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Social Learning Processes in a Citrus Farming Community of Practice

A half-thesis submitted in partial fulfillment of the requirements for
the Degree of

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ABSTRACT

Learning takes place in a number of ways. Situated learning for example, tries to shift the focus from the individual as a learner to the learner participating in the social world and from learning as a strictly cognitive process to a more encompassing view of social practice. The overall aim of this research was to gain a deeper understanding of the ways in which learning takes place in and between members of a citrus farming community, in other words it was to investigate the social learning processes. The research was undertaken in Patensie, a citrus farming community of the Gamtoos River Valley, Eastern Cape, South Africa.

Data was generated through the use of interviews and informal discussions with participants together with document analysis, such as minutes of meetings. I also made observations of the learning interactions that were evident and also the interactions that were evident in the area as a whole. The data was analysed in two phases, the first involved reading across the interview transcripts and organizing the data under broad themes while the second phase made use of an analytical framework, a Community of Practice perspective to further analyze and engage with the data. I drew quite strongly on the ideas of situated learning, Communities of Practice and the notion of Legitimate Peripheral Participation (Lave & Wenger, 1991) as a means to understand, interpret and describe the social learning processes.

The research highlighted that in this case study, citrus farmers learn in a number of sociological ways, for example through intergenerational learning (in the family), learning from each other in a Community of Practice, learning from private consultants and extensions officers as well as from other organizations and institutions. It also considered how farmers' learning had influenced landuse practice in the area. This brought to the fore an emerging partnership with a conservation agent based on providing economic incentives to farmers to engage in sustainable landuse practices. It is hoped that this research may inform future educational endeavours by shedding light on the social learning processes and by drawing attention to key aspects of learning that may previously have been overlooked in research.

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LIST OF ACRONYMS USED

- (BCI)** Biodiversity and Citrus Initiative
- (BMRP)** Baviaanskloof Megareserve Project
- (BPMU)** Baviaanskloof Project Management Unit
- (BWI)** Biodiversity and Wine Initiative
- (C.A.P.E.)** Cape Action for People and the Environment
- (CFR)** Cape Floral Region
- (CNC)** Cape Nature Conservation
- (COP)** Community of Practice
- (CSP)** Cape Stewardship Programme
- (DEAT)** Department of Environmental Affairs and Tourism
- (DWAF)** Department of Water Affairs and Forestry
- (GRV)** Gamtoos River Valley
- (NLC)** Networked Learning Community
- (PCB)** Patensie Citrus Board
- (PCC)** Patensie Citrus Company
- (PE)** Port Elizabeth
- (PPP)** Proud Partner Programme
- (STEP)** Sub tropical Thicket Ecosystem Planning Project
- (WDM)** Water Conservation and Demand Management

Chapter 1- Introduction

1.1 OVERVIEW OF THE CHAPTER

This chapter presents the background and setting of the research in the field of environmental education. It first describes how the study arose and my personal interest in the research. From this emerges the research question and the goals of the study. It then introduces the reader to the context, (biophysical, historical, institutional, economic and social) of the study area and finally gives the reader an overview of the study.

1.2 HOW THE RESEARCH IS SITUATED IN ENVIRONMENTAL EDUCATION?

Biodiversity conservation has become increasingly important over the past few years in South Africa. It has been suggested that South Africa is the third most biologically rich country in the world (Wynberg, 2002) with between 250 000 and a million species. Some regions of the country, such as the Cape Floristic Region contain many rare, endangered and threatened species, especially plant species, which require protection and conservation methods. The vast majority of South Africa's biodiversity exists outside of formally protected areas, such as National Parks (Wynberg, 2002) leaving about 16 million hectares or 13.1 % of land under private management and conservation (Scholes, 2002; Wynberg, 2002). Private conservation initiatives and private landowners therefore have a vital role to play in the future conservation of South Africa's biodiversity.

Agriculture and farming are an important economic activity throughout most of South Africa, contributing about 27% to the economy with a variety of crops being grown and sold both domestically and internationally (Vermeulen, Jordaan, Korsten, & Kirsten, 2006). It is therefore important that farming activities in South Africa are as ecologically friendly as possible so as to reduce the impact on the natural environment and yet maintain high productivity. It has been suggested that one of the biggest threats to biodiversity worldwide is that of habitat transformation (Wilson, 2002).

In an agricultural context for example, the expansion of agricultural land, fields and orchards often extends into natural and sensitive habitats and therefore pose a serious threat to biodiversity. The challenge of safeguarding this biodiversity therefore lies with individual private landowners and particularly with farmers across the country.

Many educational strategies have been designed around the ideas of sustainability and sustainable living. In conservation education, these have often been around extension services in which external educators/agents try and convince farmers and landowners to change their ways and practice. Often these approaches have been met with limited success. As Janse van Rensburg (1997: 3) suggests, many of these past approaches to education had been met with limited success as "education was treated as a technique to change others' behaviour". As a response to this, many of the approaches that have emerged since this time have been more participatory in nature whereby people become co-engaged in an activity, event or discussion that facilitates learning to take place. A shift has therefore taken place from teaching people (about conservation) and trying to change their behaviour to working with people in a particular context (such as farming) to facilitate learning and understanding (Babikwa, 2004).

1.3 HOW MY INTEREST IN THE STUDY EMERGED?

As a researcher with a background in the natural sciences, my perception of education was very much one that involved teaching and educating individuals. As I began to make the transition from natural sciences to social sciences and environmental education, and began reading the literature about learning and education, I discovered that a lot of research in education and learning had been done with children, mainly in classroom and school based contexts. For example Rickinson (2006) notes that between 1993 and 1999 many studies were done that investigated the characteristics of school students such as their environmental knowledge or attitudes.

I also came to realize through my reading that many of the approaches to education had involved learners being taught something. As Rickinson (2006: 446) states, "concern with environmental learning as an integral part of our everyday lives and with what learners learn, not with what teachers teach, has been all too rare". Myers (2006) writes that there has in past educational research been too much emphasis on the teacher teaching and not enough emphasis on the learner learning.

I began to reflect on the work I had undertaken in my honours year of Environmental Science, which had looked at the role conservancies' played in biodiversity conservation in South Africa. One of the findings that emerged from this research was that groups of landowners, form voluntary partnerships around a common future focus, in this case that of conservation and sustainable landuse. Through various interactions such as regular

meetings, discussions and forums these landowners formed powerful learning groups in which communication and sharing of information were key (Downsborough, 2005).

I thus became interested in the informal ways in which people learn, as opposed to the more formal and structured ways, such as those that occur in schooling and training programmes. Informal learning according to Wals and Heymann (2004) is learning as part of everyday semi-structured events. I decided to take this finding of my honours research and expand it into an educational context and investigate the ways in which people, especially adults learn in a citrus farming community and how this learning informs action namely a reduced impact on the natural environment.

1.4 RESEARCH QUESTION AND GOALS

This research is guided by the central question of how does learning take place in a citrus farming community of practice to reduce impact on the natural environment?

My main aim in this research was to gain a deeper understanding of the ways in which learning takes place in and between members of a community (citrus farming community). It was also to explore the broad scale social learning interactions that take place (in a community of practice and a wider community) and how these may result in learning and learning actions that reduce impact on the natural environment. In order to help me achieve this aim and approach my research question I generated two research goals:

- 1) To document how the Patensie citrus farmers have become constituted as a community of practice and are now responding to the Baviaanskloof Megareserve.
- 2) To identify and record accounts of social learning interactions that are shaping evolving farming practices that reduce impact on the environment.

As one of my primary concerns was to gain a deeper understanding of the learning and learning processes that take place within a community, I needed to allow the farmers experiences and knowledge of their context and practice to be captured.

1.5 REGIONAL CONTEXT OF THE RESEARCH

This research is located in Patensie, a small citrus farming town in the Gamtoos River Valley on the edge of the Baviaanskloof Megareserve.

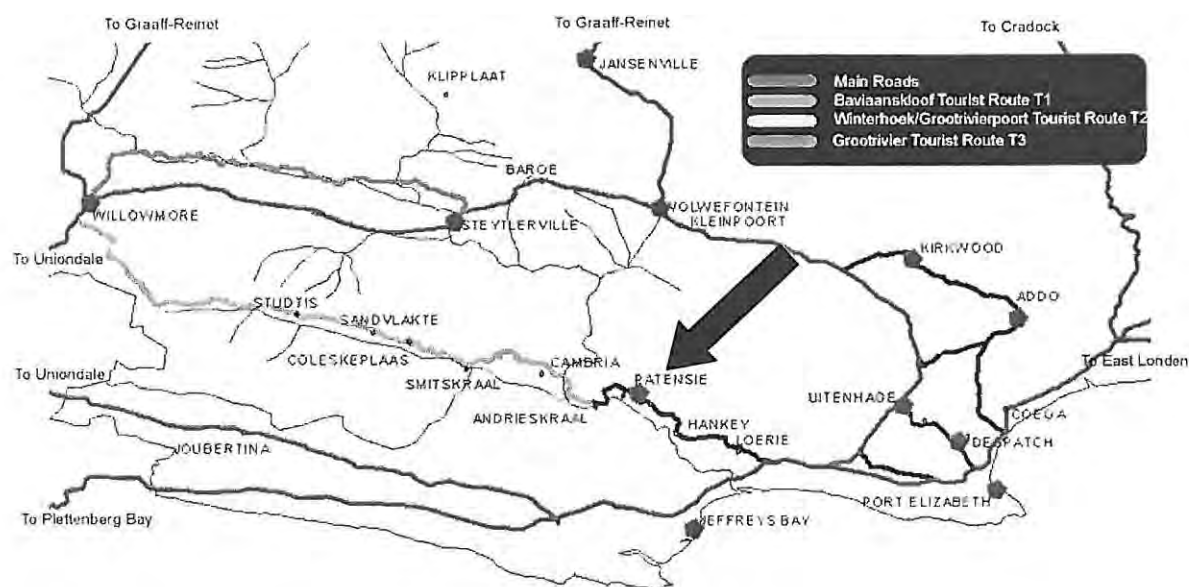


Figure 1: Regional Map of the study area (Patensie)

1.5.1 Bio-geographical profile

The Baviaanskloof or 'valley of baboons' as it is commonly known, is situated in the western part of the Eastern Cape Province, South Africa. The area falls within the Cape Floristic Region (CFR), which is a unique biological region. Seven of South Africa's eight biomes are found here. The area supports a high diversity of species and habitats, 1161 plant species, dominated mainly by fynbos and sub tropical thicket, 310 bird species and 58 mammal species (Boshoff, 2005).

The Gamtoos River Valley is situated about 100km west of Port Elizabeth. The Valley is roughly 70 km long and is surrounded by the Baviaanskloof Mountains (WDM, 2004). The towns of Lorie, Hankey and Patensie form the backbone of the Gamtoos River Valley (Boshoff, 2005) and thrive on the production and export of agricultural produce, mainly citrus (oranges) grown in the valley.

Table 1: Summary of crop composition (%) in the Gamtoos River Valley

	Patensie	Hankey	Lorie	Gamtoos
Citrus	38.6	27.4	1.6	22.5
Potatoes	28.1	27.4	4.8	20.5
Kikuyu ryegrass	0	0	23	7.2
Carrots	1.2	3.6	16.3	6.9

Maize	2.1	8.3	9.3	6.9
Wheat	7	11.2	0.6	6.7

Patensie, which is known as 'the pantry of the Eastern Cape' is a small town in the lower catchment of the Gamtoos River Valley. A variety of crops are grown here the most common being citrus, potatoes and kikuyu ryegrass followed by carrots, maize and wheat. There is also a diverse range of smaller produce grown such as tobacco, cabbages and various other vegetables (beans, cauliflower, sweetcorn). The majority of citrus is exported internationally while many of the vegetable products are grown for a national/local market (P3, pers comm., 3 April 2006).

1.5.2 Historical

For many centuries the Baviaanskloof area was home to the San people, however during the 18th century the area became the site of frontier wars between the white Cape farmers and the Xhosa people (Boshoff, 2005). Many of the San people were forced to leave or become farm labourers in the area. The next 100 years witnessed the arrival of many farming families, many of whom were of Dutch origin but some British Settlers settled in the Gamtoos River valley around 1820. In 1802 there were 12 families settled on the banks of the Gamtoos River (WDM, 2004). The new European settlers hunted most of the indigenous animals of the area to extinction, replacing natural game with domestic stock and arable areas were put under cultivation (Boshoff, Cowling, & Kerley, 2000). The main farming activity of this time was pastoralism, mainly with goats but tobacco, fruit and wheat were also cultivated in the floodplain areas (*ibid*).

1.5.3 Political

South Africa is a country that has a history of land dispossession based on racial discrimination, which has produced a generally unequal pattern of landownership and widespread poverty (Crane, 2005). As elsewhere in South Africa, the settlement of white farmers in the 19th and early 20th centuries went with the displacement of black farmers from the area (*ibid*). The 1913 Land Act made it impossible for black farmers to own land outside of the homelands systems. This type of legislation as well as strong government support for white commercial farmers (in the form of subsidies, credit, marketing and infrastructure support) was responsible for the majority of the landholding patterns in the

ⁱ The word Gamtoos is a Koi-Koi word which means 'roaring lion'. This is associated with the regular flooding of the Gamtoos River.

area (Crane, 2005). The area is very much a white commercial farming venture. After the 1994 elections and the government's land reform scheme some small communities of black farmers have begun to reclaim some land in the valley and have initiated small farming operations (WDM, 2004).

1.5.4 Conservation

There is quite a long conservation history in the area, which dates back to the 1920's, when the first nature reserve was proclaimed. In 1923 state owned land in the area was proclaimed as a forest reserve and a catchment zone (Crane, 2005). Since this time a number of additional conservation areas have been proposed including the plan for the Baviaanskloof Mega-Reserve complex (*ibid*), a proposed 500 000 ha reserve that aims to encompass not only a vast suite of biodiversity but also the biological and ecological processes responsible for maintaining such biodiversity. In 2004, the Baviaans Nature Reserve along with seven other reserves were declared a World Heritage Site due to their 'significant ecological processes, biodiversity and threatened species' (Boshoff, 2005:9). The Baviaanskloof Megareserve Project is being initiated by the Wilderness Foundation, who have also initiated a number of smaller projects within the area. For example in the Patensie area, they are proposing a biodiversity and citrus initiative as a means to engage citrus farmers in biodiversity conservation and sustainable landuse practices.

1.5.5 Institutional arrangements

The study region (Patensie) is situated within a number of wider socio-ecological and socio-economic contexts and reflects numerous interactions within a variety of institutional structures. Some of these structures incorporate both conservation agents such as STEP (Sub tropical Thicket Ecosystem Planning Project) and the C.A.P.E. Project (Cape Action for People and Environment) together with the Baviaanskloof Megareserve Project but also other institutional structures such as the Gamtoos Irrigation Board, the Patensie Citrus Company, and Citrus South Africa as well as South African Government structures and institutions such as the Department of Agriculture, Water and Forestry and the Department of Labour.

1.5.6 Social and economic

The economies of small towns such as Hankey, Patensie, Willowmore, and Steytlerville, are based almost entirely on commercial agriculture (mainly citrus and deciduous fruits) (Boshoff, Cowling, & Kerley, 2000). Most of the citrus that is grown in the Gamtoos River

Valley is from Patensie. The first oranges were exported from the area in 1907 (Baviaans, 2006b). In 1929 the Patensie Citrus Co-operative was founded and the first packing facility was built in 1937. Today the former co-operative is known as the PCC (Patensie Citrus Company) and is the biggest citrus packing facility in the area. Boshoff (2005) suggests that commercial agriculture is operating at near capacity, with limited space for growth and therefore agriculture is unlikely to provide the economic boost required to address growing unemployment in the region.

According to municipal data (CensusSA, 2001), 6 392 people live in and around Patensie. 32% (2030) of the population in this area are employed, 5% (318) are unemployed, 27% (1755) are not economically active and 36% (2 288) are not of working age. Of the estimated 2030 people that are employed, 68% of people are employed in agricultural related work. Personal incomes are low for the region, 55% have no income, due to the fact that they are not economically active (due to age). 12% earn up to R400 per month, while the majority of those that are economically active, (25%) earn between R400 and R800 per month.

1.5.7 An emerging context

In 2004 the Baviaanskloof was declared a World Heritage Site due to its unique flora and fauna and a proposed 500 000 ha Megareserve project was initiated (Boshoff, Cowling, & Kerley, (2000). The Gamtoos River Valley forms a key area (highlighted in blue) of the proposed new megareserve area (See Map below). A conservation agent, the Baviaanskloof Megareserve Project (BMRP) has been appointed to oversee the establishment and implementation of this new reserve. In order to get stakeholders to buy into the new Megareserve, the BPMU have been working with farmers and other stakeholders in the area and offering them incentives, mainly financial incentives, so that they conserve the natural environment. The citrus farmers are primarily concerned with the production and export of citrus internationally whilst the Megareserve are interested in the long term conservation of the Baviaanskloof. There therefore appears to be a conflicting of interests when it comes to an emerging partnership between the citrus farmers in the Gamtoos River Valley and the Baviaanskloof Megareserve Project.

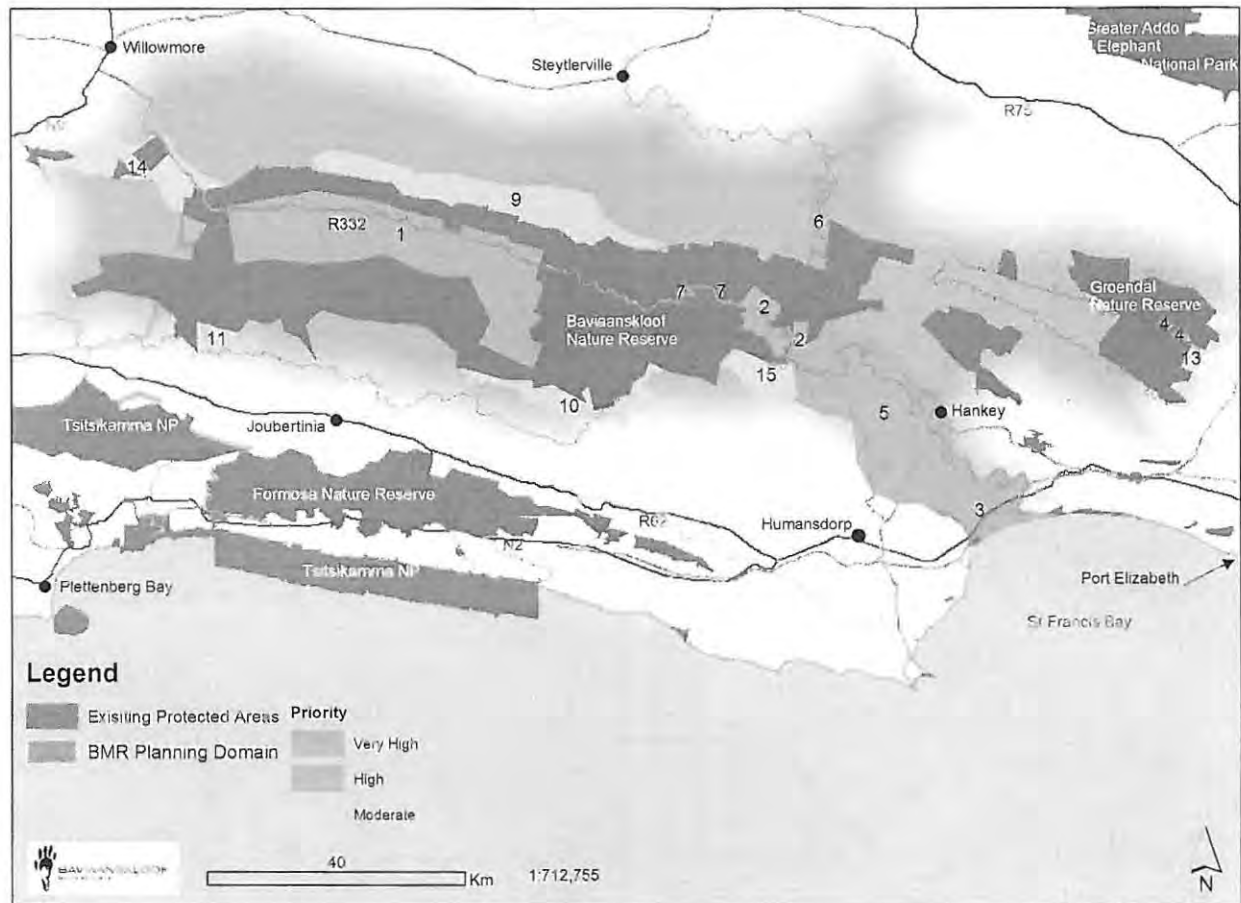


Figure 2: The emerging context of the study area within the Baviaanskloof Megareserve

1.6 OVERVIEW OF THE CHAPTERS

Chapter 2 provides the reader with insights into the literature that has been used to guide interpretations in the research. The chapter starts with an overview of educational learning theories and moves in to focus on social learning theory and more specifically situated learning. From this emerges the idea of Community of Practice (COP) and how learning can take place in such a community and other informal situations.

Chapter 3 introduces the reader to the methodology and methods that have been used in the research. I have worked within an interpretive framework in which understanding and meaning making were the focus. I have also worked with Community of Practice as a theoretical framework or heuristic as a means to interpret and describe the learning that takes place within a community.

Chapter 4 presents the data from the research process, namely the interviews, my observations and documents such as minutes of meetings. The chapter follows an historical timeline that tracks some of the major changes and developments that have taken place in the area and in the citrus industry. I have tried to write as close to the data as possible, using thick description and have therefore used direct quotations as a means to let the voices of the farmers be heard.

Chapter 5 engages the reader in a discussion around the data. Six analytical statements were formulated from the data, and are posed as hypotheses (statements) around which a discussion is then written, which pertains specifically to the citrus farmers.

Chapter 6 provides the reader with a summary of the main findings of the research. It then discusses these findings in light of an emerging partnership between the Baviaanskloof Meagreserve and the Patensie citrus farmers. It also makes some recommendations as to how this partnership might be maintained and strengthened over time. This leads into a broader discussion of the implications for environmental education and future research possibilities.

Chapter 2- Reviewing the context and the literature

2.1 CHAPTER OVERVIEW

This chapter presents the relevant theory (social learning theory) and literature that I have used in this research. It firstly situates the research within the broader educational theories and discusses some of the historical perspectives and interpretations of education. It then moves the reader into an emerging body of literature on social and situated learning and more specifically the ideas of a Community of Practice. Greater detail about the context of the citrus farming community is presented in this chapter, which brings about the ideas of networks and partnerships, stewardship as an educative process and community driven conservation initiatives.

2.2 THEORIES ON LEARNING

Learning and education are often used synonymously and commonly revolve around the processes of gaining and acquiring knowledge and skills (Marx, 1969; Johnson, 1971). In the field of psychology learning is defined as a behavioural modification gained through experience, practice or conditioning (Marx, 1969; Johnson, 1971; Boud, Cohen and Walker, 1993). Over the last century many theories have emerged that have attempted to explain the origins of learning. The scientific investigation of learning began in the nineteenth century with Ivan Pavlov when he looked at the conditioned responses of dogs to external stimuli (Marx, 1969). Since this time numerous other theories have been proposed which attempted to explain learning and the process of learning. These theories can broadly be broken down into three main streams of thinking and reasoning.

Table 2: Three orientations to learning (Smith, 1999)

	Behaviourist	Cognitive	Social and Situational
Main Theorists	Thorndike, Pavlov, Watson, Guthrie, Hall, Skinner	Koffka, Kohler, Lewin, Piaget, Bruner, Gagne	Bandura, Lave and Wenger, Salomon
View of the learning process	Change in behaviour	Internal mental process	Interaction/ Observation exists in social contexts
Locus of learning	Stimuli in the external environment illicit a response	Internal cognitive structuring	Learning is a relationship between people and the environment

Purpose of education	Produce behavioural change in desired direction	Develop capacity and skills to learn better	Participation in Communities of Practice and utilization of resources
Educators role	Arrange environments to elicit desired response	Structure content of learning activities	Works to establish Communities of Practice in which conversation and participation can occur

This research is particularly interested in the social and situational approach to exploring learning and the learning process. This is because I am interested in looking at how the learning interactions (in every day activities) in a Community of Practice, shape better landuse practice, or reduce impact on the natural environment.

According to Smith (1999) it is suggested in social and situational learning, that learning happens through interactions and observations that take place between people and the environment in which they live. This differs from previous theories, which have proposed that learning is the result of a change in behaviour or an internal process that results from external stimuli within the environment. One of the key elements in social/situational learning is communication and participation, as opposed to a focus on behavioural changes, skills development, training, cognitive development and intelligence (See Table 1). It is important to note however, that processes such as cognitive development and skills development are still important and relevant when it comes to explaining learning, but are not the main focus of this research.

One of the pioneering theorists in social and situational learning was Albert Bandura. However much of his work was centered on observational learning, observed particularly with children. The most basic mode of learning according to him is rooted in direct experience, from the positive and negative effects that certain actions produce, learning in response to something (Bandura, 1977). Boud, Cohen and Walker (1993: 169) claim that we (humans) spend most of our time learning from experience, "learning from experience happens in everyday contexts as part of day-to-day life".

