

# **An investigation into farming enterprises under the land redistribution program in the Southern Cape**

A mini-thesis submitted in partial fulfillment of the requirements for the degree of  
Magister Artium in the Institute for Social Development  
University of the Western Cape



Prepared by  
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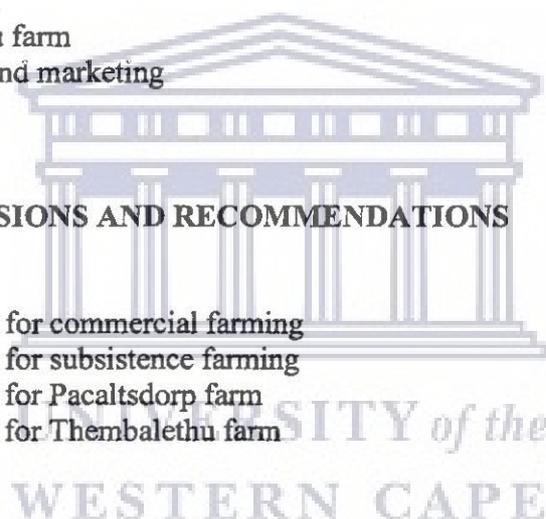
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November 2004

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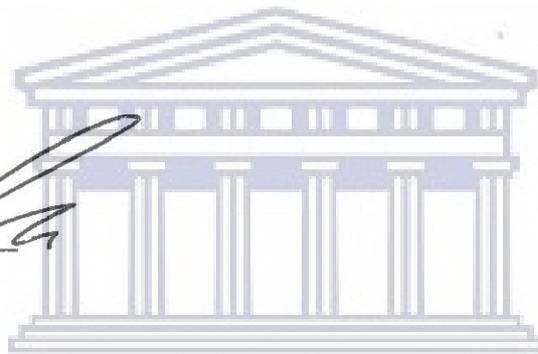


## DECLARATION

I declare that *An investigation into farming enterprises under the land redistribution program in the Southern Cape* is my own work, that it has not been submitted before for any degree or examination in any other university, and that all the sources I have used or quoted have been indicated and acknowledged as complete references.

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## ABSTRACT

### *An investigation into farming enterprises under the land redistribution program in the Southern Cape*

O.M. Okada

In 1994, the first democratically elected South African government promised to redistribute 30 % of white-owned farmland to the formerly disadvantaged people in order to rectify the racially-based unequal distribution of land and to improve their socio-economic conditions. The ANC-led government opted to promote agriculture for achieving the latter aim since agriculture is generally seen to have a strong potential for poverty alleviation and economic development in the under-resourced areas.

However, it is generally pointed out that several obstacles are likely to hinder farming projects under the land redistribution program. These obstacles are the prevailing agro-ecology, the neo-liberal macroeconomic policy and the lack of a coherent post transfer agricultural support policy, appropriate technology for smallholders, quality extension staff, credit access, market access and institutional capacity of the land reform beneficiaries.

This study shows through two case studies that redistribution of land on its own does not lead to the success of farming enterprises. In order for the land redistribution program to develop the agricultural sector and to have a positive impact on poverty alleviation and economic development in rural areas of South Africa, it is essential to provide massive infrastructure, extension services and appropriate strategies and technology to promote different types of farming enterprises.

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## KEY WORDS

*LAND REFORM*

*REDISTRIBUTION*

*AGRICULTURE*

*COMMERCIALIZATION*

*POVERTY*

*HOUSEHOLD*

*FOOD SECURITY*

*SUBSISTENCE*

*VIABILITY*

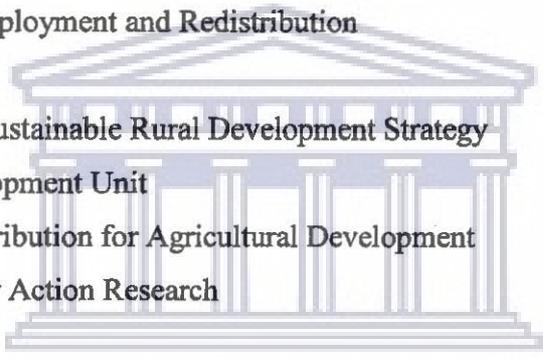
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## LIST OF ABBREVIATIONS

<b>CPA</b>	Communal Property Association
<b>CSIR</b>	Council of Scientific and Industrial Research
<b>DLA</b>	Department of Land Affairs
<b>DoH</b>	Department of Housing
<b>DST</b>	Department of Science and Technology
<b>DoA</b>	Department of Agriculture
<b>FAO</b>	Food and Agriculture Organization of the United Nations
<b>GEAR</b>	Growth, Employment and Redistribution
<b>ha</b>	hectares
<b>ISRDS</b>	Integrated Sustainable Rural Development Strategy
<b>LDU</b>	Land Development Unit
<b>LRAD</b>	Land Redistribution for Agricultural Development
<b>PAR</b>	Participatory Action Research
<b>R</b>	Rand
<b>RDP</b>	Reconstruction and Development Programme
<b>SLAG</b>	Settlement/Land Acquisition Grant

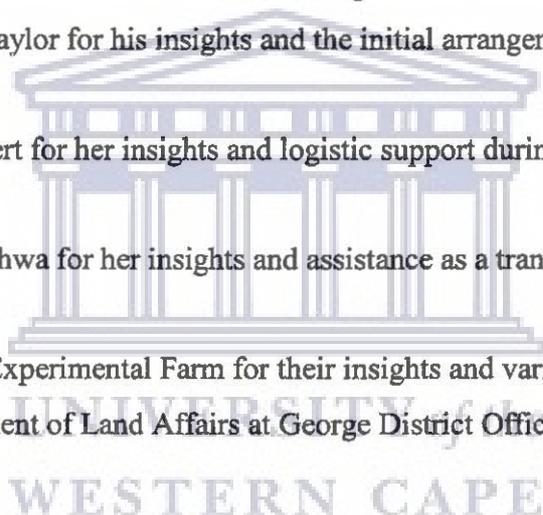


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## CHAPTER 1

### INTRODUCTION

#### 1.1 BACKGROUND

In the mid-1990 slightly more than 50 % of the population of South Africa lived in rural areas, of whom 70.9 % were estimated to be poor. The poverty rate among the African population was 60.7 %, while 1 % of the white population was poor (Statistics South Africa, 1997). The large-scale white commercial farmers settled more than 85 % of the countryside (ISRDS, 2000). This is a result of the racially based discriminatory policies and practices under the colonial and apartheid governments.

It is against this background that the first democratically elected South African government initiated land reform in 1994, in order to deal with political and economic issues. Politically, on the one hand, it aims to modify the highly and racially skewed landholding pattern. Economically, on the other hand, it aims to alleviate poverty and enhance economic development in rural areas in particular through productive use of land.

The land redistribution program supports both subsistence level farming for poverty alleviation and commercial farming for economic development through the establishment of the black commercial farming class. Therefore, the success of the land redistribution program depends on the success of both subsistence and commercial farming enterprises. Failure of these farming enterprises will result in waste of productive assets and tax, leaving the pressing national issues unsolved. This study aims to understand the factors that contribute towards the success of farming enterprises under the land redistribution program.

## **1.2 RESEARCH PROBLEM**

The land redistribution program intends to promote subsistence and commercial farming by distributing land to the formerly disadvantaged people. For these different types of farming enterprise to become successful, their operations need to become efficient. However, appropriate strategies and policies to achieve this have not yet been developed adequately. How these different types of farming enterprises can become efficient and economically viable is the research question that guides this study.

## **1.3 AIMS OF STUDY**

The overriding aim of this study is to understand the factors that contribute towards the success of various farming enterprises under the land redistribution program, which can lead to poverty alleviation and economic development in the under-resourced areas of South Africa. For the purpose of achieving it, the following aims are pursued:

- 1) To investigate the current efficiency and economic viability of farming enterprises under the land redistribution program through two case studies in the Southern Cape region.
- 2) To identify problems and obstacles that inhibit or prevent farming enterprises under the land redistribution program from performing efficiently.
- 3) To reveal the conditions necessary to transform these farming enterprises to become efficient and economically viable operations.
- 4) To make recommendations to relevant government departments, NGOs and other interested parties.

## **1.4 RESEARCH METHODS**

This study is based on qualitative research, including literature study followed by two case studies in the Southern Cape. The following methods were employed for data collection in the field studies:

- 1) Participatory action research
- 2) Simple observation
- 3) Structured interview
- 4) In-depth interview
- 5) Group meeting

Qualitative data analysis was employed in order to analyze the complicated social and cultural dynamism.

## **1.5 CONCEPTUAL FRAMEWORK**

The following are the seven basic concepts on which this study is based.

### ***COMMERCIALIZATION OF FARMING PROJECTS UNDER THE LAND REDISTRIBUTION PROGRAM***

Although the policy directions of the land redistribution program support any type and scale of agricultural production, statements from the DLA and Ministry of Agriculture and Land Affairs have clearly shown that commercialization of these farming enterprises is the priority (Jacobs *et al*, 2003:1; Lahiff, 2001:5). Commercial farming is generally seen as efficient and productive, and therefore it can make a significant contribution to both national and regional food security as well as rural economic development.

### ***POVERTY***

Poverty can be defined as the inability of individuals, households and communities to attain a minimal standard of living (May, 1998: 1). Individuals and households may fall temporarily into poverty (i.e. transitory poverty) or may stay in poverty over time (i.e.

chronic poverty) as a result of uncontrollable events (e.g. loss of job, loss of assets, exclusion from social services, lack of security, landlessness, poor health, elderly and disabled). Although income sources from the informal sector may be important to escape from total destitution, a key determinant of individuals and households to stay out of poverty is the opportunity of employment in the formal sector (Aliber, 2000: V).

### ***HOUSEHOLD LIVELIHOOD***

Many poor households are barely existing through multiple sources of income such as self-employment, wage labour, agriculture, welfare programs (e.g. old age pension, child support grant and disabled grant) and illegitimate activities (e.g. drug trafficking, prostitution and petty theft) (May, 1998: 3). Over one third of rural households engage in subsistence agriculture as the third most important livelihood strategy after remittances and wage labour, even though it generates only a relatively small income for households (May, 1998: 13). Fulfillment of food security by means of subsistence farming is important for many poor households in rural areas.

### ***FOOD SECURITY***

In South Africa, individuals and households secure their food necessities by purchasing foods at shops, receiving them from relatives and friends and growing them. The expenditure of the poorest income group on food increased from 44 % to 51 % of their total income between 1995 and 2000. There was a dramatic rise in the price of basic foods since 2000 (Watkinson, 2003: 19). Therefore, fulfillment of food security by subsistence level farming could significantly contribute to poverty alleviation. However, it is generally insufficient to eradicate poverty.

### ***SUBSISTENCE FARMING***

The main characteristic of subsistence farming is to feed and provide for the family rather than to produce for the market, although the surplus produce is often sold. It is likely to

be environmentally more sustainable than the conventional commercial farming because of less application of chemicals. However, it was formerly perceived that subsistence farming, not producing for the market, was a failure in South Africa (Catling and Saaiman, 1996: 160). The size of subsistence farming is usually smaller than one hectare in South Africa. In the Western Cape Province, a large number of agricultural projects under land redistribution include subsistence farming (Jacobs, 2003: 18).

### ***ECONOMIC VIABILITY***

The basic condition for any successful farming, regardless of whether it is commercial farming or subsistence farming, is economic viability. Economic viability is usually measured by the amount of profit. Profit is the only indicator of economic viability of commercial farming enterprises. Any commercial activity cannot survive without a certain economic profit.

Economic viability can also be measured by the self-supporting nature of non-commercial activities. That is, subsistence farming is considered to be beneficial when monetary value of produce calculated from the market price is higher than production costs, even though it does not generate any cash income. Individuals or households would have to pay more for purchasing the same agricultural produce at shops when not engaging in subsistence farming. This measurement is meaningful particularly when it is applied to activities of people who live under disadvantaged socio-economic conditions. Activities with little or no cash transaction (e.g. gifts from relatives, help from friends and growing foods) play an important role in sustaining their livelihoods.

### ***EFFICIENCY***

Any economically viable farming requires operational efficiency. Efficiency means to be “productive with minimum waste or effort” (Thompson, 1995: 432). For the success of land redistribution, any type of farming enterprise needs to become efficient in its own

way. Operational efficiency means economic viability and, therefore, sustainability of the farming enterprise.

## **1.6 CHAPTER OUTLINE**

**Chapter one** provides an outline of this research, including background, research problem, aims of study, research methods, conceptual framework and chapter outline.

**Chapter two** introduces the international and South African experiences of land reform through literature review. Then, it shows the South African agricultural policy of the land redistribution program and the obstacles for its implementation.

**Chapter three** describes the research procedure and methods employed in this study.

**Chapter four** presents the research findings from a group commercial farm.

**Chapter five** presents the research findings from a family subsistence farm.

**Chapter six** concludes the research with recommendations for policy and practice.



## CHAPTER 2

### LITERATURE REVIEW

#### 2.1 THE INTERNATIONAL EXPERIENCES OF LAND REFORM

The last century has seen land reform initiatives in Africa, Asia, Latin America and the states of the former Soviet Union. Land reform is generally taken to mean redistribution and/or confirmation of land rights for the benefit of the poor (Adams, 2000: 1). It is primarily an issue of basic human rights (Barracough, 2001: 1). Land reform usually involves the state's compulsory acquisition of large holdings for redistribution to previous tenants and landless workers (Dorner and Thiesenhusen, 1990: 65), either with or without compensation for landowners.

The essential problem of the land question comes from the monopolization of land that results in extreme rural poverty and inequality by landed property's exploitation of peasants (Griffin *et al*, 2002: 291, 308). However, land reforms have occurred under various social, economic and political circumstances of the states. For example, land reform was part of social revolution in Mexico (1917), Bolivia (1952), Cuba (1959), Nicaragua (1979), Russia (1917) and China (1949). A US military government initiated land reform in South Korea and Japan after the Second World War. In Kenya and Algeria, land reform was the process of liberalization from a colonial power. Land reform in the former Soviet Union (1991) occurred under economic transition to the market oriented economy from the centrally planned one (Griffin *et al*, 2002: 317).

The World Bank and the Food and Agriculture Organization of the United Nations (FAO) have criticized the compulsory approach to land reform as ad hoc political manoeuvres, leaving the reform only partially implemented (Reidinger *et al*, 2000: 1). The World Bank has begun to support a market based approach whereby the sale and transfer of land is processed through a market mechanism of a willing seller-willing buyer system with little intervention by the state (Reidinger *et al*, 2001: 1). South Africa is one of the states that adopted a market-based land reform with the World

Bank support in 1994 (Reidinger *et al*, 2000: 5, 6). However, none of the market-based land reform in the world has been successful since an effective and swift transfer of land is obstructed by high land price, landowner resistance, complex administrative process and a lack of the government's capacity (Reidinger *et al*, 2000: 2-8).

## 2.2 LAND REFORM IN SOUTH AFRICA

Land issues in South Africa have a long history of racial dispossession by the colonial and apartheid governments. The land monopolization of European settlers by forcefully removing Africans from land since the mid-17<sup>th</sup> century has resulted in the extremely unequal racial pattern of land holding and wealth associated with land. In the mid-1990s some 60 000 white farms occupied 86 % of rural land (i.e. 86.8 million hectares) and the 14 million blacks of the reserves were concentrated in the 13 % of the total land surface (Bernstein, 1996: 27).

