LINKING COMMUNAL SMALLHOLDER AVOCADO FARMERS IN VENDA TO HIGH-VALUE LUCRATIVE MARKETS IN LIMPOPO PROVINCE

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DECLARATION

I Lusito Daniel Khumalo, certify that the material reported in this thesis represents my original work, except where acknowledged. I further declare that these results have not otherwise been submitted in any form for any degree or diploma to any University.

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Prof A.T. Modi

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DEDICATION

This thesis is dedicated to my children Lihle, Mpendulo and Vusi.

ABSTRACT

Inclusive business models are possible through the identification of a strategic ‘fit’ between large agribusinesses such as Westfalia and smallholder farmers. A gross margin analysis was used to determine the profitability of applying chemical control of avocado fruits to enhance quality and redirect market channels to maximize income. A complementary relationship was found in an early market window when smallholder farmers aligned their production activities with Westfalia. There was a positive impact on the gross margins of small farmers due to the beneficial association with a large company. Key success factors were economies of scale, efficiency in logistics and improved quality. A business model emerged indicating the potential for smallholder farmers to profit from participating in big business in the avocado industry.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

1.1 Importance of the study

The food security of households is dependent on adequate access to food either through production on family land or through affordability through markets and optimal food utilization for specific individual dietary needs (Riely *et. al.,* 1999). The development of smallholder farmers has been a key policy objective of the South African government since the dawn of democracy in 1994.

One of the major challenges to overcome was the duality of the agricultural sector where small-scale and communal farmers, characterized by the lack of resources and exclusion from mainstream markets, had to compete with large scale commercial farmers that benefited from immense State support in the previous dispensation. Despite this effort, almost twenty years into democracy, there are very few success stories that have emerged. One such case is the subject of this thesis. In general, fruit farming in Vhembe district (previously known as the Venda homeland) has a long history as part of the way of life of people in the area.

It is common that each household has at least one tree of the five main subtropical fruit crops that thrive in that climate. These are mango, litchi, banana, avocado and guavas. Avocado *Persea americana* is the most profitable fruit which has three distinct races, namely Mexican, Guatemalan or West Indian origin (Chia and Yokohama, 1991). 'Fuerte' is the popular cultivar mostly grown by smallholder farmers in Vhembe district in Limpopo province. This cultivar is drought tolerant hence more suitable for dryland production but is highly susceptible to blackspot *Pseudocercospora purpurea* a fungal infection that causes dark blemishes on the avocado fruit reducing its aesthetic value.

Poverty is a dominant feature of small-scale agriculture in Africa caused to a large extent by resource constraints and technology stagnation (Ghatak *et al.*, undated). Previous efforts by the State have in the main been production-oriented. The extension system in the country was also largely geared to provide farmers with technical

production support only in isolation of the other support services that the farmer requires. Recently, there has been the realization that technical production skills, although a necessary precondition for farmer development, are not sufficient when provided in isolation without the attendant farming equipment and financial support. The renewed focus is towards a market-oriented approach that seeks to integrate farmers with mainstream high-value markets.

The challenges confronting smallholder avocado farmers in Vhembe are many and complex. Principally, they relate to failure to meet market requirements that demand good quality, quantity and a consistent supply of product throughout the year. These farmers lack throughput (quantity), safe products (quality) and the ability to meet deadlines (consistency). This is a huge market barrier and since it is a prerequisite for a farmer to qualify for a retailer grower programme.

In the main, most of the incapability of the small farmers arises from the lack of capital to invest in infrastructure such as irrigation systems that increase yield, mechanization to expand land area, and working capital to purchase synthetic fertilizers and chemicals for intensive production. There is also the added cost of managing quality management systems for market access such as GlobalGAP (Global Agricultural Practices) for the farm and HAACP (Hazard Analysis Critical Control Points) for the pack house.

The importance of the study stems from the gap in literature where studies of efforts to intergrate communal smallholder avocado farmers with large agribusiness in South Africa are not widely documented. The marketing of avocados overseas has become very challenging due to the poor quality of exported fruit to the EU. The avocado industry in South Africa has also over the years become very sophisticated and highly competitive since the EU market is the most profitable in the world.

The supply of low quality fruit riddled with blackspot gives the European buyers more power to force South African producers to accept lower prices (Nelson, 2012). The control of blackspot *Pseudocercospora purpurea* (Duvenhage, 1994) is achieved using copper sprays (Copperoxychloride) and sooty blotch *Akaropeltopsis* sp. (Smith, *et al.*, 1985) is also controlled effectively with the same treatment. This has to be done timeously for best results if premium fruit quality is to be achieved.

The realization of the magnitude of the negative impact of early immature fruit deleivered to market by small growers from Venda moved SAAGA (South African Avocado Growers Association) in 2007 to mobilize stakeholders such as Subtrop (Subtropical fruit growers association) Limpopo Department of Agriculture and the Vhembe avocado growers association (VAGA) to assist in arresting the problem. Subtrop was tasked with facilitating the registration of small growers in Venda to become members of SAAGA inorder to benefit from the commercial industry's technical expertise through regular meetings and study groups. The objective was to educate growers on best farming practices that prevent unintended damage to the industry through loss of consumer confidence (Subtrop, 2009).

The importance of quality management is especially relevant when the fruit is transported from Limpopo by road over 26 hours to the Cape Town harbour and eventually shipped over 21 days to Europe (Bower and Cutting, 1997). Optimum management of the door-to-door cold chain system is necessary to prevent the softening of fruit on arrival overseas, fruit disorders and the surfacing of physiological diseases such as blackspot (Nelson, 2006).

In 2008 and 2009, approximately 64% of South African produced avocados were exported (DAFF, 2010). However, Nelson (2012) reported that in 2009, South African exported avocados were considered to be of an inferior quality. Poor fruit quality at the final destination in supermarkets overseas is a major concern during exportation. Thus, the development of valuable postharvest technologies could improve the quality and consequently extend the shelf life of avocados locally and during export to distant markets (Kassim, 2012).

The gap between the rich and poor in South Africa continues to widen. In 1998, South Africa's poorest 40% of households (equivalent to 50% of the population) received only 11% of total income, while the richest 10% of households (equivalent to only 7% of the population) received over 40% of total national income (May, 1998). This is illustrated by the rise in the South African Gini coefficient from 0.68 (1991) to 0.77 (2001) (Schwabe, 2004). Poverty is more pervasive in rural than urban areas particularly in the former homelands where 78% of the rural population is chronically

poor which makes up 65% of the national statistics (Machethe, 2004). Hemson *et al*., (2004) was of the view that if the rural agricultural economy were revived that could address food insecurity, raise rural incomes and promote non-farm activities such as small businesses like spaza shops, barber shops, etc. This could create a new source of product demand for goods and services thus contributing to job creation and contribute to breaking the poverty cycle.

Empirical evidence has shown that small-scale agricultural units have achieved higher returns to land and capital over time than large-scale agricultural operations (Delgado, 1997). Rural education can be a powerful investment for achieving agriculture productivity growth and through non-formal training at farm level, including training for farmers and women's organizations to develop user-friendly technologies that enable them to carry out their own agricultural research (IFPRI, 2002). Westfalia accounts for almost 40 percent of the 1.5 million 4kg cartons that are exported annually to Europe and Asia from South Africa. Figure 1 shows the EU market share for avocados by exporters. The chart shows that Westfalia was the market leader (36.7%) in 2009 and has continued over the years although competition from other companies such as Halls & Sons (22.4%) and Katope (13.8%) has increased significantly in recent years. The biggest competitor to Westfalia is ZZ2, a major tomato and avocado supplier that still focuses primarily in the local market.

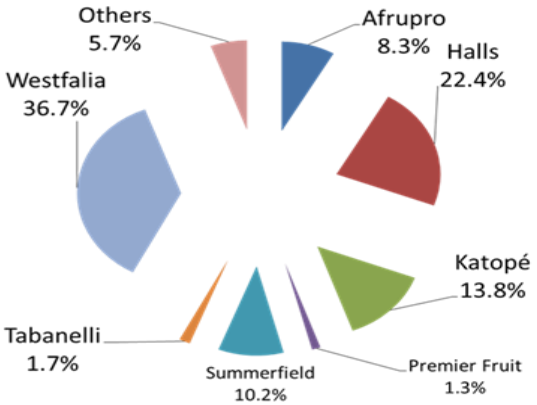


Figure 1. EU Market Share by South African Avocado Exporters **(Source: Westfalia Marketing, 2011**

The functioning of the agri-food chains have been affected by both by the dismantling of state-led enterprises such as marketing boards due to privatisation and deregulation policies and the introduction of new organizing principles that install alternatives for monopolies or oligopolies (Vellema, 2011). Prior to deregulation farmers had only to concern themselves with production on-farm and were not involved after the farm gate. Beyond that the co-operatives were responsible for collecting, transporting and marketing their members produce. Similarly, the procurement of farm inputs such as fertilizer, seed and chemicals was the responsibility of the co-operative which bought inputs in bulk for all members at lower prices by exercising bargaining power.

Although subsistence agriculture plays an important role in food security the need for a quick transition for smallholders to reach a commercial level has become a priority if they are to become sustainable in the long term. On-farm income derived from small-scale avocado production plays a significant role in ensuring the sustainable livelihoods of farmers in Venda. A recent study comparing small-scale irrigated and dryland farming in Venda found that 83% of households that were food secure had irrigated farms compared to 53% under dryland production (Oni *et al.*, 2011). This implies that small-scale farming contributes positively to household food security and that irrigation has a positive effect on farm output.

The achievement of food security at a household level has a bigger impact on family decisions such as adding another family member or sending a child to school or University, they all are determined ultimately by the financial performance of the avocado orchard.

Table 1 indicates that farming plays an essential role in the livelihoods of rural families in Limpopo accounting for 41% of household income. This is against the backdrop that Limpopo is one of the poorest provinces in the country with high poverty levels that are more pronounced in rural than in urban areas. It is estimated that about 57% of individuals in South Africa were living below the poverty line in 2001 indicating that patterns had not changed since then. Limpopo and the Eastern Cape had the highest proportion of poor people with 77% and 72% respectively, living under extreme poverty conditions (Schwabe, 2004).

The South African avocado season starts in mid-February and ends in September. Avocados are subtropical fruits that are ideally suited to the north-eastern parts of South Africa. The main cultivars produced in South Africa are 'Fuerte' (42%) and 'Hass' (33%). Fuerte is the main cultivar produced by small farmers. "Fuerte" is a Spanish name which meaning the "strong one". The leading exporter of avocados to Europe is Israel supplying 29% followed by South Africa with 21% of exports (Van Zyl and Ferreira,1995).

Table 1. Sources of income to total household income in Limpopo

Income source	**Average monthly income (R)**	**Contribution of total household income (%)**
Farming	545	41.0
Pension	329	24.8
Wages	258	19.4
Remittances	165	12.4
Family business	19	1.4
Other non-farm income	13	1.0
Total	**1329**	**100**

(Source: Machete *et al*, 2004)

Avocado production is concentrated along the warm subtropical areas of Limpopo and Mpumalanga, between latitudes 22^0S and 25^0S. Annual rainfall is on average 1000 mm although there are some semi-arid regions with low rainfall of around 400 mm per annum that still produce a good crop. KwaZulu-Natal accounts for 8% of the total number of orchards where the temperatures are much cooler due to the southerly latitude of 30^0S (Donkin, 2007). This province is responsible for the latter part of the season where harvesting starts in late July and ends in September.

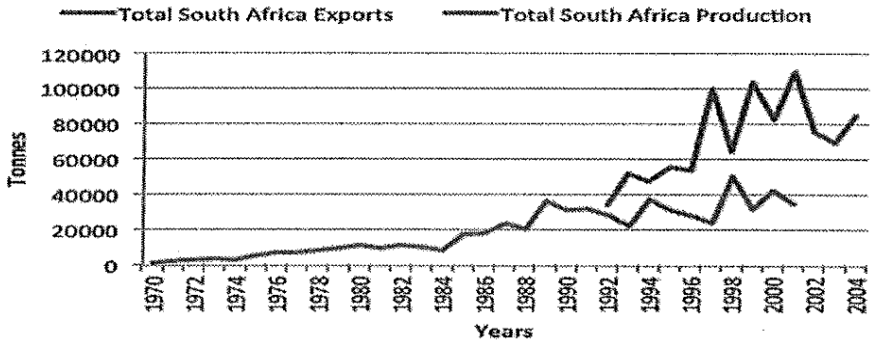


Figure 2. South African Avocados Production and Exports, 1970-2004
(Source: USDA, 2010)

The South African avocado industry has been growing consistently over the years in both volumes produced and exported as shown in Figure 2. The peaks and troughs are in the main as a result of alternate bearing where the avocado tree experiences heavy volumes in one year and a sudden drop to a small crop the following year. In addition, adverse weather conditions such as the occurrence of hailstorms and wild fires also impact on volumes. A case in point is during the 2009/10 season where hailstorms damaged a lot of orchards and this was followed by wet conditions that made matters worse adding to the negative impact on fruit quality of export fruit. As a consequence consumers in the EU market lost confidence in the quality of South African fruit and opted for substitutes from competitor countries namely Peru and Chile that had better quality (Nelson, 2012).

The industry is estimated to have a market value of R400 million with SAAGA as the lead association representing 85% of all commercial operations in the country (PPECB, 2009). Westfalia is arguably the largest producer and exporter in the country with a vertically integrated business that has a holding structure of farming operations, processing and marketing companies. Small-scale farmers, some that are members of SAAGA account for less than 1 percent market share of the South African market (Radzilana, 2011).

There is a market shortage of avocados annually starting at the end of the South African season from November to early March and this demand creates an incentive for early Fuerte to be harvested in January before fruit maturity levels are reached. This immature fruit does not ripen because it is still physiologically immature. This practice erodes trust in the supply chain to South African consumers ultimately translating to

low off-take due to decreased demand of the product. As a consequence, the credibility of South African avocado farmers becomes compromised.

The project was designed to address this problem in stemming the continued exploitation of smallholder farmers by unscrupulous market agents who show no sympathy to these vulnerable groups of farmers by exposing their fruit to market and price risk and, more often than not, dump their products when it cannot be sold on the market floor (Subtrop, 2009). In response to this problem the Department of Agriculture then started ad hoc inspections of avocado consignments in Pretoria, Johannesburg and Cape Town fresh produce markets starting from January, February and early March every year to downgrade fruit to "immature" class. The objective was to deter the entrance price of immature fruit. The main disadvantage of the approach is that although this penalty deterred producers from sending such fruit it did not prevent market agents from selling it to consumers (Subtrop, 2009).

The farmers frequently complained of being compelled to pay-in by the market agents for wastage costs when their fruit was dumped at the market. The implementation of this project enabled this problem to be addressed to benefit the farmers in saving them wasted costs and ensuring that they received their proceeds after sales from projected market prices that were communicated to them. This brought transparency along the supply chain, a practice that was absent in their prior dealings with the market. It also ensured that farmers participated meaningfully in the transactions that pertained to their products and this eliminated information asymmetry. Information asymmetry existed because the market agents had more or superior information than the farmers (Gunupudi and De, 2011).

The benefits of the project were also industry wide since immature fruit that was not ready for consumption was removed from the market and as result the price floor was lifted. This benefited all producers as the average producer price was increased. Consumer confidence also increased since buyers knew that they would get value for their money from fruit that they would have purchased. The industry was protected overall from the agents that had given the sector a bad name for selling fruit at a high price and yet the biological indicators such as the high moisture content indicated that the fruit was still not ready for consumption.

Blackspot is a fungal disease caused by *Pseudocercospora purpurea* (Darvas and Kotzé, 1979) that affects the skin of the fruit reducing its aesthetic value. The internal quality of the fruit is typically unaffected by the blackspots. The external appearance of the immature fruit is blemished as the fungus develops when the fruit matures. This disease is effectively controlled by timely application of Copper oxychloride sprays (Duvenhage, 1994).

