town Market in comparison to informal markets, are greatly diminished by the high transport cost. Limited production output is a major cause. Small-scale farmers in Grabouw lack available land, but also lack agriculture knowledge and investments which negatively affect their productivity. Additionally, risks such as theft, animal intrusion and weather extremity which are also common in Grabouw, devaluate the total production and its quality. Additionally, farmers greatly lack money for investments (and inputs), which also indicates that paying for transport costs (before acquiring the profit) is troublesome.

During recent years, trainers from (local) NGO's and governmental organizations are educating small-scale farmers into increasing their productivity. However, transferring their knowledge proves difficult. Factors such as language differences and illiteracy complicates the communication between trainer and farmer. Farmers also show signs of procrastination and show little insight how to successfully manage their farm. These factors all negatively influence the total production and its quality.

A second explanation is limited trade opportunities. For Xhosa speaking farmers, trade obstacles are created due to language differences with traders on the Cape Town Market. Additionally, the information published on the Market is exclusively in English, which makes them dependent on translators. The latter also burdens illiterate farmers. Different farming purposes is another explanation. While all farmers recognize their need for Self-sufficiency, the percentage harvest sold between the farmers greatly differs. For farmers who self-consume larges parts of the harvest and sell the leftovers, supplying this surplus to the Cape Town Market is likely not worth the efforts. A quick profit is a fourth explanation. Farmers are motivated to sell their harvest quickly as theft risk will be decreased. Additionally, organization of transport, as well as trading, packing and grading the produce is avoided by selling on informal markets in Grabouw. Possibly farmers also lack self-control and are habited to earn a quick income and spend it fast as well.

To overcome these obstacles, combined transport is suggested, in which the transport costs per unit dramatically decrease. Moreover, by selling on the Cape Town Market, transparency towards prices is provided which protects against opportunistic behavior from traders. Additionally, value added activities such as packing and grading vegetables, which are a requirement to sell on the Cape Town Market, require little costs and are therefore a valuable side-activity.

By comparing the results from this research with, (Van Schalkwyk et al., 2012) comparable results were obtained regarding the obstacles small-scale farmers encounter. Differences however, occurred in the recommendations. (Van Schalkwyk et al., 2012) suggested vertical coordination in the value chain, counteract monopsonistic situations, encourage transparency and stimulate traceability in markets, this research did not. Integrating in existing value chains, other than the Cape Town Market, will prove extremely difficult due to high demanding retailers. However, farmers in Grabouw can connect to the Cape Town Market, which do not enforce such high demands. Additionally, the market provides (price) transparency, traceability and counteracts monopsonistic situations. The other recommendations are however, suitable to apply for farmers in Grabouw, though lacked in detail about their implementation.

# Reference list


Agriseta. (2014). Agricultural Sector Education Training Authority South Africa. Retrieved Februari 10, 2014, from http://www.agriseta.co.za/Default2.aspx?section=1&page=13

Alden Wily, L. (2010). Whose land are you giving away, Mr. President? *Paper Presented at the Annual Bank Conference on Land Policy and Administration, April 26 and 27, 2010, Washington, DC.*

Almanac. (2014). Carrots. Retrieved 09-09, 2014, from http://www.almanac.com/plant/carrots

Altman, M., Hart, T. G., & Jacobs, P. T. (2009). Household food security status in South Africa. *Agrekon, 48*(4), 345-361.

Antwi, M., & Seahlodi, P. (2011). Marketing Constraints Facing Emerging Small-Scale Pig Farmers in Gauteng Province, South Africa. *Journal of Human Ecology-New Delhi, 36*(1), 37.

ARC. (2014). Hydroponic Vegetable Production. Retrieved 06-09, 2014, from http://www.arc.agric.za/arc-vopi/Pages/Crop%20Science/Hydroponic-Vegetable-Production.aspx

Avisvanrental. (2014). Quote & book. Retrieved 27-06, 2014, from http://www.avisvanrental.co.za/Specials/NeedABakkie.aspx

Banerjee, A. V., & Mullainathan, S. (2008). Limited attention and income distribution. *The American Economic Review*, 489-493.