People learn from their experiences in the world by reading, experimenting, painting, attending performances, experiencing field trips, thinking and reflecting, engaging in conversations and discussions and making connections between experiences (Wenger,

1998; Elliott, 1999). Boud, Cohen and Walker (1993) suggest that every experience is potentially an opportunity for learning to occur because learning relates to what has gone before.

One of the key concepts in the theory of 'learning from experience' is reflexivity (the ability to reflect). Boud, Cohen and Walker (1993) propose that reflection plays an important role in extracting meaning from an experience to enhance learning. The linking of new experiences with those of the past, through re-evaluation, provides new meaning. For example, if a farmer sprays a certain chemical on their crop and it does not have the desired effect or worsens the situation, they are able to reflect on this, re evaluate the situation and make a change (an appropriate change). That farmer will then be able to reflect on this past experience in the future, with a different result and hopefully not make the same mistake again.

2.3 HISTORICAL PERSPECTIVES ON LEARNING AND EDUCATION

Often when people think about the words education and learning they are filled with thoughts and images of classrooms, teachers, tests, homework or training sessions (Wenger, 1998). "One myth of contemporary education is that most learning takes place in the classroom and depends on the physical presence of a teacher and textbooks" (David & Wright, 1975: 75). Janse van Rensburg (1997) suggests that education is often interpreted as a one-way directional activity directed towards 'those that need to be taught'. She suggests that education is often associated with its formal education roots, which involves children being taught by more knowledgeable individuals. Babikwa (2004: 63) suggests that "education based on the neo-classical orientation, approach education as a 'neutral' instrument for overcoming technical problems and view educational processes as a process of transmitting knowledge to change people's behaviours".

Myers (2006) proposes that education should be seen as a two-sided coin with one side representing environmental learning and the other environmental teaching. The author also suggests that, much of the research that has been done has been too teacher and not learner orientated. Dewey as cited by Myers (2006: 460) comments that, "education is a process that occurs between a learner and an educator, with the educator responsible for constructing a productive learning environment and facilitating a learning process intended to bring about changes in the learner".

Rickinson (2006) notes how environmental education research over the past decade has been criticized for overlooking aspects of learning, processes and theory. "Learning has been neglected in a literal sense in that there have been few empirical or theoretical studies that have focussed primarily on this issue" (*ibid*: 446). He also notes that where learning has been studied and discussed it has been in relation to educational interventions rather than learning as a process in its own right. There have also been few studies done or attempts made to conceptualize how environmental learning might be understood to take place.

The field of environmental education and educational research is continuously evolving and shifting. As Rickinson (2006) notes, an increasing number of studies are taking seriously the ways in which learners are making sense of their experiences of the environment. Informal learning experiences such as visits to national parks or nature based excursions have focused on the 'multiple ways in which visitors make sense of the information they encounter' and not on if visitors get the message the provider is trying to convey.

Wenger (1998) notes that learning has largely been perceived by many as an individual process or activity, that has a beginning and an end and is separate from the rest of our daily activities, and results from teaching. Elliott (1999:30) suggests that 'education is perpetuated as a practice' (something that must be done) and in so doing this, it becomes detached from our daily lives. However the field of environmental education is evolving and workplace learning, e-learning, science learning, learning how to learn and community based learning are some of the many topics that are emerging for research and investigation (Rickinson, 2006).

One of the more recent developments within environmental education has been to focus on more participatory and community driven approaches to learning and education (Babikwa, 2004). One of the central notions behind these learning processes is that people learn together with other people and from other people, in other words, learning happens in social situations.

2.4 A SOCIAL THEORY OF LEARNING

Social learning theory according to Smith (1999) states that people learn from observing other people and that such observation takes place in a social setting. One of the more radical models to emerge from this idea of social learning theory is that of situated learning. This suggests learning is placed in social relationships, "learning is in the relationships between people" (Smith, 1999). One of the key concepts behind social learning, according to Daniels (2001) is that knowledge is socially constructed and this is achieved through collaborative efforts to achieve shared objectives.

2.4.1 Situated Learning

Situated learning suggests that learning is always contextualized. As Benzie, Mavers, Somekh and Cisneros-Cohernour (2005: 180) note, " the context and the activities through which learning take place are an integral part of what is learned and the environment in which the learner engages in learning is an integral part of the learning experience and shapes that which is learned".

Situated learning as proposed by Lave and Wenger (1991:35) suggests that "learning is not just situated in practice as if it were just something that happened to be located somewhere, learning is an integral part of social practice in the lived-in world". Situated learning tries to shift the focus from the individual as a learner to the learner participating in the social world and from learning as a strictly cognitive process to a more encompassing view of social practice (*ibid*).

2.4.1.1. Legitimate Peripheral Participation

Lave and Wenger's work on situated learning has become widely regarded as a seminal text in which a particular view of learning was established. Their model of situated learning emerged from a wider body of literature such as socio cultural psychology and cultural historical theory as proposed by authors such as Vygotsky. According to Lave and Wenger (1991: 29)

Learning viewed as situated activity has as its central defining characteristic a process we call legitimate peripheral participation. By this we mean to draw attention to the point that learners inevitably participate in communities of practitioners and that the mastery of knowledge and practice require newcomers to move towards full participation in the sociocultural practices of a community. Legitimate peripheral participation provides a way to speak about activities, identities, artefacts, and communities of knowledge and practice. It concerns the

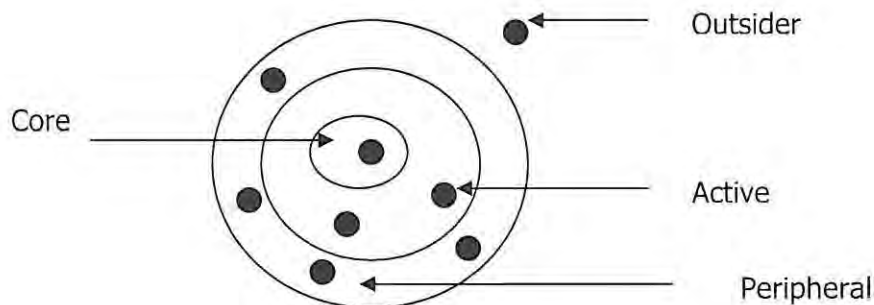
process by which newcomers become part of a community of practice. A person's intentions to learn are engaged and the meaning of the learning is configured through the process of becoming a full participant in a sociocultural practice. This social process includes the learning of knowledgeable skills.

Situated learning according to Lave and Wenger (1991) is based on an assumption that learning is social and comes largely from our experience of participating in daily life, through a process of Legitimate Peripheral Participation (LPP). They have therefore tried to place learning (and associated knowledge acquisition) in social relationships, or situations of co-participation (Smith, 1999). Wenger (1998) refers to participation not just as participating in local events and engaging in certain activities with certain people, but to a more encompassing process of being active participants in the 'practices of social communities'. Participation is both an action and a form of belonging, "participation shapes not only what we do, but also who we are and how we interpret what we do" (Wenger, 1998:4).

The ideas of Legitimate Peripheral Participation emerge from work done by Vygotsky that suggests that 'talk and interaction' assist learning (Benzie, Mavers, Somekh & Cisneros-Cohernour, 2005). Vygotsky noted that through interaction with a supportive adult or peer, learners are able to move beyond their current range of ability and function at a higher level. Therefore what can be understood and achieved by a group of learners working together can often be more than any one learner could understand and achieve alone (*ibid*). More specifically LPP is about learning within a Community of Practice. Learners learn by participating in a community of practitioners, they undertake tasks, which contribute to the productive activity of the enterprise/community (*ibid*). Lave and Wenger suggest that LPP is about describing a relationship between newcomers into a community and old-timers and that, "the new comer is not just an observer but also a participant as a member of the community" (Lave & Wenger, 1991: 98).

LPP could be viewed as a process of movement from being a peripheral participant in an activity or within a community to becoming a core member. Initially members begin with simple tasks and gradually begin to take on more responsibility. Learners learn from and in the presence of experts and through a process of interaction and acceptance move towards becoming core participants. Lave and Wenger caution however that LPP is not just about goals, tasks and gaining knowledge but also about identity. They note that, "in performing new tasks and demonstrating new understandings, learners identities are

transformed". The identity of the community can also be transformed, a community is not a closed domain of knowledge or collective practice, learning involves the co-construction of identities (Benzie, Mavers, Somekh & Cisneros-Cohernour, 2005).



Degrees of community participation (Wenger, McDermott and Snyder, 2002)

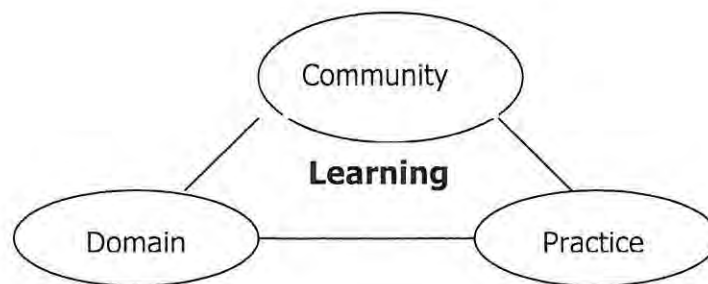
According to Wenger, McDermott and Snyder (2002) based on the diagrammatic representation above, within any community, there is often a small core group of people who actively participate in discussions, debates, who actively take on projects and move the community along. At the next level of participation, there is an active group. These community members attend meetings for example, but only participate occasionally and without the intensity and regularity of the core group. The majority of the community are peripheral and rarely participate, keeping more to the sidelines watching the various interactions, but are not fully passive. They may gain insights from discussions or have private discussions which can be put to good use and therefore in their own way, they may be learning a lot.

Community members move through these levels as the focus or domain of the community shifts. Active members may be deeply engaged for a month or two, and then disengage and peripheral members may drift into the centre as their interests or expertise are required. The boundaries of this model are therefore fluid and even outsiders have the opportunity to become involved as the focus of the community shifts in their area of interest of skill.

2.4.2 A new perspective on learning: Communities of Practice

Lave and Wenger's model of situated learning (1991) proposed that learning involved a process of engagement in a Community of Practice (COP) (Smith, 2003). A community of practice is defined by Wenger as a group or groups of people who share a concern or a

passion for something they do and learn how to do it better as they interact regularly. In this research citrus farmers in the Patensie region of the Baviaanskloof represent a community of practice as do the conservation organization, the Baviaanskloof Project Management Unit. Communities of Practice are formed by people who engage in a process of collective learning, around a shared domain/field/area (Wenger, 2000). In a citrus farming community context, people are engaged around the growing and exporting of citrus on an international market. One of the key elements within a COP is the idea of a shared practice (Wenger, 2000). In this research, citrus farmers are considered a Community of Practice engaged in the practice of exporting citrus (oranges) and the conservation of their land whilst the Baviaanskloof Project Management Unit are concerned with broad scale biodiversity conservation.



Wenger (2000) identifies a Community of Practice as consisting of three core elements;

- 1) **Domain:** A sense of joint enterprise that brings members together. This creates an identity and a shared domain of interest and a commitment to the domain.
- 2) **Community:** Members engage in joint activities and discussions, help each other and share information with each other. They build relationships that enable them to learn from each other. To be a COP there needs to be regular interaction. An ongoing history of engagement is crucial because it creates a forum for building both the practice and the community. Learning therefore takes place through joint activities "learning is situated in that community and is something that takes place with other members of that community" (Daniels, 2001:72).
- 3) **Practice:** Members of a community develop a shared repertoire of communal resources (experiences, tools, stories) over time. The practice of a community is dynamic and involves everyone learning.

As members of a Community of Practice, people are accountable to develop a practice, they bring their experience and receive help with their problems, they get a chance to

discuss their new solutions, to share them with others and integrate them into the community's practice. Knowledge is created, shared, organized, revised and passed on within and among communities (Wenger, 1998; 2000). In other words, "members are involved in a set of relationships over time and communities develop around things which matter to people" (Lave & Wenger, 1991:98).

It is important to note the distinction between a Community of Practice, a community of interest and a team. The key element in a COP is the idea of a shared practice. A COP is different from a team in that the shared learning and interest of its members is what keeps it together and not the pursuit of a goal or a work plan (Wenger, 2000). A COP is different from a network in the sense that it is 'about' something and not just a set of relationships. Over time it produces a shared practice as members engage in a collective process of learning.

Communities of Practice come in a variety of forms, for example some are small, others large with a core group of members, some are within organizations, some are formally recognized and others are informal and even invisible. But Communities of Practice are everywhere and most people belong to a number of them (at work, school, home or leisure interests). In some, people are core members in others more peripheral members (Wenger, date unknown). Communities of Practice may also have a variety of functions and develop this function through a variety of activities, for example problem solving activities, requesting information, documenting projects and discussing trends and developments (Wenger, date unknown).

Refer to Chapter 3.3 for the use of Community of Practice as a research methodology and research design.

Learning interactions are key processes that shape and or encourage learning. In this research I have defined a learning interaction as any formal or informal situation in which learning takes place. For examples meetings, conversations, interactions with documents are all interactions that can result in learning taking place. Wals and Heymann (2004) note that in social learning, the interactions between people are viewed as possibilities or opportunities for meaningful learning to take place. Of crucial importance is the motivation of an individual to participate in social learning, which depends on the collective goals shared by those engaged in the process (*ibid*).

2.5 ADULT LEARNING COMMUNITY

Authors that have written about adult education note that, adults are often neglected when it comes to learning and education but this does not mean that adults do not learn; learning is a lifelong process (Illeris, 2003). For a long time, adult education has been considered a second chance for adults who did not have the opportunity to study in their youth. One of the reasons given for this is that adults seem to be absorbed in their own complex realities and many social roles (Belzer, 2004). Early perceptions and definitions around adult education involved the notion that adult education was a voluntary activity which people involved themselves in because they experienced a desire to learn something in a specific subject or field that was of interest to them (Illeris, 2003).

Much of the literature on education and learning deals with formal education and being taught something in formal situations, such as in schools and training workshops (Wals & Heymann, 2004). However this form of education and learning may not be appropriate or suitable for the majority of adult learners. Informal education, on the other hand, implies learning in a less formal and non- threatening environment such as in a work place or community context (*ibid*). This form of education and learning may be more suited to the vast majority of adult learners.

Andersson and Andersson (2005: 421) suggest that situated learning challenges traditional approaches to education because instead of regarding learning as a universal process and de-contextualised, "there is now an interest in viewing learning as situated and bound to specific settings". This has also been termed by some as 'authentic practice'. Cohesive, meaningful and goal-directed activities have often been termed as authentic. In other words authentic activities are ordinary practices of culture according to Andersson and Andersson (2005). Authentic learning can emerge when people come to interact and make meaning in a collaborative activity, which is situated and real and therefore implies participation in a real situation (Andersson & Andersson, 2005). Doyle (2000 as cited by Andersson & Andersson, 2005) claims that authentic learning is built on the ideas of participation, a genuine interest and interaction with more experienced people in a context that is real and situated.

Many authors agree that experience is of great importance in the adult learning process. Lindeman (as cited by Belzer, 2004: 42) for example suggests that, "the resource of highest value in adult education is the learner's experience... Experience is the adult

learner's living textbook". However it should be noted that experience is shaped by socio-cultural and historical factors, as are the learners and therefore experiences are always open to reinterpretation and are therefore not concrete in nature. Authors such as Dewey as cited by Belzer (2004) have even suggested that not all experiences are educational and can in fact promote and foster the opposite of learning. It has also been suggested that prior experiences can form 'mental blocks' which prevents learners from incorporating new ideas that challenge their previous beliefs (knowledge, values). Despite this Illeris (2003: 13) in a study on adult education concludes that,

Adults have very little inclination to really learn something they do not perceive as meaningful for their own life goals, adults in their learning draw on resources they have and adults take as much responsibility for their learning as they want to take (if they are allowed to do so).

Because education was largely interpreted as a practice and something that needs to be taught to people to change their behaviour, it has been met with limited success in a number of situations. Many people, especially adults tend to resist a change in behaviour or a change in practice. For example, exporting standards have recently been introduced into the citrus industry and imposed on growers, forcing them to comply with a number of international production standards (C1, pers comm., 21 June 2006) Many of the farmers are not happy about these standards as they dictate how to farm and produce citrus of high enough quality for export. Wals and Heymann (2004) however suggests that in situations such as this, when tensions and conflicts arise, these very situations can be the source of new learning experiences.

2.6 CONTEXT OF THE LEARNING COMMUNITY

2.6.1 The South African citrus industry

There are five main areas in South Africa in which citrus is grown, but the best and most well known places are the Kat, Sundays and Gamtoos River Valleys in the Eastern Cape Province. Citrus fruits have been grown in and exported from these areas for over a hundred years (Mather & Greenberg, 2003). Agricultural export, especially of fruit is an important part of the South African economy, accounting for about 27% of total agricultural exports (Vermeulen, Jordaan, Korsten & Kirsten, 2006). Of this citrus comprises about 11%, with an overall contribution of about 3% to the total agricultural export economy (*ibid*).

2.6.2 History of export

Citrus has been exported from South Africa since the early 1900's, mainly to Britain. In, Patensie the first oranges were exported from this area as early as 1907 by a Mr Bean (Baviaans Homepage, 2006). In 1920 the South African Cooperative Citrus Exchange was established as a means to control the quality of fruit being exported from the country (Mather & Greenberg, 2003). In 1937 as a result of the Marketing Act, the Citrus Board was born, which had the power to set local prices and also establish a single channel marketing agent for the export of citrus internationally. The Citrus Exchange became the single marketing agent up until 1996 (*ibid*). During the 1990's however, the single marketing approach was challenged as it was deemed too rigid and inflexible and also worked on supplying quantity (through the pooling system¹) while limited attention was given to quality. The agricultural sector has experienced almost total liberalization and state deregulation² in the post apartheid period (*ibid*). There was a progressive removal of state support to agriculture during the 1980's but was formally deregulated in 1996. Deregulation has also given farmers greater flexibility and efficiency in operating.

Retailers, especially abroad, started to demand higher quality and newer varieties of fruit, which the single market system was not geared towards. In 1996 a total deregulation of the South African market took place and the Citrus Exchange was dissolved and became a private company (Mather & Greenberg, 2003; Vermeulen, Jordaan, Korsten & Kirsten, 2006). It also changed its name and became Outspan International and in South Africa was known as Capespan. By the late 1990's Capespan was one of the largest fruit exporting companies in the world (Mather & Greenberg, 2003).

In the Eastern Cape Province there were (are) a number of large cooperative pack houses (Katco, Patensie, Sundays and Goodehoep). This is because farm sizes tend to be small and private pack houses are too expensive for such small operations. In 2000, three of the cooperatives (excluding Katco) had been privatized and turned into companies. This allowed them to become more flexible and provided them with greater access to international markets. However it has been suggested that their relationship with their growers has maintained a 'cooperative culture', in which growers may remain

¹ Fruit delivered to a packing house was pooled by variety and size and growers were paid according to their contribution in volume to the pool. While this system did not reward quality it did encourage citrus farmers to maximise their pool volume (Mather & Greenberg, 2003).

² State deregulation does not mean that there is a lack of regulation, but rather a shift in the forms and agents of regulation (Mather & Greenberg, 2003).

bound by a set of rules, which require them to deliver their fruit to only the cooperative pack house (*ibid*).

2.6.3 Cooperatives versus private pack houses

One of the major advantages of the former cooperatives was that they were able to pack huge volumes of fruit (millions of cartons per year). In a competitive environment, this was their source of their market power. However this was undermined by the emergence of some of the smaller pack houses. Growers who pack privately lacked volume of fruit but often had better quality fruit. This meant that the overall quality of fruit being packed at the former cooperatives was decreasing. "In a global citrus market that is regularly oversupplied, exporters cannot afford to handle poor quality fruit" (Mather & Greenberg, 2003: 405). Some International supermarkets were no longer interested in buying from cooperatives as it was almost impossible to guarantee traceability. "The huge pack houses of the cooperatives were not designed for traceability, they were designed to pack as much fruit as possible without interrupting the process of treating, sorting and packing the fruit" (*ibid*: 405).

2.6.4 Current situation in South Africa

In order to export any agricultural produce from South Africa, producers have to be registered with the National Department of Agriculture (DoA). In addition to this requirement the South African citrus industry in particular is subject to a number of food and safety standards (Vermeulen, Jordaan, Korsten & Kirsten, 2006). These standards are based on Good Agricultural Practices (GAP). One of the most popular of these standards is that of EurepGAP. According to a study conducted by Vermeulen, Jordaan, Korsten and Kirsten in 2005, approximately 2 125 food and agricultural industries were registered and accredited with EurepGAP in South Africa.

Few studies have been done relating to (white, commercial) citrus farmers in South Africa. A recent study that was done by the Department of Agricultural Economics at the University of Pretoria, investigated the economic impacts of various Standards in the Fruit Export Industry and the returns to farmers (Vermeulen, Jordaan, Korsten & Kirsten, 2006). The research focused on whether compliance to these standards (by producers) has contributed to better quality fruit, reduced losses, higher prices for the fruit, higher returns and continued access to markets. Some of the conclusions drawn from this study indicated that whilst access to International markets was a lot easier for the South African producer/exporter than a few years ago, the returns being seen or made/received

on the fruit were not significantly different. The study tracked a crate of citrus from the orchard to the shelf in a European Supermarket. It reported that the appropriate export standards and regulations are applied in the production, packaging and export of the fruit from South Africa but these regulations are not been applied and enforced in the destination country. This leads to a deterioration in fruit quality and an ultimate loss for the producer of the fruit.

Today a few citrus growers are starting to move out of the citrus industry as a whole, due to low and variable returns on their produce and higher demands being placed on the export industry. They are beginning to shift to alternative income generating activities such as growing vegetables for local markets and other crops that can be produced with less investment and risk as well as ecotourism ventures (Boshoff, 2005).

2.7 EXTENSION SERVICES WITHIN THE AGRICULTURAL SECTOR

Past approaches in education, especially those that have followed in line with the neo classical ideas of education and the ideas that people need to be taught something and peoples behaviour needs to be changed, are beginning to disappear from more recent research. With these assumptions, many agricultural activities were directed towards trying to change people's behaviour towards more environmentally friendly practices, often through skills and training workshops and activities that tried to promote awareness amongst people in the community (Babikwa, 2004).

As the field of environmental education has evolved and diversified, more approaches have become evident. For example in conservation education particularly, experts and extension services, which tell/advise people how to do things and try and change their behaviour were the dominant approach. Babikwa's research noted that often in community contexts, experts or consultants would be called into the community to try and address the issues and community needs. These experts were merely interested in finding out and not in engaging communities in the process (*ibid*). These approaches have had limited success as people tend to resist a change they do not see as valuable to themselves (Babikwa, 2004). More recent approaches, especially in the agricultural sector, have been based on the ideas of voluntary partnerships and stewardship as well as cooperative extension services (mainly in Europe and America). It has been realized that more participatory methods of engaging with and working with farmers and landowners are needed.

Babikwa's (2004: 68) work goes on to report on how agricultural extension officer's roles have changed from a 'technicist top down' approach of training a few people and then hoping it would trickle down into the rest of the community to, "one of sharing and negotiation, in which learners and facilitators/experts become co learners and co constructors of knowledge. He goes on the note that, " there was a new awareness amongst the extension workers that, as facilitators they were not supposed to provide the answers to all the questions, but to work with farmers to find the answers collectively" (Babikwa, 2004: 68).

2.8 COMMUNITY DRIVEN CONSERVATION INITIATIVES

From previous work I have undertaken on conservancies (Downsborough, 2005) it emerged that groups of landowners, including farmers, form voluntary partnerships around a common future focus, in this case specifically that of conservation and sustainable landuse. These voluntary partnerships were centered on landowners coming together to positively improve their conservation practice and subsequently the state of the environment (Downsborough, 2005). Through various interactions such as regular meetings, discussions and forums these landowners formed powerful learning groups in which communication and sharing of information were key.

The research also highlighted that a new approach to biodiversity conservation practice was emerging in South Africa, which centers on the idea (s) of stewardship. According to Cape Nature Conservation (CNC, 2004) stewardship refers to the wise use, management and protection of that which has been entrusted to you or is rightfully yours.

The ethical imperative of stewardship must underlie all environmental policies. It is mankind's duty to look after our world prudently and conscientiously, we do not hold a freehold on our world, but only a full repairing lease. We have a moral duty to look after our planet and hand it on in good condition to future generations. We must put a proper value on the natural world. In order to fulfill this responsibility of stewardship, we must base our policies on fact not fantasy and use the best evidence and analysis available. We must act responsible and be prepared to take precautionary action where it is justified (Foster, 2005: 28).

Whilst the primary focus of stewardship is on the conservation/management of biodiversity (critical biodiversity) it also recognizes the needs of individual landowners and provides a platform for networking and support (C.A.P.E, 2004).