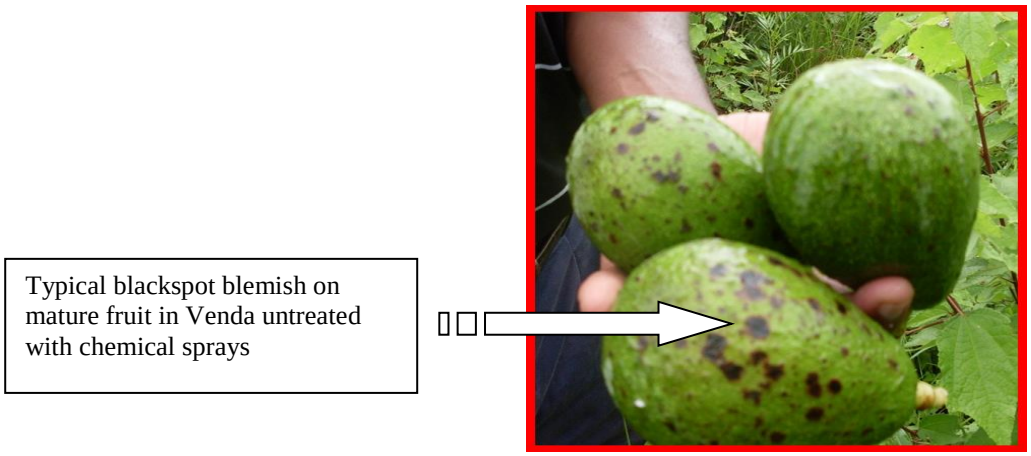


Figure 3. Blackspot Pseudocercospora *purpurea* infested avocado fruit in Venda

The farmers traditionally harvested fruit before maturity as the preferred way of avoiding the disease. This also assured the achievement of better prices at the start of the South African season during the undersupplied period. Prior to the introduction of the intervention the farmers were farming extensively, i.e. using informal organic methods that do not involve the use of synthetic chemicals to control pests and diseases.

Avocado fruit in Venda matures around mid-February at which time there is still a shortage of supply in local and export markets. Mature fruit of good quality without blackspot damage can achieve higher than average prices in the market. This fruit was well suited for high value local and export supermarket programmes. Mature blackspot infected fruit could not compete in the same market. Above average additional returns were estimated to more than offset the total spraying costs due to superior fruit quality. While the fruit from Venda farmers was supplied to existing markets, the prevalence of

blackspots limited the market potential for higher prices. Existing markets include the fresh produce (Municipal) markets and the supply to informal sectors (hawkers and bulk buyers) within the local market in Venda.

The control of blackspot was intended to improve fruit quality to meet minimum standards required by high value local and export markets. South African retail markets demand 12 months' supply of avocados and this could only be achieved through the importation of fruit during the South African off-season (October to January). Import fruit arrives in the market when the market floor is empty and the new season's production is still small. Avocados are sensitive to long distance shipping and the risk of poor quality of imported fruit is high.

Fruit from Venda presented a unique opportunity for import substitution of the poor quality fruit imported from Spain that comes at a high cost (purchased in euros) compared to fresh first fruit of the new season from Venda. Import fruit is problematic because it develops pathological disorders mainly grey pulp due to the aging of the fruit during transit. The extension of shelf life by South African producers is an important undertaking to save costs of imports and deliver good quality to their supermarket customers.

Research on shelf life studies have shown that by applying a combination of SmartFresh™ and Controlled Atmosphere (CA), the shelf life of 'Hass' fruit was extended by the three months, 'Fuerte' stored under regular atmosphere (RA) remained free of grey pulp for one month whereas fruit 'Fuerte' treated with the CA and SF combination remained free of the disorder for three months (Lemmer *et al.*, 2007). A market for pre-packed and ripened fruit in South Africa had been developed by Westfalia in the past ten years. This market requires a consistent supply of high quality fruit therefore that justified the need to develop this project as to afford smallholder farmers the opportunity to supply this niche market. An appropriate spraying program was developed and implemented allowing the first smallholder black farmers to gain access to this lucrative Woolworths high-end market.

The smallholder farmers in Venda were found to produce at more or less the same altitude above sea level as Westfalia. The farmers were on average at 700 m whereas Westfalia was at 900 metres. This was thought to be complementary as the fruit from

Venda would mature quicker because it was warmer and could provide supply for the first three weeks before the start of the season for Westfalia farms which is located in Tzaneen which was 160 km from Thohoyandou.

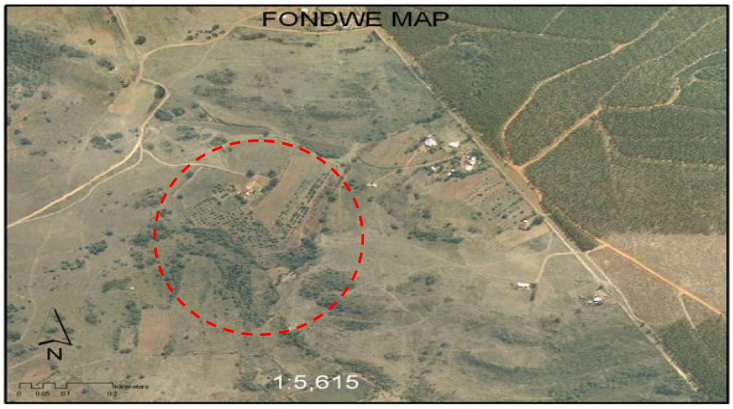


Figure 4. Aerial view of the typical avocado smallholding in Venda

Venda is a subtropical climate compared to Tzaneen which has a cool subtropical climate. This difference accounts for the quicker maturity of Venda fruit. Although the fruit from the smallholdings was produced on poorly resourced farms without irrigation and little or no inputs, the above average rainfall in the area and deep, fertile well drained soils made the yields comparable to those at Westfalia.

A well-established orchard of 10 hectares of avocado fruit in Venda without any fertiliser or chemical used to grow the trees. Tree size is highly variable due to poor nutrition and poor planting material (seedlings not clonal trees)

Figure 5. Typical avocado orchard in Venda

The application of the blackspot spraying intervention was seen to be the most appropriate because it would be possible to obtain the greatest positive impact on farm income in the shortest possible time while using the least amount of resources. Once the first objective had been achieved, it would make it possible for the other equally important goals to be achieved later such as expansion of area, installing irrigation, etc.

Risks that were identified included dryland production since production was wholly dependent on rainfall. This was mitigated by the rainfall pattern that has historically been above average making it possible that new orchards could be established and as a result some were twenty years old. The second risk factor that was considered was the possibility of the shortage of labour during spraying and harvesting. This was thought against the knowledge that the project was located in a rural area where unemployment was rife since many industries were closed after 1994 when the area became a district of the Limpopo province. Many people emigrated to Johannesburg to seek better employment opportunities.

Another factor was the loss of influence of rural areas in the allocation of resources as bigger towns and cities received preference where resources were directed. Power was now centralized in Pretoria, Cape Town and Polokwane where the national and provincial centres of power were located.

Cold chain management is a crucial factor to control the quality of avocados from harvest till final market destination (Milne, 1998). Avocado fruit that has not been sprayed for blackspot is of poor quality hence there is no value in applying cold chain management since the market value that is realized at the point of sale does not warrant the costs of preserving fruit of such poor quality. It was therefore imperative that the qualtiy of blackspot free fruit was preserved through proper transportation and cooling until it reached the distribution centre of Woolworths.

Global retail markets require a 12 month supply of avocados and South Africa is no exception. In South Africa, this can only be achieved through the importation of fruit during the South African off-season (1st and 4th quarters) and fruit is imported from Spain and Israel during this period. The Levubu valley where these farms are located have mature fruit in the new South African season in mid February to end of March. The import cost is dependant on factors like the oil price and exchange rates, which have been detrimental to the viability of these imports and the local avocado market development during the past years.

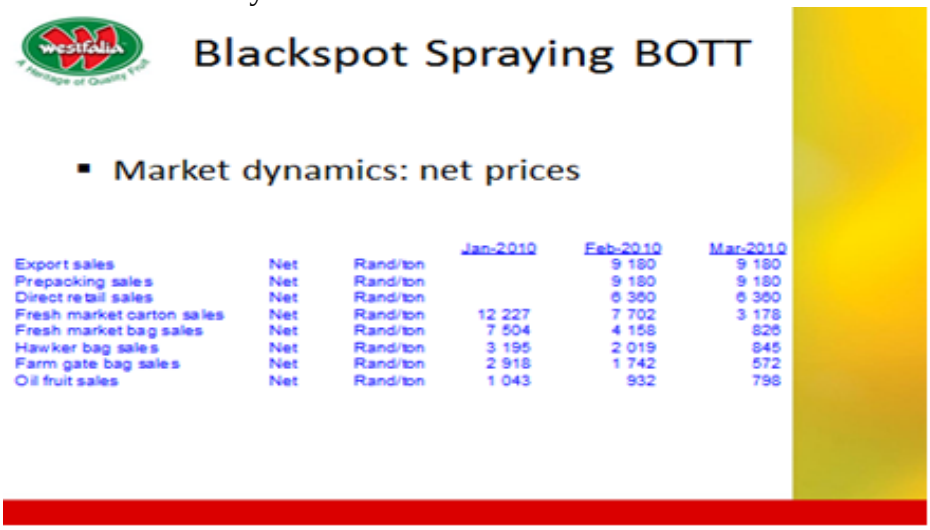
It is estimated that there are some 160 farmers smallholder avocado farmers in Vhembe district (Venda) that have on average 2 ha plots per farmer (320 ha of fruit) at an estimated yiled of 5 tons per ha. The total production from these farmers in this area is estimated at 1600 tons of avocado fruit per annum. It is also estimated that there are 3200 avocado trees implying an average yield of 50 kg per tree, by comparison commercial, intensive farming can also achieve 50 kg per tree. Intensive commercial farming, however, incorporates higher tree densisities and can achieve more than 18 tons per ha. Even though extensive farming practices are common in the area, there are a number of farmers in the district with higher than average yields per tree. The project was directed to benefit at least half the number of farmers and this translated to a possible total crop yield of 800 tons per annum.

Data collected indicated a seasonal distribution of 28%, 45% and 27% of the crop during the January, February and March windows respectively (Westfalia Marketing, 2011).While avocados are currently supplied from January, the fruit from the Venda only matures from mid-February. Fruit harvested before mid-February is therefore

mature. It is well known in the industry that fruit sold at Municipal markets does not ripen. Fruit is typically harvested according to size and not fruit maturity. As a measure of control, SAAGA introduced a control mechanim where inspectors at Municipal markets were instructed to tag immature fruit bags with a sticker clearly stating the status of maturity of that fruit so that consumers are protected and makr rational choices whether to buy immature fruit or not.

When price trends for 'Hass' to European markets were analyzed, the year could divided into four district quarters. Price growth in the first quarter outperformed the other periods in the year. Market prices in the first quarter from 2004 to 2008 grew at an average of 6.4% per year (Westfalia Marketing, 2009). Estimated avocado prices to different market segments were based on knowledge of current markets and interviews with various market agents in Venda. Market segment channel costs were estimated using information from the same sources and a net back-on-farm income for the farmers was calculated in Rand per tonne. Typical market segment channel costs like the cost of packaging, packing costs (labour), off-farm transport (markets) and commissions were considered. For the purposes of the analysis conservative prices were used for the export and retail segments.

Table 2. Price analysis of the lower-end of the



The incentive for producers to deliver fruit in January can be clearly seen from the higher prices to the relevant market segments in January compared with those in February and March. As the fruit is immature in January it does not meet the quality specifications for export or retail markets and is therefore not supplied to these market segments. For the purpose of this analysis, prices to the export and local pre-packing market segments have been assumed as equal. In an elastic market, higher prices will attract higher volume with abitradge resulting in price parity.

Data collected indicated that markets supplied by Venda farmers were limited to the following segments, i.e. Municipal fresh markets (cartons and bags), informal street sellers (hawkers), farm gate ("bakkie trade") and factory (oil processing). While it is likely that the fruit at the farm gate was also sold to informal street vendors, this segmentation was found to be useful for the determination of back-on-farm income as each of these defined market "segment" channels had its own specific "marketing" costs. It was estimated that 72%, 23% and 5% of the total production fromVenda was supplied respectively to the Municipal fresh produce market, informal street vendors and factory market segments.

Net income between the existing marketing mix and the proposed marketing mix indicates a financial advantage after taking into account the cost of the proposed

blackspot spraying programme intervention. The effect of change in the marketing mix and on the back-on-farm income was evaluated. This showed an increase in back-on-farm income of some R20 000 per hectare and R4000 per tonne, after taking into account the blackspot spraying costs excluding the cost of purchasing the required sprating equipment. Back-on-Farm (BOF) refers to the net income to the farmers' pocket after all costs have been deducted. For the purpose of this analysis funding costs for the purchase of equipment were also excluded. The proposed intervention was that the seasonality shifts from 0%, 30%, and 70% in January, February and March respectively. It was postulated that this shift would have a positive effect on the reputation of the Venda farmers and the avocado.

The demand in both European and domestic markets during the 1st and 4th quarter remains in limited supply. Demand in South Africa has increased as shown by increases in price trends over the past few years, while supply growth has been limited due to uncertainity and a limited apetite for risk in the commercial farming environment created by the lengthy land claims and land reform process. The European avocado market demand has grown by an average of 9% per annum over the past 6 years while the average growth int he UK and Scandanavian countries was up to 20% per annum until 2006 (Westfalia Marketing, 2009).

The European consumer (some 70% of the market) has a peak demand of the fruit during the South African winter months. This is the period between November and April (4th and 1st quarter), there was a window of opportunity for the Venda farmers to fill this market gap and receive a premium. In European markets, market dynamics indicate that the annual supply generally matches the demand. In a market where supply volume reacts directly to prices, over and under supply are typically limited. Any excess production is typically absorbed in the local markets or through supply to alternative markets. Supply has matched the growth in market demand in Europe throough increased production from Peru and Chile.

The on-farm spraying intervention was intended to give market access to the smallholder farmers to major markets that supply that are supplied by Westfalia. The correct application of the blackspot spraying progamme was aimed at supporting these

farmers to supply blackspot blemish free fruit to the market. Access to the three additional market segments was therefore going to be possible. These were namely, export, local retail pre-pack and local retail traditional.

Production areas in Venda had the potential to supply either or both the local and international markets early in the South African season. This created an arbitradge of opportunities for emerging farmers to take advantage of the price differentials between different markets. It was proposed that the best marketing mix would be 28%, 28%, 20%, 17%, 5%, 2% to the export, retail pre-packing, retail traditional, Municipal markets, informal street sellers and factory segments respectively. As an arbitradge situation would exist between the local retail market and the export market in February and March, volume distribution between the two was also used for the purpose of this analyis. In practice, the market was seen to be characteristic of an elastic demand market such that price determined the marketing mix where higher prices attracted high product volumes.

The specific production area selected for this project supplied fruit from January to April. During this period in the European market, the availability of avocados is low and fruit is predominantly supplied by Israel and Spain. Peruvian avocados come into the market at the same time (also in the Southern hemisphere) and compete favourably with South Africa during that period. While logistical costs were higher from Peru, lower production and land costs made Peru more competitive against South Africa. Peru also has the advantage that their government subsidized their farmers. The motivation to support these farmers in creating a supply source through procuring additional volumes from Venda which was the ‘first fruits’ of the new South African season was important. This was seen as consistent with the strategy of Westfalia to increase supply from non-own sources through partnerships.