Biénabe, E., Vermeulen, H., & Bramley, C. (2011). The food "quality turn" in South Africa: An initial exploration of its implications for small-scale farmers' market access. *Agrekon, 50*(1), 36-52.

Brune, L., Giné, X., Goldberg, J., & Yang, D. (2011). Commitments to Save A Field Experiment in Rural Malawi.

Cape Town Market. (2014). Website of the Cape Town Market. Retrieved 14-01, 2014, from http://www.ctmarket.co.za/about-us/

Collier, P. (2008a). The politics of hunger. *Foreign Affairs*.

Collier, P. (2008b). The Politics of Hunger. *Foreign Affairs, November issue*.

Collier, P., & Dercon, S. (2013). African Agriculture in 50Years: Smallholders in a Rapidly Changing World? *World Development*.

Countryfarm. (2014). Growing carrots. Retrieved 27-06, 2014, from http://www.countryfarm-lifestyles.com/growing-carrots.html#.U61QkbEdWcM

Datta, S., & Mullainathan, S. (2014). Behavioral design: A new approach to development policy. *Review of Income and Wealth, 60*(1), 7-35.

Deininger, K., & Byerlee, D. (2012). The rise of large farms in land abundant countries: Do they have a future? *World Development, 40*(4), 701-714.

Duflo, E., Kremer, M., & Robinson, J. (2009). Nudging farmers to use fertilizer: theory and experimental evidence from Kenya: National Bureau of Economic Research.

Ekboir, J. (2002). *Developing no-till packages for small-scale farmers*: International Maize and Wheat Improvement Center.

Elgin Learning Foundation. (2013). Elgin Learning Foundation. Retrieved 07-11, 2013, from http://www.elginlearning.org.za/

Eswaran, M., & Kotwal, A. (1986). Access to capital and agrarian production organization. *Economic Journal, 96*(382), 482-498.

FAO. (2012). Making Small Scale Farming Work in Sub-Saharan Africa

Fayet, L., & Vermeulen, W. J. (2012). Supporting Smallholders to Access Sustainable Supply Chains: Lessons from the Indian Cotton Supply Chain. *Sustainable Development*.

Feder, G. (1985). The relation between farm size and farm productivity: The role of family labor, supervision and credit constraints. *Journal of development economics, 18*(2), 297-313.

Financial and Fiscal Commision. (2013). Background of the Theewaterskloof Municipality.

Financial and Fiscal Commision. (2014). Public Hearings- "Sustainable Financing of Local Government.

Gardenate. (2014). Growing carrot. Retrieved 27-06, 2014, from http://www.gardenate.com/plant/Carrot?zone=23

Hanna, R., Mullainathan, S., & Schwartzstein, J. (2012). Learning through noticing: theory and experimental evidence in farming: National Bureau of Economic Research.

Hazell, P. (2011). Five big questions about five hundred million small farms. *Rome: International Fund for Agricultural Development*.

Jacobs, V. (2009). Development perspective on the Overberg region.

Kirsten, J. F., & Van Zyl, J. (1998). Defining small-scale farmers in the South African context. *Agrekon, 37*(4), 551-562.

Louw, A., Jordaan, D., Ndanga, L., & Kirsten, J. F. (2008). Alternative marketing options for small-scale farmers in the wake of changing agri-food supply chains in South Africa. *Agrekon, 47*(3), 287-308.

Makgetla, N. S. (2010). Synthesis Paper: South Africa. *Unpublished Paper, March*.

Regulations relating to milk and dairy products (1999).

Ministry of Health. (2002). regulations governing general hygiene Requirements for food premises and the transport of food.

Mohamad, N., & Yahya, S. (2010). Exploring succession planning within small family owned businesses. *経営行動科学, 23*(3), 177-191.

Nagayets, O. (2005). Small farms: current status and key trends. *The future of small farms*, 355.

Ncat. (2012). Small-Scale Intensive Farming.