2.9 PARTNERSHIPS AND NETWORKS

The relationships (or the quality of relationships) between people in society has long been an interest of many researchers, especially sociologists. Emile Durkheim, a 19th Century sociologist, was particularly interested in the ways that, "people's social ties served as the thread from which a wider society wove itself together" (Durkheim as cited by Field, 2003). She noted that, "members are united by ties which extend deeper and far beyond the short moments during which an exchange is made" (Durkheim, 1933:226 as cited by Field, 2003). Field (2003) suggests that by making connections with people and maintaining them over a period of time, people are able to work together to achieve things that they could not achieve on their own (or achieve less easily on their own).

2.9.1 Social capital

People connect and make connections with other people through a series of networks, to the extent that these networks can be seen as a resource, forming a kind of capital (Field, 2003). The central idea of social capital is that social networks are a valuable asset to both individuals and to society as a whole (*ibid*). Field (2003) suggests that social capital consists of personal connections and interpersonal interactions, together with a shared set of values. Networks provide the social cohesion because they enable people to cooperate with one another and not just with people they know directly (*ibid*). In short, "the more people you know and the more you share in common with them, the richer you are in social capital" (*ibid*: 1).

Many decisions often involve a degree of risk and uncertainty. For example in the citrus industry deciding when to spray the citrus trees or when to plant new seedlings can be unpredictable. Therefore according to Field (2003:2), "to make things happen, people often prefer to bypass formal systems and talk to people they know". People often find that they are constrained by the nature of the resources they have and will therefore use their networks to liberate themselves from these constraints.

If people are going to help one another, they need to feel good about it, which means that they need to feel like they have something in common with each other. If they do share values, they are much more likely to cooperate to achieve mutual goals (Field, 2003: 3).

Field (2003) however cautions that some social relationships can exclude and deny people as well as include and enable certain things. People's networks should therefore

be seen as part of a wider set of relationships that allow people to pursue their goals and also bind society together. In this research the citrus farmers own personal networks are situated within the wider citrus farming community as well as the industry and there is also the emerging network/partnerships with the Baviaanskloof Megareserve (Refer to Chapter 4.9).

In a changing global economy, it is essential that these networks exist amongst citrus farmers so that they are able to stay in touch with the latest news about export standards and various regulations and legislation.

2.9.2 Social capital and the economy

Putnam (2000 as cited by Field 2003: 50) claims that, "economic performance as a whole is better in well-connected societies than in poorly connected ones". Networks have long been seen as important to business success. Particularly during the start-up stage, it is widely accepted that networks function as an important information source, which can be critical in identifying and exploiting business opportunities. They also help provide access to finances (Hendry et al., 1991 as cited by Field, 2003). Networks are also thought to contribute towards a consistent and stable management style, which may be vital in enabling businesses to withstand external shocks (*ibid*).

2.9.3 Voluntary partnerships and interactions

Field (2003) notes that in many societies, the patterns of interaction are changing; interpersonal relationships are becoming more informal; there is an erosion of habit and custom, a division of labour and the blurring of boundaries between public and private enterprises. In this research I have drawn on the Biodiversity and Wine Initiative as an example to highlight the potential success of partnerships.

2.9.3.1 The Biodiversity and Wine Initiative

In the Western Cape of South Africa, the Biodiversity and Wine Initiative (BWI) has been established as a partnership between the Wine Industry of South Africa and the conservation sector and is largely based on a stewardship agreement with landowners (private landowners). These stewardship agreements are seen as a way to engage with private landowners, who are responsible for the management of 80% of the Cape Floristic Region, and encourage them through various agreements (options) to conserve valuable biological resources (CNC, 2004).

The BWI grew out of a concern that some of the natural habitats within the Cape Floristic Region were being threatened from vineyard expansion, as a result of the recent increase in wine export from South Africa³ (BWI homepage, 2006). According to Hansen (personal communication, 2006) many studies have been done on the negative impacts that certain farming practices have on biodiversity and the environment. "We didn't want the wine industry to be seen in this light". Therefore in July 2004 a partnership between the wine industry and a conservation agent (Cape Nature Conservation) was launched (*ibid*).

The primary goal of the BWI is to "minimize further loss of threatened natural habitat, and contribute towards sustainable wine production, through the adoption of biodiversity guidelines" (BWI homepage, 2006). This initiative presents a win win situation for both the wine industry which benefits from using the unique biodiversity of the region as a competitive marketing strategy and the conservation sector which benefits from implementing best practice within the wine industry to conserve the region's most threatened habitats (BWI homepage, 2006). In more detail the BWI aims to:

- 1) Prevent further loss of habitat in critical sites.
- 2) Increase the total area set aside as natural habitat in contractually protected areas.
- 3) Promote changes in farming practices that enhance the suitability of vineyards as habitats for biodiversity, and reduce farming practices that have a negative impact on biodiversity, both in the vineyards and in surrounding natural habitat.
- 4) Create marketing opportunities for the wine industry by positioning the biodiversity of the CFK, and the industry's proactive stance on biodiversity, as a unique selling point to differentiate Brand South Africa.

To become a member of the BWI, an applicant must actively seek ways to improve upon their own farming practices so as to reduce impact on the environment and also constantly look for ways to conserve portions of their property for the conservation of biodiversity. Membership also requires an ongoing process of reapplication for membership, every two years (BWI homepage, 2006). This constantly challenges members and landowners to assess their own practices (farming practices) and see how they may be able to implement changes and improve on certain aspects the following

³ In South Africa about 90% of the wine growing areas are found in the CFK, a biodiversity hotspot and a World Heritage Site (BWI homepage, 2006).

year. Landowners are also able to reflect on and track changes that may have taken place over the years.

A further partnership formed within this initiative has been with the C.A.P.E Stewardship Programme (CSP). This Program is built around providing non-financial incentives to landowners (such as extension services, farm mapping and management plans for fires and clearing of alien vegetation) to encourage them to participate in the programme (CAPE, 2004). Landowners are able to choose from three stewardship options; *contractual nature reserves* (there is a legally binding contract over a number of years), *co-operative agreements* (legally binding contract over only a few years) and *conservation areas* (not legally binding) all of which are voluntary (CNC, 2003).

2.10 LESSONS LEARNED SO FAR

I have suggested in a previous research assignment based on the Biodiversity and Wine Initiative (Downsborough, 2006) that stewardship can be an educative process in which landowners learn by engaging with certain documents and agreements.

By working and interacting with one another and various informal agreements, (such as in this programme the biodiversity guidelines and a self-assessment form), landowners have been able to engage ideas, reflect and learn from their own practice about how to manage their natural environment (Downsborough, 2006: 15).

These documents have allowed landowners to reflect on their own practices and make the necessary adjustments in a non-threatening and non-formal manner. Hart, Jickling and Kool (1999:104) support this and suggest that instead of developing defined criteria in and for educational programmes, "it may be more fruitful to find ways to engage learners [landowners] in critical reflection about their own practice and thinking".

In the Baviaanskloof, which is a World Heritage site and proposed Megareserve, the Baviaanskloof Megareserve Project, have been tasked with expanding the conservation area of the reserve. One of the ways to achieve this is to offer some form of incentive (s) to communities in the surrounding areas of the reserve. Patensie, which is the site of this research, is a core area in the proposed Megareserve.

2.11 THE WAY FORWARD

The Baviaanskloof Megareserve Project are trying to incorporate the ideas of stewardship and best practice into the citrus industry in the Gamtoos River Valley (Patensie area). These ideas are being fostered through two projects the Proud Partner Programme (PPP) and the Biodiversity and Citrus Initiative (BCI). The latter Initiative mirrors that of the Biodiversity and Wine Initiative of the Western Cape. Both these initiatives offer the farmers (or landowners) an incentive and a competitive marketing strategy, to conserve their land in accordance with best practice (stewardship).

2.11.1 The Proud Partner Programme

The Proud Partner programme was launched by the Baviaanskloof Megareserve project in 2005 as a way to create a partnership between themselves and private landowners that fosters communication and participation in a common programme. By becoming members of the programme stakeholders agree with and commit to certain guidelines:

Sharing the vision and principles of the Mega-reserve,

Open communication and constructive engagement within the governance structures of the Megareserve including the Baviaanskloof Steering Committee and the associated working groups,

Promoting of the Megareserve as a catalyst for positive change for the environment and for people,

Adhering to legislation when making decisions regarding the development and management of activities on their properties or within their businesses and

Developing a positive working relationship with the Eastern Cape Parks Board, the Department of Economic Affairs and Tourism and the Project Management Unit of the Baviaanskloof Megareserve (Baviaanskloof Megareserve, 2005). (See Appendix 1)

"The Proud Partner Programme serves as a means to build the support base and awareness of the Baviaanskloof Megareserve that aims to conserve the environment and create opportunities for people" (B1, pers comm., April 2006). Partners are required to be involved in an annual review process, through the use of a self evaluation questionnaire (See Appendix 2). The aim of this questionnaire is to allow farmers to be reflexive and critical of their own practice but also to maintain communication between the various stakeholders.

2.11.2 The Biodiversity and Citrus Initiative

This is an initiative that closely mirrors that of the BWI in the Western Cape. It aims to provide a win-win strategy for both the citrus farmers and the citrus industry as a whole as well as for the Baviaanskloof Megareserve by providing a competitive marketing strategy to citrus farmers and encouraging them to conserve valuable biodiversity (See Appendix 3 for draft guidelines). The initiative is only in the start up phase and meetings and negotiations between the various stakeholders are still taking place.

2.12 SUMMARY AND CONCLUSION

In this chapter I have presented the evolving field of education and learning and tried to situate the research within the social and situated orientation to learning, as this research is concerned with understanding the learning interactions in a Community of Practice. I have reviewed a range of relevant literature pertaining to learning and education and drawn quite heavily on Lave and Wenger and their ideas of Community of Practice and Legitimate Peripheral Participation as a means to (In Chapter 5) explain the learning that is taking place. I have also provided the reader with a greater understanding of the context in which the research is situated and the complexity of it. The following chapter will document how the research was undertaken in light of meeting the overall aim and goals of this research (See Chapter 1.4) and details the methods and methodology used in the research.

Chapter 3: Research Methodology

"Education should begin in research and end in research... An education which does not begin by evoking initiative and end by encouraging it, is wrong. For the whole aim is the production of active wisdom" (Whitehead 1932) as cited by Elliott 1999).

3.1 CHAPTER OVERVIEW

This chapter deals with the research design and decisions that have been made to achieve the goals of the research. It describes the broad methodological framework in which I worked and some of the methods employed in this research. It also presents how data has been analyzed, techniques used for this and discusses issues of validity, research ethics and trustworthiness of the research and how each of these were addressed.

McTaggart (1991) suggests that the purpose and nature of the research often has a bearing on the orientation of the research. As mentioned in Chapter 1.4 the focus of this research is on understanding some of the interactions that take place between and within a citrus farming community and how these interactions reflect learning and learning actions around environmental and sustainability concerns. As mentioned previously, I am particularly interested in how interactions may translate into a farming practice that reduces impact on the natural environment. My focus was to gain insights and a deeper understanding from doing this research. I thus approached this study with an interpretive perspective, working with evidence (data) and ideas (theory) to understand the learning interactions in relation to environment and sustainability in the developing farming community.

3.2 RESEARCH ORIENTATION

As a researcher, I have a background in the natural sciences and am therefore familiar with undertaking more traditional forms of scientific research, such as qualitative and statistical interpretations of data. With a move to the social sciences I have noticed that many authors have written about the importance of understanding what is going on in a particular setting or context from the view of the people within it (Connole, 1993; Mertens, 2005). Robottom and Hart (1993: 22) for example note that it is important to understand the relationship between people and the environment, which is best gained, "through a process of interaction between learners and the environment being studied

rather than through a process of detached study". This led me to a review of interpretive and constructivist perspectives in the design of the study.

The basic assumption guiding the constructivist paradigm is that knowledge is socially constructed by people active in a research process. The goal of the researcher is to understand the multiple social constructions of meaning and knowledge (Mertens, 2005). Conole (1993) suggests that meanings are generated and shared through language and that the task of the researcher is to understand what is happening not from a detached vantage point alone, but through active involvement in a process of negotiated meaning making.

Constructivism advocates the notion that a learner's basis of meaning and meaning making is found in his or her direct experience with a dynamic and responsive world (Quay, 2003). Learning from this perspective is viewed as a process of active adaptation. One of the limitations of constructivism, according to Quay (2003), is that it views learning as a process that applies specifically to the individual person. This research is primarily concerned with understanding how learning takes place within and between a small group of citrus farmers (a Community of Practice). Quay (2003) notes that the limitation of constructivism is highlighted when a small group of people are learning through their social interaction. He proposes that this be referred to more specifically as social constructivism.

The main idea being proposed by this is that, "collectives of persons are capable of actions and understandings that transcend the capabilities of the individuals on their own" (Davies, 2000 as cited by Quay, 2003:106). This position recognizes that the process of learning is not just caught up within the individual but also encompasses the social world as it exists.

Learning is not solely individual, rather it is always collectively embedded, enabled by and constrained by the social phenomenon of language; caught up in layers of history and tradition: confined by well established boundaries of acceptability (Davies, 2000: 67, as cited by Quay, 2003: 106).

3.3 THEORETICAL FRAMEWORK

Because this research is concerned with the understanding a community engaged with environmental and sustainability concerns, I was drawn to Lave and Wenger's

Communities of Practice as a source of interpretive propositions for interpretive engagement with the data. The notion of Community of Practice emerges from a wider body of literature on situated learning and cultural historical activity theory (Illeris, 2003) (Refer to Chapter 2.4.1, 2.4.1.1). Benzie, Mavers, Somekh and Cisneros-Cohernour (2005) claim that the notion of Community of Practice provides a useful theoretical framework for researching the social processes of groups in contexts such as the workplace or the local community. This is because the research setting will be within the community itself, which would allow a holistic analysis of the structures and relationships.

The strength of working with an analytical framework that has the concept of Community of Practice at the centre, is that it emphasizes the situated nature of knowledge and brings matters of context to the fore. It highlights relationships both between individuals and between individual and community. In this way, it is well suited to supporting accounts that capture social complexity (Benzie, Mavers, Somekh and Cisneros-Cohernour, 2005: 185).

The ideas of Community of Practice in this research have allowed a close grasp of the social processes to be understood. It has also been taken up as a framework to analyze and hopefully gain insights on how and why some of the social changes have taken place with the community and how learning on matters of environment and sustainability were taking place (Refer to chapter 4 and 5).

3.3.1 Case study approach

In light of the interpretive nature of this research and the fact that it draws on the theoretical vantage point of community of practice, I decided to adopt a case study methodology. This is because it allows for an in-depth investigation to be undertaken that enables particular detail to be captured for interpretive analysis (Yin, 1993, Kumar, 1996). Eisenhardt (1989 as cited by Andersson & Andersson 2005: 419) suggests that "the case study is a research strategy which focuses on understanding the dynamics within single settings". My research was primarily with a small group of citrus farmers in the Patensie region of the Gamtoos River Valley and thus a case of contextual learning interactions was documented.

According to Cohen, Manion and Morrison (2000) case studies have a number of distinguishing features. They are able to blend a description of events with the analysis of them, they focus on individuals or groups of people, they are able to highlight specific events that are relevant to the case and the researcher is integrally involved in the case.

The authors suggest that case studies portray 'what it is like' to be in a particular situation, to catch the close up reality and thick description of 'participants lived experiences of thoughts about and feelings for a situation' (Ibid: 182).

For this research, the case study approach seemed appropriate because of the natural context of the case, a citrus farming community, where farmers are engaged in and responding to environmental concerns. In order to understand these concerns in more depth I needed to attempt to situate myself within their context. I also needed to understand some of the wider historical and political factors influencing the case.

3.4 RESEARCH PROCESS

3.4.1 Selection of research informants and participants

Following a meeting with the Baviaankloof Megareserve Project Manager, I met with the land liaison officer who was able to direct me towards some of the key people with whom he had already made contact. I contacted the chairman of the Farmers Association and asked to make a presentation of my intended research to the farmers that attended such meetings. I designed a one-page survey to distribute at this meeting to obtain some general baseline information as well as follow up contact details of the farmers. The intention of this being to follow up with specific people who volunteered to participate in the study and make themselves available for a follow up interview.

Case studies are usually carried out over a fairly lengthy period of time in which the researcher can get to know and understand the participants they are studying or working with (Maxwell, 1992). With the limited time I had to conduct the research I did manage to build a good working relationship with a few key informants in the area (Limiting factors to the research are discussed in more detail in Chapter 6).

Through the set up interactions, a working group of five key individuals (informants) emerged for the study. These included the Baviaanskloof Megareserve land liaison officer, the chairman of the Farmers Association, a member of the Patensie Citrus Company, a representative of Southern Fruit (a private packing company) and a respected member of the farming community in Patensie. These five representatives also

constituted different structures within the area and were valuable sources of information, providing the necessary coverage of farming community, interactions for the research project. An additional five citrus farmers were also interviewed.

3.4.2 Research participants

The study consisted of two sets of participants and informants, the Baviaanskloof Megareserve and the Patensie citrus farmers. For reasons of anonymity codes have been substituted for participants' names and or titles. This resulted in members of the Baviaanskloof Megareserve being assigned the codes B1-B3, whilst farmers have been allocated codes F1-F6. There are also representatives of the areas pack houses (main packing house and private packing houses) and special informants, who have been assigned codes P1-P3 and finally a member of the Gamtoos Farmers Association, C1 resulting in a total of 13 participants across the actively interacting interest groups of the citrus farmers and the conservation agents in the area.

Six farmers volunteered to participate in this study. Two of them were brothers, farming on adjacent property, whilst another two were uncle and nephew. All of the participants in the study except for one member of the Baviaanskloof Megareserve Project, were male and white. All farmers were Afrikaans speaking but were fluent in English and were therefore comfortable with interviews being conducted in English. As a young, white English female, it was a little difficult undertaking this research project, due to my age and gender. Another concern was the fact that the research design was more extractive than collaborative and there was not sufficient time to form long lasting working relationships with participants and informants. My purpose was to gain insight into a case of conservation and change through understanding the learning interactions in a community over time.

3.4.3 Research Methods

Interpretive research according to Cohen, Manion and Morrison (2000) and Janse van Rensburg (2001) requires rich, detailed information of a qualitative nature to be captured from the research process, which may be obtained from methods such as in-depth interviews, observations or interpretations of documents. I used semi-structured

interviews, participant observation and primary and secondary document analysis in the research. How each of these methods were used is presented in more detail below.

3.4.3.1 Semi structured interviews (structured discussions)

Murray (2006) suggests that interviews can range from highly planned and structured verbal questionnaires to more unplanned and informal 'opportunistic chats'. In this research I opted for informal discussions with participants as I was interested in gaining a deeper understanding and insight into citrus farming histories, developments and conservation practices. It was therefore necessary to be able to discuss and probe certain points and be able to follow up questions. The discussions were however aided by the use of a few key questions but were by no means confined to only those questions. Some of the broad questions were about the farmer's family history in the area, their farming knowledge and conservation farming practices, their main interactions and some of the main problems they faced in the area/industry and how they responded to these. (See Appendix 4 for interview schedule). After some of the initial interviews I undertook, it became necessary to record, on a digital recorder the remaining interviews due to the quantity and richness of the data. A further issue prompting the use of a digital recorder was because I was unable to physically record all the information and still follow the conversation while being able to probe certain points further.

In terms of quality and understandability of the questions I was asking, the interview was piloted before being used in the research. The piloted interview was approximately 15 minutes in length. However, when the data collection commenced with the farmers, the open ended design had interviews extending to between 25 and 30 minutes in length. The recorded material was then transcribed. As my focus was to collect, validate and probe people's experiences with farming and conservation farming methods only the actual detail of the conversations were transcribed and have been used as data.

I conducted a total of seventeen interviews in this research. Each of the six farmers had one detailed interview, which was recorded and transcribed, as did a member of the Patensie Citrus packing house and the project manager of the BMRP. Because of the value and depth of the information I got from some participants, such as a respected informant, a second and in one case a third interview was conducted with the land liaison officer from the Baviaanskloof Megareserve Project.

3.4.3.2 Observations

Observations according to Cohen, Manion and Morrison (2000) enable a researcher to gather live data from lived situations, in other words the researcher is able to look at what is going on *in situ* rather than from a second hand perspective. Patton (as cited in Cohen, Manion and Morrison 2000: 305) states that "observational data should enable the researcher to enter and understand the situation that is being described". In this research observations were particularly useful for me to better understand some of the conservation farming practices that were being used by farmers to reduce impact on the environment. Photographs were used as a means to document some of these (See Appendix for photographs).

Observations were also used in this research to gather data on interactions that took place at the farmers meeting I attended. Besides making a short presentation about my research at this meeting, my role was to be a passive or complete observer, detached from the main happenings of the meeting. Again, observations were unstructured but were directed towards social/learning interactions taking place between people which included formal and informal, verbal and non-verbal. These observations were recorded in a small research journal.

3.4.3.3 Document analysis

According to Cohen, Manion and Morrison (2000) documents can be classified into primary and secondary sources. Primary documents are those documents that have had a direct physical relationship with the events being reconstructed while secondary sources do not bear a direct relationship with the event.

Some of the primary documents utilized in this research were minutes of meetings (Farmers meetings and also meetings between the BMRP and stakeholders in the area), official publications by the Patensie Citrus Company for example and research reports done by varying institutions and organizations, like the BMRP and Terrestrial Ecology Unit at Nelson Mandela Metropole University (NMMU). A number of secondary sources and documents were also used. For example the export standards that farmers have to comply with in order to export their produce internationally, (EurepGAP) and other popular media and journal articles relating to the citrus industry as well as literature pertaining to Communities of Practice.

The documents, my experiences and observations in the area and the interview data were all directed at evidence that would enable interpretive insights to be derived and changing conservation and landuse practices recorded over time. This was done through careful documentation of the data and the use of an analytical framework to report on and investigate evidence of learning and change.

3.5 DATA ANALYSIS

Data interpretation and analysis involves making sense of what people have said, looking for patterns, putting together what is said in one place with what is said in another place and integrating what different people have said (Patton, 2002: page unknown).

The analysis of data developed in two phases. The first phase (presented in Chapter 4) was to work with the interview transcripts, the historical and other documentation and the minutes of meetings I had collected. The approach I took was to interpret the information gathered from the interviews and trace back to the documents and minutes of meetings as a means of reference to what had been said in the interviews. The second phase of analysis (revealed in Chapter 5) was to apply a heuristic tool to the data as a means to better understand the data. For this I used Lave and Wenger's ideas of a Community of Practice (Refer to Chapter 2.4.2).

3.5.1 Phase 1

Each of the interviews I conducted was given an identity, a code, instead of using the names of the participants. (Refer to 3.4.2). Data from the interviews was analysed under broad themes, which related to the interview schedule and the questions asked during the interview process. These were then organized into categories and sub categories using a constant comparative approach, by reading across all the transcripts. An analytical memo was produced containing broad themes and headings. I have used extensive direct quotations from the farmers and participants to enable their ideas to come through in this study therefore ensuring some thick description.

Data analysis in this phase was inductive in nature (Connole, 1993). This sort of analysis starts with specific observations or data and progresses towards more general principles (Connole, 1993). Berth, Ekström, Jakobsen, and Karlsson (2002:76) state that "induction is a process where from observations of a limited number of events or phenomenon,

universally applicable conclusions are drawn from a larger population". In other words it is a grounded approach to analysing data. From this inductive process I was able to generate six analytical statements, which are some of the dominant and recurring themes that emerged from the data. According to Bassey (1999) analytical statements are based in the raw data but speak directly to the research question. These statements were posed as hypotheses, from which a discussion then emerged in Chapter 5.

3.5.2 Phase 2

For greater meaning and understanding to be applied to the findings, which is the primary focus of qualitative and more specifically interpretive research, an abductive process has been used. This is because induction is unable to describe the processes that lie behind what has been observed by the researcher (Berth, Ekström, Jakobsen, & Karlsson, 2002). The authors suggest that conclusions drawn from an abductive process, provides new insights as a result of interpretations or explanations of something. The interpretations emerged from the historical evidence as well as the interview data. This is often referred to as recontextualisation, where a researcher observes, describes, interprets and then explains something within the frame of a new context. In order to gain a deeper understanding of the data, I used the notion of a Community of Practice (2.4.2) and the ideas of Legitimate Peripheral Participation (2.4.1.1) as a means to explain the learning that was taking place.

3.6 VALIDITY/ TRUSTWORTHINESS

Maxwell (1992) describes validity as being either descriptive or interpretive. Descriptive validity refers to researchers not distorting information they see or hear, in other words it is the factual accuracy of the researchers account. In order to help me ensure descriptive validity, I recorded the majority of the interviews I conducted, and made detailed observations and took digital pictures of farming practices.

Interpretive validity on the other hand describes the accuracy of the concepts used by the researchers in relation to the perspectives of the individuals included in the account. This is primarily concerned with the meaning that participants give to an event or situation. Maxwell (1992) suggests that the participants use of language is especially important. In my presentation of the data in Chapter 4, I have used direct quotations as

a means to represent what participants have said and to stay as close to the case in context and allow the complexities of the context to be reflected.