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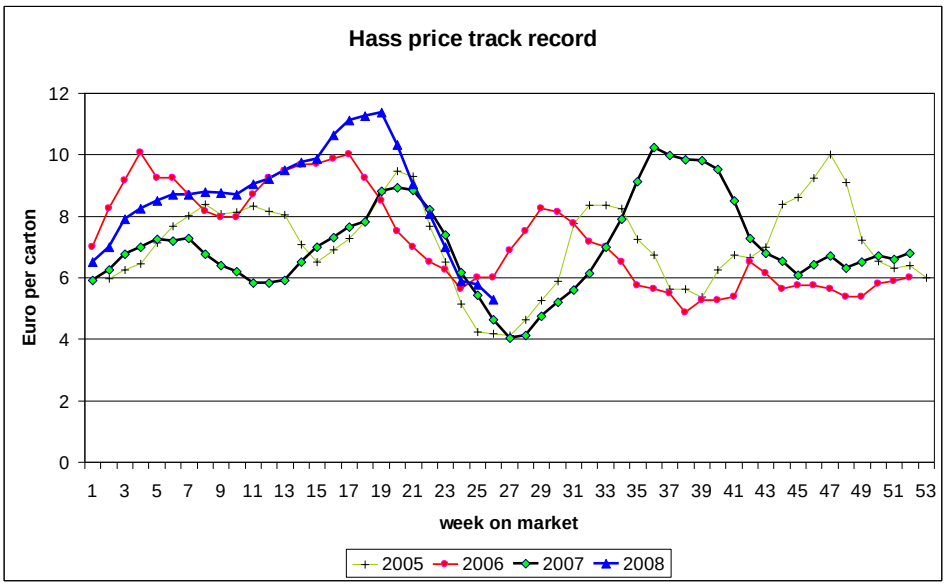


Figure 6. Hass Price Record in International markets

Competitor countries like Peru are set to become major avocado suppliers in the world market. Part of the reason is their proximity to the largest avocado markets and the support from their government in providing incentives such as the development of agriculture where the capital investment of infrastructure is made by State and production is still subsidized. The implementation of the project was thought to yield a good return on investment which far exceeded the hurdle rate.

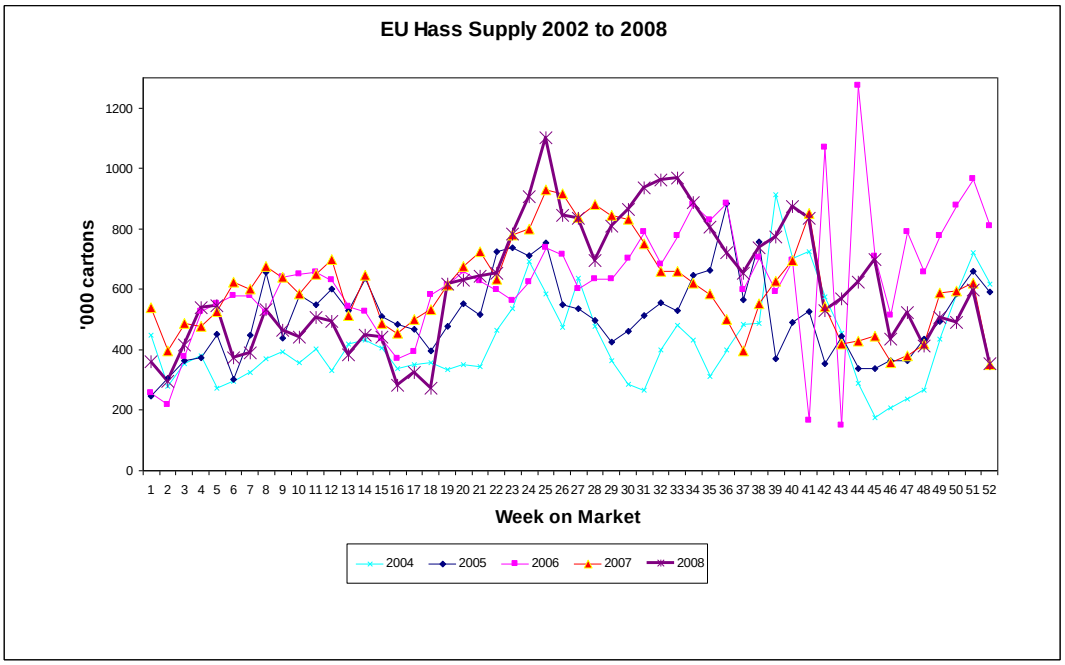


Figure 7. Supply of South African fruit to the EU 2002 -2008

Figure 7 above shows the historical trend of supply volumes from South Africa to the European market which clearly indicate that there were smaller avocado volumes that were available during the period from January to April. While there are a number of countries that can supply from January to April, growth in supply volume to the local market and in Europe is limited.

Traditionally the main supplying countries in this period are Spain and Israel. The avocado industry in Spain has stagnated over the last few years, with real estate developments and cost of land the most important factor contributing to this situation. Growth in Israel was also limited because of land and water availability. Any growth opportunities in Israel would have resulted from replanting with improved genetic material or improvements in orchard management practices.

Late areas in Chile that could potentially supply in this period have a high climatic risk. The local market price in Chile was also relatively high in that same period making exports unattractive. Higher lying areas in Mexico could produce late season Hass avocados in that period. However, with a very good domestic market and preference for the USA market, limited avocados volumes from Mexico were exported to Europe.

In general, market dynamics indicate that the annual supply to the European markets generally matches the demand. When analysing the price trends for Hass, the year data was into four distinct quarters. Price growth in the first quarter outperformed the other periods in the year. Market prices in the first quarter, from 2004 to 2008 were on average € 7.60 per carton (4kg) with a 20% growth over 4 years, averaging a 5% growth per year. The prices increased despite a growth in 'Hass' volumes during the first quarter at 26% over four years 2004 to 2008 at an average of 6.4% per year (Westfalia Marketing, 2009).

Production areas in the Americas had the potential to supply both the largest markets Mexico and the US as well as the European markets. This created arbitrage opportunities for suppliers to take advantage of price differentials between the different markets. South Africa as a supplier to Europe does not currently have this advantage and is unlikely to gain access to Mexico or the USA in the short term. Peru is more

advanced in the process to gain access to these markets and is expected to supply these lucrative markets in the short term.

Although the Peruvian environment requires more intensive management than Brazil, Ethiopia, Mexico and South Africa, this industry is still very successful and competitive. Peru has an average altitude of 2 300m, meaning it has a much cooler elevation than South Africa which has an average of 900 m above sea level. Farming units were cut up into smallholdings by the government as part of the land reform process after independence. However, twenty years later the government is reversing this practice by allowing farmers to consolidate their farming units into larger blocks. Smallholdings were selling at $2178/ha (Westfalia Marketing, 2009).

1.2 Aim and objectives

The aim of the project was to align the smallholder farmers with the main business of Westfalia. This was achieved through formulating four objectives:

1) To improve fruit quality by chemical means to prevent blackspot and redirect produce to high-end supermarkets.

2) To transfer farming and entrepreneurial skills to the small farmers.

3) To build an operating company to be transferred in four years.

4) To organize these producers into Co-operatives that will be GlobalGAP accredited and export ready.

1.3 Statement of the research problem

Can smallholder avocado farmers in Venda integrate successfully with large companies like Westfalia to better access technology and markets as opposed to supplying immature fruit in the early part of the season in open Municipal markets?

1.4 Sub-problems

The specific questions that were asked about the avocado value chain followed by farmers in the Venda were:

- Is the current method of harvesting immature fruit in January sustainable?
- Does the adoption of chemical sprays bring better financial results to farmers?
- Has transparency of the supply chain been enhanced for farmers through a supplier programme arrangement with Westfalia compared to current practice?
- Were the high-value lucrative markets in favour of procuring avocado fruit supplied by smallholder farmers?

1.5 Research hypothesis

Blackspot spraying in avocados has contributed positively in financial terms to improve the food security status of the farmers that participated in the project.

1.6 Study limitations

The study is limited to smallholder farmers in Vhembe district of Limpopo province. The study only focussed on farmers that were members of the Vhembe Avocado Growers Association and did not include other emerging farmers in the area. The study focussed on three sites namely Lwamondo, Phiphidi and Fondwe. Of the sample of 10 farmers that were selected, seven of the farms were located in Lwamondo.

1.7 Study assumptions

Assumptions were that farmers participated out of free will and were aware that this was a trial to see if the proposed value chain could deliver better financial results for them compared to the current method. The risks associated were for the farmers to bear

and take a decision whether to continue with the old way or adopt the new way. All prices were assumed to be due to market forces and the inherent market price risk.

1.8 Structure of the thesis

This research provides evidence of a private-sector led initiative of inclusive business between a large agribusiness firm and smallholder farmers. Chapter 1 covers the introduction and literature review of similar studies that have been conducted to address the challenge of blackspot damage on avocado fruit destined for local and export markets. Chapter 2 discusses the research methodology followed in conducting the study. Chapter 3 presents the results and analysis thereof. Chapter 4 summarizes with a discussion and conclusion.

CHAPTER 2

MATERIALS AND METHODS

2.1 Site identification

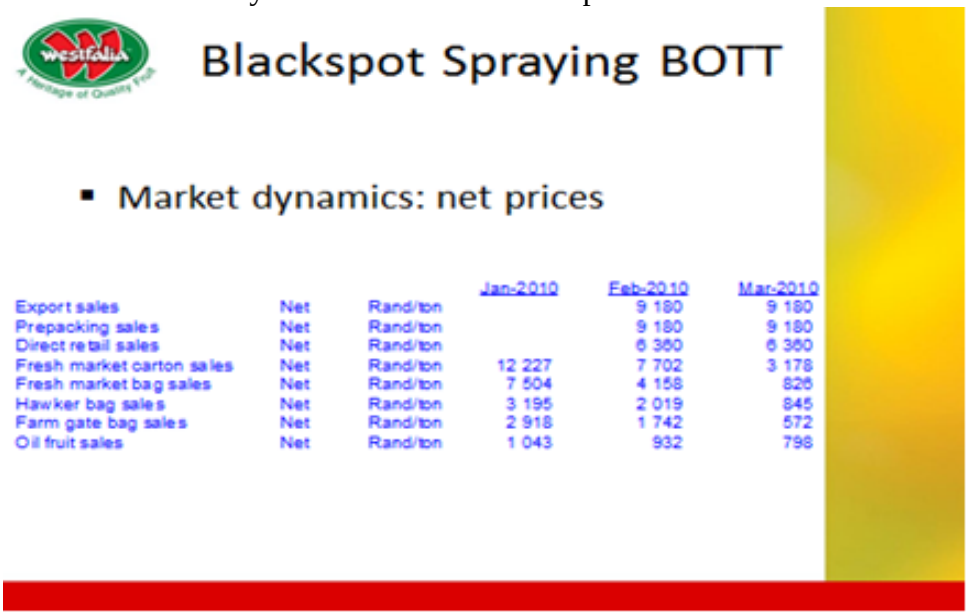
Vhembe district is located at the North-western tip of South Africa in the Limpopo province. The district covers an area of 25 597km² with a population of 1,294,722 made up of 335 276 households. The Population growth is estimated at 0.78% per annum and the unemployment rate is 38.7% (Local Government Handbook, 2012). Vhembe borders Zimbabwe to the north and Botswana to the North-West. The district is comprised of five Municipalities namely Thulamela, Mutale, Makhado and Musina. The District Municipal offices, as well as the Thulamela Local Municipality offices, are located in the town of Thohoyandou.

It covers a geographical area that is predominantly rural. It is a legendary cultural hub, and a catalyst for agricultural and tourist development. The main towns are Makhado (formerly Louis Trichardt), Mesina and Thohoyandou. The main economic sectors are agriculture, mining and tourism. The Limpopo river valley forms the border between the district and its international neighbours. Through the Kruger National Park, the Vhembe district also borders Mozambique on its eastern border. Within South Africa, the Kruger National Park to the East, the Mopani District to the South East, and the Capricorn district to the Southwest border the district. Municipal offices of the district are situated in the town of Thohoyandou which is the economic hub of the district.

The Limpopo province has the fourth largest provincial population in South Africa at 12% of the total national population. The population of Vhembe is 1.2 million people where at least 90% of the population are located in two local municipalities, namely Thulamela and Makhado. Vhembe district Municipality represents 22% of the population of the Limpopo province. The population is concentrated in the South-East of the district Municipality with the north and western parts of the district being very

sparsely located. The population is still predominately rural with 95% of the population still living in traditional settllements.

Table 3. Price analysis of lower end of fresh produce market in 2009



Despite the accellarted pace of development in the district out of the 2446 recorded settlements, only 13% are classified as growth points. There is therefore a need to improve transport to increase accessibility of the existing services and to improve employment prospects to residents of smaller settlements. The unemployment rate in each of the local municipalities has a similar pattern as that of the Vhembe district as a whole. On average, across all age groups, 53% of the potential force in the district are unemployed. Formal employment is highly concentrated in the government and personal services sector and the economy is highly vulnerable to external shocks that impact on the pruchasing power of government employees.

The distirct represents an important production area for certain horticultural products such as macadamia nuts, as well as forestry. There is big potential for agroprocessing in the local economy and oopporutnities for tourism development. The subtropical climate conditions make Vhembe the home of the fruit basket of South Africa and makes year-round production of both fruit and vegetables. Due to high unemployment,

most people in Vhembe rely on some form of production of agricultural produce from communal farms.

Table 4. Economic Profile of Vhembe District

Item	**Quantity**
Population	584 563
Unemployed	82 148
Employed	55 670
Economically active	178 833
Access to Water	96 536
Electricity	60 323
Housing	37 500
Waste Manager	136 417
Geographic area	2966 km^2
Ward Councillors	38
Proportional representatives	35
Municipal budget	R472 258

2.1.1 Land Tenure

Communal farm land in Vhembe is governed by Traditional Councils headed by a chief of the area. They administer the issuing of PTOs (Permission To Occupy certificates). The PTO has an indefinite time period to the user and can be considered as the equivalent of a 99 year lease. The land user does not have title of the land and cannot use it as collateral to raise funds to operate the farms. These agricultural holdings can range between one and 50 hectares per household. In the event of disputes over land use rights, the traditional council is the final arbiter. These councils fall under the jurisdiction of the Department of Co-operative Governance and Traditional Affairs. This Department is responsible for all Municipal areas under which Thulamela is designated to oversee the Lwamondo area, where the project was located.

2.1.2 Rainfall

It is estimated that some 65% of the orchards in Venda are planted to Fuerte. This information was based on data collected from the 44 members of VAGA and extrapolated for the 10 farmers selected for this analyis. Since the farmers are producing under dryland conditions, it was found that all had planted 'Fuerte' since it was more tolerant to drought conditions. The downside of this cultivart is that it is highy susceptible to the blackspot disease. Hass on the other hand has more tolerance to blackspot but it is very susceptible to drought and not preferred by the local market although it is very popular overseas.

Temperatures in Thohoyandou range between 25^0C to 40^0C in summer and 22^0C and 26^0C in winter (Mzezewa *et al.*, 2010). Observations are that distribution is a more important factor than the total amount of rainfall recorded and it is more even in the western parts of the district than in the east. The average rainfall over 25 years was 1277 mm although there have been periods of droughts and floods in between (Mzezewa *et al.*, 2010). Minumum and Maximum temperatures were within the suitable range for avocado production. However, the need for supplementary irrigation was evident as rainfall had not started during September at a time when the avocado tree begins its summer leaf flush.

2.2 Survey

The survey was conducted in February and August 2009 where 60 farmers were interviewed in groups. A selection criteria was developed to identify a sample of 15 farmers that would participate for the pilot phase. In developing this project the approach was first to collect data and to consult with stakeholders. A serious of meetings were held with the Vhembe Avocado Growers Association (VAGA) and the Vhembe District Municipality to introduce the concept and to obtain buy-in from the community. Feedback from the community was positive with VAGA growers having some 44 members with approximately 200 hectares of high potential land.

2.2.1 Selection criteria

Inorder to qualify, farmers had to meet the following crtiteria:

a) The farm had to have trees of a bearing age 4 years minimum.

b) The farm had to have a minimum plant population of 100 trees per hectare.

c) The farmer had to have a PTO certificate signed by the Lwamondo Traditional Authority and registered in the farmers name.

d) The farmer had to agree to participate and sign an tripartite agreement between the parties, i.e. Westafalia, Woolworths and the farmer.

e) The farmer should not have any other marketing agreement for the fruit.

Out of the 15 farmers selected, only 10 met the criteria and planning began.