In 1994, the ANC-led government initiated land reform to rectify the racially based distributive inequality as part of national democratic struggle. As customary common property regimes still remain vigorous, South African land reform includes restitution of lost lands and securing tenure of the land, as well as redistribution of land (Barraclough, 2001: 63).

The restitution program aims to restore land and provide other remedies to people dispossessed by racially based discriminatory practice in the past (DLA, 1997: XI), while the tenure reform program aims to protect or strengthen the rights of residents who reside on white-owned farms and the former Bantustans where customary common property regime remains vigorous (Lahiff, 2001: 1). The purpose of the land redistribution program is to redistribute 30 % of white-owned agricultural land to the formerly disadvantaged people for improving their living conditions (DLA, 2000: 14; DLA, 1997: XI).

## 2.3 SMALL-SCALE FARMING AS PART OF THE LAND REDISTRIBUTION PROGRAM

The Department of Land Affairs (DLA) created the Settlement/Land Acquisition Grant (SLAG) for the land redistribution program (DLA, 1997: 70). SLAG was accessible to the historically disadvantaged poor who needed land and tenure security on land (DLA, 1997: 20). Qualified applicants received R15 000 (later R16 000) (DLA, 1997: 72) with which they were supposed to purchase land for residential and productive purposes in order to enhance their livelihoods. It aimed to transfer 30 % of white farmland to black smallholders for redistribution within five years from 1994 (Williams, 1996: 139), though later this deadline was extended to 2015 due to the cumbersome process of land transfer, high land cost, landowner resistance and lack of the government's capacity associated with the market-based approach.

The initial policy document of the Reconstruction and Development Programme (RDP) (1994: 19, 20) encouraged the productive use of land, particularly, agriculture. The creation of economic opportunities through redistribution of land is generally considered to be one of the major strategies for poverty alleviation in rural areas (May, 2000: 21). As the developing states seldom have the capacity to provide the rural poor with opportunities for better livelihoods, land redistribution may be the only viable option for alleviation of the acute rural poverty (Barraclough, 2001: 26).

Small-scale farming was one of central concerns of the land and agrarian policy in South Africa, which was based on the recommendations of the World Bank's Rural Restructuring Program in 1993 (Mohamed, 2000: 164). Focus on small size is associated with the argument of an inverse relationship between farm size and efficiency. Significant efficiency could be gained if farms in the commercial sector become smaller (Van Zyl, 2000: 117). It is largely due to higher efficiency of family labour used in small-scale farming compared to hired labour used in large-scale farming (Binswanger *et al*, 1993a cited in Van Zyl, 2000: 118, 119). That is, poverty reduction could be combined with efficiency gain (Deininger and May, 2000: 4).

The Integrated Sustainable Rural Development Strategy (ISRDS) (2000: 23) stressed the importance of small-scale farming for poverty alleviation and rural economic

development more than that of large-scale farming. The former is more labour intensive in operation and it is likely to have a higher linkage with the local economy such as purchase of the labour-intensive goods and services (ISRDS, 2000: 23).

The Department of Agriculture (DoA) (1995: 17) also placed special emphasis on a potential and role of small-scale farming that was expected to become a major economic driving force of rural South Africa. In order to ensure this potential, the DoA intended to establish “highly-efficient and economically viable market-oriented” small-scale farming sector (DoA, 1995: 3).

The small-scale farming projects under SLAG have usually resulted in community projects where a large number of community members were put together to meet the cost of land (McIntosh and Vaughan, 2000: 227).

#### **2.4 LAND REDISTRIBUTION FOR AGRICULTURAL DEVELOPMENT (LRAD)**

In 2001, for the purpose of developing exclusively agriculture, the DLA introduced a new policy direction as a sub-program of the land redistribution program: the integrated program of Land Redistribution for Agricultural Development (LRAD), which virtually replaced SLAG. The official policy directions of LRAD support broad agricultural projects ranging from subsistence to commercial production at any scale to improve the quality of life (DLA, 2000: 14-18). However, the priority is to promote commercial production (Lahiff, 2001: 5).

LRAD assists applicants to purchase land on the free market (Jacobs *et al*, 2003: 4) by providing various sized grant, instead of a fixed size of grant under SLAG. Under LRAD, beneficiaries are obliged to contribute R5 000 for access to a minimum grant of R20 000. For each R5 000 of their contribution, an additional R1 000 is given as a grant, beneficiaries can access to a maximum grant size of R100 000 (DLA, 2000: 16). In other words, beneficiaries need R400 000 of their contribution for a grant of R100 000. However, the requirement of own contribution may exclude the very poor from the land redistribution program.

Most of the beneficiaries provide their own contribution of R5 000 or a little more, thus, the size of the grant they receive usually falls within the range of R20 000 to R40 000 (Jacobs *et al*, 2003: 11). Like SLAG, most of the LRAD projects are also implemented as group projects in order to meet the price of farmland. Most of them are small and medium-scale farming. The average size per project is 508 ha in the Western Cape, and 405 ha in the Eastern Cape. It means that the average land size per person is 7.4 ha and 36.1 ha in these two provinces, respectively (Jacobs *et al*, 2003: 12, 13).

In addition to a larger grant size, LRAD has made an improvement in accessibility of grants to a larger number of applicants by shifting the target unit of beneficiaries from households to individuals. That is, the LRAD grant is accessible to each approved individual, compared with SLAG that was accessible to each household unit no matter how big or small was the household. For example, a poor household of three adults could receive a total of R60 000 (R20 000 each), instead of one grant of R16 000 under SLAG (Jacobs *et al*, 2003: 5).

Another major improvement of LRAD is that the implementation process is decentralized to provincial level (DLA, 2000: 14) where the approval process has become faster and less costly. Approximately 80 % of the LRAD projects have been processed directly by provincial DLA offices (Jacobs *et al*, 2003: 5).

## **2.5 OBSTACLES FOR FARMING ENTERPRISES UNDER THE LAND REDISTRIBUTION PROGRAM**

There are, however, several factors that hinder farming projects under the land redistribution program from becoming efficient and economically viable operations. Review of the literature points to the following eight obstacles.

### ***CLIMATE AND AGRO-ECOLOGY***

South Africa is a semi-arid country where crippling droughts are common, except for a narrow strip on the eastern and southern coast. Most of land is low-potential soil that is more suited for livestock-grazing than for crop production (Zimmerman, 2000:

<http://etd.uwc.ac.za/>

1445). Most of the high potential land and available water are already fully integrated with the existing production and employment patterns, so that the transferring these resources to the new farmers disturbs these patterns (Williams, 1996: 156, 157). Water, a crucial factor for agricultural production, will become less available to the agricultural sector due to the growth of cities in South Africa (Moolman and Lambrechts, 1996: 117-158). New water resource developments such as construction of new dams and extraction of the ground water reserves are economically and ecologically unsustainable (Farmer's Weekly, 2004b: 42).

### ***MACROECONOMIC POLICY***

The neo-liberal macroeconomic policy of South Africa (Growth, Employment and Redistribution: GEAR) and the Uruguay Round of the General Agreement in Tariffs and Trade (GATT) work against smallholders. Deregulation and trade liberalization allow lower-priced imports to flood into South Africa (Coetzee, 2003: 23). Few subsidies are available for commercial farmers (e.g. there are subsidies on diesel and for drought relief). These factors necessitate expansion of farm size and economies of scale to squeeze a thin profit margin for the sake of economic survival (Farmer's Weekly, 2004a: 8), despite that there is the argument of an inverse relationship between farm size and efficiency.

It might be expected that the small-scale farming sector and rural economy benefit from labour-intensive horticultural production. However, smallholders rarely have the capacity to meet the strict requirements of large retail chains, such as a reliable supply of produce and a standardization of quality (Williams, 1996: 150). Contrary to the well-established large commercial farmers who have access to credit and can afford more efficient technology, the resource-poor smallholders cannot be competitive without further technical and financial support from government. The experiences of Chile, Brazil, Mexico and China show that a liberalized economy has worked negatively against smallholders but has benefited large-scale farmers (Mather, 2000: 158, 159).

## ***POST TRANSFER POLICY***

It is generally said that sufficient provision of extension services and physical infrastructure (e.g. roads, telecommunications and irrigation facilities) is essential for the success of small-scale farming (Kepe and Cousins, 2002: 2; Machethe and Mollel, 2000: 340; Mather, 2000: 158; Mohamed, 2000: 166; DLA, 1997: 7; DoA, 1995: 7). The provincial Departments of Agriculture began to implement farmer support services (e.g. extension services, provision of infrastructure and training) since around the beginning of 2001 (Jacobs, 2003: 1, 3, 5). However, government has not yet developed a clear and coherent post-transfer agricultural support policy (Jacobs, 2003: 3).

## ***APPROPRIATE STRATEGIES AND TECHNOLOGY***

The DoA's report (1995) fails to differentiate strategies for different groups of smallholders with various resource-bases due mainly to a lack of data and information on these farmers (Roseboom *et al*, 2000: 68, 69). Research on appropriate technologies for smallholders has yet to be developed (Burgers *et al*, 2002: 5).

## ***QUALITY OF EXTENSION STAFF***

Global experience shows that public extension staffs are often low in their work productivity and in morale as a result of poor training given to them, a lack of on-the-ground supervision by managerial staff and a lack of incentives for good performance (Norman *et al*, 1994: 1-20). The public extension service is the main source of necessary information accessible to many smallholders in South Africa (Machethe and Mollel, 2000: 343). The poor quality of public extension staff is likely to result in poor performance of emerging smallholders of the land redistribution program, particularly, of those who have little farming experience.

## ***ACCESS OF CREDIT***

A lack of access to credit prevents many subsistence smallholders of the land redistribution program from utilizing their resources fully. Financial institutions see <http://etd.uwc.ac.za/>

these farmers as risky and their productivity low relative to the high input costs (Burger *et al*, 2002: 6). This becomes a barrier for these farmers to get credit from financial institutions. While prospective commercial farmers of land reform have a chance to get 80 % of total capital as a long-term loan from the Land Bank, very few ordinary commercial farmers can manage an 80 % debt ratio, not to mention new farmers (Coetzee, 2004: 20).

### ***ACCESS TO THE MARKET***

Experiences of sub-Saharan Africa confirm that market access is a critical precondition to successful farming (Wiggings, 1999: 631). Field studies from India, Kenya and Sudan show that improved market access increases productivity (Von Oppen *et al*, 1997: 128). For subsistence farmers, the costs associated with market access are expensive. These include the cost of acquiring information, transport and establishing a relationship with traders (Burger *et al*, 2002: 6). LRAD encourages agricultural production, but there is limited assistance for accessing markets (Jacobs, 2003: 18).

### ***INSTITUTIONAL CAPACITY***

Weak institutional capacity and conflicts among beneficiary members cause severe damage on many of farming projects under the land redistribution program (Andrew, 2003: 22). Projects under SLAG were usually group/community enterprises as beneficiaries needed to pool their small grants for meeting the cost of land (McIntosh and Vaughan, 2000: 227). Group size of the farming projects under LRAD is relatively smaller than under SLAG. However, available data from the Western and Eastern Cape indicate that there is no clear difference between SLAG and LRAD in terms of group/community project (Jacobs *et al*, 2003: 12, 13).

## **2.6 CONCLUSION**

In the last century, land reforms have occurred under various social, economic and political circumstances of the states in the world. Despite these various circumstances, the basic tenet of land reform is to benefit people who suffer extreme

poverty and inequality from landed property's exploitation. Land reform usually involves the state's compulsory acquisition of large holdings for redistribution to previous tenants and landless workers.

Based on a neo-liberal belief in efficiency gains through the market mechanism, the World Bank began to support a market based approach to land reform that, however, has never proved to be successful elsewhere in the world due to the problems in land transfer that are associated with a willing seller-willing buyer system.

South Africa has initiated a market-based land reform with the World Bank support in 1994, in order to rectify the historical practice of the racial dispossession of land and extreme poverty based on race by the colonial and apartheid government. One of central concerns of the initial land redistribution policy was the promotion of small-scale farming by redistributing 30 % of white farmland to blacks by 1999. Behind the focus on small size, there was the appealing argument of an inverse relationship between farm size and efficiency gain. The recipients of SLAG usually had no choice but to pool their small grants to meet the cost of farmland, the result of which was the establishment of small farming projects where a large number of community members were put together. The market mechanism delayed smooth land transfer and, later, forced government to extend the 30 % deadline to 2015.

In 2001, the government replaced SLAG with LRAD in order to overcome the shortcomings of SLAG. Although the market mechanism is still intact, LRAD has made some improvements in grant size, grant accessibility and the bureaucratic process of land transfer. LRAD supports both subsistence and commercial farming of any production scale. Most of the LRAD projects, like SLAG, are group or community projects since an individual grant size is still too small to cover the cost of farmland.

However, review of international and South African literature points to several possible obstacles to the success of farming projects under the land redistribution program. These obstacles arise from such issues as: natural environment, macroeconomic policy, agricultural policy, agricultural technology, quality of

extension staff, credit access, market access and institutional capacity of the land reform beneficiary groups.



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## CHAPTER 3

### RESEARCH DESIGN

#### 3.1 RESEARCH DESIGN

##### 3.1.1 RESEARCH METHODOLOGY

Basic knowledge on the research topic was obtained through literature study. Literature consulted included publications of the Department of Agriculture (DoA) and the Department of Land Affairs (DLA), published and unpublished research papers, and relevant literature, magazine and newspaper articles.

Two case studies were conducted near George in the Southern Cape from June 8, 2003 to January 22, 2004.

- 1) A 70 ha commercial vegetable farm owned and operated by a group of 59 households in Pacaltsdorp.
- 2) A 3.5 ha subsistence farm owned and operated by a single household in Thembaletu.

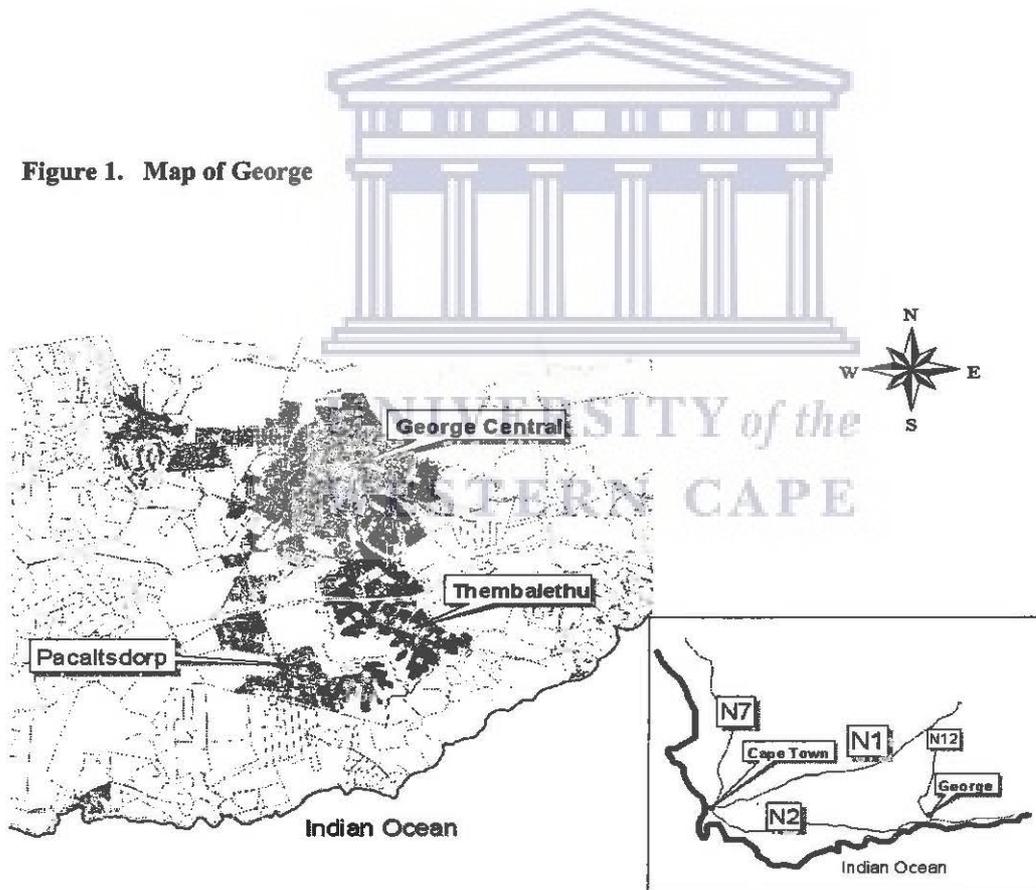
The factors used for the selection of the case study sites were:

- 1) They represented two different types of the land redistribution program in terms of farm size, ownership (group or individual) and purpose of production (commercial or subsistence).
- 2) Newly established farms were avoided as they had a high risk of failure during the research period.
- 3) The researcher had previous knowledge about the two farms due to a prior visit for study purposes in 2002, which made it easier for him to approach the farmers.