Neto, F. B., Gomes, E. G., de Araújo, R. R., de Oliveira, E. Q., de Sousa Nunes, G. H., Grangeiro, L. C., & da Silveira Borges Azevedo, C. M. (2010). Evaluation of yield advantage indexes in carrot-lettuce intercropping systems. *Interciencia, 35*(1), 59.

O'Laughlin, B., Bernstein, H., Cousins, B., & Peters, P. E. (2013). Introduction: Agrarian change, rural poverty and land reform in South Africa since 1994. *Journal of Agrarian Change, 13*(1), 1-15.

Ortmann, G. F., & King, R. P. (2007). Agricultural cooperatives II: can they facilitate access of small-scale farmers in South Africa to input and product markets? *Agrekon, 46*(2), 219-244.

Pam Golding Properties. (2014). Pam Golding Properties. Retrieved 21-05, 2014, from http://www.pamgolding.co.za/property-search/south-africa/northern-cape/farms/for-sale/2.aspx?locations=2040&sortorder=priceascending&source=advanced-search

Poulton, C., Dorward, A., & Kydd, J. (2010). The future of small farms: New directions for services, institutions, and intermediation. *World Development, 38*(10), 1413-1428.

Pridham, J. C., & Entz, M. H. (2008). Intercropping spring wheat with cereal grains, legumes, and oilseeds fails to improve productivity under organic management. *Agronomy journal, 100*(5), 1436-1442.

Private Property. (2014). Private Property Grabouw. Retrieved 21-05, 2014, from http://www.privateproperty.co.za/grabouw-s752150.htm

Ramírez, R. (2002). The Effectiveness of Small-Scale Agriculture Interventions on Household Food Security:A review of the literature.

Reardon, T., & Berdegue, J. A. (2002). The rapid rise of supermarkets in Latin America: challenges and opportunities for development. *Development Policy Review, 20*(4), 371-388.

Reardon, T., Timmer, C. P., Barrett, C. B., & Berdegué, J. (2003). The rise of supermarkets in Africa, Asia, and Latin America. *American journal of agricultural economics, 85*(5), 1140-1146.

Reardon, T., Timmer, C. P., & Berdegué, J. A. (2005). Supermarket expansion in Latin America and Asia. *New directions in global food markets*.

Schrader, T. (2013). Elgin Valley agro-economy and emerging agribusiness development: support mission to Elgin Learning Foundation.

Simmons, P. (2002). Overview of smallholder contract farming in developing countries. *Rome: FAO*.

South African Agriculture. (2013). from http://www.southafrica.info/business/economy/sectors/agricultural-sector.htm#.UnUGAuJgXDc

SSA. (2013). Social Security Programs Throughout the World: Africa, 2013. Retrieved 21-05, 2014, from http://www.ssa.gov/policy/docs/progdesc/ssptw/2012-2013/africa/south-africa.html

Statistics South Africa. (2011). Statistics South Africa.

Tamrat, I. (2010). *Governance of large scale agricultural investments in Africa: The case of Ethiopia.* Paper presented at the Washington DC: Paper presented at the Annual Bank Conference on Land Policy and Administration.

UNCTAD. (2013). Wake up before it's too late. *Trade and environment*.

Van Schalkwyk, H. D., Fraser, G. C. G., Obi, A., & Van Tilburg, A. (2012). Unlocking markets to smallholders. *Mansholt Series, 10*.

Van Wolfswinkel. (2013). Intercropping of Annual foodcrops.

Vink, N., & Van Rooyen, J. (2009). The economic performance of agriculture in South Africa since 1994: Implications for food security. *Development Planning Division Working Paper Series, 17*, 13.

Weatherspoon, D. D., & Reardon, T. (2003). The rise of supermarkets in Africa: implications for agrifood systems and the rural poor. *Development Policy Review, 21*(3), 333-355.

Western Cape Government. (2011). Theewaterskloof Municipality. from http://www.westerncape.gov.za/text/2008/4/idp_ob_theewaterskloof_2007.pdf