2.3 Planning

Planning of the project entailed conducting a focussed group survey with the target population to gather information on current production and undertake an analysis of the traditional supply chain. This was followed by several hours of building the financial model and a detailed discussion where the data collected was scrutinized and a model was then developed. The investment was found to have economic merit as it exceeded the hurdle rate which is the weighted average cost of capital.

The business plan was then finalized and fund raising commenced. Figure 10 depicts a reconfiguration of the business model of the farmers to shorten the supply chain and align it with that of Westfalia to save the farmer costs, lower risk, improve transparency in the marketing channel and maximize farmer returns.

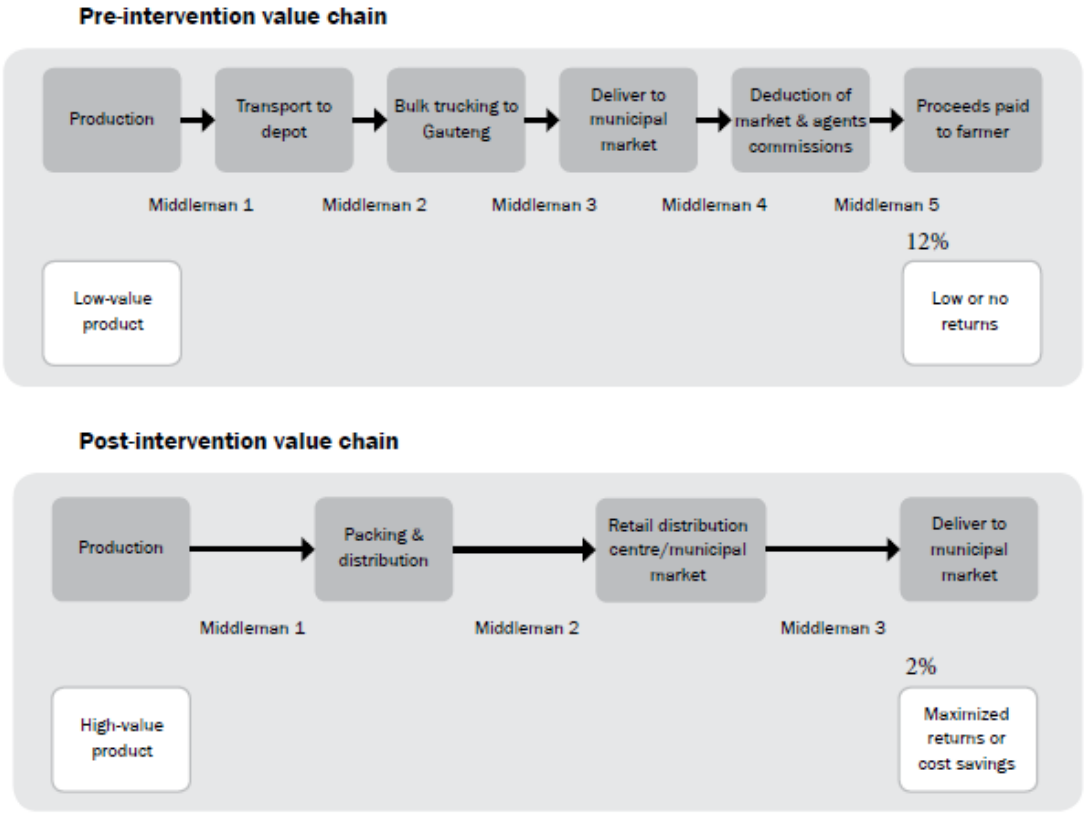


Figure 8. Pre and post intervention value chain for Venda project (Source: Khumalo, 2013)

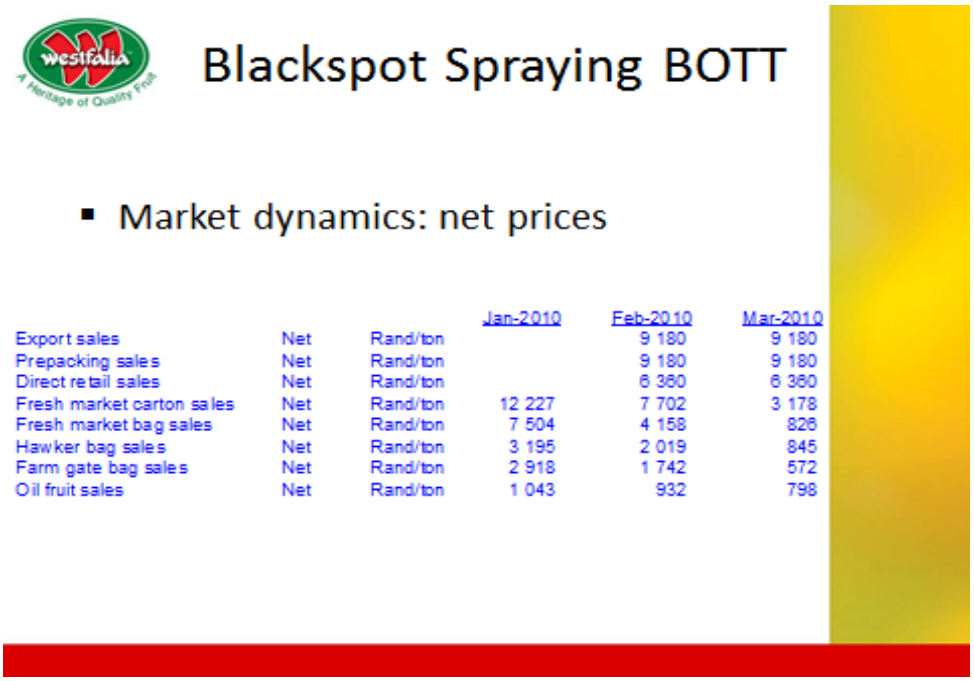
2.3.1 Reconfiguration of value chain

The hypothesis was that the farmers were to apply chemical sprays to control blackspot and delay harvesting by not picking in January allowing the fruit to fully mature and to start picking in late February (30%) and fully harvest in March (70%). This way they would be in a more competitive postion. Their chances of making good profits were envisaged to be much better as they would compete more favourably with other farmers on the basis of high quality as opposed to the traditional great rush to capture the R12 227/ton (R12/kg) price from the last week of January which alos quickly drops down to R7 kg in February and evebtually R3/kg in March.

Table 4 shows the attraction why the farmers crowded the market every season with high volumes of bad quality fruit at the start of the season. The analysis showed that it was because when good quality fruit entered the market in early March, the small farmers were squezzed out totally based on inferior quality. Consumers showed that

they were willing to pay for quality fruit hence the aim to improve the capacity of the farmers to improve fruit quality to access this oppportunity.

Table 5. Market segment price analysis for Venda farmers



2.3.2 Tripartite agreement

Fund raising attempts with government did not yield any positive result. This follows unsuccessful attempts in completing numerous application forms and pitching presentations to the Limpopo Department of Agriculture with no committment obtained from the State to support these farmers with a subsidy. Success was finally achieved when Woolworthhs through their enterprise development fund were willing to loan the farmers an amount of R708 000 as a seasonal soft loan to finance the procuring of equipment (spray tanks) and also to fund working capital (labour, chemical, diesel etc). Appendix A shows the tripartite agreement between the parties, i.e. Dishumeleni farmers, Woolworths and Westfalia. Dishumeleni co-operative is a legal entity that was registered for the farmers to facilitate their formal business structure. The agreement clearly pointed out the roles and responsibilities including a

mediation mechanism should had a dispute occurred. The agreement was carried out very well and farmers, in particular, were very conscienscious of abiding to the conditions as agreed.

The volume spread shown on Table 5 shows that the farmers were channelling too much of their product 70% (50.9% in cartons plus 20.8% in bags) to the Johannesburg market in January to capture the R12/kg price. Secondly, the data showed that the farmers were, in the main, trading at the lower-end of the market with low margins and high competition. This was not a sustainable supply chain in the long term.

Table 6. Traditional volume distribution for fruit from Venda farmers

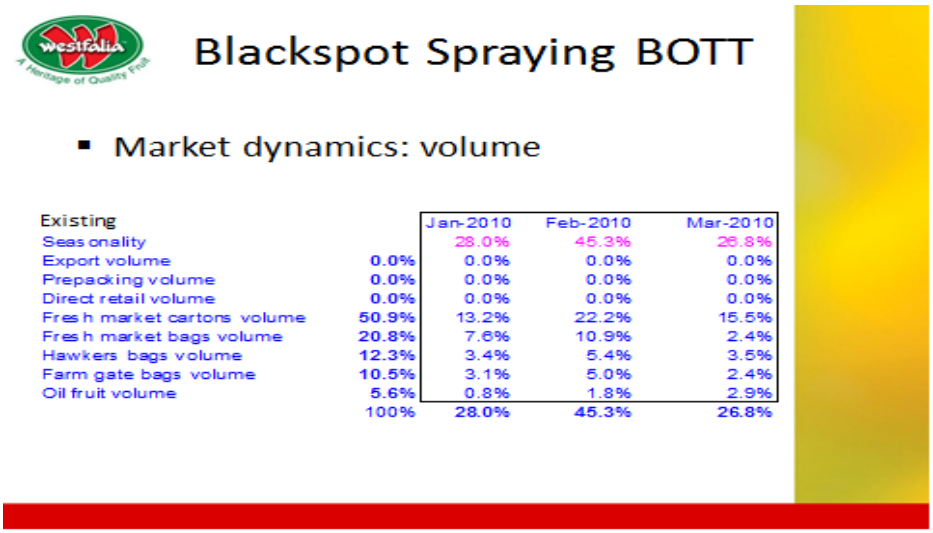
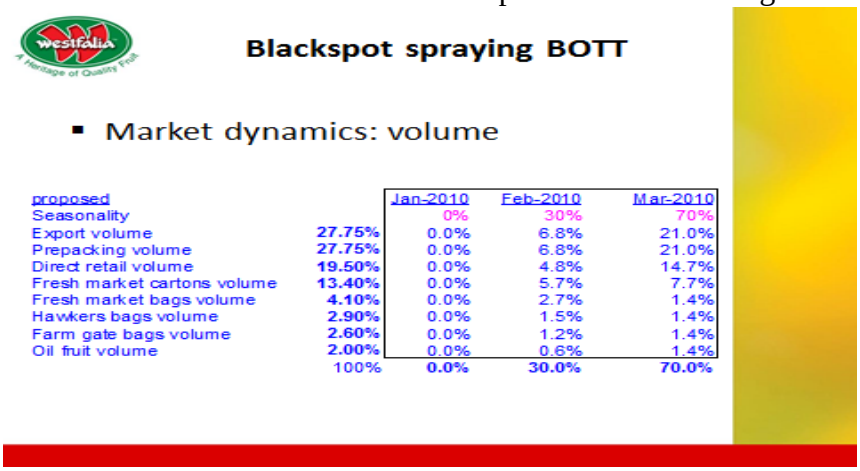


Table 6 on the other hand, shows the proposed change which the project sought to avhieve. The first was to move the volumes from the lower-end of the market to the upper-end. The second was to spread the harvest throughout all market segments placing the most volumes in the upper-end of the market. Thirdly, it was to stop the farmers from harvesting in January allowing the fruit to mature prior to harvesting.

Table 7. Redistribution of volumes of product across all segments



2.4 Implementation

A value chain analysis of the farmers traditional supply chain was conducted to better understand how the business structure and its interactions with other players impacted on the overall profitability and sustainability of the enterprises. The approach adopted was the Sustainable livelihoods approach (Caroline and Carney, 1999).

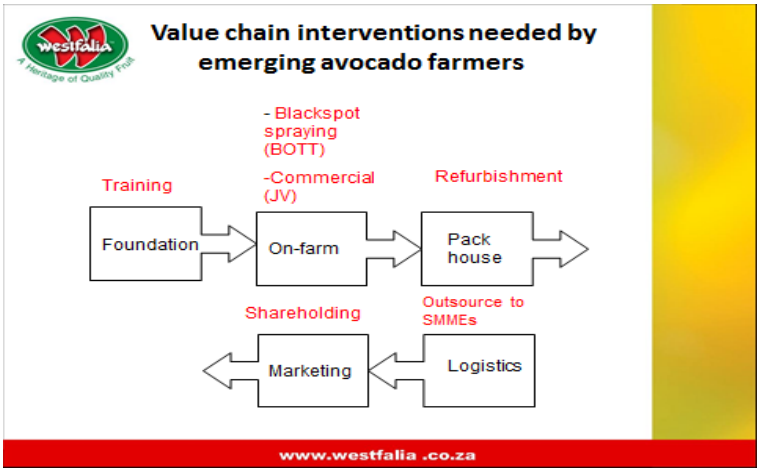


Figure 9. Value Chain Analysis of Vhembe Avocado Growers
(Source: Khumalo, 2010)

2.4.1 Budgeting

A budgeting process was undertaken to estimate the cost of the operation.

2.4.2 Training

Theoretical training was conducted at the community resource centre of the company whereas practical training for spraying was done in the orchards at Westfalia and picking training conducted in Venda. A one week study tour with four of the farmers (including the chief of the area) was undertaken to Holland and the United Kingdom in May 2010 to expose the farmers to international markets and Westfalia operations overseas. These visits were to Westfalia BV in the Netherlands which was the main marketer of South African fruit and Greencell in the UK, a subsidiary of Westfalia that does the same in the UK.

Figure 10. Visit to Albert Heijn supermarket in Rotterdam

2.4.3 Spraying training

In Figure 12 farmers and workers are shown listening to a training session by supervisor at Westfalia demonstrating how to handle a spray gun whilst spraying copper oxychloride to a mature avocado tree at close range.

Figure 11. Farmer's day training on blackspot spraying

Farmers were taught on how to carefully handle and save copper since it toxic and costly. They learnt the importance of always wear protective clothing. i.e. the breathalyser (white mask seen in picture that covers the mouth and nostrils) to prevent inhaling toxic fumes.

Practical training was carried out and each farmer was given an opportunity try out the spraying exercise by holding the hose and spraying. This training lasted the whole day. This was followed by a theory session at the classroom where they were taught some principles of basic production economics. The farmers were transported by bus from Venda to Westfalia (using grant funding from AgriSETA) and the day ended with a braai in the evening. Farmers were optimistic that the skills they acquired would go a long way in assisting them in the coming season.

Figure 12. Spraying team and equipment

2.4.4 Harvesting training

Once training was completed spraying began a week later. As a result of the new skills they acquired, farmers were now in a better position to monitor the implementation of the operations since they had also participated in the training together with workers. They were now knowledgeable and could supervise more effectively the work of the spraying team. Table 8 overleaf depicts the picking plan that was developed to estimate harvesting costs.

Table 8. Harvesting budget

	Week 8	Week 9	Week 10	Week 11	Total
Start date	22-Feb	01-Mar	08-Mar	27-Mar	
No. of Workers	40	40	40	0	
Wages	62725	62725	62725	0	
Diesel	1680	1680	1680	0	
Transport (local)	0	0	0	15750	
Security	0	0	0	4095	
Trailer purchase	31000	0	0	0	
Transport	0	0	0	158400	
Petty cash	1000	1000	1000	0	
TOTAL	96405	65405	65405	178245	-405460

The estimated cost for harvesting was estimated to be R405 460. This was because the workers were grouped into two operations teams and moved from farm to farm spraying for each farmer as they went along. Whereas spraying lasted five months from September to January the following year, picking started at the beginning of March and ended during the first week of May, a period of two and a quarter months.

Figure 13. Hygiene and fruit handling training

In Figure 14 farmers and workers were listening to a demonstration on how to carefully handle and harvest fruit properly. This practical took place at one of the Chief's orchards in Lwamondo. The same workers that had conducted the spraying were now being trained on picking. This ensured 12 months' work for the workers for the 60 previously unemployed community members 90% of were women. Employing the same people also had the advantage that with more experience workers would produce better results.