Although these farms cannot be considered to be representative samples of farms in South Africa, or even in the Southern Cape, they do reflect many of the characteristics of farming projects within the land redistribution program.

### 3.1.2 CASE STUDY AREA

The case studies were conducted in Pacaltsdorp and Thembaletu in the George Municipal Area (WC 044) of the Southern Cape (Figure 1). The George Municipal Area consists of areas previously under the jurisdiction of the Outeniqua and Bo-Langloof Rural Councils.



There are four racial groups of African/Black, Coloured, Indian/Asian and White in the George Municipality. Table 1 is a census of population group of the George Municipality in 1996 and 2001. In 2001, the total population was 135 415, of which 36 934 were Africans/Blacks, 68 219 Coloureds, 354 Indians/Asians and 29 098 Whites. During the period 1996 to 2001, the total population increased by 25 %. African/Black population recorded the highest growth of 62 %, followed by Indian/Asian of 48 %, Coloured of 24 % and White of 3 %.

**Table 1 Population by racial group in the George Municipality, 1996 vs. 2001.**

African/Black		Coloured		Indian/Asian		White		Total	
1996	2001	1996	2001	1996	2001	1996	2001	1996	2001
22 797	36 934	55 050	68 219	241	354	28 290	29 098	108 375	135 415

Source: Stats SA: Census 1996 & 2001.

There were remarkable differences in the unemployment level between George suburbs in 1996. Table 2 shows the unemployment levels of George suburbs in 1996. George central had the lowest unemployment rate of 6 %; Pacaltsdorp, a former Coloured settlement, had 15.8 %, while Thembaletu, a former black township, had the highest unemployment rate of 33.3 %.

**Table 2 Unemployment levels in George suburbs 1996.**

Section of municipal area	Unemployed, looking for work (%)	Employment (%)
George central	6.0	94.0
Pacaltsdorp	15.8	84.2
Thembaletu	33.3	66.7

Source: Stats SA (11), 2000.

As was the case of the unemployment level, there was also a clear difference in personal income level between George suburbs in 1996. Table 3 shows the distribution of personal income in George suburbs in 1996. 42.2 % of the population of George central earned less than R1 000 per month, while 36.8 % of it earned more than R1 000. In Pacaltsdorp, 63.1 % of the population earned less than R1 000 per month and 18.7 % earned more than R1 000 per month. In Thembaletu, 45.3 % of the population earned less than R1 000 per month and 12.7 % earned more than R1 000 per month. Given the highest unemployment rate of 33.3 %, however, it is assumed that Thembaletu had the

highest percentage of the population earning less than R1 000 per month, since most of the 42 % of “unspecified” population were considered to earn less than R1 000 per month.

**Table 3 Distribution of monthly personal income in George suburbs, 1996.**

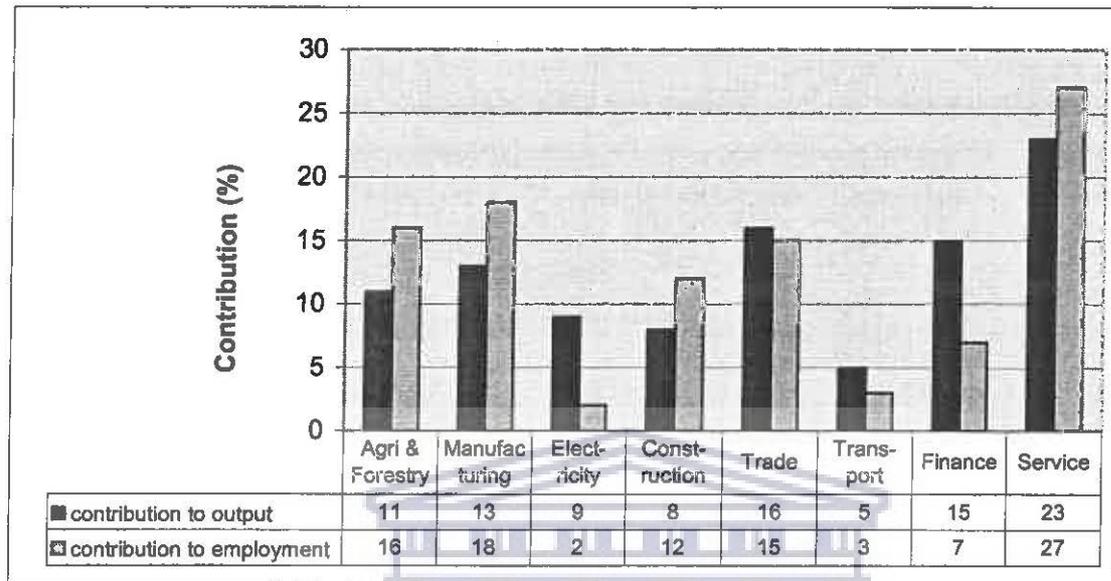
Area	None	R1-R1 000	R1 001- R4 500	R4 501- R6 000	R6 001- R30 000	Unspecified	Total (%)
George central	32.6	9.6	25.9	4.7	6.2	20.9	100
Pacaitsdorp	42.8	20.3	17.2	1.1	0.4	18.1	100
Thembaletu	25.1	20.2	11.8	0.5	0.4	42.0	100

Source: Stats SA (12), 2000.

Generally the Southern Cape has a mild temperate climate (average temperature: 16.2 °C, maximum average temperature: 21.3 °C, minimum average temperature: 11.1 °C) and rainfall throughout the year (annual average rainfall: 776 mm) (FAO, 1984). Agriculture in George began to flourish in the early 20<sup>th</sup> century with the extension of the railroad to major towns (George Development Consortium, 2000). The horticultural industry is particularly well developed in this area in terms of infrastructure of processing plants, packers, wholesalers and exporters. Commercial farming in this industry has been very successful over a long period of time (Burger *et al*, 2002).

The agricultural sector contributes considerably to the economy of George both in output and employment. Figure 2 is the sector contribution to output and employment of the George Magisterial District in 1998. Agriculture and Forestry industry amounted to 11 % of the total output, providing 16 % of the total employment opportunities, which was the third highest after service industry and manufacturing industry.

Figure 2 Sector contribution to output and employment in the George Magisterial District, 1998.



Source: George Development Consortium, 2000.

The production of vegetables was the most important agricultural activity of the George Magisterial District in 1993. It generated 28 % of gross farm income in 1993, followed by milk production. However, profits in horticultural industry declined after 1996 due to crop pests and withdrawal of government subsidies (George Development Consortium, 2000).

### 3.1.3 RESEARCH METHODS

**Participatory action research (PAR)** was performed with the members of the group commercial farm in Pacaltsdorp for a total of 102 days between June 13 and November 4, 2003. During this period, the researcher stayed and worked on the farm in order to see things from the land reform beneficiaries' perspective. After November 4, he visited this farm on 19 different occasions to make **simple observations** until January 22, 2004.

This involved three methods of data collection:

- Observation of the farmers' daily operations.
- Observation of crops and livestock on the farm.
- Unstructured interviews and conversations with the farmers.

**Simple observations** were employed on the subsistence family farm in Thembaletu from June 13, 2003 to January 22, 2004. This involved the observation of cultivation methods and the condition of crops and livestock on the farm. It was considered to be an appropriate method of data collection since the operation of this farm was simple and easily understood. The researcher visited this farm ten times on the following dates: June 20, July 14, September 1, October 1, November 12, December 18, January 10, 12 and 21.

**A structured interview** was held with the household of the subsistence farm in Thembaletu in order to obtain basic information that could not be collected through simple observations, such as household dynamics, all aspects of management (production, finance and marketing), and the records of the past years' production.

**In-depth interviews** were held with the farmers of both farms as well as the local people who knew the situation and conditions of the projects, staff of Outeniqua Experimental Farm (run by the Department of Agriculture), staff of the Council of Scientific and Industrial Research (CSIR), and staff of the Land Development Unit (LDU) based at Outeniqua Experimental Farm. These interviews provided the researcher with in-depth information that could not be collected at the case study sites.

**Group meetings.** The researcher joined four different types of meetings held by the farmers of the group commercial farm in Pacaltsdorp in order to gain the insight into the true situation: four weekly meetings (June 23, July 15, July 28, August 25), two monthly general meetings (August 9, October 11), one special meeting (September 29) and two meetings with staff of the Land Bank and the farmers (June 18, September 3).

### **3.1.4 DATA ANALYSIS**

Qualitative data analysis was employed. Some tendencies and patterns in the farming enterprises of the land reform beneficiaries were identified through the researcher's interaction with them and by the observation of their farming activities. The identification of these tendencies and patterns, which were considered to have arisen from a specific social and/or cultural dynamism, made it easier for the researcher to comprehend and analyze the whole situation of the case study sites.

Numerical data were coded through Excel software for graphical presentation where necessary.

### **3.2 LIMITATIONS TO THE STUDY**

The financial analysis of the Essential Oil Project at the group commercial farm could not be shown in this report due to the confidentiality placed by the Council of Scientific and Industrial Research (CSIR).

The records of farming enterprises kept by the farmers at the case study sites were often inaccurate, insufficient or totally missing so that it was difficult to estimate with accuracy the economic viability of their farming enterprises.

### **3.3 ETHICS STATEMENT**

The researcher has conducted all the activities of the research with the permission and agreement of those who were involved in the research for the sake of protecting their rights and welfare. The researcher protected the interests of those who were involved in the research and guaranteed them confidentiality of the information as well as the information sources given to the researcher.

## CHAPTER 4

### CASE STUDY OF PACALTSDORP FARM

#### 4.1 PACALTSDORP

Pacaltsdorp is a “Coloured” settlement dating back to 1813 when the missionary Carolus Pacalt of the London Missionary Society established a mission station. A settlement grew around the mission station and in 1818 the settlement was named Pacaltsdorp after the missionary. In 1975, Pacaltsdorp received municipal status. Until the 1980s, Pacaltsdorp remained a rural village when new residential areas began to appear. In 1995, it was incorporated to the George Municipality (George Development Consortium, 2000).

#### 4.2 PACALTSDORP FARM

##### 4.2.1 PACALTSDORP FARM

Pacaltsdorp farm is situated on the eastern boundary of the Pacaltsdorp municipal boundary with a view over the Indian Ocean. The farm is approximately 8 km from the nearest markets in George central. It is an irrigated vegetable farm that had been owned and farmed successfully by a commercial farmer for over 20 years before the purchase of the farm by a group of 59 land reform beneficiaries in 1999 (DLA (2), n.d.). The total size of this farm is 70 ha. However, only 30 ha are cultivable due to hilly topography. The size of this small-scale horticultural farm is common in this area. With the necessary support, this farm has a potential gross annual income of R300 000 (DoA, n.d.). The potential annual profit per household is R1 271, provided that the profit is 25 % of the potential gross annual income.

A five-roomed main house stands near the entrance of the farm. Two farm worker houses are situated in the middle of the farm, about 200 meters from the main house. There are two stalls and one main irrigation dam with an electric water pump. Water is pumped into the dam from a tributary of the Skaapkop River that runs on the border

<http://etd.uwc.ac.za/>

of Pacaltsdorp farm. Except for the water supply, the infrastructure of electricity and telephone already existed on the farm before its purchase. However, the two farm worker houses lack these service facilities.

The beneficiaries have been farming vegetables and livestock (cows and pigs) since November 2000 and the rose geranium (*Pelargonium graveolens*: an indigenous perennial plant that produces essential oil) for the Essential Oil Project since June 2002.

#### 4.2.2 BACKGROUND OF THE BENEFICIARIES

A large group of people of Pacaltsdorp applied to the DLA for agricultural land through SLAG in 1996. This group consisted of people who were farming on land leased from the George Municipality. Most of these leases terminated at the end of February 2000. These farmers had difficulty in renting land every five years and found it impossible to buy land on their own (DLA (2), n.d.).

In 1998, the DLA conducted a household survey of all the applicants, investigating income, number of adult women, marital status and number of dependants. The criterion for selecting beneficiaries was that an applicant household should not have received a SLAG and/or Housing Subsidy in excess of R16 000 since April 1994 (DLA (2), n.d.). As a result of this survey, 59 households were identified as beneficiaries of SLAG. They consisted of 93 individuals, of which 44 were adult women.

The DLA set up four meetings to workshop the beneficiaries on legal matters. By South African law, a group of land reform beneficiaries is required to form a legal entity to manage their farms: either a Communal Property Association (CPA), a Trust or other forms. This legal requirement is mainly for the sake of administrative procedures such as land transfer and registration. The 59 beneficiaries opted to form a CPA. In principle, a CPA is a legal structure where all the members manage the farm together and have an equal say in the management of the farm (Mokgope, 2000). The 59 beneficiaries elected a committee consisting of nine members, three of whom were women. They drafted a constitution and it was accepted at a formal CPA meeting in

November of 1999. They decided to start a commercial farming enterprise on a communal basis (DLA (2), n.d.). Those beneficiaries who would work on the farm were to be paid a fixed minimum salary from a part of the future income of the farm, and the future profit was to be shared equally by all the 59 households. In addition, the two previous farm workers who had been employed by the previous farm owner were to be hired by the CPA and to be paid a fixed minimum salary, though they are not beneficiaries.

#### **4.2.3 PURCHASE OF PACALTSDORP FARM**

The information regarding how the farm was selected for the 59 beneficiaries was not available. The agreement of sale for the farm was made in May 1999. The purchase price of R850 000 and the R9 240 transfer cost were financed from the pooled grant of the beneficiaries (i.e. R944 000: R16 000 x 59 beneficiary households). The farm purchased included all fixtures consisting of a five-roomed main house, two farm worker houses, two stalls, two water pumps, piping and underground irrigation equipment. However, other farming implements (e.g. hoes, rakes, and spades) and machinery (e.g. tractors, lorries and pick-up trucks) were not included. Transfer of the farm took place in October 2000. The farm is now the property of the CPA.

#### **4.2.4 SETTLEMENT OF PACALTSDORP FARM**

Of the two farm worker houses, one is occupied by one of the two farm workers who had been employed by the previous farm owner but who are not beneficiaries. The other was used by one beneficiary household for about a year. This household has subsequently moved back to the Pacaltdorp residential area, about 4 km away from the farm. None of the other beneficiaries moved to reside on the farm. One reason for this is that they already had their homes in the residential area of Pacaltdorp. The second reason is that the location of the farm is inconvenient because there is no shop within a reasonable walking distance. The third reason is a lack of proper accommodation facilities on the farm with the exception of the main house.