3.6.1 Face validity

According to Lather (1986) face validity refers to whether a study looks valid to the reader; at face value, or is it believable or trustworthy? One of the ways of ensuring or avoiding possible questioning of face validity is to use member-checking. This is a process that involves taking the interview data back to the participants. For me the value of this process was two fold, first it allowed me to check that I had captured everything that was said during the interview process, especially if the interview had not been recorded on tape and secondly it allowed me to check the accuracy of my interpretations of what had been said.

3.6.2 Triangulation

This is another technique often used by researchers to enhance the validity/trustworthiness of their research. It is defined by Cohen, Manion and Morrison (2000) as the use of two or more methods or sources of data collection in a study. I used three main sources of data namely; interviews, observations and document analysis. I worked primarily with the interview data, and then traced backwards to the documents such as minutes of meetings and also my observations and notes taken of these.

3.6.3 Thick Description

Thick description advocates that a study has enough evidence on which to base reliable conclusions, in other words it is about having enough data to support what is being presented. I have made extensive use of direct quotations (In Chapter 4) so as to allow enough of what the participants had told me to be reflected in the reading of the study.

3.6.4 Generalizability

Within validity (which is pertinent to case study methodology in particular) is the idea of 'generalizability'. This refers to the extent to which accounts or findings from a studied situation can be applied to other situations (people or settings) (Maxwell, 1992). Since case studies deal with context specific and thick descriptive information, it is often suggested that the findings cannot be generalized to other contexts. Maxwell (1992) however argues that generalizability can take place through the development of a theory

that pertains to a given situations but can also hold true in different situations but lead to different results. He therefore suggests that the theoretical ideas can be generalized but the findings cannot, as they are context specific, "generalizability, therefore assumes that theory may be useful in making sense of similar situations" (Maxwell, 1992: page unknown).

This research has relied on the ideas of and theory behind Community of Practice as a means to explain and understand what is happening within a studied context. However this theory of Community of Practice can be generalized to other farming or work place based contexts and produce different findings, "it is not the generalizability of cases to populations or universes that is important, but rather the generalizability to theoretical propositions" (Strelitz, 2005:76). It was thus possible to be true to the case and also draw from it to begin to make more general observations and inferences of learning and change to inform the developing field of environmental education (fuzzy generalizations). According to Bassey (1999: 12) case studies cannot be generalized as this takes away the accuracy of the single case, however claims may be made called "fuzzy propositions". These are statements, which make no absolute claim to knowledge but hedges the claim with uncertainty as a possible way forward.

Maxwell (1992) makes the distinction between internal and external generalizability. Internal generalizability allows one to generalize within a community or institution that was studied to people or events that were not. External generalization on the other hand, refers to generalizing to other communities or institutions (Maxwell, 1992). By using the ideas and theory behind Communities of Practice and Legitimate Peripheral Participation, this research has been subject to internal generalizations, as Community of Practice assumes members of a community to be participate in a number of roles and ways. The findings of this research study may therefore be applicable to some extent to other members of the citrus farming community. My main concern was, however, how the data might provide insights on learning and change to inform the field of education around matters of conservation and sustainability of the natural environment.

3.7 ETHICAL CONSIDERATIONS

Mertens (2005) suggests that ethical considerations should be an integral part of not only the research planning but the entire research process and not viewed as an afterthought

or burden. Due to the fact that an interpretive approach to research relies heavily on understanding, which requires human participation, ethical considerations are very important.

In my research it was important that all members of the various organizations (Baviaanskloof Megareserve Project and the citrus farming community) were kept up to date and informed as to my research. Numerous e-mails were sent to both the Project manager of the BMRP and the chairman of the Farmers Association giving them updates, progress reports and seeking assistance. It was also of utmost importance to inform both organizations of my intended dates of fieldwork and field visits and purpose of the research.

Another ethical consideration for my study was that of language. All the citrus farmers in the area are Afrikaans speaking, however I asked permission for all interviews to be done in English. It was originally proposed that these could be done in Afrikaans through the use of a translator but at the farmers meeting, the association decided that it would be acceptable to do the interviews in English, as all could communicate fluently. This was a great help to me as I was obviously able to conduct the interviews myself. It was also important in my study that participants volunteered to be interviewed and were not forced or obliged to any way. All the farmers that I interviewed did volunteer for the study.

During the interview process it was explained that if participants did not want their names to be mentioned in the final research report then anonymity could be assured for these participants. (I decided in the writing of the research to not use any names or titles and have therefore substituted these with codes). It was also explained that if anyone felt uncomfortable with any of the questions the interview could be stopped at any time. All of the interviews were conducted in a friendly manner and participants were forthcoming and interested in the member checking process. I am left with a sense of gratitude and respect for the participants, especially their honesty and openness that allowed the insights into learning interactions to emerge from the study.

For the interviews that were recorded with a digital recorder, permission was asked prior to beginning the interview and it was also explained that if they did not want something to be recorded it could be switched off for that period of time during the interview.

3.8 SUMMARY

This chapter has presented a detailed overview of how the research was undertaken, the orientation to the research, the theoretical framework, the methods that were used to generate the data and also the methods of analysis that have been employed. It also presented evidence as to how issues of validity and ethical considerations were dealt with, through various techniques. The following chapter (Chapter 4) presents the data that was collected during the research process. The chapter is written under a variety of headings which were generated from reading across all the transcripts. It also follows an historical timeline that presents evidence of how the citrus farming community has evolved and responded to various changes and tensions through time.

Chapter 4- Findings of the research

4.1 CHAPTER OVERVIEW

This chapter reports on the perspectives generated through the research process. The analysis was undertaken in two phases. The first presents the major historical (political, economic, social and environmental) changes that have taken place in a citrus farming community. The second phase, presented in Chapter 5 probed the learning associated with these changes. The study thus provides evidence as to how a Community of Practice established or became constituted and reveals how this community has evolved and changed over time. The perspectives and insights have been presented under broad themes (headings), which were derived from the constant comparative analysis of the emerging data revealed in the interviews.

The structure of this chapter follows a historical timeline, which tracks change over a period of approximately a hundred years. It first examines some of the historical evidence for settlement and farming in the Gamtoos River Valley together with how major developments have influenced the citrus industry. It examines some of the risks associated with an agricultural context and how farmers have responded to these. It then considers some of the changes that have taken place post 1994 and finally probes the evolving role of the Baviaanskloof Megareserve Project and how the citrus farming community are responding to environmental and economic pressures in the area.

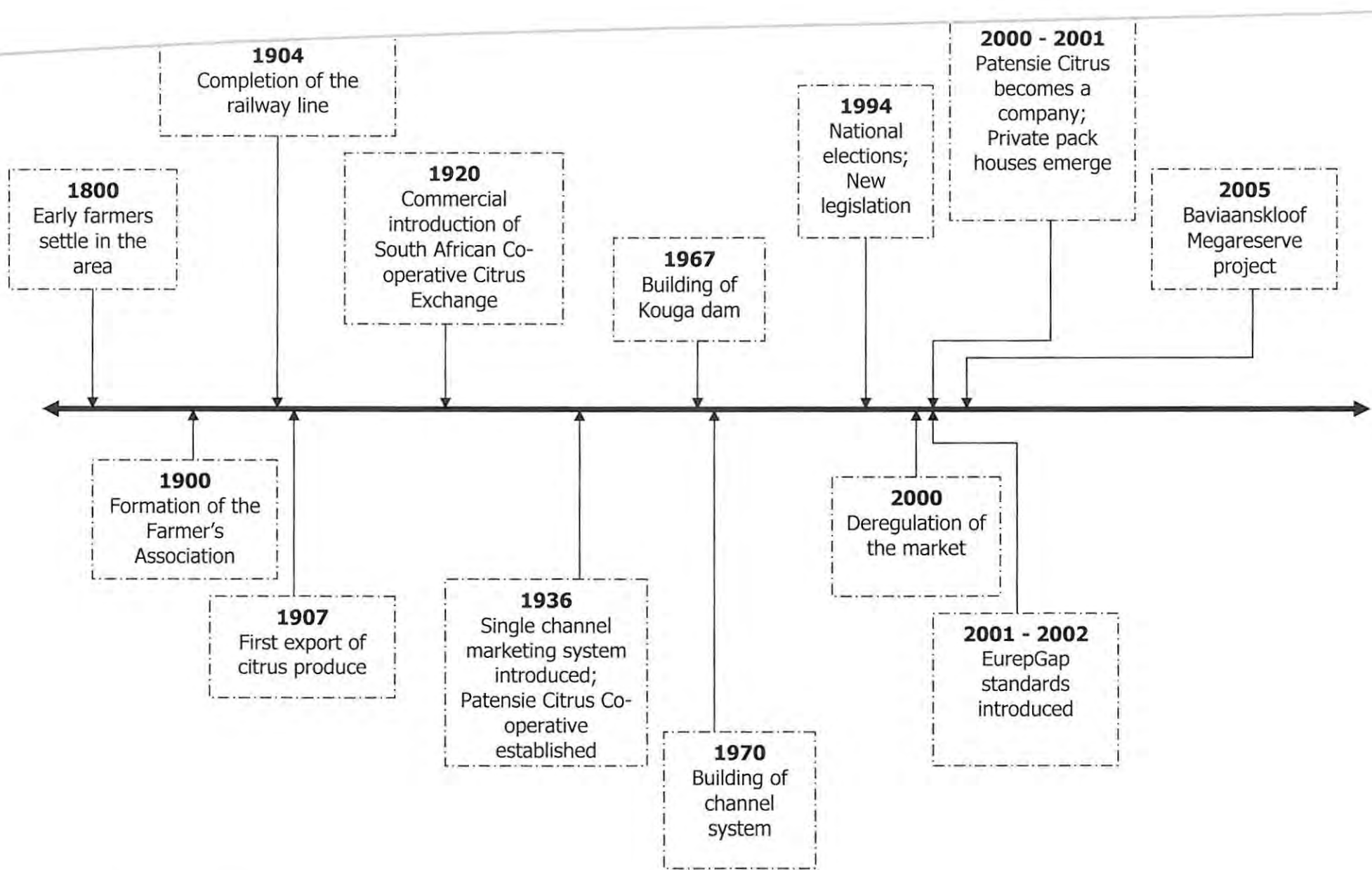


Figure 3: Timeline of major political, economic, social and environmental changes

4.2 HISTORY OF SETTLEMENT AND DEVELOPMENT IN THE GAMTOOS RIVER VALLEY

The first farmers arrived in the Gamtoos River Valley (GRV) in about 1745. In 1818 these farmers received 2000 morgan of land each (P3, pers comm. 21 June 2006). In 1852 the farm 'Patentie', which was 3000 morgan was subdivided and in 1858 Patensie was declared a town (ibid). Evidence from one of my interviewees revealed that the original 'Patentie' farm of 2000 morgan was inherited from his grandmother, Rautenbach, as it was formally known as Rautenbach Farm and had been in their family for a long time (F2, pers comm. 18 September 2006). He also noted that because the town of Patensie was privately owned and was originally one farm, development in the area was difficult and prolonged.

Originally much of the Gamtoos Valley was primarily livestock farming, boer-goats and a few cattle. The name Patensie is reportedly a Hottentot name (lêplek van die beeste), which means, "where the cattle lie". Problems soon arose between farmers who kept goats and those that practiced agriculture such as tobacco, vegetables and other arable crops as the goats would destroy their crops as well as the natural vegetation. After World War 2, many farmers in the area turned their attention to food crop production on an intensive scale and livestock farming was phased out of the valley/area.

Citrus was only introduced into the area (on a commercial scale) in about 1920, this despite the first oranges being exported from the area in 1907 by a Mr Bean. The expansion of agriculture and especially citrus in the area was due to an irrigation channel system being built in 1912, that allowed farmers to construct a direct channel from the river to their fields. This allowed farmers to irrigate their crops on a more regular basis and therefore the area of production expanded rapidly (P3, pers comm., 21 June 2006).

The early development and expansion of infrastructure and markets in the area was restricted, until a bridge was built over the river in 1895, which greatly improved access and transportation of agricultural produce to markets in Port Elizabeth. The railway line, which was completed in about 1914, also greatly improved access into and out of the area and helped establish marketing posts for agricultural produce to be sold on a local market. From 1936 large-scale citrus was exported from the area through the Patensie Citrus Cooperative, which was a farmers' cooperative, to international markets, mainly Britain. In 1967, after a few years of drought in the valley, the Kouga Dam was built and

in 1970 a canal system was built along the length of the valley. This provided farmers with a year round supply of water and agriculture continued to expand rapidly across the landscape both horizontally and vertically across the landscape.

4.3 FAMILY HISTORY IN THE AREA

It was noted from the interviews with farmers in the area that there is quite a long family farming history in the area. One interviewee noted that his father started farming in Patensie in 1908 with only two hectares (2ha) of land (F3, pers comm. 25 September 2006). "He eradicated all the bush and he increased all the planting areas and started with sweet potatoes, which was his main income, but also had beans and tobacco... I now farm here with my son" (*ibid*). As already mentioned another interviewee indicated that he had inherited a small portion of what was originally the 'Patentie' farm,

Actually this farm was the old farm, this farm was spilt into eight parts for the eight children. My father inherited one of those eight parts. This is the old Patentie Farm. Then he bought out other pieces of land and I inherited one of those pieces again (F2, pers comm., 18 September 2006).

Interviewees gave the distinct impression that farming is generally a family orientated business. One farmer noted,

Farming isn't just something you come into, it is quite a family orientated practice, you are generally born into a farming family and grow up with the ideas of becoming a farmer to take over the family farm (F1, pers comm., 21 June 2006).

My own observations in the area confirm that farming is a family business, fathers and sons, sons who have taken over the family business, brothers farming together on adjacent land and uncles and nephews. One farmer notes, "This farm was handed down from my grandfather, who bought it from his brother in law. My grandfather had 500 orange trees but when my father took over in 1976 when my grandfather passed away, he planted another 9500 trees. I came to the farm in 1997" (F5, pers comm., 17 October 2006).

All interviewees I spoke to were born in the valley and had inherited their farms from their fathers. Two of the interviewees however, were not originally in the farming business and one had only recently (2000) entered into it and taken over the family farm

when his father passed away, "I used to teach and then my father got sick and I came to the farm and we farmed together for about three and a half years. From 2000 I have farmed on my own" (F6, pers comm., 17 October 2006). The other interviewee has been farming for thirty years but was not born into the farming business.

After school I went to college, did an engineering diploma in building science and later I became a teacher at a technical college. In 1976 my father asked me to join him. So then I started with him and he passed away last year and since then I have been farming with him. Being with him I also started buying land that was next to us and that is how we expanded the business (F5, pers comm., 17 October 2006).

4.4 EVOLVING INTERACTIONS IN THE GAMTOOS RIVER VALLEY

As irrigation and farming expanded and intensified in the area farmers needed to and began to respond to some of the developments and political, economic, social and environmental changes that were taking place. They therefore started to organize themselves together and in 1905 the first Farmers Association was formed. The current chairman of the Farmers Association notes that there were two Farmers Associations in the greater area, one in Patensie and one in the upper valley, but approximately fifteen years ago they merged and have become known as the Bo-Gamtoos Association (pers comm., 18 September 2006). One of the reasons for this merge was the decrease in the number of farmers in the area but also the changing role of the association itself, with regards to being the sole communicator and provider of information to farmers in the valley. A member of this association notes some of the changes,

The farmers association at this time, I think is the only political arm that the farmer has. It is your spokesperson on a political side. Most information about crops and growing vegetables or citrus is supplied by specific specialists, supplied by the industry. The industry supplies information about growing the crops, technical information. It used to be the farmers associations role but then that went down in the last few years because most industries now supply their own information. In the old days, long time ago the farmers association organized farmers days, information days where information was given about growing certain crops like tobacco or citrus. But not any more because the industry supplies their own information. But the farmers association will come in when there is new information, for example if there is a new product in an area, we will play a role (C1, pers comm., 18 September 2006).

I attended and observed one of the farmers meetings that took place in the valley on the 20th of June 2006. The meeting opened with a prayer, which included a request for the

market and exchange rate to be improved and gave thanks for its recent strengthening. According to a member of the association and documented records of the minutes of meetings, meetings are organized every two months with a function at the end of the year. At this particular meeting there were 12 farmers present, one wife, the local Police Captain and the guest speaker for the evening. When I asked how many people normally attend these meetings I was told they never really know until the night. At each meeting the association tries to organize a guest speaker who will speak about various issues. The speaker for this meeting was talking about medical schemes specifically for farmers, as this is quite a concern for many of the older farmers in the area as it is expensive. Previous speakers have talked about financial schemes and options, new research in agriculture and presentations by fertilizer and chemical companies promoting new products and technologies (C1, pers comm., 21 June 2006).

There are typed minutes taken at each meeting with an agenda for the evening on one side of the page and a summary of the last meetings minutes on the other side (See Appendix 7). Despite the agenda, the meeting took on a very informal conversational approach. The chairman and the secretary sat at a table in front of everyone else, who sat on chairs in a hall. It was evident that all farmers knew each other and sat chatting before the meeting started and stayed for a while after the meeting had officially ended. "I think the interaction between farmers is very good, farmers come together at regular meetings and the communication between them is good, however there will always be competition with yourself and other farmers" (P3, pers comm., 12 October 2006).

Informal issues that were discussed during the Farmers meeting included an issue raised about water concerns and the amount of water being released from the Kouga Dam to Port Elizabeth. There was also a point raised about a government document that had made mention of the fact that if one has a dam on one's property and the farmer is not using it, then it can be taken away from the farmer, so the farmers were looking for clarification on this point. The Police Captain spoke of general crime and problems that were of importance in the area, which included children not going to school and working on farms and offering self defence lessons to woman to raise awareness. There was passing mention of some conservation related information and that pertaining to markets and prices for citrus.

It is evident that as agriculture developed within the area so more specialized information has been required by farmers and this is now being provided by the industries themselves. In such a competitive business as citrus farming is, it is essential that farmers have the most recent information available about the markets, prices as well as about various products such as fertilizers, chemicals and other equipment. Some of the more basic elements of farming practices, methods and techniques have however been learnt from their fathers and grandfathers. One interviewee noted that as children they used to have to help out on the farm before they could do their homework, "we were quite a big family so we had to work together to keep things going... My knowledge came from my dad and from working with the land since we were children" (F5, pers comm., 17 October 2006). Some of the farmers that were interviewed had been to agricultural school/college or done courses in specific aspects of farming and land management as well as business and financial management.

I asked farmers who the main people, business or organizations were with whom they currently interacted. This was in an attempt to identify some of the key sites, sources and ways in which learning potentially takes place. Many said that the Farmers Association used to be their main interaction and source of information but now this role has been take over by private industries such as the chemical and fertilizer companies as well as private consultants. Most farmers also suggested that they interacted regularly with the Patensie Citrus Packinghouse about markets, prices and scheduling of delivery and packing of fruit. One of the most significant changes that has taken place is with regards to the international export standards that have been introduced and the interactions with the various documents and guidelines. In order for farmers to export their produce through the Patensie Citrus Packinghouse, they have to be accredited with EurepGAP (Refer to Chapter 4.8.2).

4.5 RISKS IN AN AGRICULTURAL CONTEXT (MAIN PROBLEMS)

The majority of the risks reported in an agricultural context are economic risks. More specifically these refer to the marketing opportunities for exported produce, which is governed by the global economy as well as the exchange rate and various international export standards. It is evident that within a citrus farming community, who rely heavily on the production and export of citrus, that markets and the exchange rate play a critical role. Prices received for produce are often low, "You must accept what you get for your

produce on the markets and the export markets" (F5, pers comm., 17 October 2006), while the production or inset costs are high and therefore profit margins are very low. One farmer suggests that, "The economic risks of having a bad crop are just too high" (F4, pers comm., 25 September 2006).

One of the responses to the fluctuations within the citrus market has been to diversify production as a means to maintain a continual income. Many farmers for example have begun farming vegetables and potatoes as well as salads and honey, which are then sold on the domestic market or to a chain supplier or supermarket as a means to sustain an annual income. One farmer talked about how he was nearly bankrupt after a very bad year of citrus,

About 5 years ago, in the year 2000, we had a very very bad citrus year, the markets especially, the citrus on the markets could not even pay for the shipping, we had to pay the shipping out of our pockets. And so I started looking for what else can I do to just secure my farm, you know just to be able to withstand a problem. I was very near to bankrupt, but I got through it. So that is nearly 6 years ago, very near to bankrupt, I said that if I get 4 normal to good years then I can get out of it. But my 4th year after that was a bad year also. So I am still struggling but I am getting better and better but still struggling to get out of that bad year (F2, pers comm., 18 September 2006).

I then asked what would have happened to him had he not diversified his crop production, "I would not have survived last year. Last year was not as bad as 2000 but the knock of 2000 would have knocked me over in 2004. But the salads pulled me through" (*ibid*). Another farmer mentioned how he had entered into a contract with McCain to grow vegetables for them to supplement his income from citrus farming. He too suggests, "I don't think I would have survived had I not diversified my products" (F4, pers comm. 25 September 2006).

Farmers (F1, F4) also note that citrus farming is a volume game,

A lot of farmers have solely citrus but it is a volume game, so in a year like this year[2006] with a good and big crop and good prices, if the volume is right, then you can put away a lot of money but if the volume is not enough, then it's not good enough. Last year [2005] was a bad year with the citrus, so we had to make up (F4, pers comm., 25 September 2006).



There is therefore a fine line for farmers between having a lot of citrus only or having smaller volumes of citrus but supplementing income with additional activities such as vegetable or salad farming.

Another aspect in the marketing of citrus internationally, is that the price for the produce is fixed by the buyer, "farming is the only undertaking which cannot stipulate the price of its product, the buyer fixes the price" (P3, pers comm., 21 June 2006). Farmers therefore have to accept what they receive for their produce on an international market.

The market is fixing the price. But there are so many people that sell direct and now the people who buy the stuff from those selling direct, they give you the same price as the market price. But by selling direct, you take the buyers from the market away and the price in the market drops down because there is no competition. It is very difficult because selling direct you need not pay the market fees and the buyer says, listen, I will get you almost the same price as the market and you needn't pay the market fees. It's a difficult situation because some say by selling direct you add value to your stuff and indirect you lose (F3, pers comm., 25 September 2006).

In the year 2000, the export market was deregulated and the single channel marketing system that had been in place for about 70 years, fell away. This was the worst year for citrus farmers in the history of farming in the GRV, "In 2000 we had a very bad year, we had to pay in on our oranges, it was the worst year in the history of oranges because of the deregulation and collapse of the single channel market" (F6, pers comm., 17 October 2006). After 2000, for the first time, farmers were allowed to market and export their own produce directly to the buyer.

A number of farmers in the valley left the main cooperative packinghouse and established their own small private pack houses. This has caused some competition between farmers in the valley especially around the marketing side of the fruit together with the cost of exporting and the prices received for the produce. At present about fifty farmers take their citrus produce to the Patensie Citrus Company and they account for approximately 50 % of the valley's production while the balance is packed by another big company in the area and between ten and twelve smaller private pack houses (P1, pers comm., 25 September 2006).

One of the other major risks in the area is the supply of labour. Farming is a labour intensive activity as is the production and preparation of the fruit for export. Labour laws (post 1994) are a huge challenge for many of the farmers in the valley. On one of my visits to the area interviews had to be postponed because the Department of Labour arrived unexpectedly.

It is interesting to note that during the interviews when farmers were asked what some of the main problems were that they faced, they always mentioned economic (marketing and exporting) factors first and then issues to do with labour, the new labour laws and very little mention was made of environmental risks that they face in the agricultural sector. They did however mention that occasional droughts were a problem and the supply of water was a periodic issue for them, depending on the levels of water within the Kouga Dam, "...If the dam is full we are happy. It was almost empty last year and we had restrictions¹" (F6, pers comm., 17 October 2006).

Pests are a problem, especially snails but as one farmer mentioned, "we have very good chemicals for them now" (F1, pers comm., 18 September 2006). Some attempts have been made to use biological forms of pest control, such as leaving citrus mulch under the trees to distract pests from the actual fruit on the trees. Fruit that has been damaged by snails, that has red skin or other blemishes due to wind or hail, are not considered to be of high enough standard for international export so the control of pests and diseases is essential (See Appendix 8).

Other problems that farmers mentioned with reference to their workforce included alcohol abuse, child grants for young children and HIV/AIDS.

For the first time, this year, AIDS is starting to affect my business. Every week there is somebody, not necessarily on my farm, but a relation, passes away and then for a while they are not at work and this puts pressure on the farmer and the business (F5, pers comm., 17 October 2006).

¹ In September 2004 water restrictions were placed on the whole region due to low rainfall in the catchment and subsequent low levels of water in the areas dams (DWAF, 2004). The restrictions suggested that Nelson Mandela Metropole could no longer use water from the Kouga Dam and the Gamtoos Irrigation Board was only allowed to supply water at the previous years average water use to the towns of Patenise and Hankey. These restrictions lasted until July 2005 (DWAF, 2004).

4.6 CONSERVATION FARMING PRACTICES

From the interviews with farmers and my observations of farmers' agricultural practices, some of the practical things farmers are doing to reduce impact on the environment include;

- **Replacing overhead aerial irrigation with drip irrigation**

This drips water directly into the root of the tree at given times per day. Less water is used and also lost into the environment through evaporation. "The drip irrigation saves a lot of water" (F6, pers comm., 17 October 2006). Drip systems are also easier and safer for labourers to work with, although a more costly system to install and maintain.