Figure 14. Harvested fruit from orchards

The picture in figure 15 shows farm workers after picking fruit folllowing the training they had received on food safety and hygiene as part of GlobalGAP standards. All producers were also registered with the Department of Agriculture Forestry and Fisheries as Food Business Operators (See Appendix B) and informed of statutory requirements of compliance as food suppliers.

2.4.5 Micro-enterprise development training

In May farmers and their successors (their sons) attended a three day workshop on micro-enterprise development that had a focus on the establishment and operations of Co-operatives in modern business. The course was provided by Sekope Communications, a subsidiary of Zingisa Investments.

Figure 15. Farmers listening to a lecture at training

Figure 16. Farmer graduates that succesfully completed the training

At the end of the workshop all the participants received a competency certificate for having successfully completed the course. Figures 16 and 17 show the graduation ceremony where the farmers were acknowledged for their achievement. It was a day of celebration. The farmers celebrated in a typical Vha-Vhenda cultural way as shown in figure 18 overleaf.

Figure 17. Farmers celebrating graduation

The course objectives were as follows:

1) To understand the concepts of livelihoods, entrepreneurship and micro-enterprise.

2) To understand the relevance of marketing in promoting micro-enterprise.

3) To impart the knowledge among participants on various tools used for livelihoods analysis, identification of business ideas, business planning and feasibility analysis.

4) To sensitize the participants on the need to analyse the business environment for proper use of the concepts and tools.

5) To educate participants on the fundamentals of operating a business entity.

The training was delivered in a participatory approach using group dynamics, case study analysis, games and exercises. Farmers and their sons enjoyed the course and a second level of the course is planned for the next season. This was also done to encourage succession planning in the emerging farming sector.

2.5 Marketing

Marketing began soon after the first crop was harvested. Since the volumes were larger than what could be absorbed through the Woolworths ripe and ready programme, it was therefore necessary to find alternative markets for the rest of the fruit although the reality was that it would be at a lower price. The challenges on marketing results arose from poor prices due to high volumes in the market during that season. This followed poor prices in the export market for traditionally exporting farmers, mainly a lag effect of the recession in Europe. As a consequence this fruit was dumped in the local market hence prices plunged below projections to the detriment of the financial position of some farmers.

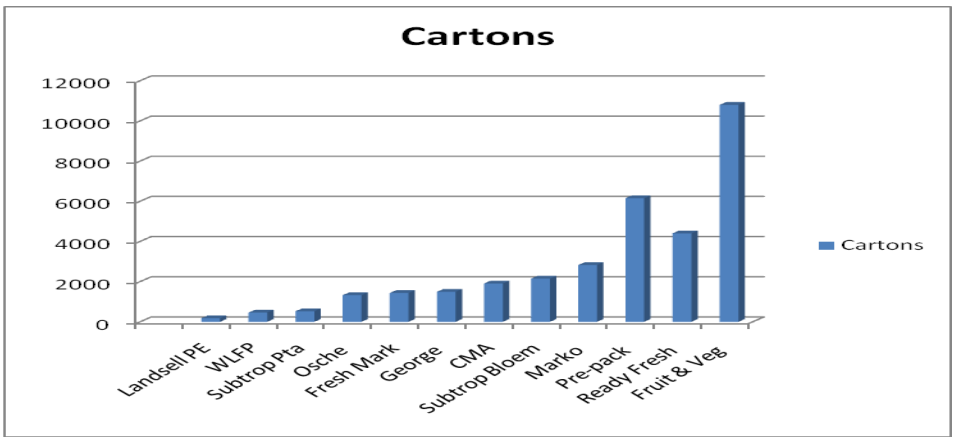


Figure 18. Distribution of fruit across multiple marketing channels

Figure 19 depicts the distribution of fruit to various markets when 50% of fruit had been consigned. Approximately 6000 cartons were supplied to Woolworths and the season ended with a total supply of 14 817 cartons which translated into 60 tons.

2.6 Data analysis

Data was collected and analysed using Microsoft Excel 2010. This package enables companies to make better decisions based on accurate information and scenario projections derived using financial modelling (IFF, 2013). The purpose of financial analysis methods is to produce financial statements according to the South African Institute of Chartered Accountants (SAICA) and the Generally Accepted Accounting Practice, AC 101 (Kolitz and Quinn, 1997).

Capital budgeting is a method used widely in the process of evaluating investments in capital projects. Capital investment decisions are central to the strategy of the organisation and therefore have a direct impact on all units of the organisation and the respective cash flows of those divisions (OU, 2010). The basis of accounting is to record all transaction activity in the form of income and expenditure which portrays a picture through the various elements of the financial statement. The most important were the Income statement, cash flow and balance sheet.

A financial model was constructed using Microsoft Excel 2010. Parameters that were used to inform the assumptions of the model are shown in Table 8. TFP stands for Tzaneen Fruit Pack House Company which is a subsidiary of Westfalia that packs fruit for outside growers.

Table 9. Parameters financial model construction

Transport	Unit of measure		Rate	Rate/Carton	Total
Transport (TFP)	Km	440	12.6	1.76	158 400
Transport (local)	Days	30	1200	0.40	36 000
Transport (Market)	Ctns			2.8	214 200
Diesel	Litres	630	8	0.06	5 040
Rental (Tractor)				0.06	5 000
Break downs				0.03	2 500
Total				**4.68**	**421 140**

Picking costs	Unit of measure		Rate	Rate/Carton	Total
Storage costs	days	30	65	0.07	5 850
Picking (Wages)	days	30	65	0.87	78 000
Consumables				0.01	1000
Total				**0.94**	**84 850**

The Venda fruit was packed at the TFP pack house. AC 101 rules states the objective of general purpose of financial statements is to provide information about the financial position, performance and cash flows of an enterprise that is useful to a wide range of users in making economic decisions (AC 101, 1998).

2.6.1 Value chain cost analysis

A value chain analysis was undertaken to determine the cost chain of exporting avocado fruit to the international EU market.

Table 10. Value chain cost analysis

Estimated Farm Income per carton for Hass in EU export markets

4kg Carton Gross in Euros (€)	Packing Costs (R)	Transport to Port (R)	SAAGA (R)	Export Comm. (R)	Other (R)	Sea freight (R)	Overseas costs (R)	BOF (R)
5.50	7.50	3.40	0.68	1.00	2.50	10.00 - 11.00	12.10	28.00
8.00	7.50	3.40	0.68	1.00	2.50	10.00 - 11.00	14.80	55.00

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Table 9 shows the breakdown of value chain costs at two price ranges, upper and lower. The trade is done in euros and the costs are deducted in Rands.

Parameters were estimated from other commercial operations and financial institutions to construct the financial model.

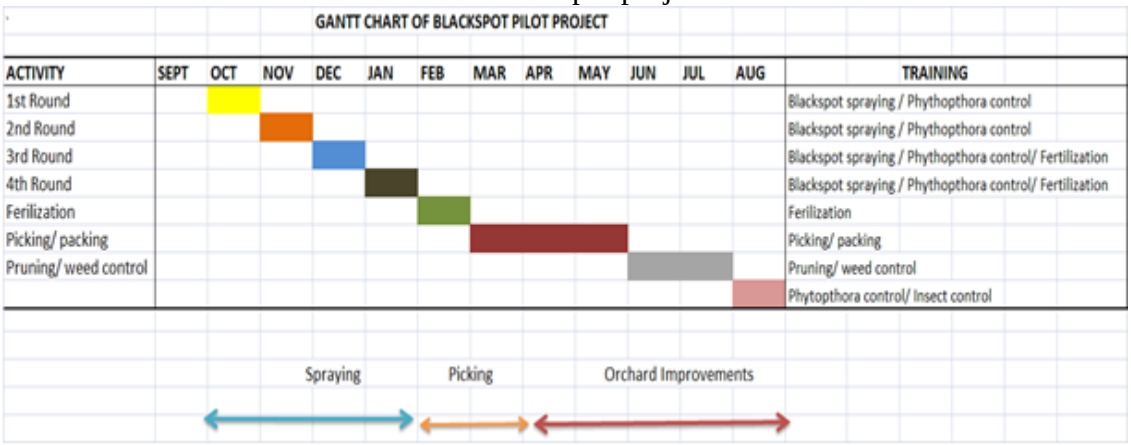
CHAPTER 3

RESULTS

3.1 Production results

An operations team led by the projector manager (the writer) was assembled comprising of a projector coordinator, supervisor and two tractor drivers. Operations were undertaken in time according to the Gantt chart shown in table 8 below.

Table 11. Gantt chart of activities for blackspot project



Spraying began in the middle of September 2009 and was completed at the end of January 2010. A total of four rounds of copper sprays over the 40 ha were applied. The spraying pressure was 2 bars which is the recommended level by SAAGA that controls blackspot effectively. Spraying is a hard labour exercise and this was not easy.

3.2 Spraying results

The inexperience of workers saw the first week moving much slower. However, Phineas Baloyi, the field supervisor, was on hand to give directions and performance began to show improvement over time. The first two sprays progressed well in September and October although towards the end of October rains began to become a problem. Constant rain interruptions meant spraying had to be redone and persistent rainy days resulted in tractors not being able to continue operating due to slippery conditions. Another challenge related to the pressure problems from the spray tanks. A

number of breakdowns were encountered and as result decision was made to change all the nozzles on the spray guns. Sprays are the control handle at the end of the hose used to deliver the chemical. The supplier agreed to re-supply new ones at his cost.

Once the operational challenges were overcome it was down to timing of operations to maintain consistency. This implied working 12 hour shifts on some days to cover the whole 40 ha. Even though there were these interruptions, most activities progressed according to plan. What also became evident was the improvement amongst the workers as they began to exercise care and interest towards the economical use of copper. This became apparent at the end of the spraying season when there were 1.5 tons of leftover stock in inventory from the initial 7.2 tons purchased. The objective of the project was to achieve 100% blackspot free fruit in the first season. The first fruit harvested was blemish free. A 100% infested free fruit was subsequently achieved when all the 241 tons of fruit had all been packed.

Figure 19. High pressure spraying

A worker in Figure 20 above applying a high pressure spray to fully protect the fruit. In the picture also is an example of fruit exhibiting white copper residue. This residue indicates good coverage of the fruit circumference ensuring maximum protection from the blackspot fungus.

3.3 Harvesting results

3.3.1 Moisture testing

Prior to harvesting the farmers were taught to test the moisture content of their fruit. Samples from each orchard were taken weekly and analysed at the Westfalia laboratory and moisture levels recorded. Harvesting dates were determined following testing of samples that were taken from the last week of January onwards. The decline in moisture content is considered an indication of fruit maturity. This is known as maturity indexing.

Table 12. Moisture Results in Percentage for avocado fruit from Venda in 2010

		Mphephu Daisy		Nyambeni		Fondwe		Matondoni		Magaba		Chief Lwanmondo		Rhaphalane		A.S Mphephu		MS Mukheli		Elias Makhado		Mphephu	
Date	Cultivar	Big fruit	Small fruit	Big fruit	Small fruit	Big fruit	Small fruit	Big fruit	Small fruit	Big fruit	Small fruit	Big fruit	Small fruit	Big fruit	Small fruit	Big fruit	Small fruit	Big fruit	Small fruit	Big fruit	Small fruit	Big fruit	Small fruit
27/1/2010	Fuerte	82.6		83.5	84.2	79.8	83.7	79.7	78.2	82.3		81.4											
9/2/2010				1 fruit ripe						1fruit: SER		2 fruit: SER											
				No shrivel						No shrivel		No shrivel											
				Taste:watery						Taste: watery		Taste: watery											
12/2/2010		3 fruit ripe		1 fruit ripe	2 fruit ripe	2 fruit ripe	3 fruit ripe	3 fruit ripe	2 fruit ripe	1 fruit ripe													
		2 with no shrivel		Bad shrivel & SER	Bad shrivel & SER	No shrivel	1 with shrivel	No shrivel	1 with little shrivel	No shrivel													
		1 with shrivel & SER		No tasting due to SER!		Bad SER	SER	Bad SER	SER	SER													
		Taste: bad!				No tasting	No tasting	No tasting	No tasting	No tasting													
04/2/2010	Fuerte			82	81.6			81.4	83.5	83	82.5	81.7	83.6	82.6	82.9	76.9	81.9	78.4	80.6	79.8	83.4	80.2	81

Table 13 indicates the moisture content for each farmer in the different localities. Since each farm was geographical different, the maturity dates for each fruit were different. This was particularly useful for harvesting and informed the logistics plan on when harvesting was carried out. Logistics planning was done around the volumes of farmers whose fruit were ready based on the moisture results. Once the fruit reached 74% moisture levels it was deemed ready for harvesting.

Harvesting began on the first of March 2010 three weeks earlier than Westfalia. At first workers picked much slower and the main reason was found to be that the farmers were pre-selecting before picking whereas in fact this was the function of the pack house. By the end of the first week though there was a marked improvement as workers began to fill the 20 ton truck load every day quicker than they had done a few times before.

The harvesting results in Table 10 below show that some farmers had too few fruits (low volume) and yet they had high waste. The waste fruit (class 3) was sold to the bakkie trade for R1.50/kg. The average waste percentage was within the industry range of 20%. This result bore testimony to the success of the spraying exercise where effective control of the blackspot fungus was achieved. Farmer Nyambeni had the largest output of 35 806 cartons which accounted for 59% of the total consignment of 241 tons (60 358 cartons).

Table 12. Results of avocado fruit harvested in season 2009/10 in Venda

Farmers Name	Volume	Volume % Grower	Waste %	Production cost/carton
Mphephu RP	324	1%	42%	32.08
Netshifire TW	2 224	4%	31%	16.27
Madele RS	2 772	5%	33%	11.78
Makhado E	2 068	3%	25%	12.58
Mukheli MS	2 706	4%	28%	10.94
Nelwamondo CA	3 541	6%	15%	9.38
Mphephu PD	6 498	11%	17%	10.47
Nyambeni N	35 806	59%	20%	8.18
Ntshegendzeni PR	1 230	2%	18%	8.52
Magaba A	3 190	5%	17%	9.66
Total/ Average- per carton	**60 358**	**100%**	**21%**	**9.45**

Nyambeni also had the lowest cost per carton of R8.18 compared to Mphephu PR who had the lowest volume (324 cartons) and highest waste (42%). Nyambeni did well due to economies of scale, good fruit quality and logistical efficiencies since he had a larger farm of 10 ha compared with the other smaller farmers whose units ranged between one to five hectares. Nyambeni also had better management control than the rest of the group. His young age, and hard work and desire to succeed played a vital role in the final outcome.

3.4 Financial results

3.4.1 Income statement

The income statement shown in table 11 indicates that actual turnover was 26.2% less than budget and that was due to lower market prices than had been anticipated. The actual price per carton was R24.98 compared to the budget price of R40.87. The low prices were attributed to high volumes of fruit in the market that year due to the "On" year avocado bearing habit. Avocado trees are alternate bearers which means they carry a heavy crop in one year followed by a light crop.

Table 13. Combined earnings statement for the ten farmers in 2010

	ACTUAL 2010	% VARIANCE	BUDGET 2010
GROSS SALES	**1 507**	**-26.2%**	**2 044**
DISCOUNT			
NET SALES	**1 507**	**-26.2%**	**2 044**
COST OF SALES	(1 045)	-19.8%	(838)
DISTRIBUTION EXPENSES - EXPORT			
DISTRIBUTION EXPENSES - LOCAL	(99)	4.9%	(104)
GROSS PROFIT	**364**	**-67.0%**	**1 102**
OVERHEADS			
OPERATING PROFIT	364	67.0%	1 102
MEDICAL AID PROVISION			
SUNDRY INCOME/(EXPENSE)			
PROFIT BEFORE FINANCE CHARGES			
INTEREST RECEIVED/(PAID)	(47)	-24.8%	(36)
PROFIT BEFORE GRANTS	**317**		**1 066**
GRANTS AND DONATIONS			
PROFIT BEFORE TAXATION	**317**	**-70.3%**	**1 066**
NORMAL TAXATION			
PROFIT AFTER TAXATION	**317**	**-70.3%**	**1 066**
Cartons (4 Kg Equivalent)			
EXPORT			
LOCAL	47 870	**-4.3%**	50 000
FACTORY	12 487.41		
TOTAL	**60 357**	20.7%	**50 000**
PRICES			
Price per carton	24.98		40.87
Net return per carton	5.25		52%
RATIOS			
GROSS MARGIN	24%		54%
PAT MARGIN	21%		52%

3.4.2 Interpretation

The cost of sales was also higher than budget by 19.8% due to higher costs than had been anticipated. In particular, the cost of hiring tractors from contractors was especially exorbitant since no second tractor could be secured from the area. The one used was sourced from Hoedspruit which was 250 km away. Gross profit was lower by 67% due to lower sales as a result of lower prices and higher cost of sales. Profit after tax included interest and excluded tax. The actual turnover was lower than budget due to higher interest incurred than budget.