#### 4.2.5 FARMER SUPPORT SERVICES

The beneficiaries were involved in various farmers' days, information days and proceedings presented for them by the DoA. They completed the following courses presented by the DoA: pig farming, vegetable growing, and safe handling of agrochemicals. The project members were also involved in a capacity-building training workshop prepared by the Land Development Unit (LDU). The companies Agrichem, Nitrophoska and Hygrotech gave them instruction on technical aspects of vegetable production. The previous owner of the farm leased his farming implements and machinery to the beneficiaries until they could afford to purchase them at the offered price of R250 000 (DoA, n.d.).

Staffs of the DoA visit the farm periodically to give advice on management and sometimes help them with production planning, and occasionally join the monthly general meetings of the beneficiaries.

Before the start of the farming, the beneficiaries received seed potatoes and one ton of fertilizer that were privately donated. In 2002, the DoA installed a new irrigation system which takes water from the main channel of the Skaapkop River since the tributary of the river from which water was taken dries up in summer. This new irrigation system uses a tractor instead of electricity as a source of power to pump water. The DoA provided a second-hand tractor with enough capacity for this purpose. The DoA chose this type of irrigation system to prevent the theft of power cables that is prevalent in this area. The total cost was about R360 000. In early 2004, the DoA provided an infrastructure fund of R100 000. Old implements and machinery were repaired and fertilizer was purchased with this fund. The balance was used to pay the outstanding electricity (R23 400) due to the Municipality. Table 4 is a summary of these material and infrastructure support services. The total market price of the donated seed potatoes and fertilizer was unknown. Thus, a total R460 000 worth of infrastructure and materials were provided by early 2004.

**Table 4 Value of material and infrastructure support provided to the beneficiaries at Pacaltsdorp**

Year	Item	Amount (SA Rand)
2000	Seed potatoes, one ton of fertilizer	*N/A
2002	Irrigation system and a tractor	360 000
2003	Infrastructure fund	100 000
	<b>Total</b>	<b>460 000</b>

\*Not available

According to a staff member of the DoA, additional funds for infrastructure will be provided in the near future.

#### 4.2.6 FINANCIAL ARRANGEMENT

The beneficiaries' pooled grant was worth R944 000. The farm was purchased for R850 000 and the balance was spent on the costs of land transfer, the connection of electricity, the rent of agricultural machinery from the previous farm owner and the up-front inputs such as fertilizers, chemicals, seeds and 13 calves. Table 5 lists the items that were purchased with the pooled grant of the 59 beneficiaries.

**Table 5 Items purchased with the pooled grant of the 59 beneficiaries at Pacaltsdorp**

Date	Item	Amount (SA Rand)
October 2000	Purchase of the farm	850 000
October 2000	Transfer costs of the farm	9 240
November 2000	Rent of machinery	33 364
November 2000	Purchase of 13 calves	7 000
November 2000	Purchase of fertilizers	13 255
December 2000	Rent of machinery	20 574
December 2000	Purchase of agrochemicals	1 744
December 2000	Purchase of seeds	4 011
December 2000	Purchase of seedlings	1 800
January 2001	Connection of electricity	2 700
March 2001	Purchase of agrochemicals	312
	<b>Total</b>	<b>944 000</b>

In 2002, the farmers (i.e. the beneficiaries who regularly work on the farm) received a production loan in September and an infrastructure loan in October from the Land Bank with the assistance of the DoA. The production loan of R78 500 is repayable over one year at a fixed annual interest rate of 18 %. The total amount of repayment is R93 000. The loan was used to finance the production costs such as salary of

workers, diesel, seeds, fertilizers and agrochemicals. Table 6 shows the details of the production loan.

**Table 6 Details of Production loan**

Amount of loan	R78 500
Date	15 September 2002
Period	One year
Date of repayment	15 September 2003
Interest rate	18 %
Total amount of repayment	R93 000

Source: The DoA 2003a

The infrastructure loan of R250 000 is repayable over 10 years at a fixed annual interest rate of 15.5 %. The total amount of repayment is R480 000. The amount of the annual installment payment is R48 000. This loan was used to purchase four tractors, one pick-up truck, one lorry and the implements they were renting from the previous farm owner. All of these items were second-hand and most of them were quite old. Table 7 is the details of the infrastructure loan.

**Table 7 Details of infrastructure loan**

Amount of loan	R250 000
Date	15 October 2002
Period	10 years
Interest rate	15.5 %
Date of installment payment	15 October of every year
Amount of instalment payment	R48 000
Total amount of repayment	R480 000

Source: The DoA 2003a

One year later, that is, September 2003, the farmers could not repay the production loan fully due to their difficult financial situation. In the following month, they did not have any finance to repay the installment payment of the infrastructure loan. This will be discussed later in detail.

#### **4.2.7 PARTICIPATION AND DECISION MAKING**

The majority of the beneficiaries were not participating in the farming project from the beginning of production, i.e. November 2000. Many of them still had their original job then and some of the others were not interested in the project for some reasons or other. Firstly, the beneficiaries who worked regularly on the farm had to

wait for three months before receiving their first salary that was generated from the sales of the first harvest, as there was no money left to pay them a salary after the purchase of the farm and the up-front inputs. Since there was no guarantee for the success of their farming, there was no guarantee of their salary. Secondly, many beneficiaries felt that the distribution of the profit was unequal for those who worked regularly on the farm. Even though their farming would be successful and profitable, the profit, in the name of the CPA, was to be equally shared by the other beneficiaries who never worked on the farm. This discouraged the participation of the beneficiaries. According to one beneficiary, about 15 of them, including the chairperson of the CPA, managed to start vegetable production for the market. Several of them left the farm before the first harvest because they could not wait for it. As time passed, others including the chairperson left one by one as a result of internal conflicts between the farmers (i.e. the beneficiaries who regularly work on the farm). In 2002, three other beneficiaries joined for different reasons those who were working on the farm. One common reason, however, was that there was no other available job for them anywhere. One of these three took over the post of chairperson. By early 2003, seven farmers remained, of whom three were female. These seven farmers consisted of a chairperson, a foreman for vegetable production, a mechanic, two record keepers and two propagators of geranium plants at the farm nursery. Their ages ranged from 40 to 65.

The farmers have a weekly meeting at the main house on Monday mornings. The meeting is held for the farmers but not for the other beneficiaries who do not work on the farm. At the meeting, the farmers discuss the issues of the weekly operation. It is they who decide which vegetables to grow, when, how and how much. In this regard, there is little need for consultation with the other beneficiaries. Except for this, the farmers, including the chairperson, have no rights or powers to decide any issue of the farm by themselves. Such issues are discussed at the monthly general meetings until agreement is reached by the majority of all the beneficiaries including the seven farmers.

The CPA committee holds the monthly general meetings at the main house of the farm. This meeting is open to all 59 beneficiaries and they are encouraged to attend. The time and date of the meetings are informed by a letter and word of mouth. At the

meeting, the results and the details of their farming progress are reported and explained by the committee members, mainly the chairperson and two record keepers. Any issue concerning the farm is discussed and an agreement is reached. For example, an important issue during the research period was about the legal form of the farm. There were two possible forms of legal entity to manage the farm: the present form, i.e. a CPA, or a Section 21 company.

However, only about 15 beneficiaries including the committee members and the farmers attend the monthly general meetings. Since the committee members including the chairperson cannot decide anything without an agreement by the majority of all the beneficiaries, special meetings have to be held in the Pacaltsdorp residential area when any decision needs to be made. Regardless of the committee's effort to get hold of them, only about half of them were seen in one special meeting held during the research period. Therefore, important decisions were just not made at the right time.

#### **4.2.8 PRODUCTION AND MARKETING**

##### ***VEGETABLES***

Vegetable production started in November 2000. The farmers grow vegetables on Pacaltsdorp farm and an adjoining farmland of 7 ha that they rent for R800 per month. The vegetable types grown are cabbages, carrots, potatoes, beetroot, pumpkins, watermelon, sweet corn, green beans, cauliflower and broccoli. It is possible to produce many of these vegetables throughout the year due to the mild climate of the area.

The foreman (i.e. one of the seven farmers) is responsible for all aspects of vegetable production and is the only beneficiary who works on the vegetable side. The other five farmers, except for a mechanic, work for the Essential Oil Project that is run in parallel with vegetable production and is managed separately by the Council of Scientific and Industrial Research (CSIR) for the purpose of community development. The foreman and two regular farm workers (who are not the land reform beneficiaries) do most of the work on vegetable production. Seasonal workers are employed for

labour intensive operations like planting, weeding and harvesting. The produce is sold to hawkers, local street shops, local supermarkets, a processing company in Pacaltsdorp, and a wholesaler called Golden Harvest in George. Vegetables are produced for these markets without any production contract and market research. The demand for fresh vegetables is enormous so that the farm usually does not suffer from unsold produce or low prices due to any over-production. The farmers do little marketing from their side as buyers always approached to them for fresh vegetables. At the same time, the farmers produce vegetables for McCain, one of the major vegetable processing companies, on a contract basis. McCain provides them with seeds and, when necessary, fertilizers, the cost of these inputs being deducted at harvest. No penalty is imposed on the farmers when they fail to meet the contracts. During the period October 2002 to October 2003, the farmers made a total of eight contracts with McCain. The types of crops produced under these contracts were pumpkins (twice), sweet corn (twice), green beans (twice), carrots (once) and sweet potatoes (once).

Before starting the discussion regarding the financial situation of the farm, a definition of profit or loss is given briefly in order to avoid confusion. Profit or loss was calculated from the difference between the total amount of sales and the production costs for a period of the 38 months from November 2000 to December 2003. The production costs included the up-front inputs, the seasonal inputs, the outstanding costs and the loan repayments. However, the following two costs were excluded from the production costs. Firstly, the depreciation costs of capital goods that were difficult to calculate. They were very old and many of them were considered to be “written-off”. Secondly, the price of the privately donated seed potatoes and fertilizer that was unknown.

In November and December 2000, the farmers purchased the up-front inputs for vegetable production shown in Table 8. A total of R74 747 was spent on the rent of implements and machinery from the previous farm owner and the purchase of fertilizers, agrochemicals, seeds and seedlings. All of these costs were financed through the balance of the beneficiaries’ pooled grant after the purchase of the farm.

**Table 8 The up-front inputs for vegetable production purchased in November and December 2000, Pacaltsdorp**

Date	Explanation	Amount (SA Rand)
November 2000	Rent of implements and machinery	33 364
November 2000	Purchase of fertilizers	13 225
December 2000	Rent of implements and machinery	20 574
December 2000	Purchase of agrochemicals	1 743
December 2000	Purchase of seeds	4 011
December 2000	Purchase of seedlings	1 800
	<b>Total</b>	<b>74 747</b>

The long-term flow of the farmers' profitability and performance over the 38 months are shown in Figures 3 to 5. Unfortunately, the outstanding costs (i.e. tractor maintenance, electricity, tractor license and legal cost) could not be included in these three Figures as the exact dates that these costs had occurred were not recorded by the farmers. The outstanding costs will be separately explained later. The costs of the up-front inputs shown in Table 8 were also excluded from the Figures for the sake of providing a clearer understanding of the farmers' performance.

Figure 3 represents the year 2001 including the two months of November and December of the previous year, and Figure 4 and 5 represent the years 2002 and 2003. It must be noted that the records of the production and sales for the first three months (i.e. November and December 2000 and January 2001) were missing, but the sales in these months were little if any because the vegetable production started in the mid November 2000, and probably the first harvest and sales occurred after January 2001.

**Figure 3 Monthly profit margin of vegetable production between November 2000 and December 2001, Pacaltsdorp**

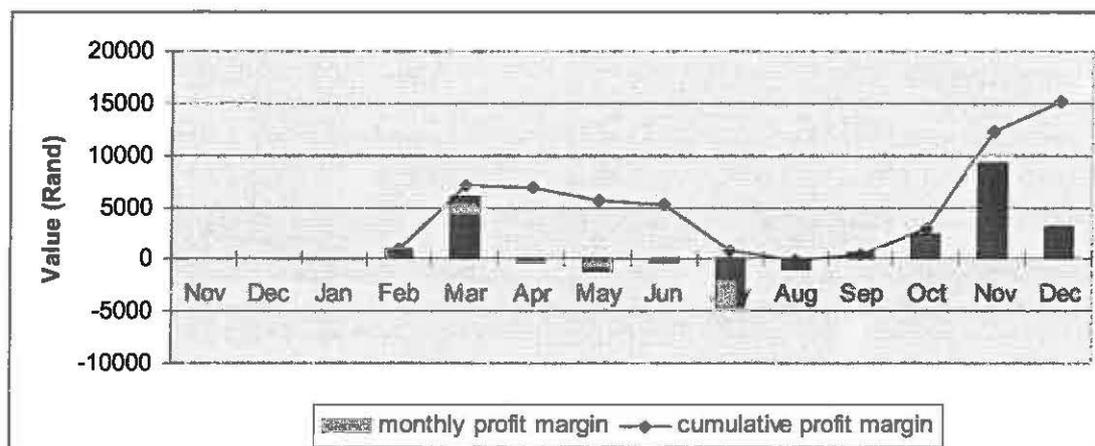


Figure 4 Monthly profit margin of vegetable production in 2002, Pacaltsdorp

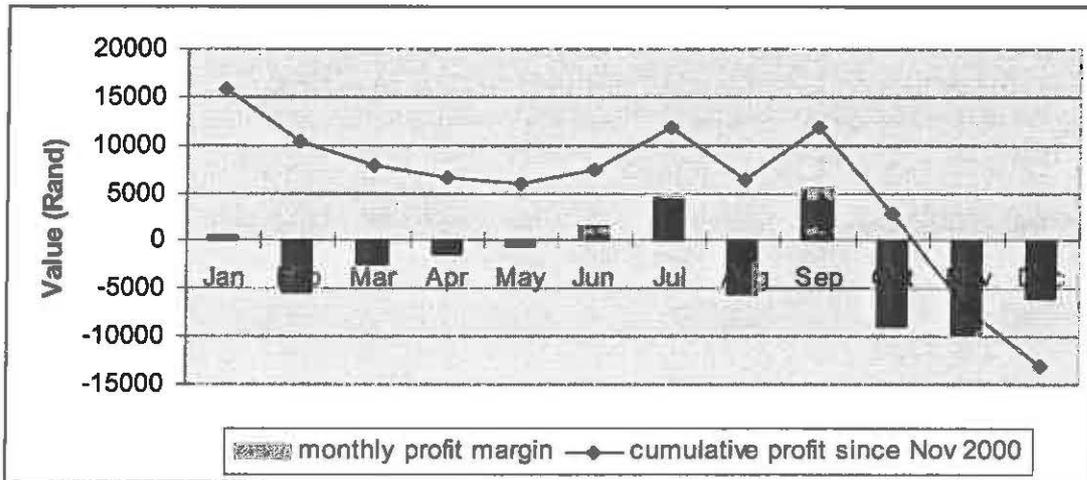
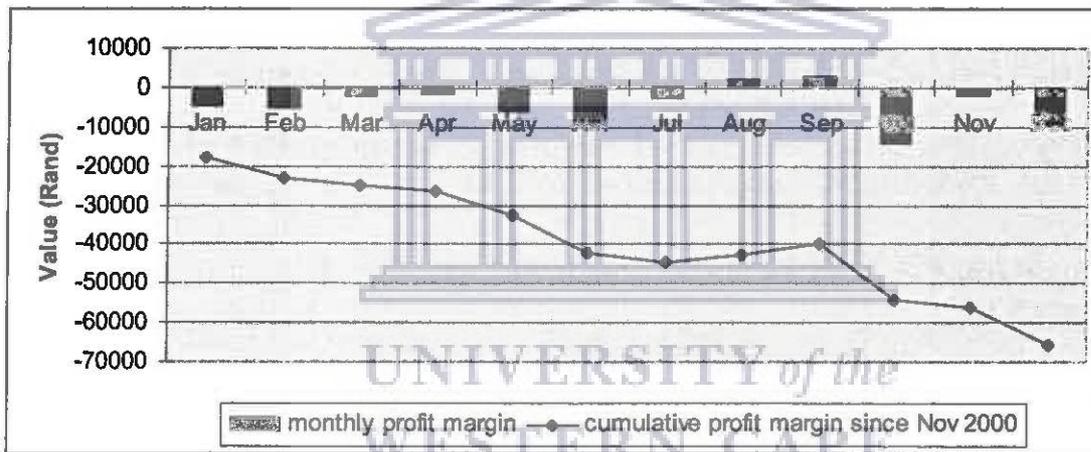


Figure 5 Monthly profit margin of vegetable production in 2003, Pacaltsdorp



It is seen in Figures 3, 4 and 5 that the farmers accumulated financial losses of R68 869 at the end of 2003. They performed better in 2001 than in the following two years. One reason for this is that the seed potatoes and fertilizer were privately donated. The sales of the potatoes explain the profit of R6 049 made in March. In Figure 3, the farmers made the highest monthly profit of R9 252 in November but the reason for this is unknown as the record of this month was missing.