- **The process of fertigation**

Instead of using fertilizer on the crops, we undertake a process of fertigation. This is fertilizer and water mixed together and delivered via drip lines to the trees. This is all done according to a computerized system, which is set on a timer and can calculate the amount and ratio of mix of water and fertilizer. This method is quite effective as things are not lost to the environment, soil and ground, instead the mixture is dripped straight to the roots of plants (F1, pers comm., 21 June 2006).

This method also prevents fertilizers being lost into the environment, notably river systems and causing damage to other living organisms.

- **Practicing and implementing soil conservation methods**

I just do farming practices that that will conserve the ground. I want my sons to farm as I have done and not deplete everything out of it. I will even put a green fodder in for the winter and plough it in to conserve the ground (F2, pers comm., 18 September 2006).

I also throw grass under the trees and that helps, it saves water because the moisture stays in the soil (F6, pers comm., 17 October 2006).

- **Halting the ploughing of land**

And even when planting other crops, like potatoes and chicory, we stop ploughing. We just loosen, make the soil loose with a tiller and plant on the rest and the previous crop is lying on the ground and it forms a kind of mulching on top of the soil or in the top layer of the soil. And that's a new kind of thinking for the farmer and I think it's a great success (F3, pers comm., 25 September 2006).

- **Adding green fodder or teff grass**

Some farmers also put green fodder or teff grass into the soil in their orchards to promote soil organisms and moisture in the soil.

We have started now with a different kind of cultivation, we mulch the citrus trees with teff grass. We use some of our irrigated land to grow the teff grass, then we sow it and throw it under the trees. And it makes a great difference. It spares us a lot in weed killer and it keeps moisture in the soil and if you lift up the mulch you can see it is living organisms beneath it (F3, pers comm., 25 September 2006).

I had soils that were quite dead and within 2 years of putting down this fodder I could get earthworms right through my farm (F2, pers comm., 18 September 2006).

- **Rotational farming practices**

Many also practice rotational farming, especially for their vegetables, whereby areas are left fallow for a while,

We rotate the crops very often. One season is teff grass and the next season is chicory or potatoes. We don't produce the same thing on the same land within three years, so every three years we come back to the same product (F3, pers comm., 25 September 2006).

Many farmers mentioned that they just undertake 'normal good practices',

So there is normal good practices, not over irrigation, no unnecessary cultivation of the land, minimize use of weedkiller wherever, not to practice monoculture, like potatoes on the same soil every year, change it with something else like maize or green fodder. The disciplined use of fertilizer, you can over fertilize. Use different irrigation methods" (F4, pers comm., 25 September 2006).

"We all realize its good to have sustainable agriculture and I think the farmers here know that more than anyone else otherwise they won't have a business in ten years time" (P1, pers comm., 25 September 2006).

I also asked farmers if they had tried to reduce their use of chemicals and sprays and use biological control as a form of conservation methods. One farmer mentioned. "I have chickens and turkeys, they eat the worms and snails and a lot of other stuff and so I don't have to spray as much" (F5, pers comm., 17 October 2006).

One of the biggest dictators of conservation and sustainable farming practices in the industry are now the export standards to which farmers must comply, "the guidelines

have a couple of rules you need to follow. They have criteria in there that you have to comply with" (F5, pers comm., 17 October 2006). For example, Chapter 13 of the EurepGAP guidelines deal exclusively with conservation and environment related issues. For example the guidelines suggest, "A key aim must be the enhancement of the environmental biodiversity on the farm, through a conservation management plan. This could be a regional activity rather than an individual one". These standards are also one of the major sources from which farmers get their conservation and environmental information.

4.7 SOURCES OF INFORMATION (CONSERVATION INFORMATION)

My knowledge came from my dad and working with the land since we were children. And then also a lot of information comes from extension officers who give you all the information you need. And then also by attending meetings like the Farmers Union, there you can pick up a lot of things. And we in the Gamtoos Valley is like a big family, the one helps the other one and you will never be given a cold shoulder when you go to somebody to ask them for help (F5, pers comm., 17 October 2006).

I learnt a lot from my father, but you can also learn by yourself as well, trial and error but it costs you a lot if you make an error.

Many of the farmers mentioned similar situations to the one presented above.

Some farmers rely on external consultants and specialists whom they pay to draw up planting, feeding, fertilizer, irrigation and pesticide schemes for the year,

I pay to get my conservation knowledge. I pay an external consultant who comes from Nelspruit four or five times per year. He does leaf analysis and analyzes the fruit and then decides on the correct scheme to be used for planting, feeding, fertilizing and pesticides use. I also pay an entomologist from Port Elizabeth to draw up a spraying programme for the year. This is in the form of an integrated pest management scheme which is conservation friendly (F1, pers comm., 21 June 2006).

Extension officers from private companies such as agri-chemicals and fertilizers are a critical source of conservation information.

They are looking at what the farmers are doing and if it is a success, they come and tell you, so in that way they are increasing information from one farmer to another. They are the biggest help at the moment. One of them told me that he is urging farmers to plant more teff grass even though he is selling insecticides

and weed-killers so that is competition with him but he is still urging us to do that (F3, pers comm., 25 September 2006).

And then also a lot of knowledge comes from places like McCain foods, they have extension officers and when you want to plant something like baby carrots, they give you all the details about how to do it and the way your soil needs to be prepared (F5 pers comm., 17 October 2006).

The fertilizer guys are the main people, but there is also the co operative, the citrus company, we have got an extension officer and he also helps us a lot (F2, pers comm., 18 September 2006).

Many of the farmers also mentioned that to broaden their knowledge base and keep up to date with common trends, they read magazines such as Landbou, agricultural newsletters and publications as well as use the Internet.

I asked a member of the Farmers Association if the Baviaanskloof Megareserve Project were or had been supplying them with any sort of conservation related information. He said, "not yet, I think that will come when the initiative is going, when the citrus initiative is implemented, then I think there will be guidelines for what to do and what not to do" (C1, pers comm., 18 September 2006). When I asked a member of the team at the BPMU the same question he said, "... we are not responsible for giving agricultural advice to farmers, however the Unit can be involved in giving advice where needed and when requested from them" (B1, pers comm., 11 September 2006). He did mention however that for farmers who were members of the Proud Partner Programme, regular newsletters and brochures with odd bits of information were sent out to all members to keep them updated and informed but were not widely available to everyone.

4.8 SIGNIFICANT CHANGES POST 1994

4.8.1 Introduction of new legislation

In 1994 South Africa underwent National Democratic elections. In 1996 the New constitution of South Africa was adopted along with various other legislation including environmental legislation. Legislation that was particularly relevant to farmers and to the agricultural industry as a whole, were the new labour and water laws. According to F3 (pers comm., 12 October 2006),

The farming sector is the only one in the country, which is compelled to supply housing with a prescribed minimum standard to labourers at a fixed rent. This rental

is far too small to balance the interest a farmer has to pay on expenses for building such a house. After having lived in such a house for ten years the labourer has the right to stay in that house for life (on the property)... according to new legislation it is almost impossible to dismiss a worker. Even if he has committed a serious offence, the farmer has to consult his attorney.

The new Water Act constitutes that nobody has any right to use any water for irrigation purposes, unless in possession of a recently issued license. Even after a farmer has farmed for 60 years on a farm, which he bought together with the right to irrigate 50 hectares, he now has no rights and taxes are imposed (*ibid*).

P3, (pers comm., 2006) also goes on to mention that before 1994, "farmers were subsidized and encouraged by procuring low cost water, electricity, railway charges and other services to keep production costs low, today service charges have to be paid in full".

Another form of legislation that emerged post 1994 was the marketing and export regulations for the country. Prior to 1994, all agricultural produce was marketed and exported through a single channel, in the citrus industry this was through Outspan,

What the one big change has been is that we have started direct marketing. In the past, 100% of the fruit went through Outspan. We are really doing about 55% of the marketing ourselves now directly to supermarkets. That has been the big change and has had a huge impact on the way we operate this plant; it has become more difficult" (P1, pers comm., 25 September 2006).

4.8.2 Introduction of international export standards

In order to export citrus on an international market, farmers are required to comply with a number of export standards. For example to export to the European Union and European markets farmers need to be accredited with EurepGAP which is a consortium of European Retailers who attempt to certify growers for good agricultural practice. These standards set out a number of guidelines which farmers need to comply with in order to be accredited. There are 13 chapters in the guidelines dealing with traceability, record keeping, varieties and rootstocks, site history and site management, soil management, fertilizer use, irrigation, crop protection, harvesting, post harvesting treatment, waste and pollution management, worker health and safety and environmental issues (See Appendix 5 for these guidelines).

One farmer notes that EurepGAP concentrates mainly on food safety and product safety,

... they are very strict on traceability of products from the orchard to the consumer. And then there is record keeping of all the different actions taken on the farm. You must have records of sprays and fertilizer application and all the audits done. You have to have records of the varieties and rootstock of the fruit and the preparation of the land, suitability of the land and your conservation use. The citrus trees you plant, you must have proper trees, no Genetically Modified Organisms as well as proper rootstock suitable for the soil. You must have maps of all the orchards, the dates they were planted, must have a record of the whole nursery to establish that tree, certificates for the trees and all new plantings must be properly documented (F1, pers comm., 18 September 2006).

EurepGAP was introduced into the valley about four years ago and Patensie Citrus began with it as soon as it started. All farmers that export through the Patensie Citrus Company have to be accredited with EurepGAP (P1, pers comm., 25 September 2006). I asked if it had been easy to get all the farmers to comply with EurepGAP,

It was a huge battle, initially it was a huge mindset change for them. Initially you take the progressive guys first, those who want to do it, they prove they can do it and pass the inspection or they get accredited and then you take the next lot and the next lot and then you sit with the stragglers that you just have to push through the whole thing. Farmers work like that, they are always different, different personalities, but we managed to get them all through. Once you are running on the system you just need to keep the pressure there and keep them going on an annual basis (P1, pers comm., 25 September 2006).

EurepGAP, however, is not the only export standard, recently a British Supermarket Tesco, introduced their own set of standards called Natures Choice. These standards are specific to that supermarket and if farmers want to export their produce to Tesco then they have to comply with the prescribed criteria. I asked how different these two sets of standards were.

Different but not too different. They all have the sustainability aspects, but some will focus more on labour issues, some more on environment, some more on the whole traceability system so it depends. We have about 50% of our crop, which is now Natures Choice compliant, for Tesco (P1, pers comm., 25 September 2006).

There are a lot of overlaps between Natures Choice and EurepGAP (F4, pers comm., 25 September 2006).

4.8.3 Responses to export standards

I am not negative about all these standards and complying and things, I realize one has to do it. A lot of them are, in general, good in some aspects. It's good to have standards especially with the chemicals and all that, safety and storage of

the stuff, which is necessary. We are not too convinced about some of the other issues (F4, pers comm., 25 September 2006).

From interviews conducted with the farmers, many are fairly sceptical and unhappy about the export standards, claiming that they require too much paper work and administration. Farming is a full time business for many of the farmers and these standards just add to the pressures of their lives. "It is very rigid on some aspects and there is a lot of red tape and paper work, which I personally think is unnecessary. I also think there is a bit of suspicion from the producers and I have suspicions as well, but obviously we realize this is a global business and we have to compete with other people" (P1, pers comm., 25 September 2006).

Many of the farmers were already doing a lot of what the guidelines recommended and required and therefore didn't have to make major changes to the way they operate and run their farms/ businesses. EurepGAP requires that farmers be audited every year to make sure they are up to date with the required standards being set by these guidelines. The audit is completed by the farmers and then assessed by an external consultant, which farmers have to pay for. "They do moan about the money, it's a lot of money R3000 per inspection, so they are querying the costs because the guy sits there for about an hour and a half" (P1, pers comm., 25 September 2006).

Its not that we are not doing it and are negative about it, we are just wondering all the time that we are busy with it, where does this stop and are we getting enough for the trouble the guys are going to? Are we really getting better prices for Tesco? And there are more standards coming in all the time, BSC and M and S and they will come with a higher standard than Tesco (*ibid*).

Natures Choice is just unnecessary. It's a lot of admin and a lot of it overlaps with EurepGAP and what we are afraid of it that the next Tesco, or Marks and Spencer will then have their own Natures Choice to be just one step ahead and where does this end? (F4, pers comm., 25 September 2006).

4.9 ROLE OF THE BAVIAANSKLOOF MEGARESERVE PROJECT

In 2002/2003, the Wilderness Foundation launched the Baviaanskloof Megareserve Project (BMRP) to conduct the planning and implementation of the expansion of the Baviaanskloof. Their aim is "the effective long term conservation of the Baviaanskloof biodiversity, scenery and cultural history and the promotion and facilitation of a

biodiversity economy in the surrounding areas" (B2, pers comm., 29 March 2006). More specifically the Megareserve Project seeks to

- Conserve the area's spectacular biodiversity,
- Protect its critical role as a provider of water, and
- Promote sustainable economic development opportunities based on the natural resources of the area.

The BMRP offers farmers in the valley two conservation orientated programmes, the Proud Partner Programme (PPP) and the Biodiversity and Citrus Initiative (BCI) (Refer to Chapter 2.11.1 & 2.11.2)

4.9.1 Proud Partner Programme

This is an initiative being promoted by the BPMU and was formally launched in the area in September 2005 (B1, pers comm., 21 April 2006). The main idea behind the initiative is to get landowners, mainly private landowners, to become part of biodiversity conservation in the area (*ibid*). It is based on a low-level stewardship agreement between the landowner and the Baviaanskloof Megareserve Project, the idea being to move away from a formal agreement that is legally binding to a low level agreement drawn up by the Baviaanskloof Megareserve Project (*ibid*) (See Appendix for this agreement). Once members have signed up, they receive a signboard and also have the right to be associated with the Baviaanskloof Megareserve Project when marketing their products. According to the Land Liaison Officer for the Baviaanskloof Megareserve Project,

In the citrus industry, the Proud Partner Programme can be used as a marketing tool, by adding the logo of the Baviaanskloof it will become known that the product or land on which it was produced is managed by people that are conservation minded". (B1, pers comm., 11 September 2006).

Three of the farmers I spoke to were members, Proud Partners, of the Megareserve, which means that they have agreed to comply with and adhere to certain 'best practices'. These include;

- Sharing the vision and principles of the Megareserve,
- Open communication and constructive engagement with the BPMU,
- Adhering to legislation when making decisions regarding the development and management of activities on their properties, and

- Promoting the Megareserve as a catalyst for positive change for the environment and for people (PPP, 2006 See Appendix 1).

A member of the Baviaanskloof Megareserve Project said that, "one of the main objectives is to draw up a management plan for individual properties that allows landowners to continue farming as usual but to gradually make the switch to biodiversity, conservation and rehabilitation of the land" (B1, pers comm., 21 April 2006).

Membership to the PPP is subject to an annual review process both by the individual farmer and an independent reviewer. A self-evaluation questionnaire is used as a means to review the programme. Questions on the questionnaire include/involve how the Baviaanskloof logo has been used, how the PPP has added value to their operations, how being involved in the PPP has improved understanding of the Megareserve and how overall understanding of conservation has improved. Detail also needs to be provided of any tourism, conservation or community projects that have been undertaken as part of the PPP and finally suggestions that could improve communication and involvement of all stakeholders in the Megareserve (See Appendix 2).

4.9.2 The Biodiversity and Citrus Initiative

This initiative arose out of a concern that agricultural expansion, mainly of citrus in the area, was threatening some of the areas valuable and vulnerable habitats. The initiative therefore proposes, "expansion to take place in a sustainable manner that can compete on the overseas markets as well as using water resources optimally" (BCI draft initiative, November 2005). This initiative is being mirrored on the success of a similar initiative in the Western Cape, the Biodiversity and Wine initiative (BCI draft, 2005). Both the citrus industry and the conservation sector stand to benefit from such an initiative. The industry will gain a competitive marketing strategy from using the biodiversity and by being involved in the conservation of the area's natural heritage. The conservation sector will benefit from the conservation of the unique biodiversity and ecosystems in the Gamtoos River Valley.

This initiative has not been implemented yet but it aims to:

- 1) Prevent further loss of natural habitat in critical sites,

- 2) Promote changes in farming practices to enhance the suitability of citrus orchards as habitat for biodiversity, and reduce farming practices that have negative impacts on biodiversity,
- 3) Promote the Gamtoos River Valley as part of the Baviaanskloof Megareserve as a tourism destination, and
- 4) Promote activities that result in positive working relationships between formal agricultural enterprises and the Megareserve (BCI draft, November 2005).

The initiative also has six main implementation strategies, which are to

- Establish an enabling environment
- Identify biodiversity and citrus champions
- Promote conservation stewardship
- Develop a biodiversity and citrus route
- Integrate biodiversity into branding and
- Incorporate biodiversity guidelines in the Integrated Production of Citrus (IPC) guidelines.

4.9.3 Interactions with the Baviaanskloof Megareserve Project

The most recent interactions in the area have been between the farmers and the Baviaanskloof Megareserve Project, around issues of conservation and sustainable landuse management. There is a long conservation history in the area with the first nature reserve being proclaimed in the 1920's. In 2004 the Baviaanskloof was declared a World Heritage Site due to its significant ecology and biodiversity. As indicated above (4.9.2) there is an initiative (The Biodiversity and Citrus Initiative) due to be implemented in the area soon, which provides farmers with an incentive, a competitive marketing strategy, to conserve their land or use it in a sustainable manner. Meetings between the Baviaanskloof Megareserve Project and the relevant stakeholders in the valley have already taken place.

I asked a member of the Farmers Association about the proposed Biodiversity and Citrus Initiative with the Baviaanskloof Megareserve Project and how it had started and what it was about.

The guys from Baviaans visited us and asked the big packinghouse, citrus packinghouse if they could meet the farmers and quite a few farmers went to the meeting and said they were interested. So Patensie Citrus Company is into the

project and supports it and most of its members, shareholders support it and even the farmers that are packing privately. So the whole valley is included into this project (C1, pers comm., 18 September 2006).

This citrus initiative was not launched through the farmers association. It is through the citrus farmers, citrus farmers initiative. I was at the meeting as a representative of the farmers association but it was not actually through the association (*ibid*).

He said that there have been three or four meetings already but they are not regular at the moment and happen rather more on a needs basis. From the minutes I have collected, the introductory meeting took place on the 22nd of September 2005 (M1) (See Appendix 6). At this introductory meeting, the project manager of the Baviaanskloof Megareserve Project gave a presentation on how the Biodiversity and Wine Initiative was established and functioned in the Western Cape and how successful the initiative has been. "The idea to develop a citrus initiative for the Gamtoos should be grabbed with both hands as it will add value to the agricultural products in the valley". Guidelines for the initiative, based on the BWI were to be drafted and discussed at the next meeting. From the records of who attended this introductory meeting, 11 people were present, of which 9 were farmers in the valley.

The next meeting took place on the 15th of November 2005, where it was decided to form a working group for the initiative, which represents the BMRP, PCB and private packers in the valley (M2) (See Appendix 6). It was also mentioned in this meeting that this initiative was for all producers in the Gamtoos Valley. A meeting was then held on the 18th April 2006 for the working group that had been established (9 members from different organizations) (M3). Then another meeting on the 19th April to confirm the advertising of a consultant for the implementation of the project (M4) and a further meeting on the 3rd of July 2006 (M5). The initiative is currently at the position where they are advertising for a consultant to implement the initiative.

Communication between the Baviaanskloof Megareserve Project and the (citrus) farmers in the Gamtoos River Valley is rather *ad hoc*. "Meetings happen when needed, on a needs basis, there is no set time for these" (B1, pers comm., 11 September 2006). Communication from the Baviaanskloof Megareserve Project takes place through a Land

Liaison Officer, who makes contact with a few opinion leaders in the community. "Opinion leaders are people like the chairman of the local agricultural association, who are well known and respected within the community" (*ibid*). The information is then relayed to other members of the community through these opinion leaders, "we like to keep people informed, the channel is there, but it's not a good one, it's an informal channel" (*ibid*).

When farmers were asked during interviews about the BMRP and its associated projects (PPP and the BCI) most had heard about them but were unsure of the exact details. Most farmers did recognize that the biodiversity and citrus initiative was designed to give them a competitive marketing strategy/edge as they would be able to market their citrus using water from a World Heritage Site. One farmer referred to the initiative as, "The Green Orange".

A member of the Farmers Association noted that farmers seemed to be quiet about the emerging initiatives with the Baviaanskloof Megareserve Project but they were aware of what was happening.

A few farmers have joined and they know what it is about. We would like to put the Baviaans logo on our boxes. That's for a marketing strategy because the fruit is watered by water coming out of a wilderness area, a World Heritage Site and so we can say that the water should be pure (C1, pers comm., 18 September 2006).

4.10 SUMMARY

This chapter has dealt with the first phase (Phase 1) of data analysis and presented the raw data, from the interviews conducted, the documents reviewed as well as my own observations during the research process. Some recurring themes developed during this phase of analysis and these themes have formed the basis of the discussion around which Chapter 5 is written. Some of these trends include a strong family presence and history in the area, a strong commitment to the land and the family farm and the important roles of interactions, partnerships and private companies and consultants. This chapter also reveals farmers struggles with the changing global economy and the export of their citrus internationally, especially given the introduction of the export standards and the constant fluctuations in market price. It also reports on the emerging partnership and evolving interactions with the Baviaanskloof Megareserve Project.

Chapter 5: Engaging with the data

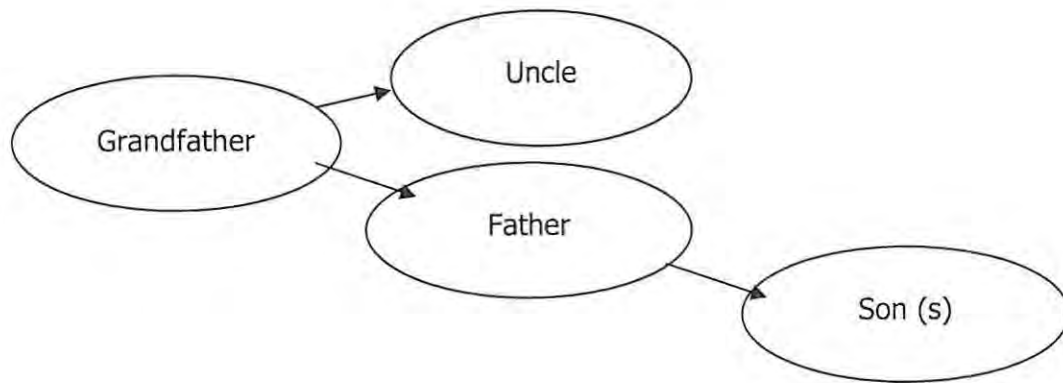
5.1 OVERVIEW

This chapter is written around some of the main themes that emerge from the data presented in Chapter 4. In chapter 4, the data was organized and presented under broad themes, which were based on the questions asked during the interviews. Analytical statements have been generated from the data in chapter 4. These analytical statements are written around a Community of Practice perspective, as this has been used as an analytical framework for explaining some of the relationships and learning (or learning processes) that take place within and between a community (Refer to Chapter 3.3). This chapter also discusses how learning takes place in a citrus farming Community of Practice

5.2 INTERGENERATIONAL LEARNING

Analytical statement One: Farmers learn in the family (through family ties) over time

Evidence from the interviews conducted with farmers points to a strong family history and affiliation in the area, that stretches back about a hundred years. One farmer noted, "farming isn't just something you come into, it is quite a family orientated practice, you are generally born into a farming family and grow up with the ideas of becoming a farmer to take over the family farm" (F1, pers comm., 21 June 2006). As indicated in Chapter 4.3, many of the farmers I spoke to had been born into farming and had inherited their farms from their fathers. Two of the farmers however, did not originally start out as farmers in the area, but their fathers were farmers. When they became ill, both moved back to the area and took up the family business. This indicates that the legacy and tradition of farming is quite strong in the families in this area and there is a desire to continue with the family business. There also appears to be a strong sense of attachment to the land and the place, as farmers continue to pass on the family farming tradition from generation to generation.



Most learning about citrus farming and agricultural practices was noted to have come from within a family (intergenerational learning), mainly fathers and grandfathers, as well as through the farmers own experience. "My knowledge came from my dad and from working with the land since we were children" (F5, pers comm., 17 October 2006). This is almost a form of local knowledge that is specific to the citrus farming community that has been handed down through the generations (See discussion on Legitimate Peripheral Participation, 2.4.1.1 & 5.3.1). The knowledge needed is within the community, it comes from within the community and has been generated within this community. Wenger (2000) notes that knowledge, as the property of a community, is not static and involves interactions, conversations, actions and interventions. Knowledge is not useful unless it is felt to be owned by people to whom it matters (*ibid*). People tend to develop knowledge through the participation in specific communities of people, with whom they interact on a regular basis, in this case the family unit.