3.4.3 Financial ratio analysis

The two financial ratio measures calculated were the Gross Margin ratio and the Profit after Tax (PAT) margin. The budget gross margin at an estimated turnover of R2 044 000 was 54% and the actual was 24% which was half of that. PAT in the budget was estimated at 52% based on the balance sheet estimates on Appendix D. The actual PAT came to 21% which was still quite good for an agricultural enterprise. These results indicated that the venture was viable at the margin and could be improved when farmers become more efficient in cost control, better spraying management and timely harvesting.

The project made a small profit in its first year as seven of the ten farmers had a positive return. Two of the farmers made a loss and one was only able to break-even. This was interpreted to mean that the project achieved a 70% success rate. Considering that this was the first year of the project and farmers that had no prior knowledge of blackspot spraying and redirected produce from a single to multiple marketing channels. A detailed cash flow analysis is shown in Appendix D which shows the main costs drivers during the peak months.

3.5 Cost competitiveness of the enterprises

3.5.1 Economies of scale

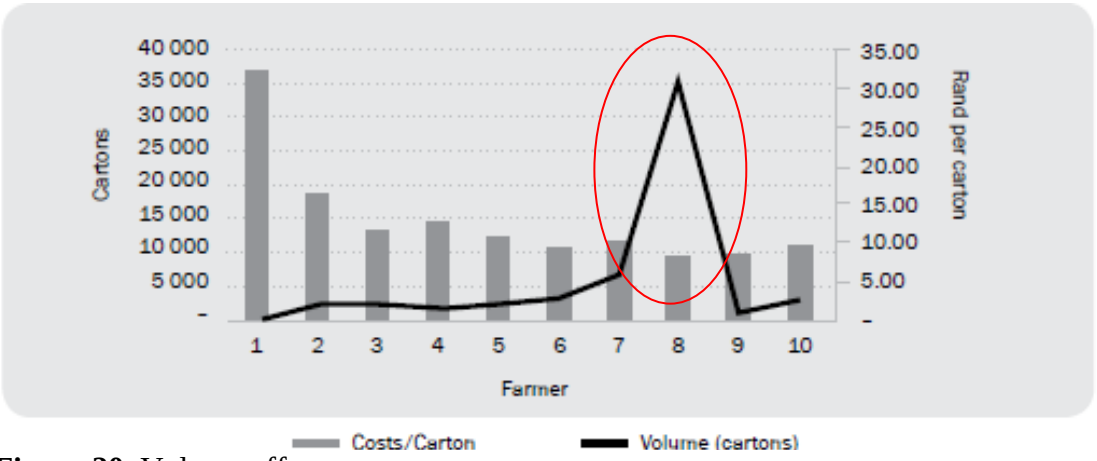


Figure 20. Volume effect on cost

The graph in figure 21 above shows that farmer 8 (Nyambeni) had the lowest costs of production in the group. This was because he produced the highest volume of 35 000 cartons and was therefore able to spread his total costs over a larger volume. The effect was that his cost per carton was the lowest at R8.18.

3.5.2 Total costs effect on turnover

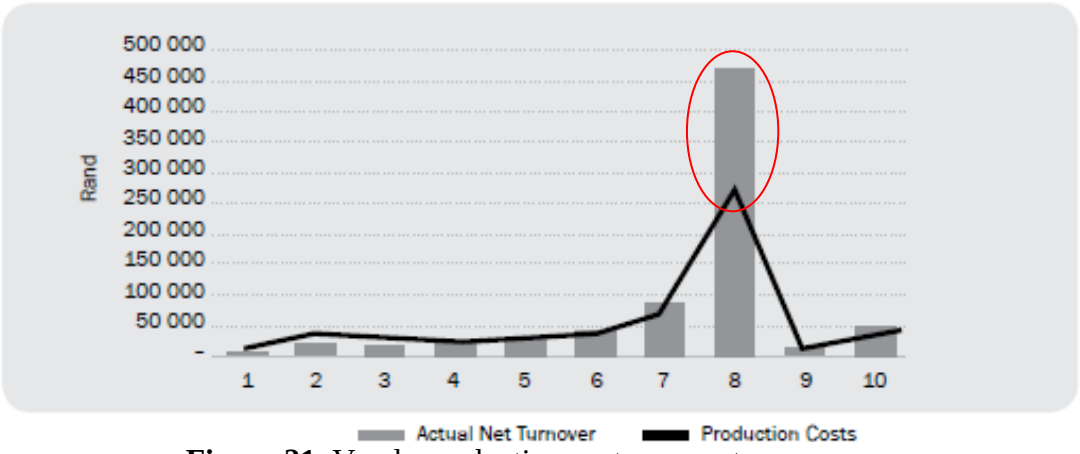


Figure 21. Venda production costs versus turnover

Figure 22 on the previous page indicates that farmer 8 (Nyambeni) was the only producer that made a reasonable profit. The majority of the farmers had turnover's that were below production costs and it was evident that their smallholdings were too small to generate a decent profit for them. The impact of economies of scale was clearly evident in this result. An emerging theme showing that farm size and plant population were the two key determinants was beginning to form.

3.5.3 Cost comparison to Westfalia

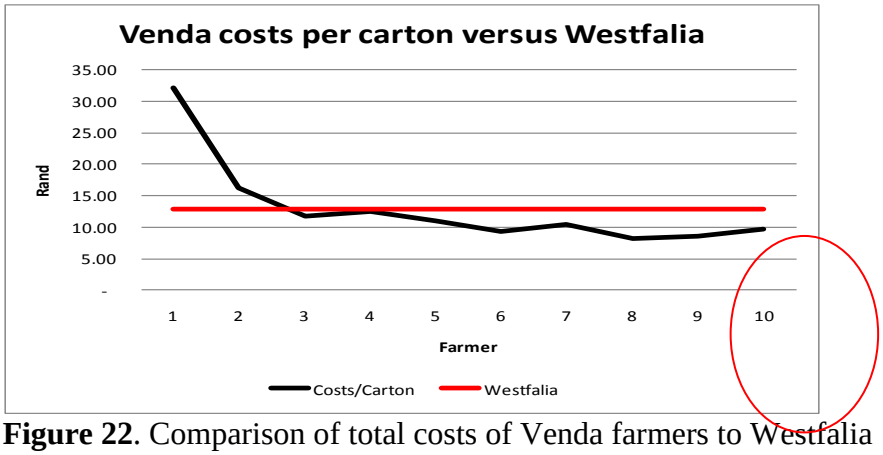


Figure 22. Comparison of total costs of Venda farmers to Westfalia

Almost all the farmers, with the exception of the two farms that were located far away from the rest of the group, had lower costs per carton compared to Westfalia. Farmer 8 again had the lowest cost. The added costs on Westfalia's production costs were due to additional overheads such as the employment of a farm manager (s/he salary cost), bakkie and additional items such as road maintenance etc.

3.5.4 PEST analysis

The PEST analysis was carried out to scan the external macro-environment of the project since it involved different stakeholders. The effects of the Political, Economic, Social and Technological factors combined were considered in assessing the viability of the project. Appendix E presents the project logo that was developed and captures the logos of all stakeholders that participated namely Dishumeleni farmers, AgriSETA, Westfalia and Woolworths. This positive outcome of the assessment of the PEST indicated that it was worth it for Westfalia to continue to support these farmers and so doing this project would add to their B-BBEE scorecard and Corporate Social Investment targets.

Table 13. External environment considerations

Political	**Economic**
• Improves corporate image and promotes Private-Public Partnerships • Contributes social objectives (i.e. Job creation, economic growth, etc.)	• Project is feasible • Opportunity for farmers with scale • Project has bearing on 64 ha planting
Social	**Technological**
• Project contributes to CSR • Contributes to community development • Promotes integration of smallholder farmers with mainstream agribusiness	• IP share with emerging farmers • Industry integration • creates sources of new supply

CHAPTER 4

DISCUSSION AND CONCLUSIONS

Inclusive business models in South Africa are possible through the identification of a strategic 'fit' between large agribusinesses such as Westfalia and smallholder farmers. A complementary relationship was found in an early market window when small-scale avocado farmers in Venda aligned their production activities with Westfalia, one of the largest avocado producing and exporting companies in South Africa. The farmers had a competitive advantage in climate by supplying the first fruits of the South African season, thus playing an important role in the reduction of imports from Spain during the off-season. A combination of factors were instrumental in the success of one of the ten farmers that participated in the project. Economies of scale, efficiencies in logistics and high fruit quality were found to be key success factors.

Additional criteria included the young age of the farmer, his low risk aversion, early adoption of new technology and a passion for farming. A business model was developed indicating the potential for more smallholder farmers to profit from participating in big business in the South African avocado industry.

The objective of the project was to better the returns than their traditional supply chain method that entailed farming extensively and picking and packing in bags for the Johannesburg market. The farmers that made a loss were visibly upset with the result understandably so because a common and expected failure is better than a new unknown attempt where the anticipation of success is very high.

There were a number of reasons that we found to have led to this outcome. These included:

i) Unusually high volumes in the market

Since the season was an "On" year, it follows that there was too much fruit in the market that year resulting in market saturation. When that happened the market price plummeted below production costs. This was especially the case for farmers that had too little output such that their cost recovery was seriously compromised since they

also did not have the volumes to spread their costs over. The back-on-farm return per carton was R17.50/kg (excluding waste) which in industry norms was a good result.

This was a very good price compared to the amount of fruit that was available in the market at that time. In fact, this proved the theory that early fruit from Venda could give the farmers a much stronger market presence since they would be first in the new season, having good quality and lower costs. Unfortunately, the farmers with less than 100 trees per hectare could not realize this benefit.

ii) High production costs

The financial results indicated that the spraying costs were too high due to some unexpected cost price hikes such as the copper price (main chemical which is quite expensive) that was required for the effective control of the disease. During the initial stages when workers were not familiar with handling the product there was a lot of spillage and chemical was due to the inexperience of workers. Another additional factor was that other workers would cheat, hide and sleep behind trees when they were supposed to be working in dense orchards.

iii) Low labour productivity

The project created 60 jobs for men and women that were previously unemployed. The productivity was very low for both genders at initial stages during spraying and packing even though the workers had been trained and were paid R65 per day which was 8% above the legal minimum wage of R60 per day at that time.

iv) Low plant population

For each of the farms that made a loss the reasons relate to either of the two factors. It was found that some farmers had too few fruit to offset their production costs. As a result the copper sprayed could not be recovered. Two of the farmers were located too far from the rest of the group making their transport costs prohibitive. The volume of fruit harvested was not sufficient to offset the transport costs of the tractor and truck and spray team for travelling that distance.

The managing partner of the project made the best possible effort to implement the spraying exercise cost-effectively and sought the best possible prices for the farmers from various markets. This was despite having made a R300 000 profit which is unusual for a start-up business to achieve its first year of operation. The one successful farmer had 59% of the total volume of 241 tons supplied by the group to Woolworths and other markets. Lessons learnt from this research demonstrated that inclusive

business in the South African avocado industry is possible and as such this success can be replicated in other fruit industries in particular and throughout the changing landscape of South African agriculture in general.

In spite of all these important considerations in Table 12 of the PEST analysis the farmers judge the benefits based on income back to their pocket, which at that stage, had not been sufficient to meet three of farmers expectations that had made a loss.

The approach that was followed in financial management for the project was cost accounting which was to keep the cost chain for each farmer separate on variable costs (e.g. diesel, amount of copper used, etc.) with some shared overhead costs such as cost of tractor driver, loan interest, etc. Westfalia had already demonstrated her support for the project by writing off R60 000 worth of losses.

Under these circumstances the best decision was to scale down the project to focus only on the young farmer with the best potential and willingness to continue. He had the most volumes (35 000 cartons) and good fruit quality (20% waste). That was because Westfalia had invested over R1m in overhead costs in staff salaries and their subsistence and travel costs to facilitate implementation of the project. One of the most important achievements of the project was the high pack-out of 98% in the first week, 95% in the second week and an average of 90% for the whole consingment of 241 tons of fruit packed. Pack-out is an industry term that describes the ratio of fruit delivered at the packhouse to the amount of marketable fruit. Fortunately for the project, this happened on an "On" year which means the trees were on a high production year and that made the volumes and returns more favourable for research purposes to inform this study. An "On" year refers to the alternate year where avocados have a high yield.

In designing future support programmes development practitioners need to plan sufficiently before commissioning projects. Such planning should entail taking into account the social, physical and financial aspects of the project. Arising from the lessons in implementing this project was the need to balance these various aspects and prevent the project from derailing. In particular, it relate to securing enough funding and most importantly managing expectations of the farmers. Since not all the activities could be funded the amount was reduced to the bare minimum and that put pressure on some critical resources that had already been allocated to other activities.

Furthermore, it is quite important also to develop a contingency plan should things not go according to the master plan. A case in point is during implementation where

external variables such as the escalation of production costs (including minimum wage and fuel prices) decreased the profit potential as price uncertainty became more pronounced. Transport and logistics were found to be one of the major cost drivers of the project. This meant that the selection of the target population, proximity of the farms to the main road (ease of access), water sources and radius of the location of the group played an important role in determining the final total cost of the project. Emphasis is placed on the social dimension of the project since this was one of the problematic aspects where human behaviour was thought to go beyond the team's ability since the team mainly comprised of technical people and none had any social science background or specialization.

In summary this study concludes that smallholder farmers who intend to enter this sub-sector of avocado production should take into cognisance the high entry barriers of fixed costs that are peculiar to this industry. The project has shown that any farm that is less than 10 hectares in size with a plant population of less than 100 trees per hectare cannot be viable. Further, the age of the farmer, his attitude in adopting new technology and the willingness to trial new methods determined the level of success of lead particular. The effects of farm size on profitability were evident indicating the importance of economies of scale as a critical success factor.

Future lessons are that the social factors of the project are equally important and that points to the fact the people should be accorded equal attention in planning time in a similar way that the technical plan is developed. The process of social facilitation should start prior to the initiation of the project and should continue during and after the completion of the project. Farmers also gained a lot from this experience and for many this was an eye-opener. Some admitted that they now knew why they have been farming for two years and had never made money. They also learnt of the benefits of 'safety in numbers' with respect to the group benefits of sharing costs. If farmers are selected carefully and their institutional arrangements are put in place from the beginning then projects of this nature are more likely to succeed.

The role of the Limpopo Department of Agriculture has been the most problematic from the very start. It emerged during the planning stage when surveys of the farmers were conducted that any private-sector led innovation in the area had to first receive a blessing from the Department before farmers could accept it. As such, the project team could not meet the farmers without the presence of an official from the Department.

This pointed to the level of trust given by the farmers on their extension officers. However, this was very ambiguous because the same farmers would blame the Department for their sorry state of affairs and would cite their difficulties as emanating from the inefficiencies or laziness of the extension officers. They blame them for their continued struggle and exploitation by market agents in Johannesburg.

This relationship was challenging to manage because the farmers were playing Westfalia against the Department. In as much as the Department had a civil duty to provide public goods and services to the farmers it does not mean they are their custodians. Farmers are entrepreneurs and should not be dependent on government officials for decision making. It shows that there is a relationship of dominance meted out by the extension staff on farmers. Equally though, the farmers seem to take a swipe at the officials at whim, sometimes unwarranted. The project was also not spared the criticism as it later happened after the final accounts had been given out in a meeting to close the financial year that the project manager was subjected to a tongue lashing.