The farmers' performance got considerably worse after September 2002, the month when they got a production loan from the Land Bank (see Figure 4 and 5). The loan made it possible for the farmers to expand the production but without proper financial management. This led to some 18 % increase in the gross income of 2003, compared

to the previous two years. At the same time, however, the farmers accumulated the greater losses.

The gross annual profit was R12 113 in 2001, -R28 315 in 2002 and -R52 667 in 2003. The gross financial loss amounted to R68 869 at the end of 2003. Table 9 summarizes Figure 3, 4 and 5.

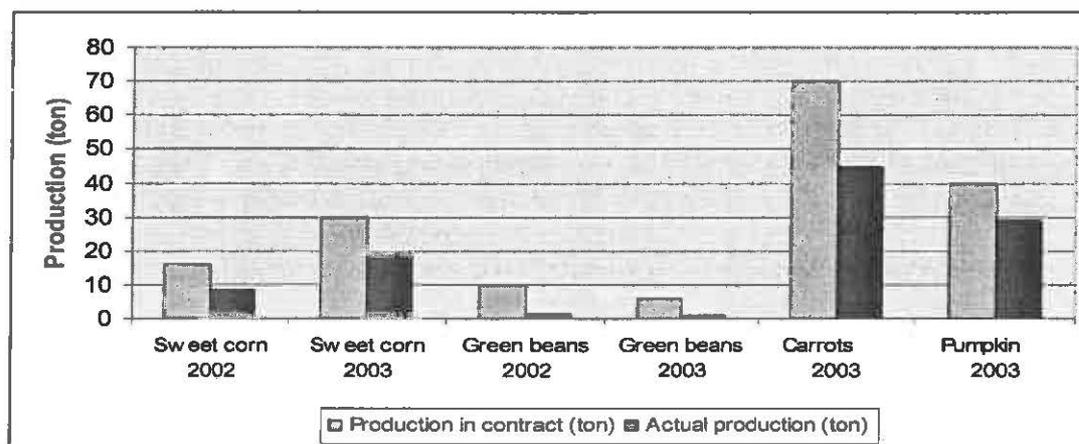
**Table 9 Summary of Figure 3, 4 and 5, Pacatsdorp (SA Rand)**

Period	Nov-Dec 2000	Jan-Dec 2001	Jan-Dec 2002	Jan-Dec 2003
Gross income	*N/A	136 224	137 134	161 366
Expense	*N/A	124 111	165 449	214 033
Profit	*N/A	12 113	-28 315	-52 667
Cumulative profit margin	*N/A	12 113	-16 202	-68 869

\*N/A: Not available.

Low productivity explains the financial losses made by the farmers. During this period, the farmers had a total of eight production contracts with McCain, of which the records of two contracts were missing. Under the available records of the six contracts, the farmers produced sweet corn and green beans in both 2002 and 2003, and carrots and pumpkins in 2003. The farmers failed to meet all of these contracts. Figure 6 shows the results of these contracts.

**Figure 6 Results of six vegetable production contracts with McCain in 2002 and 2003, Pacaltsdorp**



The production of sweet corn was 8.54 tons against 16 tons in the contract in 2002 and 19.39 tons against 30 tons in the contract in 2003. Similarly, the production of

green beans was 1.53 tons against 10 tons in 2002 and 1.03 tons against 6 tons in 2003. The production of carrots and pumpkins were 44.88 tons against 70 tons and 28.96 tons against 40 tons, respectively. The average production was only 47 % of the production specified in the six contracts. The production of green beans was particularly low. The farmers achieved only 15 % of the production in the contracts in 2002 and 17 % in 2003.

The farmers received several services on credit over the 31 months between November 2000 and May 2003, which are not included in Figure 3, 4, 5 and Table 9. Table 10 lists these outstanding costs that the farmers accumulated over the period. In May 2003 the total outstanding cost amounted to R48 118 that consisted of electricity costs, legal costs and the costs of tractor licenses and maintenance. The exact dates when the farmers had received these services were not recorded. If the total outstanding cost is divided and allocated equally over the past 31 months, the outstanding cost in 2001 amounted to R18 626. That is, the farmers actually made a deficit of R6 513 (i.e. R18 626 – R12 113) in 2001, though it looks as if they made a profit of R12 113 in Figure 3 and Table 9. Without the services received on credit, the farmers would have been unable to keep running their farm until September 2002 when they got a production loan from the Land Bank.

**Table 10 The outstanding costs accumulated over the 31 months since November 2000, Pacaltsdorp**

Item	Amount (SA Rand)
Electricity costs	23 416
Legal costs	612
Tractor licenses	15 104
Tractor maintenance (NAM tractor)	2 408
Tractor maintenance (George Landini)	3 217
Tractor maintenance (Tuinroete Agri)	3 361
<b>Total</b>	<b>48 118</b>

Source: The DoA 2003

However, it must be noted that some beneficiary farmers made a considerable effort to help out the farm from its difficult financial situation. They put money together from their own pockets to purchase seasonal inputs. For example, the new chairperson contributed nearly R4 000 for this purpose.

As mentioned earlier, there was little money left for the farmers to fully repay the R93 000 production loan in September 2003, not to mention the R48 000 installment payment of the infrastructure loan in the following month. In order to break this deadlock, three special arrangements were made between the farmers, the CSIR and the Land Bank in September with the intervention and assistance of the DoA. Firstly, CSIR allowed the farmers to use R30 000 of income from the Essential Oil Project for the repayment of the production loan (though the income was supposed to be reinvested exclusively in the Essential Oil Project, and not in the vegetable production business). Secondly, the repayment of the balance (i.e. R63 000) was extended to December 2003 when the future income from the three production contracts with McCain was to be used for the full repayment. Thirdly, the first installment payment (i.e. R48 000 per year over 10 years) of the infrastructure loan was also delayed until the farmers complete the full repayment of the production loan.

In the end, the farmers could repay only R34 400 of the R63 000 in December 2003. Again, the repayment of the balance (i.e. R28 600) was extended to June of the following year. Accordingly, the first installment payment of the infrastructure loan was also delayed. By the end of December 2003, the farmers had repaid a total of R64 400, therefore, the total amount of the outstanding loan repayment was supposed to be R76 600 (i.e. R28 600 of the production loan and R48 000 of the infrastructure loan), yet this was extended into the following year as explained above. Table 11 summarizes the loan repayments.

**Table 11 Repayments of production loan and infrastructure loan, Pacaltsdorp**

Details	Amount (SA Rand, Period: Jan-Dec 2003)
Amount of due repayment	93 000 (production loan) 48 000 (infrastructure loan)
Amount repaid for production loan	64 400 (30 000 + 34 400)
Total outstanding repayment	0 (28 600 for production loan) 0 (48 000 for infrastructure loan)
Cumulative outstanding repayment	0

The overall deficit for vegetable production had amounted to R191 734 at the end of 2003. It consisted of the up-front input costs (R74 747), the losses caused by the low productivity (R68 869) and the outstanding costs (R48 118). Table 12 is a summary of the overall deficit for vegetable production.

**Table 12 The total deficit in vegetable production over the past 38 months, Pacaltsdorp**

Item	Amount (SA Rand)
Up-front input costs	74 747
Losses caused by the low productivity	68 869
Outstanding costs	48 118
Outstanding loan repayments	*0 (76 600)
<b>Total</b>	<b>191 734</b>

\*R76 600 of the outstanding loan repayments was extended into 2004

### ***COWS***

Thirteen calves were purchased for R7 000 with a part of the beneficiaries' grant in November 2000. They are the property of the CPA and all the profit from them belongs to the CPA, which is reinvested. They are kept on two hectares of grazing land as well as on marginal land where vegetable production is impossible. No medicines, or supplementary feed are given to the calves and no veterinary services are supplied. At the same time, this grazing land is also accessible to all the beneficiaries who are allowed to keep their own cows on an individual basis on condition that they pay a R20 monthly grazing fee per cow to the CPA. Several beneficiaries who do not work on the farm keep their cows there. However, some of them do not pay this fee. The number of the owners and their cows changes from time to time, depending on the sales of their cows, the purchase of new ones and stock theft. However, the total number of cows should not exceed 15 as the grazing field cannot carry more cows in a sustainable manner.

In 2002, nine of these calves were sold for R13 900. The cumulative profit was R6 900 at the end of 2003. It means that the average annual profit was less than R2 300 per year.

### ***PIGS***

Pigs are farmed on a piece of the marginal land on the farm on an individual basis. All the beneficiaries have access to this land without any payment to the CPA. Therefore, all the income from pig farming belongs to the individual beneficiaries, and not to the CPA. The number of owners and their pigs changes from time to time, depending on the sales of pigs, the purchase of new ones and stock theft. Their numbers may exceed one hundred in a busy season.

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## ***THE ESSENTIAL OIL PROJECT***

In June 2002, the Council of Scientific and Industrial Research (CSIR) introduced the Essential Oil Project to Pacaltsdorp farm. The project aims at economic development and job creation for the formerly disadvantaged people. It is technologically supported by the CSIR and financially subsidized by the Department of Science and Technology (DST) Fund. The Essential Oil Project is run on the farm in parallel with vegetable production and is managed by the CSIR separately from vegetable production. This 15 ha project uses a hardy plant called the rose geranium (*Pelargonium graveolens*) which is indigenous to South Africa and grows in poor sandy soil under dry conditions. The leaves of the rose geranium are distilled into fragrant oil which is marketed locally and overseas.

The Essential Oil Project employs five of the seven farmers and excludes the foreman of vegetable production and the mechanic. Physically less demanding posts are assigned to them, namely supervision of the project, record keeping and propagation of geranium plants. The chairperson is assigned to the supervisory task of the project. Ten field workers are regularly employed. They are all residents of Pacaltsdorp, but are not land reform beneficiaries. In addition, seasonal workers are employed at harvest.

This project is totally subsidized by the DST Fund. Nearly R 1 million in subsidy will be budgeted by March 2005 when the subsidy is withdrawn, and the farmers take over and manage the project. The subsidized items include the salary of 15 workers (i.e. five farmers and ten field workers), daily transport of these workers, plant materials, fertilizers, irrigation, mechanization, the construction of a steam distillation plant on the farm and the infrastructure for water supply for the distillation plant. Furthermore, a monthly leasing fee for the land used for this project is paid into a CPA checking account that was specially opened for the Essential Oil Project. All the financial transactions of this project are managed through this checking account in order to avoid confusion with the management of the vegetable production business.

The original plant materials brought by the CSIR were planted on the less fertile fields of the farm. Since then, seedlings are easily and cheaply propagated from the cuttings

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of the original plants. About 16 000 seedlings are necessary for one hectare. They are planted by hand; fertilizer is applied periodically; weeding and harvesting are done partly with chemicals and farm machinery. However, there is still a lot of work done by hand, which makes this project labour intensive. Three to four months after planting, the plants are ready for harvest. The plants produce three crops every year for up to five years. The fragrant oil of the leaves is steam distilled on the farm. The first harvest was completed in October 2002. Presently, the CSIR sells the oil overseas on behalf of the farmers.

Presently, all the income from this project is pure profit for the farmers as all the production costs are subsidized. Income from the project is set aside for re-investing exclusively in the Essential Oil Project and the farmers are not allowed to use this income for other purposes without the approval of the CSIR.

Due to the confidentiality of the information, it was not possible to show the financial analysis of the Essential Oil Project. By the end of 2003, four harvests had been completed and a total 156 kg of oil was produced. The rose geranium covered nearly 13 hectares of the farm. The merit of the Essential Oil Project is that it contributes to the creation of job opportunities, while it sufficiently generates a reasonable profit per hectare.

Probably, the Pacaltsdorp farmers would have stopped farming by now if it had not been for the Essential Oil Project. Firstly, the farmers got a handsome profit from the sales of essential oil, and a part of this profit (i.e. R30 000) was used to repay part of the production loan of the Land Bank. The future prospect of this project was one of the major reasons that the Land Bank decided to extend the farmer's loan repayment. Secondly, the Essential Oil Project regularly employed five farmers that the vegetable production scheme probably could not employ on a regular basis. Thirdly, the 15 employees of the Essential Oil Project were often used for vegetable production, which saved a considerable labour cost of vegetable production.

### 4.3 FINDINGS

There were several factors that contributed to the low productivity and the financial losses in vegetable production.

#### ***PRODUCTION KNOWLEDGE***

The farmers' lack of adequate production knowledge has led to the low productivity. The most basic and serious mistake made by the farmers was lack of soil testing. Soil testing must be done every year, preferably every time before crops are planted. It reveals soil pH, chemical composition of the soil and the existence of soil-borne pests such as nematodes. Soil tests guide the use of the correct type and dosage of fertilizers and chemicals according to various types of crops that require different soil conditions. As an example of this, one hectare of cabbages did not grow properly due to a lack of calcium in the soil. This could have been easily avoided if a soil test had been done.

Two hectares of pumpkins failed because the seeds were planted directly on the fertilizer which burned the germinating pumpkin roots. Seeds must be planted beside fertilizers as the roots of crops die when in direct contact with fertilizers.

Most of 1/6 hectare of beetroot was wasted due to late weeding. Weeds already outgrew and covered the beetroot seedlings. Weeds competed for nutrition and sunlight, which negatively affected the growth of the seedlings. By this time, weeding became difficult as the exact location of the beetroot seedlings was not clear and the well-grown weeds were harder for workers to remove by hand. Finally, the farmers gave up this beetroot crop. Many of one-hectare green beans were wasted and destroyed due partly to the same problem of late weeding.

Another cause for the lower yield of green beans arises from the unusual reproduction mechanism of beans in general. Beans produce far less pods when their vegetative growth is over stimulated by a high level of nitrogen application, which is the opposite to other crops that become more productive when a lush and healthy vegetative growth is achieved. Green beans produce a far lower yield if nitrogen is

supplied heavily at about flowering stage (Farmer's Weekly, 2004d). Even the application of the correct amount of nitrogen at the correct time can result in a lower yield if the soil already has sufficient nitrogen. This is another example of how soil testing before planting is important.