5.3 LEARNING THROUGH INTERACTIONS

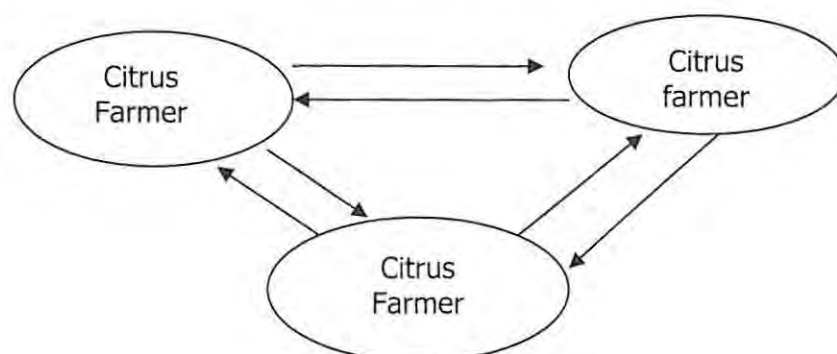
Analytical statement Two: Farmers learn through their interactions with other farmers

From the evidence collected during the interviews with the farmers and through my own observations at the farmers meeting for example, most people in the area seem to know each other well. Whilst sitting in the local coffee shop, Tolbos, people would come and go greeting each other and chatting. From what I could understand a lot of it was talk about the family and how children and grandchildren were as well as talk about the current citrus harvesting regime. From my observation at the farmers meeting I attended, farmers first greeted the chairman with a handshake and then greeted everyone else in the room by name. Many introduced themselves to me (and identified me as strange and

new in the area) before I had even been formally introduced and were interested to know what I was doing.

Meetings, such as those held by the Farmers Association, play an important role in the farming community as it is an opportunity for people, farmers, to come together and raise and discuss issues as a group of practitioners (citrus farmers). These meetings are also an opportunity for a whole host of informal interactions to take place such as the private conversations that take place between individuals. The more formal interactions of the meeting involve a minuted meeting with an agenda and issues that need to be discussed. During this period farmers are able to collectively discuss problems, share ideas and brainstorm possible solutions but also they are able to just listen to what other people are saying. For example in the meeting I attended, many of the farmers had an opportunity to report back on various issues and share information they had received during the month. This was then shared amongst the group present. A collective decision was made about how to tackle an issue they were having with some new legislation around dams on private property. These meetings are open for anyone to attend and are therefore not exclusive events and so the potential exists for any interested party to attend such meetings.

Meetings are not the only interactions farmers experience within this community. Many farmers also interact with a number of documents such as legislation and more recently the International Export Standards of EurepGAP and Natures Choice. Some farmers have found these export standards create a lot of paper work and are potentially unnecessary but it is something they have to do (See Chapter 4.8.3). During the interviews, I asked farmers how they dealt with problems and where they would seek help and advice with solutions. Many of the farmers said that they would first ask a colleague or a fellow farmer, "we in the Gamtoos Valley is like a big family, the one helps the other one and you will never be given a cold shoulder when you go to somebody to ask them for help" (F5, pers comm., 17 October 2006).



Many of the former definitions of education and learning have involved the ideas of a transmission of knowledge to other individuals, normally from a more experienced/expert individual. It could be argued, however, that in this case each farmer is an expert in their own right at some point in time and therefore through interacting with each other (farmer to farmer interactions) they are learning from experts or more knowledgeable individuals and in turn other farmers may be learning from them. Lave and Wenger (1991) however have challenged this neo classical view of structural functionalism education and suggested that learning was rooted in the social relationships people formed and through their interactions with other people and not through the transmission of an abstract body of knowledge.

It is evident that in this particular citrus farming community, farmers learn from each other and through their interactions and relationships with each other. The timing of these interactions is not that crucial (people do not have to work with each other and interact on a daily basis), (Wenger, 2000), what is important is that the interactions are centered around issues of common interests, shared insights, problem solving and collectively seeking solutions. This is a core component of a Community of Practice.

Theories of social practice, "address the production of specific ways of engaging with the world. It is concerned with everyday activities and real-life settings, but with an emphasis on the social systems of shared resources on which groups organize and coordinate their mutual relationships" (Wenger, 1998: 13). A Community of Practice is formed by people who engage in a process of collective or collaborative learning. According to Wenger (1998) Communities of Practice are everywhere and we are members of many of them, at work, at school or in recreational settings. He notes examples as, a tribe learning to survive, a band of artists, a group of engineers working on a similar problem or a network of surgeons exploring techniques. In other words, a community of practice can be defined as groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly (See Chapter 2.4.2). Communities of Practice are therefore organized around what matters to the members of that community. Wenger (1998) cautions however, about calling every social configuration a COP as it would render the concept meaningless but on the other hand, a definition that is too restrictive would also make it useless.

It is useful here to note how the shared history and concern of the citrus farmers held the group together around the engagement of the risks and concerns, such as the deregulation of the export market and more recently the emerging partnership with the Baviaanskloof Megareserve Project. This shared concern was thus key to the learning interactions and knowledge generation in the community. I have considered the citrus farmers in Patensie a Community of Practice (COP) because they have a history of engagement. They have had a history of working together to collectively respond to changes and uncertainties posed to them and the citrus industry as a whole (See 5.5 & 5.8). They have also been able to work with one another in their practice (of producing and exporting citrus) and share their knowledge amongst themselves and other people. As mentioned in Chapter 2 (2.4.2), a COP consists of three crucial characteristics, *the domain*, *the community* and *the practice*. It is these three elements that constitute a COP and through the development of these three elements in parallel, that a COP is formed.

If we apply these three elements to the citrus farmers one can start to see that the shared domain or interest of this community is the long term production and export of citrus products. This is an identity that brings the members of the community together and encourages them to interact with each other. Through formal and informal meetings, conversations and interactions, farmers in the area have built relationships with other farmers, which over time have come to be constituted as a community. There is an evident history of working together that has resulted in the formation of collaborative relationships and partnerships. Through their interactions and relationships, the citrus farmers have come to develop into a knowledge community, whereby the knowledge of farming lies with them as a resource (shared repertoire), which they are able to communicate and share with other people.

5.4 LEARNING IN THE PATENSIE COMMUNITY OF PRACTICE

If for example, a new farmer were to come into the area, they would be considered on the periphery of the COP, but through their continual interaction and participation with other members of that COP, they would become more competent in their activity and move towards a core participant in a COP. From a young age, children are involved in the farming practice with many noting how they helped their fathers when they were children. By being involved with their fathers in their activities, they became more

proficient in those activities. Learning in a COP, according to Lave and Wenger (1991) takes place through ³participation in the social world but more specifically through a process known as 'Legitimate Peripheral Participation' (LPP) (See Chapter 2.4.1.1).

The idea of LPP suggests that initially people have to join communities and learn at the periphery of them. As they become more competent in skills and activities, they begin to move towards the center of a particular community or as their interest becomes awakened at the particular concern of the community (Wenger, McDermott & Snyder, 2002). In this sense learning is not seen as the acquisition of knowledge but as a process of social participation. LPP is a way of describing the relationship between newcomers and old-timers and the process by which new comers become part of a Community of Practice (*ibid*). Many of the ⁴older farmers I spoke to would be considered core members of the COP. The core of this community of practice consists of 4 people, whom regularly attend meetings, organise community initiatives and are well known and respected within the community. There are then a group of about 12 to 15 farmers that are active within the community but are not full participants or drivers within the community. The remainder of the community would be considered on the periphery according to Wenger, McDermott & Snyder (2002). It should be recognized that LPP is not a simple participation structure nor is it an educational or teaching tool or technique, but rather an analytical viewpoint, a way of understanding some aspects of learning and how it takes place (*ibid*). Learning takes place at all levels of participation within the community, so even members on the periphery could be learning through a private conversation or observation of another member.

A final aspect I came to consider when talking about farmers learning from each other and through their established relationships and interactions, is that I have been dealing with adult learners. Literature on adult learning suggests that informal situations of learning might be better suited to adults than more formal teaching and training sessions for example (Wals & Heymann, 2004). These include processes such as informal conversations; loose interactions and meetings, which take place in a non-threatening manner. It is interesting to note however that in this research, a lot of the conservation

³ Participation does not just refer to local events or engagements in certain activities with certain people, it is a more encompassing process of being active participants in the practices of social communities (Wenger, 1998).

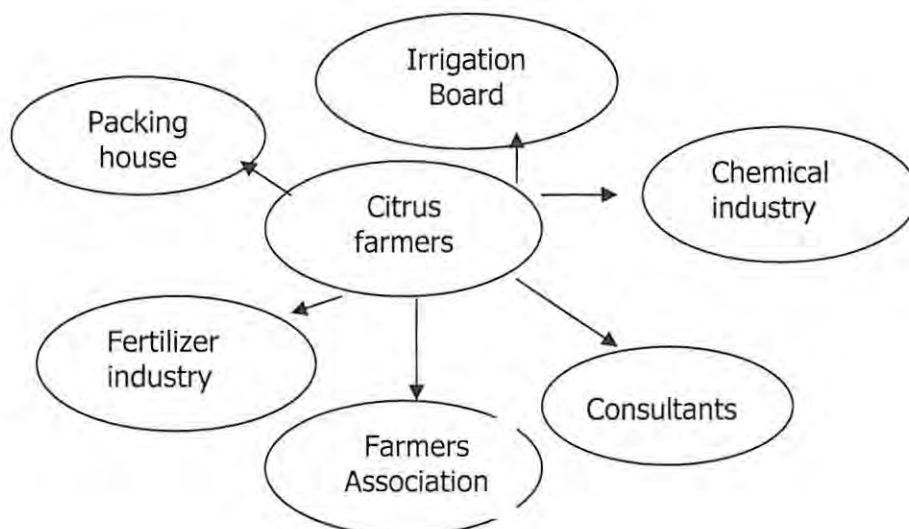
⁴ Contemporary farmers in their mid 40's and 50's.

information the farmers receive is from guest speakers at meetings and from external consultants or extension officers from private companies and these could be considered more formal traditional approaches to learning and education. Whilst there is evidence to suggest that farmers learn from each other and through their relationships, interactions and experiences with one another, they also learn from their wider established networks.

Analytical Statement Three: Farmers learn through their interactions with other organizations and institutions

Interactions in the area have evolved over time and been through various cycles, with some being more recent than others and some being more often than others. For example the interactions with the farmers association have evolved over about a hundred years, whilst the interactions with private consultants have emerged in the last five years. These changes have taken place in response to wider changes in the area and in the citrus industry as a whole. Many of the farmers noted that the farmers association used to be their main interaction in the area, but over the last few years, it has become private consultants and the consultants supplied by the fertilizer and chemical industries.

The main citrus packing house (Patensie Citrus) also forms a major interaction in the area as each farmer has a weekly delivery schedule with the pack house.



The inner circle of the diagrammatic representation (above) depicts the citrus farmers' community of practice and includes all their personal and interpersonal interactions and relationships. The surrounding 'bubbles' represent the other institutions or organizations that over time, the citrus farmers have established relationships and partnerships with.

The interactions with these organizations have developed and varied over time. Wenger (2000) notes it is not the timing that is important but the continual interaction around a shared interest.

Field (2003) notes that networks are an important and valuable asset and a vital source of information, not only to individuals but to businesses as well. For example the fertilizer and pesticide companies in the Gamtoos supply consultants that visit the farmers and share their information with them. One farmer noted, "they are looking at what the farmers are doing and if it is a success, they come and tell you, so in that way, they increase the information from one farmer to another" (F3, pers comm., 25 September 2006) (See Chapter 4.7). Another one says, "a lot of information also comes from the extension officer supplied by the industries, they give you all the information you need" (F5, pers comm., 17 October 2006).

Lave and Wenger (1991) have suggested that learning happens through participation in the social world but also through the interactions and relationships people form over time. Learning is therefore created in the partnerships and relationships that people form with other people. In this particular case, these people are members of other organizations and institutions. Field (2003) suggests that people make connections with people whom they share an interest with, and that by making and maintaining these connections over time, people are able to work together to achieve things. Therefore the networks and partnerships the citrus farmers have formed with these other organizations have enabled them to cooperate with one another to achieve mutual goals. In terms of LPP, these other organizations would form the 'outsider'. These are people, who are not direct members of the citrus farming Community of Practice such as the Irrigation Board, but at times, their domains of interest (for example water conservation) become the same and they come to interact for a period of time (Wenger, McDermott & Snyder, 2002).

From working with these ideas, I came to note how the wider interactions and partnerships created in this case, constitute a networked learning community. A networked learning community according to Roux (2005) involves individuals coming together in groups from different environments (or institutions) to engage in purposeful and sustained developmental activity. Each of the groups involved in this network, have their own individual agendas but when they come together, to participate in a single

activity, this is where the potential for learning is created. In other words, on their own, each of the members are core participants in their own practice, but when they come together to participate in a common activity, they become peripheral participants and therefore need to work together and cooperate with one another to achieve mutual objectives.

5.5 LEARNING THROUGH EXPERTS AND CONSULTANTS

Lave and Wenger (1991) note that one of the key ideas in a Community of Practice is that knowledge is generated within the community, often by the community, which is evident in this research, through family ties (Refer to 5.2) This research has however also highlighted that within this case, when farmers have encountered problems, such as changes in marketing and export standards and regulations and needing to maintain pace with the changing economy, they have brought in external consultants and experts to advise them and provide them with this knowledge and possible solutions to such problems.

Most of the farmers I spoke to mentioned how important the private companies and industries were such as the fertilizer and chemical companies and the extension officers that they had (Refer to Chapter 4.7). They supply and relay important information to the farmers about what other farmers in the area are doing, together with information about new technologies and products that might be able to help farmers. This adds another component to the Patensie Community of Practice, whilst they do have the knowledge and skills to deal with such complexities and problems, they rather choose to invite or consult with a specialist. This in itself becomes a process of learning through Legitimate Peripheral Participation as farmers are engaging in the activities of other specialists.

5.6 LEARNING THROUGH CHANGE AND UNCERTAINTY

Analytical Statement Four: Change and uncertainty have played a critical role in the development of a Community of Practice

If one refers to the timeline presented at the beginning of Chapter 4 (Figure 3), which shows the major changes in the Gamtoos River Valley in the last one hundred years, one can see that there have been a number of events (both positive and negative) that have impacted on, affected and influenced the farmers' lives as well as their farming practices.

For example the commercial export of citrus began in the valley in 1920 through the South African Cooperative Citrus Exchange but in 1936, a private company called Outspan were granted the rights to become the single channel marketing system for citrus in South Africa. This meant that all citrus exported internationally from the country had to go through this single channel.

Another example of a major change in the area has been with the changes in the supply of water, either through irrigation canals or the building of the Kouga Dam and a subsequent irrigation canal that runs directly to farmers property. The increase in the availability of water has meant that agriculture and especially citrus has been able to expand and more citrus has been put under cultivation. Farmers have to pay for the water they use from the dam through a meter system. As a result of this many farmers introduced drip irrigation to replace overhead spray irrigation and sprinkler irrigation.

Some of the most significant changes to take place in the area and in the citrus industry have been post 1994. New legislation was introduced, such as the new Water Act and labour laws, the single channel marketing system was removed and multiple channel marketing was allowed, cooperative pack-houses became private companies, smaller private pack-houses started to emerge and finally international exporting standards were introduced. The most significant of these changes, for the farmers, have been the deregulation of the market and the introduction of international exporting standards as well as some of the new labour laws.

Often when people are faced with changes, conflicts and uncertainties, they tend to come together in an attempt to respond to and adapt to such things (Wals & Heymann, 2004). There is evidence to suggest that farmers started meeting around issues that concerned them over a hundred years ago, an example being the formation of the farmers association in 1905. For example since this time, the farmers meetings have played a central role in being the provider and communicator of information and also a place where people can come together to collectively discuss problems and formulate solutions. It is from these early meetings and interactions that the citrus farming Community of Practice emerged. In other words the Community of Practice resulted from the farmers' responses to changes and uncertainties in the area and the industry. There appears to be a parallel between what was happening in the citrus industry as a whole, the changes it was undergoing and the development and establishment of the citrus

farming community of practice. As external changes were taking place such as deregulation of the markets, so this community (of practice) were responding to and adapting to these changing situations. It could also be argued however that deregulation of the markets and the introduction of external consultants for example, has fragmented the Community of Practice structure.

5.7 LEARNING INTO PRACTICE

Analytical Statement Five: There have been changes in farming practices in the area that have reduced impact on the natural environment

Historically much of the valley was used for goat and cattle farming but the availability and access to water, for irrigations purposes was one of the driving forces for changes in and expansion of landuse practice and the shift to citrus farming. There was also an economic incentive to switch to citrus farming as the returns were greater than that for livestock. Many farmers made the switch to citrus farming in about the 1920's (P3, pers comm., 21 June 2006) and today there is very little livestock farming in the area.

In 1912, an irrigation canal was built that allowed farmers to take water directly from this to their fields and orchards. As a result, farmers began to expand their agricultural production. Large areas of citrus were put under irrigation, mainly overhead spray irrigation and sprinkler irrigation. Whilst this allowed farmers to expand and irrigate their citrus, it became expensive to irrigate such large areas of land and a lot of water was lost through evaporation in the process. With the implementation of the new Water Act in 1998 and other government legislation, such as labour laws, and the loss of state subsidies for farmers, many have had to change their irrigation schemes. Overhead spray and sprinkler irrigation have been replaced with drip irrigation, which feeds water directly to the roots of the citrus trees minimizing water lost to the environment and also minimizing salination of the soil. All of the farmers I spoke to now used drip irrigation on most of their orchards (See Chapter 4.6).

Fertilizer practices are another example of practices that have changed in the valley over the past few years. Many farmers used to spray fertilizers directly onto the trees with large sprinkler systems on tractors (F1, pers comm., 21 June 2006). This caused large amounts of fertilizer to be lost into the environment, contaminating other crops and

organisms. The most recent approach has been to use 'fertigation'. This is a process whereby fertilizer and water are mixed together and fed directly to the root system of the tree, through the irrigation drip line (F1, pers comm., 21 June 2006). This eliminates the aerial loss of fertilizer into the surrounding environment. It is also a safer method of fertilizing for the workers, who previously had to handle all the chemicals.

Some of the changes mentioned (irrigation, fertigation) have been changes that have taken place indirectly often in response to something else happening and not as a forced change imposed on farmers. There has been a natural progression from one method to another that has largely been initiated by the farmers themselves. However, with the introduction of new legislation and international export standards, farmers are now required to undertake a range of farming practices so as to reduce impact on the natural environment (See Chapter 4.6). Prior to these guidelines many of the farmers just did what they had to do in terms of conservation and environmental practices, to sustain their business and export their citrus. In other words, many just undertook what they called 'normal good practices', (F4, pers comm., 25 September 2006) (See 4.6).

The introduction of export standards now dictate many of the practices farmers have to undertake in order to be able to export their citrus on an international market, mainly to Europe (See Appendix 5). Wals and Heymann (2004) describe a situation in relation to the ISO standards introduced for businesses.

After determination of such norms and standards a whole range of instruments to implement or enforce them is often used: laws, legislation, regulation, rewards and punishment schemes, (mandatory) training and instruction. These instruments tend to have in common that they leave people little choice but to subscribe to a particular outlook or behaviour whether they believe it or not. Conflict might occur in the setting of the standards and during the selection of the instruments, but once agreed upon and transplanted into the public arena, ambivalence is avoided as much as possible to show confidence in the schemes developed. It should be noted that when rules are broken, standards are not met, met superficially, or critiqued by certain groups, conflict does emerge amongst those affected by the rules, regulations and standards. (Wals & Heymann, 2004: 7).

Many of the farmers in the valley and that I spoke to were not all together happy about these new standards but have to comply with them in order to export their citrus (See 4.8.2.1).

I am not negative about all the standards and complying with them, I realize one has to do this. A lot of them, are in general, good in some aspects. It's good to have standards especially for the chemicals, but we are not too convinced about some of the other issues (F4, pers comm., 25 September 2006).

One of the things that all farmers mentioned that was good about these export standards, was that they had forced them to clean up their act with regards to chemical and fertilizer handling and management.

There have always been conservation-farming practices that farmers have employed in the area, what they refer to as 'normal good practices'. One farmer notes "we all realize that it is good to have sustainable agriculture and I think the farmers here know that more than anyone else, otherwise they won't have a business in ten years time" (pers comm., 25 September 2006). The conservation farming practices that have been employed by many farmers may not be as ecologically sound as conservationists for example would like or prescribe, but they are good enough to maintain the farmers land and business and export their citrus. Farmers don't want to lose their livelihood and source of income. It has already been noted (in analytical statement One, 5.2) that farmers have quite a strong and deep connection to the land, which has been handed down through generations and therefore they do not want to compromise this by employing 'bad' or 'unsustainable' farming methods/practices that will damage the future sustainability of their farming practice.

5.8 TENSIONS BECOME DRIVING FORCES FOR CHANGE AND LEARNING TO TAKE PLACE

Some conflicts and tensions have arisen in the area, especially post 1994 with a new government, new legislation, the deregulation of the market and the introduction of the export standards. There is also a potential conflict in the emerging relationship between the BMRP and the citrus farmers in the area. The conservation agents of the BMRP are interested in looking after and protecting the biodiversity of the area, whilst the farmers are more interested in the economics of producing and exporting their citrus. This is not to say that the environment does not matter to them, as it has already been shown that they have quite a strong connection with the land. However there appears to be a potential conflict between the economics and the conservation ethos, although most farmers do seem positive about the Megareserve Project. It is interesting to note

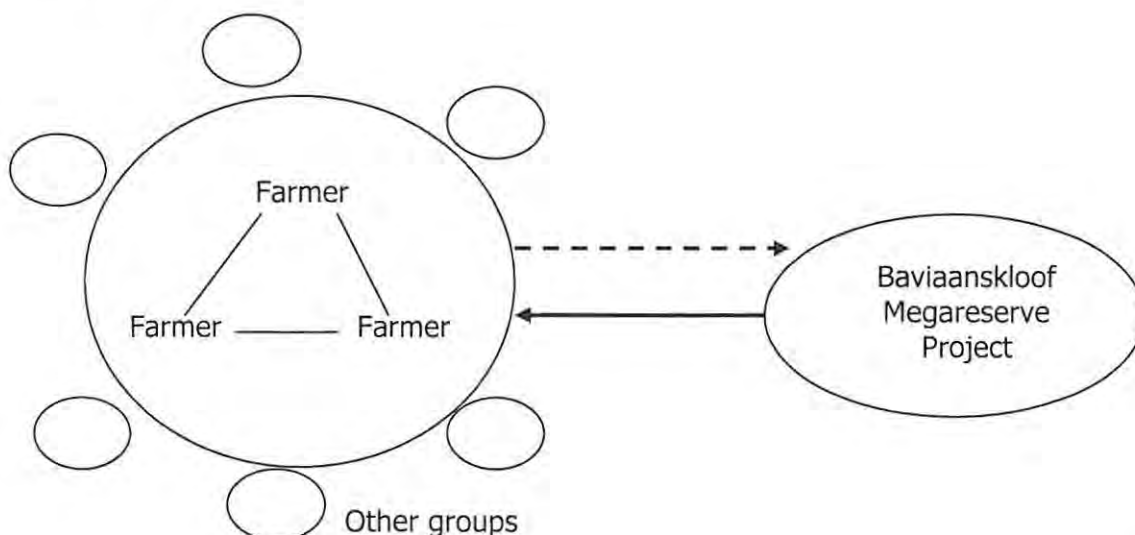
however that the Biodiversity and Wine Initiative (See Chapter 2.9.3.1), on which this initiative is being based does not appear to have this conflict.

Wals and Heymann (2004) note that not all situations of change and uncertainty result in tensions and conflicts. They note that in some instances for example conflict can in fact be a driving force for solutions to issues and encourage learning, "conflict can, when carefully introduced and guided, play a fundamental role in meaningful learning" (*ibid*: 7). In this particular context, the Baviaanskloof Megareserve are the conservation agents, whose aim is to look after the biodiversity in the greater Baviaanskloof area, including Patensie. They intend to do this through two main programmes, the Proud Partner Programme and the Biodiversity and Citrus Initiative (Chapter 2.11.1 & 2.11.2 and Chapter 4.9.1 & 4.9.2). And then there are the farmers who want to produce and export their citrus, whilst adhering to relevant legislation and exporting standards.

5.9 LEARNING IN PARTNERSHIP

Analytical Statement Six: There is an emerging partnership (Community of Practice) with the Baviaanskloof Megareserve Project

A recent partnership/relationship between the Patensie citrus farmers and a local conservation agent, the Baviaanskloof Megareserve Project (BMRP) has begun to emerge and develop. Farmers note that interactions with the BMRP started about three years ago when they made a presentation at the main pack house and asked to meet the farmers (F1, C1, pers comm., 18 September 2006). There have been four subsequent meetings between the BMRP and the citrus farmers since this time (Refer to M1-M5 in Appendix 6 and Chapter 4.9.3).



The partnership that has formed between the two parties is based largely on providing a mutual benefit to both parties, the citrus farmers receive an economic benefit for conservation friendly farming practices and the Baviaanskloof Megareserve Project benefit by safe guarding biodiversity in valuable habitats. The partnership is therefore based on an opportunity and not a crisis or uncertainty. Often many partnerships form because people or a group of people are concerned about something or something has changed and then they get together and meet around this shared concern as happens with the formation of a Community of Practice. This is how the citrus farmers came to be constituted as a COP and some of their wider interactions were formed.