The dressing down was orchestrated by the extension officer and his colleagues at the local extension office in one meeting with Woolworths. They accused the project manager saying that this whole project was started as a way to belittle the Department as shown in the decision by Westfalia to sign an agreement with the farmers without the involvement of Department officials. This was such a ridiculous and frivolous argument however it did sour relations between the two organizations. The reasons for the attack was suspected to be jealousy arising from farmers having bragged to Department officials that they were now successful because of assistance from Westfalia and yet the Department had failed in responding to their requests including the application for a subsidy for copper prior to them applying for a loan.

As one farmer put it “We have been with these extension officers for 25 years in this area. In all that time we have been farming with little resources struggling to produce our fruits. Despite all that, we now have found a new partner in the name of Westfalia who have shown us how to farm profitably in this business. Instead of the Department officials congratulating us on this success, they have sought to make the presence of Westfalia in the area impossible. When the extension office opened 25 years ago we were poor, and now 25 years later we are still poor. There is no innovation or new technology coming from that office that benefits us as farmers.

Instead we are always called for trainings, trainings and more training whereas what we need is farming inputs. They found us poor and we are still poor. That is why we have stood up now to embrace this help from our new friends from Tzaneen. We look forward to many years of working today to fully develop our farms, to install irrigation system and one day have our orchards look like those of Westfalia where we trained."

In drawing a conclusion on the future of the project, it was worth considering a number of perspectives in deciding on the future of the project based on the financial results.

a) The Subjective view

Keeping the farmers happy was the ideal objective to ensure their loyalty and support. The extent to which the farmers could be subsidized, especially the three farmers that had made a loss, should have been maximized. This view proposed that the other partners in the agreement should attempt to make an effort to meet the expectations of the famers by absorbing most of the losses for the betterment of the farmers' financial position.

b) The Objective view

The avocado business has inherent business risk that cannot be accurately predicted or forecasted. The managing partner of the project made the best possible effort to implement the spraying exercise cost-effectively and sought the best possible prices for the farmers from various markets. The rest was a result of market forces beyond anyone's control. Farmers should accept the results as they have turned out. Since they are strongly disgruntled then they should go ahead and close down the project as had tentatively indicated.

Recommendations:

Based on the two views presented, the writer recommended that support should be concentrated on farmer 8 (Nyambeni) since he was the only one with a viable business. If there is a way of subsidizing the rest of the group to continue that would be the best solution. Otherwise the results indicate that the rest of the group have units that are rather too small to overcome their costs of production and as such could do better by producing other crops such as vegetables or rearing livestock. It was not economically viable for them to continue.

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APPENDIX A

LOAN AGREEMENT

Between

WOOLWORTHS (PTY) LTD

("WOOLWORTHS")

(Registration No. 1956/000518/07)

And

WESTFALIA FRUIT ESTATES (PTY) LTD

("Westfalia")

(Registration No. 1992/002309/07)

And

DISHUMELENI AVOCADO FARMER'S CO-OPERATIVE
("Emerging Farmers'')

TABLE OF CONTENTS

RECORDAL:

WHEREAS Woolworths carries on business as a retailer of a wide variety of merchandise through the medium of a chain of retail stores located throughout the Republic of South Africa and which trade under the name "Woolworths" (namely the Woolworths; and

WHEREAS Woolworths (Proprietary) Limited contracts with various suppliers to produce and/or manufacture goods for Woolworths (Proprietary) Limited; and

WHEREAS Westfalia has embarked on a development programme to assist the Emerging Farmers to improve the quality of their avocado fruit and become strategic avocado suppliers to Woolworths; and

WHEREAS the parties have agreed that Woolworths shall lend the Emerging Farmers the Loan Amount; and

WHEREAS the parties have agreed that the Loan Amount shall be paid to Westfalia on behalf of the Emerging Farmers; and

WHEREAS the parties have agreed that Westfalia will provide the necessary support structures to assist the Emerging Framers as per clause 3 below.

NOW THEREFORE IT IS AGREED AS FOLLOWS:

INTERPRETATION

In this Agreement, unless the context indicates a contrary intention –

"Accredited Packhouses" means the Westfalia Fruit Estate Packhouse

"Agreement" means this Loan Agreement; and all annexures thereto if any;

"Commencement Date" means 25 September 2010 notwithstanding signature of this Agreement by the parties.

"Equipment" means 1 Mini-Spray Rig

"Loan Amount" means;

an amount of R40 000,00 (Forty thousand Rands), which amount shall be advance for the purpose of purchasing of Equipment; and

an amount of R366,000.00 (Three hundred and sixty six thousand Rands), which amount shall be advanced for the purpose of Working Capital

"Parties" means Woolworths, Westfalia and Ndivhuwo Nyambeni;

"**Prime Rate**" means the publicly quoted basic rate of interest per annum at which the Standard Bank of South Africa Limited will from time to time lend without security to its most favoured corporate customers in the private sector on overdraft, as certified by any manager of that bank whose appointment it will not be necessary to prove, calculated on a daily basis and compounded monthly in arrears;

"**Produce"** means the avocados being farmed by the Emerging Farmers.

"Signature Date" means the date of signing of this Agreement by the party last signing.

"Westfalia" means Westfalia Fruit Estates (Pty) Limited, registration number 1992/002309/07 of Main Road R36, Duiwelskloof

"Woolworths" means Woolworths (Proprietary) Limited a company registered in accordance with the company laws of the Republic of South Africa having registration number 1956/000518/07 of 93 Longmarket Street, Cape Town 8001.

"**Working Capital"** means money to be used specifically for the maintenance of the Tractor and the 4 ton Truck, labour (being spraying and picking), the purchase of Diesel and Copper and Truck rental

Words and expressions defined in any clause shall, unless the application of any such word or expression is specifically limited to that clause, bear the

meaning assigned to such word or expression throughout this Agreement.

Reference to months or years shall be construed as calendar months or years.

No provision herein shall be construed against or interpreted to the disadvantage of any party by reason of such party having or being deemed to have structured or drafted such provision.

The *eiusdem generis* rule shall not apply and whenever a term is followed by the word "including" which is then followed by specific examples, such examples shall not be construed so as to limit the meaning of that term.

Unless specifically otherwise provided, any number of days prescribed shall be determined by excluding the first and including the last day or, where the last day falls on a Saturday, Sunday or Public Holiday, the next succeeding business day.

A reference to any statutory enactment shall be construed as a reference to that enactment as at the signature date and as amended or re-enacted from time to time.

This Agreement incorporates the annexures which annexures shall have the same force and effect as if set out in the body of this Agreement

Unless specifically otherwise provided, all amounts in this Agreement are exclusive of value-added tax.

THE LOAN

Woolworths hereby undertakes and agrees that;

it shall lend the Emerging Farmers the Loan Amount to be used as Working Capital and for the purpose of purchasing the Equipment.

Woolworths shall pay the Loan Amount to Westfalia and Westfalia will receive the Loan Amount on behalf of the Emerging Farmers

Westfalia shall administer the Loan Amount in terms of clause 3 below.

WESTFALIA'S OBLIGATION

3.1 Westfalia shall;

3.1.1 manage the purchase of the Equipment and stock for and on behalf of the Emerging Farmers,

3.1.2 manage the spraying and the picking of the Produce by the Emerging Farmers;

3.1.3 provide training and mentorship to the Emerging Farmers,

3.1.4 provide the Emerging Farmers with technical support and shall retain all the necessary documentation,

3.1.5 be responsible for the delivery of the Produce to Woolworths,

EMERGING FARMERS OBLIGATIONS

The Emerging Farmers shall;

operate the Equipment under close supervision and mentorship of Westfalia

deliver the Produce to the Accredited Packhouse

REPAYMENT OF THE LOAN AMOUNT

The amount referred in clause1.1.5.1 together with interest shall be paid by Westfalia on behalf of Ndivhuwo Nyambeni to Woolworths in 6 (six) equal instalments each year for a period of 5 (five) years. The instalments shall be payable on the first day of each months of April to September inclusive, of each year for the 5 (five) year period from the 1st of April 2011.

The amount referred in clause1.1.5.2 shall be paid by Westfalia on behalf of Ndivhuwo Nyambeni to Woolworths in full as from the 1st April 2015.

The interest on the amount referred to in clause 1.1.5.2 shall be payable in 6 (six) equal instalments each year for a period of 5 (five) years. The instalments shall be payable on the first day of each months of April to September inclusive, of each year for the 5 (five) year period from the 1st of April 2010.

Interest shall be charged on the Loan Amount from the day that the Loan Amount is advanced to the Emerging Farmers until Woolworths receives repayment of the amount advanced in full and shall be calculated at an annual finance charge rate of prime minus 2,5 % (two percent).

Should any payment due in terms of this Agreement not be made on due date, Woolworths may regard the balance of the Loan Amount and interest owing in terms this Agreement as due and payable immediately and shall instruct Wesfalia to set off the Loan Amount or any part thereof, against any payments due by Woolworths to Ndivhuwo Nyambeni.

The Loan Amount together with any interest thereon shall become due and payable immediately in the event of the liquidation of Westfalia or if Westfalia commits an act of insolvency.

Ndivhuwo Nyambeni shall be at liberty to pay any portion of the Loan Amount and interest before the due date thereof without derogating from any right they may have in terms hereto.

Westfalia and the Ndivhuwo Nyambeni hereby expressly renounces the benefits of the exeption *non causa debiti*, *errore calculi*, the revision of accounts and no value recorded.

Woolworths may allocate any payment to capital, costs or any other item as it deems fit despite any allocation made or deemed to be made by the Ndivhuwo Nyambeni.

Any certificate issued under the signature of any manager of Woolworths whose appointment it will not be necessary to prove or his duly authorised agent that purports to certify the amount due hereunder, shall be accepted as *prima facie* proof of such indebtedness and shall have

sufficient probative value to enable the Woolworths to obtain summary judgment or provisional sentence against Westfalia and/or Ndivhuwo Nyambeni in any competent court for the amount stated in such certificate, and Westfalia and the Ndivhuwo Nyambeni accept the onus of disproving the amount so stated as not being the amount owing.

ARBITRATION

Save as otherwise specifically provided elsewhere in this Agreement, any dispute arising out of or pursuant to this Agreement, its termination or cancellation shall, at the request of any party to the dispute, be finally resolved by an arbitrator or arbitrators agreed to between the parties to the dispute and failing such agreement within 3 (three) days of a request therefore by any party, appointed by the Arbitration Foundation of Southern Africa ("AFSA"), by means of arbitration to be held in Cape Town, under the aegis of AFSA, but solely and exclusively applying the Uniform Rules of the High Court in force at the time.

Each party to this agreement irrevocably;

consents to any arbitration in terms of the aforesaid rules being conducted as a matter of urgency; and

authorises the other to apply, on behalf of both parties to such dispute, in writing to the secretariat of AFSA, on good cause shown to the arbitrator, for any such arbitration to be conducted as a matter of urgency.

Notwithstanding anything to the contrary contained in this clause 0 any party shall be entitled to apply for, and if successful, be granted, an interdict from any competent court having jurisdiction.

For the purposes of this clause 5 and for the purposes of having any award made by the arbitrator/s being made an order of court, each of the parties hereby submits itself to the Cape of Good Hope Provincial Division of the High Court of South Africa.

This clause 0 constitutes an irrevocable consent by each of the parties to any proceedings in terms hereof, is severable from the rest of the agreement and shall, notwithstanding the termination of this agreement, remain in full force and effect.

CONFIDENTIALITY

Safe to state that Westfalia shall be entitled to disclose this Agreement to its auditors, Wesfalia and Ndivhuwo Nyambeni shall at all times keep and safeguard as confidential all aspects of the business relationship between it and Woolworths (in particular any information relating to this Agreement), save to the extent permitted in writing by Woolworths and/or required by law.

Woolworths undertakes that it will not at any time whether during the continuation in force of this Agreement or at any time after the termination hereof, divulge any information to any person relating to Isikhwama's private affairs, business, method of carrying on business and/or the contents of this Agreement.

NOTICES AND DOMICILIA

Each of the parties chooses *domicilium citandi et executandi* ("*domicilium*") for the purposes of the giving of any notice, the payment of any sum, the serving of any process and for any other purposes arising from this Agreement at their respective addresses set forth in clause 0 hereof.

Each of the parties shall be entitled from time to time, by written notice to the others to vary its *domicilium* to any other address which is not a post office box or *poste restante*.

Any notice given and any payment made by a party to any of the others ("the addressee") which:

is delivered by hand during the normal business hours of the addressee at the addressee''s *domicilium* for the time being shall be presumed, until the contrary is proved by the

addressee, to have been received by the addressee at the time of delivery;

is posted by prepaid registered post to the addressee at the addressee's *domicilium* for the time being shall be presumed, until the contrary is proved by the addressee, to have been received by the addressee on the 7th (seventh) day after the date of posting.

Where, in terms of this Agreement any communication is required to be in writing, the term "writing" shall include communications by telex, telefacsimile and/or e-mail. Communications by telex or facsimile shall, unless the contrary is proved by the addressee, be deemed to have been received by the addressee 1 (one) hour after the time of transmission. With regard to e-mails, the e-mail will be regarded as having been received by the Supplier when the complete data message enters and information system designated or used for that purpose by the Supplier and is capable of being retrieved and processed by the Supplier.

GENERAL

No relaxation, indulgence or extension of time granted by any party ("the Grantor") to another shall be construed as a waiver of any of the Grantors rights in terms hereof or a novation of any of the terms of this Agreement or estop the Grantor from enforcing strict and punctual compliance with the terms of this Agreement.

No variation of, addition to, consensual cancellation of or waiver of any right arising in terms of this Agreement (including this clause 0) shall be of any force or effect unless it is effected by Woolworths or pursuant to clause 20 or is reduced to writing and signed by a duly authorised representative of each of the parties.

This Agreement constitutes the whole agreement between the parties in relation to the subject matter thereof and no party shall accordingly be bound by any undertaking, representation or warranty not recorded therein.

The Emerging Farmers and/or Westfalia shall not be entitled to sell, cede, assign, delegate or in any other way alienate or dispose of any or all of its rights and obligations under and in terms of this Agreement without the prior written approval of Woolworths.

For the purposes of this agreement the Laws of The Republic of South Africa shall be applicable.

Dated at _____on_____2010

AS WITNESSES:

1.

_____

for and on behalf of

2. **WOOLWORTHS (PTY) LIMITED**

S/he being duly authorised thereto

Dated at _____on_____2009

AS WITNESSES:

1.