A quarter hectare of cauliflower failed. The cauliflower seedlings were already stressed when the farmers received them from the nursery. Through the observation of the production process, however, it was also obvious that the irrigation was insufficient. The crops in the field often showed a symptom of wilting and the soil was often found with insufficient moisture. Cauliflower is a very sensitive crop so that even one day of wilting stress can jeopardize it, especially in the latter stage of development (Farmer's Weekly, 2004c)

Another one hectare of cabbage was destroyed by the application of an incorrect dosage of herbicide though the foreman had grown cabbages several times before. He explained, "It is difficult to adjust the correct dosage."

### ***MANAGEMENT SKILLS***

Two workshops of production planning held on the farm revealed that the farmers had limited management skills. They were not able to make even a rough estimation of profit, not to mention a detailed estimation. They did not keep detailed records of production. All the records of the production different vegetables were jumbled together, which made it impossible to make even a rough estimation of the profit margin of each separate vegetable crop grown. They did not do the production research of different vegetables as well as the marketing research. It was not sure if the farmers were unable to do these things or if they simply did not try to do it.

The lack of production research, marketing research and proper record keeping led to unplanned production strategies. That is, the decisions concerning which vegetable to grow, when, how and how much were made by guesswork. This is a part of the reason why the farmers repeated similar mistakes and repeatedly tried difficult vegetables such as cauliflower and green beans and the less profitable vegetables such as pumpkins and beetroot. The profit margin of pumpkins and beetroot is roughly 50

% less than for green beans, carrots, potatoes, sweet corn, cabbages and broccoli (McCain food Pty Ltd, 2003).

### ***LACK OF INCENTIVE***

The 59 beneficiaries owned the farm. However, most of them did not work on the farm as they had different priorities. The farmers lacked the incentive to work harder because it was known that the future profit would be shared by all the beneficiaries, even those not actively working on the farm. This is one of the major reasons why nearly all the farmers did not feel like working over time, on weekends and on public holidays without any extra payment, even if they knew that it was necessary to make their farming enterprise successful and profitable. The following words of one farmer describe this feeling well, "Those who do not work on the farm always stand first in the line." Thus, nearly all of the farmers felt little incentive to work more than for the fixed salary they received.

### ***TENDENCY TO AVOID ARGUMENT***

It was observed that the farmers had a tendency to avoid discussing personal mistakes and shortcomings that had negatively affected their farming enterprise. The following are a few of these examples:

The foreman of the vegetable production scheme repeatedly caused substantial losses by implementing incorrect production methods as mentioned earlier. Other farmers were furious about these mistakes. Yet when the next weekly meeting took place, the foreman was never asked to explain the cause for the losses, nor was a solution to the problem discussed in front of him. One of the farmers was strongly suspected of using the CPA's pick-up truck for his own benefit, but once again the subject was not asked to explain his actions. There was also a suspicion among the farmers that funds had gone missing. The amount of money recorded in an account book and the amount of cash left were considerably different. Nothing was done or said in the weekly meetings. Some of the farmers complained about a severe lack of commitment from the other farmers, yet this problem was not discussed, either.

None of the above problems were put on the agenda for discussion, therefore they continued to affect the scheme. All of the above has led to poor commitment, less cooperation, little communication among the farmers, irresponsibility, distrust, apathy and finally to the overall lack of efficiency.

### ***NEW LABOUR LAW***

The introduction of a new labour law puts pressure on the profit margin. It sets the minimum farm wage at R40/person/day. This is 25 ~ 50 %, and in some cases over 100 %, higher than the wage before the introduction of the new law. This is a heavy blow to labour intensive industries including the horticultural industry, though it does benefit the workers. Labour was nearly 40 % of the cost of vegetable production at Pacaltsdorp farm. The ratio would have become higher if the 15 subsidized workers of the Essential Oil Project did not often help in some operations of vegetable production such as planting, weeding and harvesting.

### ***DROUGHT***

Drought hit severely from October to the end of December in 2003. During this period, the farmers had to irrigate more often. The cost of irrigation was very high: R600/day for diesel, plus the cost of electricity.

## **4.4 CONCLUSION**

Pacaltsdorp farm is a 70 ha commercial vegetable farm that had been owned and farmed successfully by a commercial farmer for over 20 years before its purchase by a group of 59 land reform beneficiary households in 1999. This farm has a potential gross annual income of R300 000 from the 30 ha of cultivable land. Assuming a profit of 25 % of the potential gross annual income, the potential annual profit per beneficiary household is only R1 271, a very small amount.

The group of 59 beneficiary households received a total amount of R944 000 through SLAG. They purchased the farm for R850 000 through their grant in 1999 in order to start a communal vegetable farming business. In November 2000, about 15

beneficiaries managed to start vegetable production with the help of public and private support services. From the beginning, however, the beneficiaries lacked sufficient funds necessary for a viable commercial farming as most of their pooled grant was spent on the purchase of the farm. In retrospect, at least, R788 500 was necessary at this stage. Of which amount, R460 000 worth of infrastructure was provided by the DoA in and after 2002, and the balance of R328 5000 was provided by the Land Bank in the form of two loans in 2002, i.e. R78 500 for a production loan and R250 000 for an infrastructure loan. If new machinery and implements had been purchased, instead of the very old ones purchased for R250 000 from the previous farm owner, well over R1 million would have been necessary.

A major cause for the spiralling financial losses was the beneficiaries' lack of proper knowledge and skill in all aspects of management. The poor financial management and marketing strategies led to the unplanned production. The decisions concerning which vegetable to grow, when and how much to plant were based on guesswork. Guesswork is a great enemy of efficiency gain. The lack of proper production knowledge resulted in lower yields per hectare and the repeated crop failures. In addition, the introduction of new labour legislation put additional pressure on the farmers' profit margin, labour accounting for nearly 40 % of the cost of vegetable production. The farmers failed to complete the full repayment of two Land Bank loans. The total deficit of vegetable production over the last 38 months to the end of 2003 amounted to R191 734. During the same period, nine of 13 calves were sold with a profit of R6 900.

In June 2002, the CSIR established a 15 ha Essential Oil Project aimed at economic development and job creation for the formerly disadvantaged people. This R 1 million project was totally subsidized by the DST Fund and was managed by the CSIR separately from the vegetable production business. This project grows the indigenous geranium to produce essential oil that is sold locally and overseas. It employed five of the seven farmers and ten other field workers who are not the land reform beneficiaries. The production of the geranium started on the less fertile fields of the farm in parallel with vegetable production. By the end of 2003, the geranium plants covered nearly 13 ha, four harvests had been completed, and a total 156.3 kg of essential oil was produced and sold by the CSIR on behalf of the farmers. So far,

income from the oil sales is a net profit for the farmers as all the production costs are subsidized. The profit is reinvested exclusively in the Essential Oil Project and the farmers are not allowed to use it for other purposes. With the permission of the CSIR, however, a part of this income was used for a loan repayment of the Land Bank due to their difficult financial situation of the vegetable production business. The prospect of the Essential Oil Project was the major reason that the Land Bank decided to extend the farmers' loan repayment. The farmers would have stopped farming by now if it had not been for this heavily subsidized technological and managerial intervention. They will take over and manage the project after the subsidy is withdrawn at the end of March 2005.

A major factor negatively affecting the overall farming project was the beneficiaries' lack of incentive, which discouraged many of the beneficiaries to participate in their communal farming business. A minimum wage in return for hard and muddy work was not attractive for those who already had a job. Irregular and unreliable payment for labour due to fluctuating vegetable production was not attractive to the unemployed, except for those who were desperate. What symbolized this lack of incentive the most was the poor attendance of the beneficiaries in the monthly general meetings where there was no immediate economic return to them. It was impossible to get the equal effort and commitment from all the beneficiaries who had different priorities when it was realized that the future profit would be equally shared by all of them. This unfairness resulted in the lack of commitment by the farmers. The situation was further exacerbated by the farmers' avoidance of open discussion and argument. Their problematic issues were not put on the agenda for discussion, therefore they continued unchanged. This has finally led to the lack of an efficient farming operation.

## CHAPTER 5

### CASE STUDY OF THEMBALETHU FARM

#### 5.1 THEMBALETHU

Since the late 1940's, Lawaai kamp developed as a black informal settlement outside George. In 1976, the George Municipality planned a new township for the residents of Lawaai kamp and in 1982 they were forced to resettle 3 km away from George. In 1986, Thembaletu was proclaimed a separate municipality. In 1995, it was incorporated into the George Municipality (George Development Consortium, 2000).

Bordered on Pacaltsdorp and George, Thembaletu is also suitable for horticulture. There is a good market for fresh vegetables and there are many kiosks and street vendors that sell fresh vegetables.

#### 5.2 SANDKRAAL

Sandkraal is situated in Thembaletu and was formerly a commercial vegetable and dairy farm. The Department of Housing (DoH) purchased the farm for a housing project but it was used for an agricultural project. The farm was leased to a Trust consisting of 28 households of Thembaletu since 1999. Then the farm was divided into 2 to 11 ha plots that were sub-leased to each of 28 families for a period of five years. The 28 households are given an option to purchase these plots by applying for LRAD grants (Burger *et al*, 2002).

The details of the criteria and procedures to select beneficiaries were not obtainable. According to one of the 28 beneficiaries, in order to receive agricultural land, a household member had to undergo agricultural training offered by the Boskop Training Center, a former agricultural training parastatal. The agricultural training was held on land owned by the municipality in Thembaletu and those who completed the training

received land in 1999. However, one informant said that some of households that did not complete the training were also chosen as beneficiaries by political arrangement with a local agricultural organization.

The 28 households were required by South African law in 1999 to form a legal entity before the farm was leased to them. This was mainly for the sake of legal procedures related to land transfer. The households opted to form a Trust and decided to farm their plots on an individual basis. The Trust owns the farm and has legal power over it. In theory, a Trust is a legal structure where the board of trustees is given the management and decision-making powers (Mokgope, 2000). The trustees consist of four persons chosen by the members. The day-to-day role of the Trust is to manage the communally owned tractors and to lease them to the members. The board of trustees decided at first that each household should pay R 100 per month for its administration, mainly for the tractor maintenance. As most of the members did not pay the fee, the trustees decided to lease the tractors to the members at R 75/tractor/hour. However, the Trust still lacked enough money for the proper maintenance of the tractors.

A general meeting of the Trust is held on the farm every two to three months. Notices of the next general meeting are sent to all the members inviting them to attend. The usual number of participants in the general meetings is 10 to 15 and thus about half of the 28 households do not participate. It is assumed that one of the major reasons for this is the absence of immediate economic return to the participants.

### **5.3 FARMER SUPPORT SERVICES**

The DoA provided the 28 households with support services similar to that provided to the Pacaltsdorp farmers, which included various farmers' days, information days and activities that were presented at the DoA. The DoA provided a total of R5 082 453 for infrastructure through a donor fund (DoA, 2003b) which included one medium-sized tractor, water and electricity reticulation, irrigation system, water storage facility, fencing, soil preparation and environmental impact studies (Burger *et al*, 2002). However, it did

not include the purchase cost of the farm, and the up-front costs such as housing and initial production inputs. A private company in George donated one medium-sized tractor to the Trust. It is estimated that the total cost per household exceeded R200 000 if the purchase price of the farm and the up-front costs are added.

#### **5.4 THEMBALETHU FARM**

##### **5.4.1 THEMBALETHU FARM**

Thembaletu farm is one of the 28 plots of Sandkraal and is 3.5 ha in size. It has clay-loam soil suitable for vegetable production. There is a large dam available for irrigation.

The farm was sub-leased to a beneficiary household of Thembaletu in 1999. In the following year, this family erected the first temporary dwelling where the family lived before the erection of the permanent house. The family carried all the building costs. Since 2002, electrical power to the farm has been stopped due to the frequent theft of power cables.

The household consists of a husband (56 years), a wife (55 years) and their two school-going children (male: 19 years and female: 17 years). The husband is formally employed as a clerk in George. His wife is unemployed and it is she who underwent the agricultural training given by the Boskop Training Center. The monthly family income of R3 000 consists of the salary of the husband, and the family does not receive any remittance or public welfare payments (old age pension, disability grant or child support grant).

##### **5.4.2 PRODUCTION AND MARKETING**

The main crops of the farm are mealies, potatoes and vegetables. The family also farm free-range chickens and goats. The wife does the farming and her husband helps her when he has spare time. Four middle-sized watchdogs are kept for security without

which the family is unable to farm. The issues of security, i.e. theft of power cables, crops and livestock, are big problems for the farming community in Thembaletu. Thembaletu farm is generally seen as a subsistence farm and helps to feed the family. However, the majority of the produce is sold in Thembeletu.

### ***CROP PRODUCTION***

The family started crop production in February 2000. The crops grown are mealies, potatoes, pumpkins, onions, cabbages carrots, spinach, beetroot, tomatoes and peas. Many of these crops can be grown throughout the year. Although there is an irrigation dam bordering the farm, the family relies on rain for their crops because the irrigation pump that normally supplied the farm was stolen. Unless the pump is replaced, the family will continue to face severe hardship should the area become drought-stricken during summer.

The farm is 3.5 ha in size and the residential site occupies about 0.3 ha. There is a portion of rocky ground where cultivation is difficult. Therefore, the total size of cultivable land is about 2.4 ha. It is divided into two camps, Camp A and B.

Camp A is about 2 ha and is under cultivation between October and May. The main crop grown here is mealies. For ploughing and planting, the family hires two tractors from the Trust at R75/tractor/hour; the price includes fuel. Small amount of pesticide and fertilizer is applied. Weeding is the toughest part of mealie production as the family does not apply any herbicide. Friends in Thembaletu, all women, help the family with the weeding operation. Two to four of them, including the wife, weed by hoe. They receive a daily wage of R20 per person. Weeding usually takes one to two weeks. Nothing is grown in Camp A during the winter season because, according to the family, crops do not grow well in winter.

The size of Camp B is about 0.4 ha. Crops are grown here in winter while Camp A is rested. A tractor is hired from the Trust for ploughing. Small amount of pesticide and

fertilizer is applied. It is not necessary to hire any labour as the wife alone can do all the work in the field.

Produce is transported about 3-4 km to the local market in Thembaletu by pick-up truck driven by the husband. The company for which he works allows him to use the pick-up truck for his daily transport to and from the work place. Produce is sold to kiosks, street vendors and friends. The price of the produce is negotiated on the spot. Should the company deny him the use of the truck then he would have a problem in getting his produce to the market. Buyers come to the farm when there is a bumper harvest.

In the summer of 2002, mealies covered most of Camp A. Other crops grown were potatoes, onions and tomatoes. Gross income was R1 300. Production cost was R1 954. Production cost exceeded gross income by R654.

Production inputs included tractors, labour, pesticide, fertilizer and vegetable seeds. Table 13 shows details of the production inputs. Two tractors were hired from the Trust for ploughing and planting. A few female friends in Thembaletu were hired for weeding. Fertilizer 2:3:4 (30) was used from the stock that had been purchased in 2000. Onion and tomato seeds and pesticide for mealies were purchased from an agricultural cooperative in George. A taxi was used for a trip to and from George for the purchase of these inputs. Mealie and potato seeds were retained from the previous harvest.