Through the use of two conservation orientated projects, the BMRP provides an economic incentive for landowners, mainly farmers, to manage their property/orchards in a sustainable manner. The Proud Partner Programme (PPP), which was launched in September 2005, "can be used as a marketing tool, by adding the logo of the Baviaanskloof it will become known that the product or land on which it was produced is managed by people that are conservation minded" (B1, pers comm., 11 September 2006). The way in which the PPP is designed (self evaluation questionnaire and low level agreement), allows the farmers to make their own decisions and take responsibility for their farming actions. A shift has therefore taken place from experts supplying farmers with 'the right information', to farmers being involved in a process of self-mediation.

The PPP is a low-level stewardship agreement between the BMRP and relevant landowners (it is not a programme specifically for the citrus industry). Stewardship is based on a moral and ethical imperative towards conserving the land (Foster, 2005). It has already been shown that the citrus farmers in this area have a sense of connection with the land and have taken care of it through generations (See 4.2 & 4.3). As Foster (2005: 28) notes

The ethical imperative of stewardship must underlie all environmental policies. It is mankind's duty to look after our world prudently and conscientiously, we do not hold a freehold on our world, but only a full repairing lease. We have a moral duty to look after our planet and hand it on in good condition to future generations.

It is interesting to note the manner in which the Baviaanskloof Megareserve Project are approaching and have approached this new initiative with the citrus farmers. They have

not gone into the area and just announced that they are going to establish this initiative and 'you are either with us or you aren't', they have approached it through more participatory methods that have included farmers and other relevant stakeholders, landowners in the discussions and decision-making processes. Babikwa in his work with farmers notes the importance of including the people directly involved in the research (Babikwa, 2004).

Chapter 6: Summary and Reflections

6.1 CHAPTER OVERVIEW

This chapter provides a summary of the main findings of the research in relation to my overall interest in the research, the context of the research as well as the research question. This leads into a discussion of the broader implications of the study and the findings, in relation to education and environmental education. I also reflect critically on the study and discuss some of the limitations of the study before finally presenting some recommendations for future areas of research.

6.2 SUMMARY OF RESEARCH

This research was guided by the central question of how does learning take place in a citrus farming community of practice to reduce impact on the natural environment? I worked with a small group of citrus farmers in the Patensie area of the Gamtoos River Valley. Data was generated mainly through interviews and document analysis but also through observations and keeping a research journal. The data was analyzed in two phases using a Community of Practice analytical framework in phase 2 of the analysis to help explain some of the learning processes.

6.3 KEY FINDINGS

Chapter 5 was written around six analytical statements. These were found to be the main trends that emerged from the first phase of data analysis presented in Chapter 4. I am now able to apply these analytical statements directly to the citrus farmers.

1) The Patensie citrus farmers learn in the family (through family ties) over time

There is a definite history of farming in the area that has been passed down through the generations, mainly from father to son. Many of the farmers have learnt all they know from their fathers and other members of family and from working with the land since they were children. Farmers also demonstrate a strong connection to the land and a desire to look after the land and maintain the family farm.

2) The Patensie citrus farmers learn through their interactions with other citrus farmers

The citrus farming community appears to be a close knit community with most people knowing each other. As one farmer noted, "we in the Gamtoos is like a big family". Often when farmers are faced with problems and uncertainties, they get together, informally or formally in meetings and collectively discuss these issues. The sharing of knowledge, experiences and ideas are key aspects within this community of practice.

3) *Citrus farmers in Patensie learn through their interactions with other organizations and institutions in and around the area*

Citrus farmers have established a number of wider networks and partnerships with other organizations in and around the area, such as fertilizer companies, the main packinghouse and private consultants. Private consultants are brought into the area and play an important role in providing the farmers with information when they need it. When groups of people come together from different organizations to work towards a mutual goal, this is known as a networked learning community. Learning takes place in a social setting through the relationships that the citrus farmers have formed and through their social interactions with other people.

4) *Change and uncertainty have played a critical role in the development of the citrus farming Community of Practice*

Often when citrus farmers have been faced with challenges and issues such as technological advances, changes in marketing strategies and implementation of new norms and standards, they have either come together as a community or consulted with external consultants or extension officers from private companies. It is therefore the process of change and the threat of change and development that has brought the farmers together to engage in collective, collaborative and purposeful discussions.

5) *There have been changes in citrus farming practices in the area that have reduced impact on the natural environment*

There have been events in history, such as the expanse of irrigation and more recently the introduction of international exporting standards, that have impacted on the farming practices in the area. It has been economic incentives, such as higher returns for agriculture than livestock for example, that appear to have had the most profound impact on the landuse in the area. Many farmers employ conservation farming practices and general good practices just as part of their daily farming practice as they realize the importance for the future sustainability of their practice.

The Baviaanskloof Megareserve Project are using an economic incentive in the form of a competitive marketing strategy as a means to engage the farmers in more sustainable landuse practice that will safeguard the valuable biodiversity of the area.

This emerging partnership is around conservation and sustainable landuse, between the BMRP and the citrus farmers in the Gamtoos River Valley. This partnership is based on an opportunity for both the citrus farmers and the conservation agents. Two main incentives are being offered to the farmers, a low level stewardship agreement in the form of the Proud Partner Programme, which is a more ethically based incentive and another, the Biodiversity and Citrus Initiative which offers citrus farmers a competitive marketing strategy (economic) for conserving their land.

In order for this partnership to be maintained into the future, it has been important to understand how the Patensie citrus farmers interact with one another and other people and organizations and what learning has taken place as a result. This allows me to begin to make some recommendations for how the emerging partnership and possible formation of a new or extended Community of Practice may take place and be maintained over time. I am not making broad generalizations and suggesting that the recommendations be true in any given situation, I do recognize the context and the situatedness of this specific case and refer only to the citrus farmers.

As the BCI develops and becomes more prominent within the area (it is currently still in implementation phase), tensions and conflicts are bound to arise as people from different contexts begin to merge and share ideas. For example tensions and conflicts might arise as stakeholders discuss ways to balance conservation of the land with the economics of producing high quality citrus for export. However as Wals and Heymann (2004) have noted, conflicts when mediated correctly can actually be a potentially important source of learning and give rise to learning. Therefore not all tensions and conflicts should be seen as negative and avoided, sometimes they should be encouraged, or their potential for new knowledge creation and learning should be recognized.

As mentioned earlier (and See Chapter 2.11.1 & 4.9.1), the Proud Partner Programme, is a low level stewardship agreement between the citrus farmers and the Baviaanskloof Megareserve Project which is based on the ethical and moral imperatives of conserving the land and natural environment. Stewardship is seen as a non-threatening way to get

farmers to engage with the ideas of conservation and sustainable landuse, often through reflexive practices. For example every year, farmers undertake a self-evaluation questionnaire (See Appendix 2) to reapply for membership into the programme. Therefore stewardship can be an educative process as it allows the space for self-mediation and reflection on the part of the citrus farmers.

In order for this partnership to be maintained and furthered over time, it is important to understand how a particular group of people, such as the citrus farmers arrange themselves around what is important to them, a shared identity and practice. In time, as the two parties interact and become more engaged in each others practices and reach a new common goal or shared practice then a new community of practice may or the existing Community of Practice may extend to incorporate the Baviaanskloof Megareserve Project. The learning that will take place in this Community of Practice could be explained through the use of Lave and Wengers' ideas of Legitimate Peripheral Participation (LPP). Therefore both parties should be encouraged to participate in the others practices so that a shared understanding and ultimately a shared practice can be reached.

6.4 BROADER IMPLICATIONS FOR ENVIRONMENTAL EDUCATION

Wenger (1998: 263) notes that education concerns the "opening up of identities and exploring new ways of being that lie beyond our current state". He contrasts this notion of education with that of training which he describes as a targeted trajectory towards a competence in a specific practice.

Once education is understood in terms of identity, it is no longer a good idea to load education with the idea of being related to children and schools and being the beginning of life. Identity formation is a lifelong process whose phases and rhythms change as the world changes. We need to think of education, not as an initial period of socialization into a culture but more fundamentally in terms of rhythms by which communities and individuals continually renew themselves. Education thus becomes a mutual development between communities and individuals (*ibid*).

There has in the past been more attention given in research to formal learning contexts such as schools with less attention, until recently, being given to the role and importance of informal learning or learning in everyday contexts and situations. Snyder and Wenger (2004) note that informal learning depends on relationships with people you trust and who are willing to help you. "Informal learning activities and personal relationships amongst colleagues are the hallmarks of communities of practice" (*ibid*: page unknown).

They therefore suggest that there needs to be an increased focus on informal structures such as Communities of Practice, whose main purpose is the stewarding of learning and knowledge.

The field of environmental education is evolving and there has recently been a shift taking place from the traditional notion of education to a more encompassing participatory notion of learning. In agricultural work done by Babikwa (2004) the notion of working with people and supporting people in their work context and not removing them from their context emerged. This research has shown how farmers deal with problems and issues in context and invite external consultants into their context, instead of removing themselves from that context. This is also an emerging feature of cooperative extension whereby extension officers are seen more as facilitators than dictators and prescribers of knowledge and truth (Babikwa, 2004).

This research has highlighted the ideas of reflexive and situated learning. Situated learning has been useful to try and explain the ways in which a small group of citrus farmers interact and learn in a specific context. By using the ideas of Community of Practice I was partially able to explain the learning processes that were occurring within a group of people, through their social relationships. Participation, through a process of Legitimate Peripheral Participation has been used as a way to describe more specifically the ways in which learning happens or potentially happens, as a process of moving from being a peripheral participant to a core member within a community and how the boundaries of the community are fluid allowing easy movement of members from various levels of participation.

In terms of Legitimate Peripheral Participation, Lave and Wenger (1991) caution that is itself not an educational form or a teaching technique but rather an analytical viewpoint, a way of understanding. It is hoped that Legitimate Peripheral Participation may inform educational endeavours by shedding light on the learning processes and by drawing attention to key aspects of learning that may previously have been overlooked. Legitimate Peripheral Participation is also a useful tool to examine and explore the relationships between old timers and new comers into a community.

6.5 CRITICAL REFLECTIONS AND LIMITATIONS

One of the major limitations of this study was the fact that the study area was three hours away from Grahamstown in the Baviaanskloof. This meant that interviews had to be arranged in sets, which made finding a suitable date for as many interviews to happen at once, a challenge. On more than one occasion I arrived for interviews and the farmers were not available, and on one occasion the Department of Labour showed up unexpectedly in the Valley and all interviews on that day had to be postponed.

Due to the nature and the timeframe of the study (half thesis and 1 year), I decided to work with a small core group of citrus farmers (six) and a few other key informants (five). This allowed me to build some working relationships with some of the participants. I was torn between the ideas of working with a small group of people in more detail and conducting a broad scale investigation with a larger number of participants. I was careful to consider the nature of the research and did not want to be caught in a trap of data overload, or too much data and therefore decided to work with a small, core group of participants. In order to deepen the depth and quality of some of the information (data), it might, however, have been useful to work with a few more farmers. This would have enabled me to gain more insight into learning processes.

My original design for the study was to first undertake a broad level survey of a large number of farmers, to get a broader contextual understanding of the area. There was however a limited response to the survey and it therefore had to be replaced with detailed (in depth) interviews with the farmers. This meant the questions that were asked had to be quite broad and the interviews ended up extending to about half an hour.

Another minor limitation, for me was language. All the farmers' first language was Afrikaans whilst mine is English, but they were fluent in English and therefore interviews were conducted in English. At times, however, many of them were not able to explain what they wanted in English and therefore some of the meanings may have been lost as they looked for another way to try and explain the concept/idea to me.

Going into this study, I was also fairly unfamiliar with citrus farming, how it was grown and produced and the techniques and fertilizers that needed to be used and the processes of conservation farming practices and therefore time was often spent during

the interviews for some of these things to be explained to me. All of the farmers, were very accommodating to me and invited and welcomed me into their spaces and homes. Many took me on a visit of their farm and made the effort to show me around and explain how and why they were doing things. I found this really helpful as it allowed me to actually see what they had mentioned in their interview. For example one farmer mentioned that they used fertigation as a conservation farming practice and it was only once I had been on the visit of the farm and they had explained exactly how it worked and what it was used for, that I fully understood. This research has therefore helped to better understand the living context of the citrus farmers, the problems, tensions and changes they face and some of the responses to these.

6.6 RECOMMENDATIONS

- Not all conflicts are negative, some, when directed correctly can result in meaningful learning taking place (Wals & Heymann, 2004). Potential conflicts of interest between groups of people may be resolved through allowing the conflict to play out and a collaborative solution be found. Some conflicts should therefore be encouraged (and mediated) as a means to promote learning in a collective way.
- Change and uncertainty can be the driving forces for learning to happen (Wals & Heymann, 2004). Like conflicts and tensions, some changes may in fact have a positive influence on learning and could therefore be left to play out naturally. However this would depend on the situation and the context.
- The ideas of Community of Practice and Legitimate Peripheral Participation are effective ways to describe and explain some of the sociological concepts of learning and learning processes that take place within a community or between a group of people (Lave & Wenger, 1991; Wenger, 1998).
- Interactions between people are very important and are a site of learning. An informal conversation might be more effective than a lecture of the same nature. This is because people like to connect with people they know and trust and are therefore more likely to learn from such a situation (Field, 2003). Therefore greater attention needs to be paid to informal learning contexts and the finer detailed interactions that take place within a community.

6.7 AREAS FOR FUTURE RESEARCH

The ideas of Community of Practice have been very useful in this study to help me understand and explain the learning and learning processes that have taken place within and between a small group of citrus farmers. These ideas have also allowed me to make recommendations for the formation of a new or extended Community of Practice, through an emerging partnership between citrus farmers and a conservation agent. One must however recognize and be careful not to call every single group of people a Community of Practice, as this would render the term meaningless.

This particular research could be taken further by following the emerging partnership, tracking its development (s) and changes over time, explaining how relationships form and are maintained over time and how learning takes place. Also a more in depth study of learning interactions to consider both the cognitive and the sociological processes could be conducted. This is because the ideas of Community of Practice mainly focus on the sociological dynamics of learning in a social context in which a community has a shared interest or practice.

6.8 CONCLUSION

This case study has explored some of the sociological learning processes and interactions that have taken place in a small group of citrus farmers in the Patensie region of the Gamtoos River Valley, Eastern Cape. It has drawn quite strongly on the ideas of Community of Practice as proposed by Lave and Wenger (1991) as a means to try and explain some of these learning processes. It highlighted that in this case, citrus farmers learn in a number of sociological ways, for example through intergenerational learning (in the family), learning from each other in a Community of Practice, learning from private consultants and extensions officers as well as from other organizations and institutions. It has discussed how learning in informal ways and through informal interactions plays an important role in knowledge creating and meaning making for the farmers. The research also considered how farmers' learning had influenced landuse practice in the area. This brought to the fore an emerging partnership with a conservation agent based on providing economic incentives to farmers to engage in sustainable landuse practices.

It is hoped that this research may inform educational endeavours by shedding light on the social learning processes and by drawing attention to key aspects of learning that may previously have been overlooked.

References

Andersson, S.B. and Andersson, I. (2005). Authentic Learning in a Sociocultural Framework: A case study on non-formal learning. *Scandinavian Journal of Educational Research*. 49: 419-436.

Babikwa, D. J. (2004). Tensions, Contradictions and Inconsistencies in Community-Based Environmental Education Programmes: The role of defective educational theories. *South African Journal of Environmental Education*, 21: 58-74.

Bandura, A. (1977). *Social Learning Theory*. New Jersey: Prentice Hall.

Bassey, M. (1999). *Case Study Research In Educational Settings*. Buckingham: Open University Press.

Baviaanskloof Homepage. (2006). <http://www.baviaans.co.za>

Baviaanskloof Megareserve. (2005). Baviaanskloof Megareserve Proud Partner Programme- Agreement to become a member of the Megareserve. Letter from the project manager of the Baviaanskloof Megareserve Project.

Belzer, A. (2004). "It's not like normal school": The role of prior learning contexts in adult learning. *Adult Education Quarterly*. 55: 41-59.

Benzie, D., Mavers, D., Somekh, B., and Cisneros-Cohernour. E.J. (2005). Communities of Practice. In Somekh, B. and Lewin, C. (Eds), *Research Methods in the Social Sciences*. London: Sage.

Berth, D., Ekström, M., Jakobsen, L. and Karlsson, J.C. (2002). *Explaining society: Critical realism in the social sciences*. London: Routledge.

Biodiversity and Wine Initiative (BWI). (2006). *Background Information: Why a biodiversity and wine initiative?* Retrieved 10 May, 2006, from <http://www.bwi.co.za/background>

Biodiversity and Wine Initiative website. (2006). Homepage of the Biodiversity and Wine Initiative. <http://www.bwi.co.za>

Boshoff, A.F., Cowling, R.M, and Kerley, G.I.H. (2000). *The Baviaanskloof Conservation Area: a conservation and tourism development priority*. Terrestrial Ecology Research Unit No. 27. Port Elizabeth. Nelson Mandela Metropolitan University.

Boshoff, A.F. (2005). *The Baviaanskloof Mega-Reserve: An environmentally, socially and economically sustainable conservation and development initiative*. Terrestrial Ecology Research Unit No. 52. Port Elizabeth. Nelson Mandela Metropolitan University. 52pp.

Boud, D., Cohen, R. and Walker, D. (1993). *Using experience for learning*. Open University Court. United Kingdom.

Cape Action Plan for People and Environment. (2004). *What is conservation stewardship?* Retrieved 23 May, 2006, from <http://www.capeaction.org.za>

Cape Action for People and the Environment. (2005). Western Cape Stewardship Brochure. Retrieved March 2006, from <http://www.capeaction.org.za>.

CensusSA. (2001). <http://www.censussa.co.za>. Accessed 19 march 2006.

Cohen, L., Manion, L. and Morrison, K. (2000). *Research Methods in Education*. 5th Edition. London: Routledge.

Connole, H. (1993). The research enterprise in *Issues and Methods in Research: Study guide, Chapter 1*. University of South Australia: Underdale.

Crane, W. (2005). *Biodiversity Conservation and Land Rights in South Africa: Whither the Farm Dwellers*. Final report submitted to Geoforum.

Daniels, H. (2001). *Vygotsky and Pedagogy*. London: Routledge.

David, T.G. and Wright, B.D. (Eds). 1975. *Learning Environments*. University of Chicago Press. Chicago.

Department of Water Affairs and Forestry (DWAF). (2004). *Restriction of water use in Gamtoos River area*- Media Release by the Department of Water Affairs and Forestry 6 September 2004.

Downsborough, L. (2005). *Conservancies: The new face of biodiversity conservation in South Africa*. Unpublished honours dissertation, Rhodes University, Grahamstown.

Downsborough, L. (2006). *The Biodiversity and Wine Initiative (BWI)- A critical review of this programme and its materials*. An unpublished Masters Coursework Assignment, Rhodes University, Grahamstown. 22pp.

Elliott, G. (1999). *Lifelong learning: The Politics of the New Learning Environment*. Higher Education Policy Series. 44. Jessica Kingsley Publishers. London.

EurepGAP. (2001). *EUREPGAP Protocol for Fresh Fruit and Vegetables*. English version, September 2001. Retrieved from <http://www.agribusinessonline.com> on July 2006.

Field, J. (2003). *Social Capital: What is social capital and why does it matter?* Routledge: London.

Foster, J. (2005). Making sense of stewardship: metaphorical thinking and the environment. *Environmental Education Research*. 11: 25-36.

Hart, P. Jickling, B. and Kool, R. (1999). Starting Points: Questions of Quality in Environmental Education. *Canadian Journal of Environmental Education*. 4: 104-124.

Illeris, K. (2003). Adult education as experienced by the learners. *International Journal of Lifelong Education*. 22: 13-23.

Janse van Rensburg, E. (1997). *Environmental Education, Cooperation and Networking: Learning Together to Build our Capacity for Environmental Governance*. Environmental Education Regional Paper. Rhodes University, Grahamstown.

Janse van Rensburg, E. (2001). (*An orientation to research*). Notes from Research Design Course, Rhodes University, Education Department, Grahamstown.

Johnson, P.E (eds). (1971). *Learning: Theory and Practice*. Thomas Y Cromwell Company. New York.

Kumar, R. (1996). *Research methodology: A step-by-step guide for beginners*. London: Sage.

Lather, P. (1986). Research as praxis. *Harvard educational review*, 56(3), 257-279.

Lave, J. and Wenger, E. (1991). *Situated learning: legitimate peripheral participation*. Cambridge University Press: Cambridge.

Marx, M.E (eds). (1969). *Learning: Processes*. Collier-Macmillan Limited. London.

Mather, C. and Greenberg, S. (2003). Market Liberalisation in Post-Apartheid South Africa: the Restructuring of Citrus Exports after 'Deregulation'. *Journal of Southern African Studies*. 29:393- 412.

Maxwell, J.A. (1992). *Understanding and Validity in Qualitative Research*. Harvard Educational Review. 62: pages unknown.

McTaggart, R. (1991). Appendix: Appraising Reports of Enquiry. Deakin University Faculty of Education 2001. Masters Program: Research in Education and Training, Course File.

Mertens, D.M. (2005). *Research and evaluation in education and psychology: Integrating diversity with quantitative and mixed methods* (2nd ed.) (p1-42). Thousand Oaks: Sage.

Myers, R.B. (2006). Environmental learning: reflections on practice, research and theory. *Environmental Education Research*. 12: 459-470.

Murray, S. (2006). *Interviewing methodology*. Masters coursework handout, Rhodes University, Grahamstown.

Patton, M.Q. (2002). *Qualitative research & evaluation methods*. Sage Publications: Calif.

Quay, J. (2003). Experience and Participation: Relating Theories of Learning. *The Journal of Experiential Education*. 26: 105-116.

Rickinson, M. (2006). Researching and understanding environmental learning: hopes for the next 10 years. *Environmental Education Research*. 12: 445-457.

Robbottom, I. and Hart, P. (1993). *Research in Environmental Education: Engaging the debate*. Publisher unknown.

Roux, D. (2005). *Principles to create learning environments for good ecosystem governance*. Unpublished report. CSIR, Pretoria. 29pp.

Scholes, B. (2002). *Biodiversity conservation outside of formally protected areas*. Unpublished report, CSIR Environmentek, Pretoria, 4pp.

Smith, M.K. (1999). *Learning theory*. The Encyclopedia of informal education. Retrieved from <http://www.infed.org> on 14 April 2006.

Smith, M.K. (2003). *Communities of Practice*. The Encyclopaedia of informal education. Retrieved from <http://www.infed.org> on 14 April 2006.

Snyder, W.M. and Wenger, E. (2004). *Our World as a Learning System: a Communities-of-Practice Approach*. In *Creating a Learning Culture: Strategy, Practice, and Technology*. Marcia L. Conner, James G. Clawson (Eds). Cambridge University Press.

Strelitz, L. (2005). *Mixed Reception: South African youth and their experience of global media*. Pretoria: UNISA. (59-77).

Vermeulen, H., Jordaan, D., Korsten, L. and Kirsten, J. (2006). *Private Standards, Handling and Hygiene in Fruit Export Supply Chains: A preliminary Evaluation of the Economic Impact of Parallel Standards*. Department of Agricultural Economics, Extension and Rural Development, University of Pretoria.

Wals, A.E.J. and Heymann, F.V. (2004). "Learning on the Edge: exploring the change potential of conflict in social learning for sustainable living", in Wenden, A.L. (ed), *Educating for a Culture of Social and Ecological Peace*. New York.

WDM. (2004). *Water Conservation and Demand Management in the agricultural sector: Gamtoos Pilot Project*. WDM Baseline Report 2.

Wenger, E. (1998). *Communities of Practice: Learning, Meaning and Identity*. Cambridge University Press: Cambridge.

Wenger, E. (2000). *Communities of Practice: The structure of knowledge stewarding*. In Despres, C. and Chauval, D. (2000) *Knowledge Horizons: The present and the promise of knowledge management*. Butterwoth-Heinemann: Boston.

Wenger, E. (date unknown). *Communities of practice: An Introduction*. Retrieved from Etienne Wenger homepage, <http://www.ewenger.com> on 14 April 2006.

Wenger, E. McDermott, R. and Snyder, W. (2002) *Cultivating communities of practice: A guide to managing knowledge*. Harvard Business School Press.

⁴ Infed is an open, independent, non-profit site put together by a small group of educators.

Wilson, E.O. (2002). *The Future of life*. Abacus: Great Britain.

Wynberg, R. (2002). A decade of biodiversity conservation and use in South Africa: tracking progress from the Rio Earth Summit to the Johannesburg World Summit on Sustainable Development. *South African Journal of Science*. 98: 233-243.

Yin, R.K. (1993). *Applications of case study research*. London: Sage.