_____

for and on behalf of

2. **WESTFALIA FRUIT ESTATES (PTY) LIMITED**

S/he being duly authorised thereto

Dated at _____ on_____2010

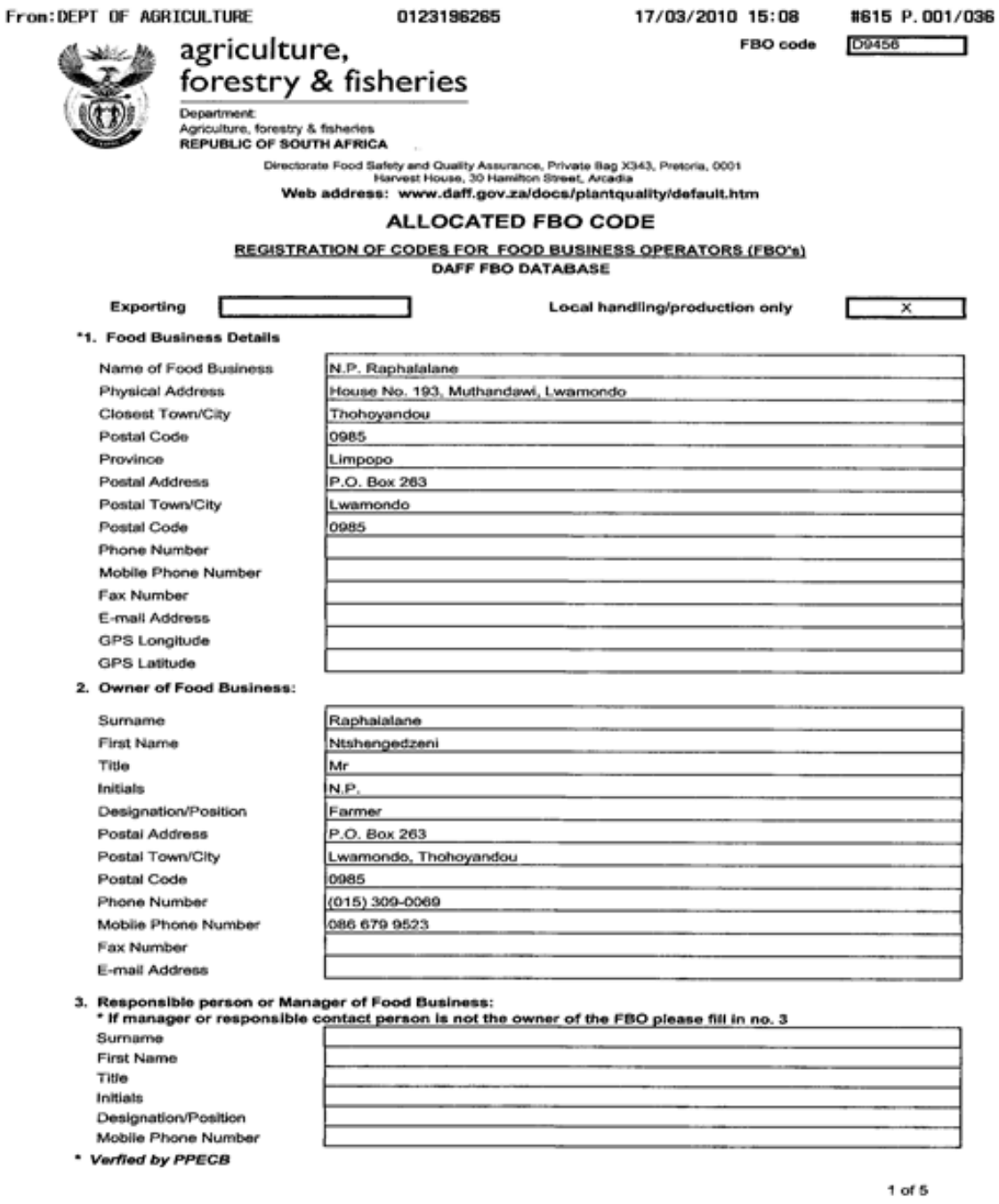
AS WITNESSES:

1. _____

2.

APPENDIX B

Example of Food Business Operator Registration for Venda farmers



From:DEPT OF AGRICULTURE 0123196265 17/03/2010 15:08 #615 P.001/036

FBO code D9456

agriculture, forestry & fisheries

Department:
Agriculture, forestry & fisheries
REPUBLIC OF SOUTH AFRICA

Directorate Food Safety and Quality Assurance, Private Bag X343, Pretoria, 0001
Harvest House, 30 Hamilton Street, Arcadia
Web address: www.daff.gov.za/docs/plantquality/default.htm

ALLOCATED FBO CODE

REGISTRATION OF CODES FOR FOOD BUSINESS OPERATORS (FBO's)
DAFF FBO DATABASE

Exporting [ ] Local handling/production only [X]

***1. Food Business Details**

Name of Food Business	N.P. Raphalalane
Physical Address	House No. 193, Muthandawi, Lwamondo
Closest Town/City	Thohoyandou
Postal Code	0985
Province	Limpopo
Postal Address	P.O. Box 263
Postal Town/City	Lwamondo
Postal Code	0985
Phone Number	
Mobile Phone Number	
Fax Number	
E-mail Address	
GPS Longitude	
GPS Latitude	

2. Owner of Food Business:

Surname	Raphalalane
First Name	Ntshengedzeni
Title	Mr
Initials	N.P.
Designation/Position	Farmer
Postal Address	P.O. Box 263
Postal Town/City	Lwamondo, Thohoyandou
Postal Code	0985
Phone Number	(015) 309-0069
Mobile Phone Number	086 679 9523
Fax Number	
E-mail Address	

3. Responsible person or Manager of Food Business:
*** If manager or responsible contact person is not the owner of the FBO please fill in no. 3**

Surname	
First Name	
Title	
Initials	
Designation/Position	
Mobile Phone Number	

**** Verified by PPECB***

1 of 5

APPENDIX C:

Actual volumes delivered at the packhouse per farmer 2010

Delivered														Waste		Sub-total	% Volume Farmer	Expected payment (Date)
Farm	PUC code	Date	Lugs	Kg's	10	12	14	16	18	20	22	24	Total	Lugs	Kg's	Cartons	%	
Albert Magaba	D9451	03-Mar	440	6 023	33	247	435	367	210	97	50	-	1 439	12	179			2010-04-07
Albert Magaba	D9451	15-Apr	147	1 892	19	77	90	71	40	12	3	2	314	38	533			2010-05-20
Albert Magaba	D9451	16-Apr	156	1 701	17	66	73	63	23	25	18	-	285	33	462			2010-05-21
Albert Magaba	D9451	19-Apr	130	1 701	24	69	73	60	44	16	16	5	307	27	446	**2 345**	**5%**	2010-05-24
Calvin Nelwamondo	D9455	10-Mar	517	7 313	29	179	329	395	354	223	157	-	1 666	50	803			2010-04-14
Calvin Nelwamondo	D9455	11-Mar	357	4 909	19	91	195	236	240	169	124	-	1 074	30	409	**2 740**	**6%**	2010-04-15
EN Makhado	D9453	29-Mar	233	3 080	11	72	116	178	114	91	62	-	644	30	413			2010-05-03
EN Makhado	D9453	31-Mar	237	3 048	1	37	78	86	112	170	74	-	558	50	763			2010-05-05
EN Makhado	D9453	14-Apr	188	2 366	30	67	59	58	52	36	36	7	345	58	906	**1 547**	**3%**	2010-05-19
MS Mukheli	D9454	03-Mar	135	1 849	3	37	86	99	92	73	41	-	431	12	195			2010-04-07
MS Mukheli	D9454	18-Mar	160	2 081	5	30	64	79	86	73	60	-	397	30	512			2010-04-22
MS Mukheli	D9454	23-Mar	119	1 619	7	36	71	69	63	39	28	-	313	21	344			2010-04-27
MS Mukheli	D9454	24-Mar	172	2 245	2	22	55	83	92	77	49	-	380	45	664	**1 521**	**3%**	2010-04-28
Nyambeni Ndivhu	D9450	05-Mar	196	2 581	1	22	84	138	157	103	60	-	565	18	278			2010-04-09
Nyambeni Ndivhu	D9450	09-Mar	621	8 960	5	96	330	517	497	329	224	-	1 998	42	896			2010-04-13
Nyambeni Ndivhu	D9450	10-Mar	466	6 819	6	107	342	456	395	217	99	-	1 622	31	500			2010-04-14
Nyambeni Ndivhu	D9450	11-Mar	488	6 694	2	93	330	449	388	208	85	-	1 555	29	423			2010-04-15
Nyambeni Ndivhu	D9450	12-Mar	565	7 191	15	161	447	516	375	163	52	-	1 729	18	280			2010-04-16
Nyambeni Ndivhu	D9450	15-Mar	553	7 241	19	184	527	543	341	77	12	-	1 703	31	447			2010-04-19
Nyambeni Ndivhu	D9450	18-Mar	462	6 305	20	228	421	399	258	67	24	-	1 417	26	396			2010-04-22
Nyambeni Ndivhu	D9450	19-Mar	296	4 153	30	186	277	238	131	67	32	-	961	20	334			2010-04-23
Nyambeni Ndivhu	D9450	22-Mar	384	5 489	22	156	307	329	297	135	42	-	1 288	18	299			2010-04-26
Nyambeni Ndivhu	D9450	23-Mar	495	6 802	41	224	403	379	293	149	61	-	1 550	30	453			2010-04-27
Nyambeni Ndivhu	D9450	24-Mar	522	7 139	15	146	311	404	372	225	103	-	1 576	30	434			2010-04-28
Nyambeni Ndivhu	D9450	25-Mar	398	5 293	11	98	269	298	263	170	89	-	1 198	30	332			2010-04-29
Nyambeni Ndivhu	D9450	26-Mar	508	6 440	7	179	231	273	298	195	122	-	1 305	67	1 021			2010-04-30
Nyambeni Ndivhu	D9450	29-Mar	558	7 368	4	59	150	171	253	228	233	-	1 098	152	2 603			2010-05-03
Nyambeni Ndivhu	D9450	31-Mar	546	7 194	10	59	120	216	240	420	197	-	1 262	136	2 089			2010-05-05
Nyambeni Ndivhu	D9448	07-Apr	482	6 164	10	80	155	207	201	160	132	42	987	117	1 918			2010-05-12
Nyambeni Ndivhu	D9449	08-Apr	585	7 718	9	81	198	225	232	205	189	58	1 197	156	2 419			2010-05-13
Nyambeni Ndivhu	D9450	12-Apr	584	8 189	10	81	188	245	269	226	184	78	1 281	162	2 512			2010-05-17
Nyambeni Ndivhu	D9450	13-Apr	548	7 186	4	59	126	180	208	183	157	74	991	195	2 894			2010-05-18
Nyambeni Ndivhu	D9450	14-Apr	602	7 732	9	74	172	203	365	170	145	73	1 211	134	2 305			2010-05-19
Nyambeni Ndivhu	D9450	15-Apr	477	6 075	3	30	116	155	114	269	144	53	884	150	2 186			2010-05-20
Nyambeni Ndivhu	D9450	16-Apr	343	4 235	4	39	81	111	144	60	107	47	593	103	1 691			2010-05-21
Nyambeni Ndivhu	D9450	19-Apr	352	4 866	27	96	148	156	122	89	77	38	753	102	1 618	**28 724**	**63%**	2010-05-24
PD Mphepu	D9452	12-Mar	170	2 336	6	54	146	93	108	76	51	-	534	17	268			2010-04-16
PD Mphepu	D9452	24-Mar	173	2 279	6	39	75	94	96	67	59	-	436	30	469			2010-04-28
PD Mphepu	D9452	29-Mar	300	3 759	24	127	214	169	138	66	48	-	786	32	500			2010-05-03
PD Mphepu	D9452	13-Apr	314	3 806	50	168	207	182	118	34	15	-	774	30	405			2010-05-18
PD Mphepu	D9452	14-Apr	232	2 690	29	107	116	117	99	44	26	12	550	27	403			2010-05-19
PD Mphepu	D9452	15-Apr	277	3 163	11	84	125	139	60	79	60	12	570	52	734			2010-05-20
PD Mphepu	D9452	16-Apr	273	3 029	10	118	130	120	54	48	49	23	552	47	662			2010-05-21
PD Mphepu	D9452	19-Apr	179	2 380	7	48	73	91	84	38	60	19	420	35	527			2010-05-24
PR Mphepu	D9452	23-Mar	62	848	5	11	23	30	30	23	16	-	138	18	283			2010-04-27
PR Mphepu	D9452	31-Mar	300	3 740	23	108	158	152	121	147	53	-	762	30	487	**5 522**	**12%**	2010-05-05
RP Ntshengedzeni	D9456	18-Mar	143	1 877	2	31	62	82	79	67	39	-	362	26	422			2010-04-22
RP Ntshengedzeni	D9456	19-Mar	226	3 012	72	175	172	114	66	32	19	-	650	27	451	**1 012**	**2%**	2010-04-23
RS Madele	D9314	12-Mar	159	2 086	1	19	51	74	104	90	65	-	404	26	411			2010-04-16
RS Madele	D9314	15-Mar	190	2 510	5	60	88	105	106	82	58	-	504	30	490			2010-04-19
RS Madele	D9314	18-Mar	125	1 663		8	27	42	68	80	60	-	285	30	461	**1 193**	**3%**	2010-04-22
TW Netshifhire	D9458	12-Mar	171	2 346	7	57	91	127	97	76	48	-	503	22	382			2010-04-16
TW Netshifhire	D9458	15-Mar	224	2 965	11	45	70	115	130	128	92	-	591	24	417			2010-04-19
TW Netshifhire	D9458	18-Mar	77	993	2	12	20	31	35	31	28	-	159	23	349	**1 253**	**3%**	2010-04-22
TOTAL:			**17 617**	**233 131**	**755**	**4 839**	**9 305**	**10 529**	**9 328**	**6 424**	**4 134**	**543**	**45 857**	**2 759**	**43 077**	**45 857**	**100%**	

APPENDIX D

Balance Sheet, Cashflow Projections and Profit and Loss Account 2010

	OCTOBER	NOVEMBER	DECEMBER	TOTAL
PROFIT & LOSS				
Production costs				
Consumables	27 456.00	21 120.00	20 858.55	69 434.55
Depreciation	1 701.36	1 701.36	1 701.36	5 104.08
Diesel	7 252.00	4 003.00	9 489.00	20 744.00
Interest	5 015.00	5 051.00	5 108.00	15 174.00
Labour transport	5 800.00	2 800.00		8 600.00
Repairs and Maitenance	17 402.00	1 679.00	2 500.00	21 581.00
Wages	14 430.00	25 874.00	14 421.00	54 725.00
Vehicle costs				-
~ Truck & Tractor hire -(Bavaria)		13 200.00	13 345.00	26 545.00
~ Truck & Tractor hire -(Lwamondo comm)			5 000.00	5 000.00
Total production costs	**79 056.36**	**75 428.36**	**72 422.91**	**226 907.63**
Balance sheet				
Long term Loan				
~ Wool worths Loan 1	211 542.00	213 542.00	215 026.00	215 026.00
~ Wool worths Loan 2	501 473.00	505 040.00	508 664.00	508 664.00
	713 015.00	**718 582.00**	**723 690.00**	**723 690.00**
Fixed assets				
~Sprayrite (sprating equipment)	184 000.00	184 000.00	184 000.00	184 000.00
~2 water pumps	6 658.00	6 658.00	6 658.00	6 658.00
~500 L horizontal tank	8 465.00	8 465.00	8 465.00	8 465.00
Accumulated depreciation	1 701.36	3 402.72	5 104.08	5 104.08
	197 421.64	**195 720.28**	**194 018.92**	**194 018.92**
Inventory				
~copper	202 944.00	181 824.00	67 392.00	67 392.00
~Fuel	2 948.00	2 002.00	1 581.30	1 581.30
				-
	205 892.00	**183 826.00**	**68 973.30**	**68 973.30**
Debtors				-
~Venda farmers	79 056.36	154 484.72	226 907.63	226 907.63
Creditors				
~ Westfalia			-18 706.00	-18 706.00
Bank	***230 618.00***	***184 009.00***	***252 018.00***	***252 018.00***
	713 015.00	**718 582.00**	**723 690.00**	**723 690.00**
CASHFLOW				
	-	-	-	-
Operations activities				
Production costs	-79 056.36	-154 484.72	-226 907.63	-226 907.63
Depreciation	1 701.36	3 402.72	5 104.08	5 104.08
Interest	5 015.00	10 066.00	15 174.00	15 174.00
				-
	-72 340.00	**-141 016.00**	**-206 629.55**	**-206 629.55**
Investment Activities				
Capex- Spraying equipment	-199 150.00	-199 150.00	-199 150.00	-199 150.00
Financing				
Loans raised	708 000.00	708 000.00	708 000.00	708 000.00
Loans Paid				
	708 000.00	**708 000.00**	**708 000.00**	**708 000.00**
Working Capital				
~Inventory	-205 892.00	-183 826.00	-68 973.30	-68 973.30
~ Debtors				
~Creditors			18 706.00	18 706.00
	-205 892.00	**-183 826.00**	**-50 267.30**	**-50 267.30**
Cash & cash equivalent	**230 618.00**	**184 008.00**	**251 953.15**	**251 953.15**

APPENDIX E

PROJECT LOGO