**Table 13 Production inputs in summer 2002, Thembaletu.**

Item	Explanation	Amount (SA Rand)
Ploughing & planting	Two tractors hired from the Trust @R75/hour.	745
Labour	Labour hired @R20/day	680
Fertilizer	2:3:4 (30) 50kg	100
Pesticide	For mealies	50
Onions	Seed	6.50
Tomatoes	Seed	6.50
Potatoes	Seed from previous harvest	0
Mealies	Seed from previous harvest	0
Dog food	For four watchdogs. @R120/month x 3 months.	360
Transport	Round taxi trip to George for input purchase.	6
<b>Total</b>		<b>1 954</b>

The most expensive input was R745 for tractors, followed by R680 for labour, R360 for dog food and R100 for fertilizer. Tractors and labour represented nearly 73 % of the total production cost.

Usually, the cost of dog food is not a part of the production costs in farming. In the case of Thembaletu farm, however, it can be regarded as one of the most important input costs since the four watchdogs were indispensable for protecting the crops from theft. About R120 worth of food (mainly the purchased mealie meal and milk) and leftovers from the family were given to the four watchdogs every month. The cost of dog food, therefore, amounted to R360 for one production season of three months.

The majority of produce was sold in Thembaletu. Gross income was R1 300. Mealies attained the highest income of R790, followed by R360 for potatoes, R90 for onions and R60 for tomatoes. Mealies were sold as “green mealies” (i.e. before fully ripe). The tonnage of the green mealies sold was not recorded.

However, the above does not include the following hidden benefits to the family:

- The family consumed green mealies during the growing period and some of other produce.
- Mealies were fed to chickens in the following year.
- Mealies and potatoes were retained as seed for the next season.

It is difficult to estimate with accuracy the actual profitability from the available data. The fact that the majority of the produce was sold means that the value of the hidden benefits was less than gross income, i.e. R1 300. By a rough estimation and supposing that the family consumed one-third of the total produce, the total profitability of the crop production in summer 2002 was around the break-even point.

In the winter of 2003, seven different crops were grown on an area of 0.15 ha within Camp B. These crops were potatoes, spinach, cabbages, peas, beetroot, carrots and

onions. Production cost was R844, gross income was R1 180, therefore surplus cash income was R336.

Production inputs included a tractor, pesticide, fertilizer, seeds and seedlings. Table 14 shows details of the production inputs. A tractor was hired from the Trust for ploughing. Fertilizer 2:3:4 (30) was used from the stock that had been purchased in 2000. Pesticides for cabbages and potatoes were purchased from an agricultural cooperative in George. Seeds of spinach, pea, beetroot and carrot, and seedlings of cabbage and onion were purchased at a nursery in George. A taxi was used for a trip to and from George for the purchase of these inputs. Seed potatoes were retained from the previous harvest.

**Table 14 Inputs for vegetable production in winter 2003, Thembaletlu.**

Item	Explanation	Amount (SA Rand)
Ploughing	Tractor hired from the Trust.	60
Fertilizer	Fertilizer 2:3:4 (30) 12 kg.	24
Pesticide	For cabbages	30
Pesticide	For potatoes	30
Potatoes	Seed from previous harvest	0
Spinach	Seed @ R6.50 x 2	13
Cabbages	Seedlings	140
Peas	Seed	20
Beetroot	Seed @R6.50 x 2	13
Carrots	Seed @R6.50 x 2	13
Onions	Seedlings	135
Dog food	For four watchdogs, @R120/month x 3 months	360
Transport	Round taxi trip to George for input purchase	6
<b>Total</b>		<b>844</b>

The R360 for dog food was by far the most expensive input, followed by R140 for cabbage seedlings, R135 for onion seedlings and R60 for the tractor.

Table 15 shows details of gross income. Potatoes attained the highest income of R400, followed by R157 for beetroot, R147 for cabbages, R146 for peas, R120 for spinach, R110 for onions and R100 for carrots.

**Table 15 Income from vegetable production in winter 2003, Thembaletu.**

Item	Explanation	Amount (SA Rand)
Potatoes	@20 (10kg) x 20 bags	400
Spinach	40 bunches	120
Cabbages	60 heads	147
Peas	@2 x 73 cups	146
Beetroot	54 bunches	157
Carrots	40 bunches	100
Onions	(No record)	110
<b>Total</b>		<b>1 180</b>

However, Table 15 does not include the following hidden benefits to the family:

- The family consumed some of produce.
- Potatoes were retained as seed for the next season.
- Vegetable wastes were fed to chickens and goats.

Again, it is difficult to estimate with accuracy the profitability of vegetable production in the winter of 2003. But, at least, there was a surplus cash income of R336 in addition to the hidden benefits the family gained.

In the summer of 2004, mealies covered most of Camp A. Other vegetables planted were potatoes, cabbages, spinach, pumpkins, tomatoes and onions. Most crops failed due to severe drought.

### ***CHICKENS***

In 2000, the family started to farm a small number of free-range chickens on 0.3 ha of the residential site. They have multiplied since then and by the end of 2003 they totaled 58 including chicks. Chickens are fed with mealies grown on the farm and they also pick up insects and weeds freely on the ground. Supplementary feeding and vaccinations against diseases and parasites are not carried out. The costs of chicken farming include the costs of fencing materials, the original chickens and starter mash fed to chicks. Chicken

farming in this form requires little labour as chickens look after themselves. Live chickens are sold at R30 per bird to anyone who wants to buy them.

The family did not keep records of chicken farming and thus the profitability could not be measured. Presently, the ongoing production cost consists only of the cost of starter mash fed to chicks. Besides the lower production cost, chickens are relatively easy and quick to reproduce. The family consumes the meat and eggs. Probably, chicken farming is beneficial to the family even though there is a limited cash income (see Appendix 1, pp73).

### **GOATS**

In 2003, the family started farming with Boer goats. As livestock owners in Thembaletu were reluctant to sell their goats, the family purchased four female Boer goats for R350 per head in Mossel Bay (50 km from Thembaletu). One of them gave birth to a female kid in the same year. Another male goat was purchased for R200 in Zoar (140 km from Thembaletu) in early 2004.

Goats are kept and graze on a portion of the rocky ground of the farm and vegetable wastes are fed to them. If the number of goats increases in the near future, they will be grazed on the nearby bush area. Neither supplementary feed (protein and mineral licks) nor vaccination and dipping against diseases and parasites are practiced. The initial costs were the purchase price of five goats (R1 600) and fencing materials. The cost of fencing materials was not recorded. Presently, there is no ongoing production cost in goat farming and, like chicken farming, it requires little labour.

At present, goats are not ready for sale. However, the family intends to breed them for future sales. As there is a sufficient demand for live goats in Thembaletu, they fetch between R250 and R400 per head. Goat farming is likely to become beneficial and bring cash income in the future if serious production problems such as stock theft and losses due to diseases are controlled.

## **5.5 FINDINGS**

There were several factors that constrained the production at Thembaletu farm.

### ***PRODUCTION KNOWLEDGE***

The family did not have their soil analyzed and seek proper fertilizer recommendations. The type of fertilizer applied was 2:3:4 (30) for all the different crops, some of which require different types of fertilizer. The family applied minimal fertilizer so that the crops showed typical symptoms of nutrition deficiency such as stunted plants and pale coloured leaves. In summer 2002, only 50 kg of 2:3:4 (30) was applied to two hectares consisting mainly of mealies. In winter 2003, only 12 kg of the same fertilizer was applied to 0.15 ha of potatoes and several vegetables. For attaining high yields of vegetables, higher rates of fertilizer, such as 2:3:2 (22) or 2:3:4 (30), are necessary at planting, followed by top dressing of nitrogen (Alleman and Young, 1993).

In livestock production, there was an absence of supplementary feed, vaccination and parasite control. All these practices may lead to serious production losses.

### ***PRODUCTION EFFICIENCY***

It was observed that there was a lack of production efficiency in the crops grown. For example, the production of cabbages was very low. Of the 464 cabbage seedlings planted out, only 60 cabbages were sold. Although the total number of cabbages harvested was not recorded by the family, 281 heads of cabbage should have been sold, assuming that the number of weak seedlings was 20 % (93 seedlings) and that the family's consumption was 30 heads over the four-week harvest period. The low productivity was not because of the weather conditions since cabbages grew very well at Pacaltsdorp farm during the same period.

In terms of land use, there was room for a further efficiency gain. Crops were planted

widely in the rows and the rows were wide apart. This practice requires more energy to plough a larger size of land unnecessarily and encourage weed growth that competes for nutrition and water. The weeding operation then requires more labour and energy. Thus the yield is lower than the potential yield from the same size of land (see Appendix 2, pp74-76).

### ***RECORD KEEPING***

Records of livestock farming were not kept by the family. Records of crop production were kept only for the summer of 2002 and the winter of 2003, and these records were insufficient. This means that the family did not have a proper financial management. The family followed production strategies based on guesswork: without analyzing which production method was the most efficient and which vegetable was profitable and by how much. The production of cabbages and onions in winter 2003 is a good example of this. These two vegetables were far less profitable compared to the other vegetables grown in the same period. The reason for this is that the family purchased expensive cabbage and onion seedlings, instead of producing them from cheap seeds. Cabbage seedlings were purchased for R140, while income from the sale of cabbages was only R147. Similarly, onion seedlings were purchased for R135, while income from the sale of onions was only R110.

### **5.6 CONCLUSION**

Sandkraal was once a commercial vegetable and dairy farm that the DoH purchased for a housing project. However, later it was used for an agricultural project. The farm was then divided into 2-11 ha plots that were leased to the 28 Thembaletu households since 1999 for a period of five years with an option to purchase. Over R 5 million worth of agricultural infrastructure was provided to them. The households are presently applying for the LRAD grants in order to purchase them from the DoH.

The 28 households opted to form a Trust to manage their farm. The day-to-day role of

the Trust is to manage two communally owned tractors and lease them to the members. They decided to farm their own plots on an individual basis rather than on a communal basis.

A 3.5-hectare farm, one of the 28 plots, was leased to a household consisting of an employed husband, an unemployed wife and their two school-going children. This family moved into housing built by the husband in 2000. The wife started to farm mealies, potatoes, vegetables and chickens in the same year, and goats were introduced in 2003. The majority of the produce was sold to kiosks, street vendors and friends in the residential area of Thembaletu, 3-4 km from the farm.

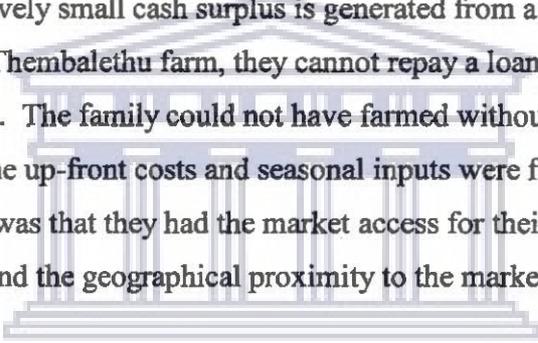
One of the four major overall problems of the farming operation identified by this study was a lack of security. The family could not farm without keeping watchdogs to save crops and livestock from theft and the feeding of these watchdogs was relatively expensive. Power cables and a water pump were stolen, which led to a crop failure during the drought-stricken summer of 2003. This was a serious financial loss for the family.

The second problem was a general lack of efficiency. The family did not possess adequate production knowledge and record keeping skills. Therefore, the production was based mainly on guesswork. The family was trying hard to improve their living conditions by making considerable effort and investment. However, their present traditional knowledge and experience will rarely achieve efficiency, let alone sustainability. In terms of land use, there was also considerable room for improvement. The cost of hiring medium-sized tractors and labour were also prohibitively expensive for such small-scale production.

The third problem was the low availability of livestock. The family had to purchase goats through their friends in Mossel Bay and Zoar since livestock owners in Thembaletu were reluctant to sell their goats to the family. In general, livestock owners in rural areas are reluctant to sell their animals.

The fourth problem was the group management system of the Trust. The Trust maintained two communally owned tractors to which its members were supposed to contribute a monthly fee. As most of the members did not pay this fee, the Trust lacked enough money for the tractor maintenance.

Except for the drought-stricken summer of 2003, the overall production was considered to be beneficial to the family though surplus cash income was relatively small. Subsistence production of this scale can improve the livelihoods of those who have an effective means to finance the agricultural inputs in the present situation, but not of those who do not have it. Those who have no other significant income simply cannot afford the necessary inputs. As a relatively small cash surplus is generated from a small-scale subsistence production like Thembaletu farm, they cannot repay a loan even if they get it from a financial institution. The family could not have farmed without the husband's monthly salary with which the up-front costs and seasonal inputs were financed. What was fortunate for the family was that they had the market access for their produce due to the availability of transport and the geographical proximity to the market.



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## CHAPTER 6

### CONCLUSIONS AND RECOMMENDATIONS

#### 6.1 CONCLUSIONS

Land reform combines a political and an economic rationale (Bernstein, 1996). Given the history of South Africa, the racial redistribution of land is a political imperative. The issue, however, is how it is justified economically. The economic justification, as Zimmerman (2000) says, depends on two possible economically beneficial effects: efficiency enhancement (commercial farming) and/or poverty alleviation (subsistence farming). Both of these types of farming enterprise must in their own way become efficient and economically viable operations for achieving poverty alleviation and economic development in rural areas, which is the aim of the land redistribution program.

A study of the literature points to several obstacles that are likely to hinder farming projects under the land redistribution program and prevent them from becoming efficient operations. Such obstacles are (i) the neo-liberal macroeconomic policy, (ii) the prevailing agro-ecology, (iii) the lack of a coherent post-transfer agricultural support policy, appropriate technology for smallholders, quality extension staff, credit access and market access and (iv) weak institutional capacity of the land reform beneficiary groups.

Today, commercial farming in South Africa is getting increasingly difficult. Agricultural profits are low and are declining over time (Coetzee, 2003). Deregulation and trade liberalization are allowing lower-priced imports to flood into South Africa. Consolidated supermarkets push down farmgate prices of a wide range of agricultural produce from grains to meats (Coetzee, 2003). Subsidies for commercial farmers are few. New taxes on water, land and capital gains, and the introduction of the minimum farm wage legislation have reduced the farmer's profit (Farmer's Weekly, 2003b; Coetzee, 2003). All these factors necessitate the expansion of farm size and economies of scale in order to

squeeze a thin profit margin for the sake of economic survival (Farmer's Weekly, 2004a), despite that there are the strong expectations of small-scale farming for promoting rural economic development, and the appealing argument of an inverse relationship between farm size and efficiency. Small farmers rarely have the capacity to meet the strict quality standards required by large retail chains.

Besides these artificial factors, the prevailing agro-ecological conditions severely limit arable agriculture in South Africa. Most of South African land is low potential soil under the semi-arid climate where crippling droughts are common. New irrigation developments such as new dams and the extraction of the ground water are not sustainable economically and environmentally. These basically make agriculture a high-risk business. As a result, only the well trained have the slightest chance to survive as commercial farmers in today's South Africa (Farmer's Weekly, 2003b).

In the case of Pacaltsdorp farm, there were shortcomings in the project design. The farm was too small for the group of 59 beneficiary households, or put another way, the group of 59 beneficiary households was too big for the farm in terms of economic impact on poverty alleviation. The potential annual profit per household was too small to improve the livelihoods of the beneficiaries. Another key shortcoming was the lack of sufficient funds. There was little money left for the beneficiaries to start a viable commercial production after their pooled grant was spent on the purchase of the farm and the initial small inputs. Group ownership and the group management system diminished the beneficiaries' incentive for participation and commitment as the immediate economic return was small and the distribution of profits was unfair.

The beneficiaries constantly accumulated financial losses over the 38 months as a result of the lack of all aspects of management. Paclatsdorp farm would have been dissolved by now if it had not been for the Essential Oil Project. In other words, heavily subsidized technological and managerial interventions like the Essential Oil Project are likely to help the emerging farmers.

In Thembaletu, over R 5 million worth of agricultural infrastructure was provided to a group of 28 households. It is estimated that the total cost per household exceeded R200 000 if the purchase price of the farm and the up-front costs were added.

At Thembaletu farm, there were two critical factors that enabled the family to start and continue subsistence farming. Firstly, the husband's monthly salary made it possible to finance the up-front costs and seasonal inputs. Secondly, the availability of transport and the geographical proximity to the market made it easy for the family to sell its produce.

Weak production and financial management and the lack of security caused serious financial losses to the family. Hiring middle-sized tractors and labour were prohibitively expensive for the small production scale of the farm. Except for the crop failure in the drought-stricken summer of 2003, however, the overall production was estimated to be beneficial to the family even though a relatively small surplus cash income was generated. Low availability of livestock constrained the family's effort to start livestock farming. The group management of farm machinery functioned poorly and there was a lack of the members' commitment. In summary, this type of subsistence farming is likely to improve the people's livelihoods if they have an effective means to finance the agricultural inputs.

## **6.2 RECOMMENDATIONS FOR COMMERCIAL FARMING**

For the success of commercial farming enterprises under the land redistribution program, the following recommendations are made:

- 1) **One-ownership projects** are necessary, and group projects should be avoided.
- 2) The size of the transferred agricultural land must support an **economic unit**. It does not make sense to bring new small farmers to a farm where an experienced commercial farmer has failed due to the pressure of liberalization.
- 3) **The careful selection of beneficiaries** is necessary. This needs to be based on their educational and agricultural background (Hansen, 1998).

- 4) **Mentors** are needed to support these carefully selected beneficiaries. An ongoing advice service on all aspects of management is necessary until they are able to survive on their own.
- 5) **A massive provision of infrastructure and financial service by government is necessary.**

### **6.3 RECOMMENDATIONS FOR SUBSISTENCE FARMING**

For the success of subsistence farming enterprises under the land redistribution program, the following recommendations are made:

- 1) **A massive provision of infrastructure and financial service by government is necessary.** This should include all the up-front costs such as housing and agricultural inputs.
- 2) **Intensive training** needs to be provided to all beneficiaries. This includes all aspects of management.
- 3) Research on **efficient technology and farming system** for subsistence farming is necessary. This should include biotechnology, farm machinery and implements suitable for small production.
- 4) An ongoing extension service needs to be provided to beneficiaries. This includes periodic soil testing, an animal husbandry service to facilitate beneficiaries' access to livestock and a veterinary service for livestock (Andrew *et al*, 2003). A marketing service should also be available for coherent groups of aspiring subsistence farmers so that they are able to supply a marketable quantity of quality produce consistently. The marketing service should include the provision of production plans based on market research and the coordination of transport to bring produce to the market until the farmers able to do it by themselves.
- 5) **Group or communal management should be avoided** as much as possible.

#### 6.4 RECOMMENDATIONS FOR PACALTSDORP FARM

Below are some suggested practices that could help Pacaltsdorp farm.

- 1) The farmers need to take **intensive training courses** consisting of all aspects of management.
- 2) **Further infrastructure provision by government** is necessary.
- 3) **An ongoing extension and consultant service** is necessary. This can be substituted by a **mentor**. A mentor supports the farmers in all aspects of management until they can manage their farm on their own.
- 4) **The Essential Oil Project** may need to replace most of the vegetable production as it is easier and less risky than vegetable production. Besides the hardy nature of the geranium plant, the advantage of the project is that no one will steal the geranium plants as they are not edible. An ongoing marketing support service is necessary even after the farmers take over the project since they would have difficulty in marketing, especially overseas and brokers and middlemen could easily take advantage of them.

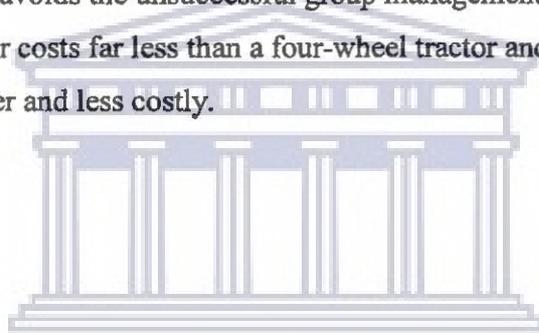
#### 6.5 RECOMMENDATIONS FOR THEMBALETHU FARM

The followings are suggested practices that could help Thembaletu farm:

- 1) The household especially the wife needs to take **intensive training courses**. It should include all aspects of management.
- 2) **An ongoing extension and consultant service** is necessary. It is preferable that soil testing is subsidized and advice of the soil testing is given to the wife.
- 3) **A special form of crop rotation** is recommended. This means that vegetables are grown intensively on 0.05 ha (22 m x 23 m) plot. Every three weeks, another 0.05 ha is cultivated in the same way as the first plot, and this procedure is repeated for a year. The number of plots cultivated through the year is 18, totaling 0.9 ha in size (assuming a production period of three months for each

plot). The number of plots under cultivation during the same time is 5 (0.25 ha: 50 m x 50 m) (see Appendix 3, pp77-78).

- 4) **Crop rotation in Camp A is recommended.** Legumes and root crops can be grown in order to break disease cycles and the buildup of nematodes in the soil. Legumes increase the nitrogen content of the soil with the working of nitrogen fixing bacteria.
- 5) **Purchase of seedlings should be avoided.** Seedlings should be grown from seed because it is very cheap and easy.
- 6) **A two-wheel handy tractor that is able to pump water would be suitable for this type of subsistence farming.** It is preferable that the tractor is provided directly to the family because it avoids the unsuccessful group management of the tractors. The two-wheel tractor costs far less than a four-wheel tractor and its operation and maintenance are easier and less costly.



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## Appendix 1

### **Farming systems for small-scale farmers in the Western Cape**

Gavin Armstrong reveals from over 20 years of research and experiment on low input, sustainable agriculture for small resource farmers that livestock farming of pigs, chickens and sheep can generate cash profit and benefits in kind, even on the marginal soils and arid conditions of the Western Cape Sandveld region. This valuable research is reported in detail by Catling (1997). It shows that there are four necessary conditions for the successful low input sustainable agriculture; these are the up-front costs, livestock breeds suitable for the area, a proper management and the market access.



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## Appendix 2

### Results of an experimental vegetable garden in Pacaltsdorp, and discussion on plant spacing and plant population.

During the summer of 2003, the researcher prepared a garden plot (5 m x 9 m) in Pacaltsdorp and conducted an experiment to investigate how efficiently land can be utilized for vegetable production (Okada, 2003). Several vegetables including spinach, cabbages and beetroot were grown with an application of fertilizer (2:3:4 (30): 7 kg + LAN/KAN (28): 3 kg). Table 1 compares the plant population of spinach, cabbages and beetroot between Thembaletu farm in winter 2003 and the experimental garden in summer 2003.

**Table 16 Comparison of plant populations: Thembaletu farm (winter 2003) vs. the experimental garden (summer 2003), Pacaltsdorp.**

	Thembaletu farm			Experimental garden		
	Plant population	Area planted (m <sup>2</sup> )	Area/plant (cm <sup>2</sup> )	Plant population	Area planted (m <sup>2</sup> )	Area/plant (cm <sup>2</sup> )
Spinach (Swiss Chard)	524	102	1946 (44cm x 44cm)	224	6.5	290 (17cm x 17cm)
Cabbage	464	302	6508 (81cm x 81cm)	36	8.5	2361 (48cm x 48cm)
Beetroot	544	113	2077 (45cm x 46cm)	288	7.5	260 (16cm x 16cm)

In Thembaletu farm, a total of 524 spinach plants were planted in a plot of 102 m<sup>2</sup>; one spinach plant occupied 1946 cm<sup>2</sup>. Similarly, 464 cabbages and 544 beetroots were planted in plots of 302 m<sup>2</sup> and 113 m<sup>2</sup>, respectively; one cabbage and one beetroot occupied 6508 cm<sup>2</sup> (81 cm x 81 cm) and 2077 cm<sup>2</sup> (45 cm x 46 cm), respectively.

In the experimental garden, 224 spinach plants were planted in a plot of 6.5 m<sup>2</sup>; one spinach plant occupied 290 cm<sup>2</sup> (17 cm x 17 cm). Similarly, 36 cabbages and 288

beetroots were planted in plots of 8.5 m<sup>2</sup> and 7.5 m<sup>2</sup>, respectively; one cabbage and one beetroot occupied 2361 cm<sup>2</sup> (48 cm x 49 cm) and 260 cm<sup>2</sup> (16 cm x 16 cm), respectively. It was demonstrated that these vegetables grew well at this higher plant population if fertilizer and pest control were properly applied. Although the production season, the applied fertilizer and the soil quality were different between Thembaletu farm and the experimental garden, it was shown that the land use of Thembaletu farm was very low.

Alleman and Young (1993) of the Horticultural Centre Pinetown at Cedara, Kwazulu-Natal wrote a valuable and indicative report on plant spacing and plant population. The excerpt quoted below is relevant to the plant spacing used on the experimental garden shown in Table 16.

*"There is no precise answer to the question, 'What is the optimum spacing for a specific vegetable crop?' Factors such as climate, soil, cultivar (particularly relative size of plant), seed/plant cost, access for implements, market requirements (especially product size), managerial ability of the grower, and many others, all play a role.*

*From the plant's point of view, planting on the square is the most favourable plant arrangement. However, it is often more practical to plant more densely in rows drawn wider apart. This allows for easier access for cultivation, pest, disease and weed control, inspections, harvesting and so on.*

*In general, fruiting crops, such as beans, pumpkins and tomatoes, respond differently to planting density than do most other vegetable crops, such as carrots, cabbages and sweet corn.*

*When optimum population levels (which are capable of producing good crops) are reached, the population of fruiting crops may be increased by between 5 and 10 times before yields are depressed, whereas the population of other vegetables can be increased only between 1 and 2 times before this occurs, i.e. fruiting crops have a wider range of acceptable populations than the others. For example, a normal green bean spacing of 60 mm x 600 mm may give a good crop, but trials have shown that yields are depressed only when spacing drops to below 25 mm x 200 mm. Conversely, yields of cabbages at a population of 45 000 plants per hectare may be ideal, but may be severely depressed at over 100 000 plants. In the case of fruiting crops, yields generally increase with denser plantings, yields per plant are less affected, the size of individual fruits is little reduced, the harvest is more concentrated, and the crop tends to mature slightly earlier. With the other group of crops, yields (mainly of smalls and mediums) increase, the size of the individual product is greatly reduced, the harvesting period is more protracted, and the crop tends to be delayed."*

Table 17 shows their recommended seeding rates and spacing for a wide variety of vegetables.

**Table 17 Seeding rates, plant spacing and plant population recommendations from Alleman and Young, 1993.**

Vegetable	Seed/g	Seeding rate/ha			Sowing Depth mm	Usual range of spacing	
		Seedtray (g)	Seedbed (g)	Direct (kg)		Plant mm	Rows mm
Asparagus	40-60	300-500	1000		15-20	400	1800
Bean, broad	0.5-1			75	40-50	200	800
Bean, bush	2-5			50-100	20-40	50-80	45-60
Bean, runner	2-4			50	20-40	100	1000
Bean, Lima	0.5-1			30-50	30-40	300-400	1000-1500
Beetroot	4.5-6			10	15-20	50-70	200-300
Broccoli	175-330	150-250	300-500		15-20	300-450	600-700
Brussels sprout	225-350	70-150	250-350		15-20	400-500	900-1000
Cabbage	200-350	120-200	300	0.5-2	15-20	350-450	500-600
Chinese cabbage	250-350	200-250	250-300		15-20	300-400	500-600
Carrot	600-1200			2-3	15-20	20-50	200-400
Cauliflower	200-400	120-200	250-500		15-20	400-500	600-700
Celery	1800-3000		500		10	150-200	200-300
Chili	150-175		250		15-20	400-500	600-800
Cucumber	30-55	150-200		2	20-30	350-500	1200-1400
Eggplant	215-250	1000-1500	300-500	3	15-20	500	700-800
Leek	280-400	140-200	4000	8	15-20	100	300
Lettuce	600-1200	700-1500	500	1.5-3	15-20	250-350	400-500
Marrow, bush	4-10	300-500		4-6	20-30	350-500	800-1200
Melon	20-40	2000-4000		3	20-30	250-350	1500
Onion	225-300		3000-5000	7	15-20	60-80	200-300
Parsley	550-800	2000-2500		3	15-20	100	300
Parsnip	250-400			3-4	15-20	150	300
Pea	3-10			50-75	30-60	50-80	600
Potato	Tubers			3000	70-100	300-400	900-1000
Pumpkin	4-5			4	20-30	600-700	2500
Radish	75-110			6	15-20	40-60	150-200
Spinach	100-140			10	15-20	70-80	200
Sweet pepper	150-175	150-200	250		15-20	400-500	600-800
Sweet potato	300-400 mm cuttings			30 000-3 5 000 cuttings		On ridges 250-400	900-1000
Swiss chard	40-50			8-10	15-20	200-400	400-600
Squash, trailing	4-10	1000-1300		2-3	20-30	400-500	1000-1500
Sweet corn	3-8			12-15	25-40	250-350	700-800
Tomato, table	200-350	100-200	250-300		15-20	350-500	1400-2400
Tomato, processing	200-350	100-200	250-300	0.5-1	15-20	450-550	1000-1400
Turnip	300-500			4	15-20	80	400-600
Watermelon	10-20			3-4	40-60	500-600	1700-2000

## Appendix 3

### Benefits of the suggested crop rotation farming method for Thembaletu farm

- 1) Weeding can be easily done by the wife alone because the plot is small (0.05 ha: 22 m x 23 m, and another plot after three weeks) and the intensive vegetable production prevents excessive weed growth. Therefore, it saves labour that is one of the most expensive inputs of Thembaletu farm.
- 2) Income is generated every three weeks, except for the initial three months before the first harvest. From the results shown in Chapter 4 and Appendix 2, it is possible to generate a gross cash income of more than R700 from 0.05 ha plot. About R210-R410 of this would be surplus cash profit even though a sufficient amount (R200-R400) of fertilizer and chemicals are applied, and R90 is spent on dog food (R120/month).
- 3) Each plot can be rested for the rest of the year (7-9 months), which helps the soil to recover.
- 4) The family can consume fresh vegetables throughout the year
- 5) Goats and chickens are fed with vegetable waste throughout the year
- 6) The family can grow mealies on the rest of the 1.5 ha plot in summer. The yield of one ton/ha for a subsistence farming system may be achievable on some soils with no fertilizer application if weeds, cutworms and stalk borer control are done properly (Farmer's Weekly, 2003c). Given the suitable soil and climate of the Thembaletu farm area, it is possible to get a yield of more than 1.5 ton/ha if a small amount of fertilizer is applied.

The mean producer price of 1.5 ton of grain mealies (yellow and white) was about R1 762 (R1 175/ton) during the first half of 2004, though the price was volatile and fluctuated between about R900 and R1 450/ton. 1 500 kg of grain mealies makes about 1 125 kg (75 % of the total weight) of mealie meal flour. The consumer price of 1 125 kg of mealie meal equals to R2 998 as the average consumer price of the major brands (Iwisa, Impala and White star) was R26.65

per 10 kg at major supermarkets (Pick & Pay and Shoprite) in 2004. Therefore, the value of the 1 125 kg of milled mealie crop is R2 998, and this is the staple food of black families in South Africa.



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