APPENDIX 1



BAVIAANSKLOOF
MEGA-RESERVE EASTERN CAPE

Baviaanskloof Mega-reserve Proud Partner Programme

The Baviaanskloof Mega-reserve has as one of its key deliverables the expansion of the conservation estate through partnerships with private landowners. This is usually associated with formal contractual arrangements, however there is a need to develop a partnership program that can cover private landowners as well as business initiatives and even commercial farms that allows for a wide spectrum of participation from stakeholders.

The Project Management Unit (PMU) of the Baviaanskloof Mega-reserve received approval for the launch of a 'Proud Partners Programme' on 21 September 2005 when the proposal was officially presented to the Baviaanskloof Steering Committee.

Stakeholders that become part of the Partner Programme receive a signboard that they can display at the entrance to their property or business. In addition partners sign a certificate along with the Chief Executive Officer of the Eastern Cape Parks Board and the Chief Director of the Department of Economic Affairs, Environment and Tourism. Partners can associate themselves with the Baviaanskloof Mega-reserve when marketing their accommodation or products however this needs to be done in consultation with the PMU.

The certificate describes a number of commitments that the Partners subscribe to and this includes:

- ❖ Sharing the vision and principles of the Mega-reserve
- ❖ Open communication and constructive engagement within the governance structures of the Mega-reserve including the Baviaanskloof Steering Committee and the associated working groups
- ❖ Promotion of the Mega-reserve as a catalyst for positive change for the environment and for people
- ❖ Adherence to legislation when making decisions regarding the development and management of activities on their properties or within their businesses
- ❖ Developing a positive working relationship with the Eastern Cape Parks Board, the Department of Economic Affairs and Tourism and the Project Management Unit of the Baviaanskloof Mega-reserve.

The use of the logo and association with Mega-reserve is subject to an annual review and it is important to note the following:

- ❖ Use of the logo must be approved by the PMU prior to use.
- ❖ An annual review will be carried out by means of self evaluation questionnaires and through an independent review.

It is important to note that association with the Baviaanskloof Mega-reserve through the Proud Partner Programme does not imply approval for past, current or future developments or changes in land use initiated by partners.

The Proud Partner Programme serves as a means to build the support base and awareness of the Baviaanskloof Mega-reserve that aims to conserve the environment and create opportunities for people. We look forward to working with you to achieve this vision.

Yours sincerely

Project Manager
Baviaanskloof Mega-reserve
Project Management Unit

APPENDIX 2



BAVIAANSKLOOF
MEGA-RESERVE EASTERN CAPE

Baviaanskloof Mega-reserve Proud Partner Programme

Annual review process

Partners agree to be involved in an annual review process that will be carried out by means of self evaluation questionnaires and through an independent review. The self evaluation will be carried out by all the partners themselves on an annual basis and an independent reviewer will evaluate randomly selected partners representing 10% of the total number of partners at the time.

The review process should be seen as a constructive opportunity to improve communication between the partners and to improve the benefits of the relationship. It also acts as a mechanism to maintain standards associated with branding, use of the logo and marketing in general. A summary of the annual review will be presented to the Baviaanskloof Steering Committee for approval. Disputes that cannot be resolved between the partners will be referred to the BSC for resolution and these decisions will be considered binding on all parties.

Self evaluation questionnaire:

Name of partner	
Partner reference number	
Location	
Date of joining PPP	
Date of evaluation	
Brief description of business activities	
Where are signs displayed	
How has the logo been used	
Has the PPP added value to your operations	
Has the PPP improved communication between yourself and the ECPB,DEAET and the PMU	
Has your involvement in the PPP improved your understanding of the Baviaanskloof Mega-reserve	
Has your involvement in the PPP improved your understanding of conservation in general	
Detail any conservation, tourism, job creation or community projects that you are involved in as a PPP of the Mega-reserve	
Any suggestions that could improve communication and involvement of all stakeholders in the Mega-reserve	
Any other comments	

APPENDIX 3



BAVIAANSKLOOF
MEGA-RESERVE EASTERN CAPE

DRAFT FOR COMMENT
MARCH 2006

DEVELOPMENT OF A BIODIVERSITY STRATEGY FOR THE CITRUS INDUSTRY

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SCOPE OF SERVICES AND TERMS OF REFERENCE FOR THE CITRUS BIODIVERSITY STRATEGY FOR SPECIALIST SERVICES CONTRACT

SCOPE OF SERVICES

The scope of services for this contract is as follows:

- It is essential that a public participatory process be followed with the roll-out of this contract. All role-players should have opportunity to provide input, take part in discussions, review of draft document, etc.
- Due to the nature of this project, the consultant will be guided and managed through a technical committee consisting of PCB,CGA and Baviaanskloof Mega-reserve PMU.
- Lessons learned from Biodiversity and Wine initiative should be used to guide and direct this process. Lessons to be shared from our partners must also be included.

TERMS OF REFERENCE

Step 1: The Business Case for Biodiversity.

- What is the relevance of biodiversity in terms of core business?

- What are the key biodiversity objectives?
 - Conservation Objectives
 - Sustainable use objectives
 - Equitable benefit sharing

What opportunities do these objectives unlock for the industry to meet broader strategic & operational objectives.

- What are the resultant benefits to the company?
 - Soft benefits – good environmental reputation, public trust, loyalty of investors, increased employee morale, delivery on environmental commitments.
 - Tangible benefits – license to operate, reduced remediation costs, increased land value because of good land stewardship.
- What process needs to be developed to take the initiative forward within the industry?
 - Design and possibly integration with environmental/ social management systems EUREPGAP, Nature Choice, ISO 14000 etc.
 - Marketing and branding strategy
- What resources are required to implement the process?
 - What synergies exist with other industry activities to reduce cost?

Step 2: Identify a Senior Level Biodiversity Champion

- Senior level support is essential to develop enough momentum to take biodiversity initiatives forward.
 - Who is the individual/individuals who will champion biodiversity within the industry?

Step 3: Carry out a Biodiversity Assessment.

- The objective should be to decide which biodiversity issues warrant further attention.
 - What is the external biodiversity framework?
 - What is the legislative framework for biodiversity Conservation – NEMA, Biodiversity Act, Protected Areas Act, and CARA etc.
 - Who are the key stakeholders involved in biodiversity conservation – DEAET, ECPB, NGO's, Civil society etc.
 - Other industries involved in biodiversity conservation.
 - What issues are relevant to the industry?
 - Assess industry activities and operations and the relationship with biodiversity.
 - What are the direct & indirect impacts of the industry through operations, supply chain, use of products &

services, use of biodiversity, industry contribution to biodiversity?

The assessment here would evaluate impacts in three areas, impact in relation to conservation objectives (How does the citrus industry contribute to meeting SA conservation targets?), sustainable use objectives (How sustainable are the production systems?) and equitable sharing (What value is the industry creating for external stakeholders?).

- What policies, practices and procedures does the industry have in place to address issues of biodiversity conservation?
 - What is known and understood under "biodiversity" within the industry?
 - What is the area, location and type of land holding within the industry?
 - What is the understanding regarding the relationship between biodiversity and the company activities?
 - What are the strategic benefits to the industry of biodiversity friendly activities currently in operation?

The assessment should aim to identify and quantify all areas that have negative impact on biodiversity.

- What could the industry do to build on existing practices & procedures to benefit biodiversity and business?
 - Identify priority areas for action in relation to the identified direct & indirect impacts.

Step 4: Secure Board Level Endorsement

- The board/industry should endorse a biodiversity policy that broadly commits the company to act on issues identified through the various assessments.

Step 5: Develop an industry biodiversity strategy

- What will the biodiversity strategy look like?
 - Industry Goals
 - Acceptable targets
 - Mechanisms for action
 - Identification of key role-players

This strategy should aim to mainstream biodiversity into industry activities recognising that a biodiversity strategy is a subset of the industries wider social responsibility and economic sustainability.

Step 6: Develop an Industry Biodiversity Action Plan.

- How will biodiversity be conserved?
 - Site-specific biodiversity action plans – management plans on individual farms.
 - Biodiversity offsets for negative impacts?
- How will biological resources be used in a sustainable way?
 - Use of certification schemes
 - Partnering with conservation agencies & NGO's
- How will benefits be shared equitable?
 - Community involvement
 - Support to conservation initiatives
 - Initiation & support of industry initiatives.
 - Staff involvement
 - Sharing data generated with stakeholders
- How will management systems be strengthened?
 - Where can biodiversity conservation be built into current management systems?
- How will performance be evaluated?
 - Monitoring & Evaluation in all sectors of the action plan.
- How will performance be reported?
 - Data collection and reporting
- How will new opportunities be identified?
 - Dynamic process – new opportunities should be incorporated as necessary.
- Specific, clear business and roll-out plan
 - Clear explanation of financial and management resources required.
 - Terms of reference of different role-players in industry

Step 7: Implement the industry biodiversity Action Plan

This falls outside the scope of this project and will be seen as Phase 2. However, step 6 will include a business and roll-out plan for implementation.

APPENDIX 4

1) How did you come to be involved in farming? History of farming, family history of farming? (Stories of farming).

2) Can you tell me about some of the conservation farming practices you use?

Where did you learn about them? (from whom?)

Where do you get your conservation information from?

How do you keep up to date with them?

3) What do you think/feel is the benefit/importance of using such practices? What is the benefit of reducing impact on the environment?

How have you benefited?

4) Who are the main people you interact with on a regular basis?

5) Where do you get the majority of your conservation information? (From whom?)

6) Do you interact with the Baviaanskloof Megareserve Project?

How often do these meetings/interactions happen?

What is the main focus?

What sort/type of information do you receive from the BPMU?

Are you a proud partner? Or a member of the biodiversity and citrus initiative?

How do you feel about these initiatives?

EUREPGAP Protocol for Fresh Fruit and Vegetables

English Version

EUREPGAP Protocol ver. Sept. 2001_Rev.02

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0. INTRODUCTION
Scope
This document sets out a framework for Good Agricultural Practice (GAP) on farms which defines essential elements for the development of best-practice for the global production of horticultural products (e.g. fruits, vegetables, potatoes, salads, cut flowers and nursery stock). It defines the minimum standard acceptable to the leading retail groups in Europe, however, standards for some individual retailers and those adopted by some growers may exceed those described. This document does not set out to provide prescriptive guidance on every method of agricultural production.
EUREP members wish to recognise the significant progress already made by many growers, grower groups, grower organisations, local schemes and national schemes in developing and implementing best-practice agricultural systems with the aim of minimising adverse impact on the environment. EUREP members also wish to encourage further work to improve growers capability in this area, and in this respect this GAP framework, which defines the key elements of current agricultural best-practice, should be used as a benchmark to assess current practice, and provide guidance for further development.
GAP is a means of incorporating Integrated Pest Management (IPM) and Integrated Crop Management (ICM) practices within the framework of commercial agricultural production. Adoption of IPM/ICM is regarded by EUREP members as essential for the long-term improvement and sustainability of agricultural production.
EUREP supports the principles of and encourages the use of HACCP (Hazard Analysis Critical Control Points).
It is essential that all organisations involved in the food production chain accept their share of the tasks and responsibilities to ensure that GAP is fully implemented and supported. If consumer confidence in fresh produce is to be maintained, such standards of good agricultural practice must be adopted, and examples of poor practice must be eliminated from the industry.
All growers must demonstrate their compliance with national or international law.
All growers should be able to demonstrate their commitment to: a) maintaining consumer confidence in food quality and safety; b) minimising detrimental impact on the environment, whilst conserving nature and wildlife; c) reducing the use of agrochemicals; d) improving the efficiency of natural resource use; and e) ensuring a responsible attitude towards worker health and safety.
Independent Verification:
The Scheme documents are: <ol style="list-style-type: none"> 1. EUREPGAP Protocol as the normative document e.i. the scheme standard with which the grower must comply. 2. EUREPGAP General Regulations which sets out the rules by which the scheme will be administered. 3. EUREPGAP Control Points and Compliance Criteria which gives specific details on how the grower complies with each of the scheme requirements. 4. EUREPGAP Checklist which form the basis of the grower external audit and which the grower must use to fulfil the annual internal audit requirement.
As described in EUREPGAP General Regulations, this scheme is divided into Major Musts (red background), Minor Musts (yellow background) and Recommendations (green background)
Growers receive their EUREP GAP approval through independent verification from a verification body that is approved by EUREP.

REQUIRED	ENCOURAGED
1. TRACEABILITY	
#1 All the product is traceable to the farm where it has been grown.	
2. RECORD-KEEPING	
2.a. Record Keeping:	
#1 Growers must keep up to date records available to demonstrate that all activities of production comply with GAP as outlined in this document and to help trace the history of products from farm to final consumer. Appropriate records must be kept for a minimum of two years, unless legally required for a longer period. Retrospective records are not required prior to application of EUREPGAP registration.	
3. VARIETIES AND ROOTSTOCKS	
3.a. Choice of Variety or Rootstock:	
	#1 Growers should be aware of the importance of effective crop husbandry in 'mother crops' (e.g. in the production of seed potatoes), which can lead to less intervention in subsequent crops
	#2 Choice of variety or rootstock should meet the specified requirement as agreed between growers and customers with respect to quality standards (e.g. taste, visual appearance, shelf-life, agronomic performance, environmental impact, minimum dependence on agrochemicals).
3.b. Seed Quality:	
	#1 Seed quality should be known before use and a record of the variety name, variety purity, batch number and seed vendor should be kept in a crop diary. Where available, seed certification should be retained.
3.c. Pest and Disease Resistance/Tolerance:	
	#1 Varieties should possess resistance/tolerance to commercially important pests and diseases.
3.d. Seed Treatments and Dressings:	
Seed treatments can be an effective method of controlling pests and diseases, reducing the amount of active ingredients applied to growing crops, and as a strategy for crop protection where foliar sprays are ineffective.	
#1 The use of seed treatments must be justified.	
3.e. Nursery Stock:	
#1 Purchased nursery stock must be accompanied by officially recognised plant health certification, such as Plant Passports which exist under the EU Plant Health Directive or similar for countries outside the European Union, where available.	#2 Plants should be free of visible signs of pest and disease.
#3 Quality guarantees or certified production guarantees must be kept in the crop diary.	
#4 Plant health quality control systems must be operational for private or in-house nursery propagation.	
#5 Pesticide treatments applied during the plant rearing stage must be recorded.	

REQUIRED	ENCOURAGED
3.f. Genetically Modified Organisms (GMO):	
#1 Planting of any GMO must comply with all existing regulations in the country of production and all existing regulations in the country of the final consumer.	
#2 The use of GMO cultivars must be agreed with individual customers prior to planting.	
#3 Suppliers must inform all customers of any developments relating to the use or production of products derived from genetic modification before engagement.	
4. SITE HISTORY AND SITE MANAGEMENT	
4.a. Site History:	
#1 A recording system must be established for each field, orchard or greenhouse to provide a permanent record of the crops and agronomic activities undertaken at those locations.	
#2 A visual identification or reference system for each field, orchard or greenhouse must be established.	
#3 For all new agricultural sites, a risk assessment must be undertaken, taking into account the prior use of the land and all potential impacts of the production on adjacent crops and other areas.	
#4. The results of the risk assessment analysis must be recorded and used to justify that the site in question is suitable for agricultural production.	
#5 A corrective action plan must be developed setting out strategies to minimise all identified risks in new agricultural sites, such as spray drift or water table contamination.	
4.b. Rotations:	
#1 To maintain soil condition, reduce reliance on agrochemicals and to maximise plant health, growers must recognise the value of crop rotations and seek to employ these whenever practicable.	
#2 Where rotations are not employed, growers must be able to provide adequate justification.	
5. SOIL AND SUBSTRATE MANAGEMENT	
5.a. Soil Type Mapping:	
	#1 Soil maps should be prepared for the farm, which can then be used to plan rotations, planting programmes and growing programmes.
5.b. Cultivation:	
	#1 Mechanical cultivation should be used where proven to improve or maintain soil structure, and to avoid soil compaction.
5.c. Soil Erosion:	
#1 Field cultivation techniques that minimise soil erosion must be adopted.	

REQUIRED	ENCOURAGED
5.d. Soil Fumigation:	
#1 Chemical fumigation of soils must be justified.	#2. Alternatives such as crop rotation, planting of break crops, use of disease resistant cultivars, thermal or solar sterilisation, conversion to soil-free cultivation, and similar techniques must be explored before resorting to use of chemical fumigants
5.e. Substrates:	
#1 For substrates that are not inert, documents must demonstrate its suitability.	#2 For inert substrates (PUR, rockwool, etc.), growers should participate in substrate recycling programs where available.
#3 Where chemicals are used to sterilise substrates for reuse, records of location must be kept.	
#4 Where chemicals are used to sterilise substrates for reuse, date, type of chemical used, method of sterilisation and operator must be kept.	#5 For substrates reuse, steaming should be the preferred option.
6. FERTILISER USAGE	
6.a. Nutrient Requirement:	
	#1 A cropping or soil care plan should be developed to ensure that nutrient loss is minimised.
	#2 The application of fertilisers should be based on nutrient requirements of the crop and on appropriate routine analysis of nutrient levels in the soil, the crop or the nutrient solution.
#3 Fertiliser application, using either mineral or organic fertilisers, must meet the needs of the crops as well as maintaining soil fertility.	
6.b. Advice on Quantity and Type of Fertiliser:	
#1 Growers or their advisers must be able to demonstrate competence and knowledge.	#2 Recommendations for application of fertilisers should be given by competent, qualified advisers holding appropriate and recognised national certification. Where such advisers are unavailable, adequate training in fertiliser usage and application should be undertaken.
6.c. Records of Application:	
#1 All applications of soil and foliar fertilisers must be recorded in a crop diary or equivalent. Records must include: location, date of application, type and quantity of fertiliser applied, the method of application, and operator.	
6.d. Timing and Frequency of Application:	
	#1 The quantity of fertiliser applied and timing of fertiliser application should be carefully considered so as to maximise benefits and minimise losses of fertiliser.
#2 Any application of nitrogen in excess of national or international limits must be avoided.	#3 Quantities of nitrogen to be applied should be calculated from a nitrogen management plan.
6.e. Application Machinery:	
#1 Fertiliser application machinery must be kept in good condition, with annual calibration to ensure accurate delivery of the required quantity of fertiliser.	

REQUIRED	ENCOURAGED
6.f. Fertiliser Storage:	
#1 There are stock records kept up to date and available.	#2 Fertilisers should not be stored in the same room with pesticides. If that is not possible, then the fertilisers and the pesticides must be physically separated and labelled accordingly.
#3 Fertilisers must be stored covered in a clean, dry location where there is no risk of contamination of water sources.	
#4 Fertilisers must not be stored with nursery stock.	
#5 Fertilisers must not be stored with fresh produce	
#6 All hazard and risk areas must be clearly indicated.	
6.g. Organic Manure:	
Organic manure or compost can help improve soil fertility by increasing organic matter content, improve nutrient and water retention and reduce erosion.	
	#1 Organic manure should be stored in an appropriate manner to reduce the risk of contamination of the environment.
#2 The use of raw untreated human sewage sludge is prohibited. Any use of treated human sewage sludge on land destined for agricultural production must be supported by data and/or recognised codes of practice which demonstrate that any carry-over of pathogenic organisms and other components which may have an adverse effect on human health, the quality of the soil, the groundwater or the wildlife are controlled to maintain risks at the lowest possible level.	#3 To avoid pollution by heavy metals or by nitrate leaching, analysis of levels of nutrients, heavy metals and other potential pollutants in the manure, should be completed before application. Proper account must also be taken of the nutrient contribution of manures.
	#4 Manuring in open field cultivation should be based on nutrient management plans.
7. IRRIGATION	
7.a. Predicting Irrigation Requirement:	
	#1 Incorrect usage of water can have a detrimental effect on product quality. To avoid excessive or insufficient water usage, methods of systematically predicting the crop requirement for water should be utilised. Where possible irrigation should be adjusted based on predicted rainfall, plant water use and evaporation. Daily rainfall records for outdoor production may be used to assist in planning irrigation requirements. Growers are recommended to obtain access to regular meteorological forecasts to aid irrigation planning.

REQUIRED	ENCOURAGED
7.b. Irrigation Method:	
	#1 The most efficient and commercially practical water delivery system should be used to ensure the best utilisation of water resources. Flood irrigation systems are discouraged due to excessive wastage of water.
	#2 Consideration should be given to a water management plan to optimise water usage and reduce waste (e.g. systems for re-use, irrigation at night, maintenance of irrigation equipment to reduce leakage, winter storage, collection of rainwater from glasshouses, etc).
	#3 All growers should maintain records of irrigation water usage.
7.c. Quality of Irrigation Water:	
#1 Untreated sewage water must never be used for irrigation	#2 Based upon risk assessments, irrigation water sources should be analysed at least once a year for microbial, chemical and mineral pollutants by a suitable laboratory. The analysis results should be compared against accepted standards and adverse results acted upon.
7.d. Supply of Irrigation Water:	
	#1 To protect the environment, water should not be abstracted from unsustainable sources. Advice on abstraction should be sought from water authorities.
8. CROP PROTECTION	
8.a. Basic Elements of Crop Protection:	
#1 Protection of crops against pests, diseases and weeds must be achieved with the appropriate minimum pesticide input	
#2 Wherever possible growers must apply recognised IPM techniques on a preventive basis. Non chemical pest treatments are preferred over chemical treatments	#3 Growers are encouraged to understand and adopt IPM systems to control and preserve their productivity and minimise the potential impact of pest control on the environment. Assistance with implementation of such systems should be obtained through training, or advice through advice obtained from grower organisations, research organisations, qualified extension officers, consultants or chemical distributors.

REQUIRED	ENCOURAGED
8.b. Choice of Chemicals:	
#1 The crop protection product utilised must be appropriate for the control required.	#2 Selective products that are specific to the target pest, weed or disease and which have minimal effect on populations of beneficial organisms, aquatic life, workers and consumers and are not detrimental to the ozone layer should be used wherever possible.
	#3 An anti-resistance strategy should be adopted to avoid reliance on any one chemical.
#4 Growers must only use chemicals that are officially registered in the country of use and are registered for use on the crop that is to be protected where such official registration scheme exists, or, in its absence, complies with the specific legislation of the country of destination	
#5. A current list of all products that are used and approved for use on crops being grown must be kept. This list must take account of any changes in pesticide legislation.	
#6. Chemicals that are banned in the European Union must not be used on crops destined for sale in the European Union.	
#7. Growers must be aware of restrictions on certain chemicals in individual countries.	#8 Growers should consult their customers to determine if any additional commercial restrictions exist.
	#9 The label instructions should be followed to ensure successful application, avoid risks to operators, consumers and the environment. Where appropriate, growers may reduce the application frequency specified in the label instructions.
8.c. Advice on Quantity and Type of Pesticide:	
#1 Recommendations for application of pesticides must be given by competent, qualified advisers holding a recognised national certificate or similar.	
#2 Where such advisers are unavailable, growers must be able to demonstrate their competence and knowledge (e.g. through adequate training in pesticide usage and pesticide application).	
#3 The quantity of spray mix calculation must consider: velocity of application, surface area to be covered, pressure of application system.	
8.d. Records of Application:	
#1 All applications of pesticides must always include: crop name, location, date of application, trade name and name of operator.	
#2 Pesticide application records must also include: reason for application, technical authorisation, quantity of pesticide used, application machinery used and pre-harvest interval.	
8.e. Safety, Training and Instructions:	
#1 Workers who handle and apply pesticides must be trained.	#2 Each application should be accompanied by clear instructions or symbols detailing the location of application, chemical dosage and required application technique.

REQUIRED	ENCOURAGED
8.f. Protective Clothing/Equipment:	
#1 Workers must be equipped with suitable protective clothing in accordance with label instructions and appropriate to the posed health and safety risks.	
#2 Growers must be able to demonstrate that they follow label instructions with regard to protective clothing and equipment.	
#3 Protective clothing and equipment must be stored separately from pesticides.	
8.g. Pre-harvest Interval:	
#1 Pre-Harvest intervals must be observed and under no circumstances should the registered pre-harvest interval be ignored.	
8.h. Spray Equipment:	
#1 Spray equipment must be suitable for use on the land in question and be kept in good condition, with annual calibration to ensure accurate delivery of the required quantity of spray.	#2 Participation in an independent sprayer calibration certification scheme is encouraged.
#3 When mixing chemicals, the correct handling and filling procedures, as stated on label instructions, must be followed. The correct quantity of spray mix for the crop to be treated and the proposed treatment type must be calculated, accurately prepared and recorded.	
8.i. Disposal of Surplus Spray Mix:	
	#1 If surplus spray mix does occur, or if there are tank washings, these should be sprayed over an untreated part of the crop, as long as the recommended dose is not exceeded, or sprayed onto designated fallow land, where legally allowed, and records kept for future reference.
8.j. Pesticide Residue Analysis:	
	#1 The frequency of pesticide residue analysis should be based on risk assessment, however, in many cases, pre-harvest sampling and analysis is most effective.
	#2 Residue test results should be traceable to the grower and to the product's production location.
#3 Growers and/or suppliers must be able to provide evidence of residue testing	
#4 The laboratories used for residue testing are accredited by a competent national authority to good laboratory standard (e.i.: GLP or ISO 17025)	#5 An action plan should be in place in the event of an maximum residue level (MRL) being exceeded.

REQUIRED	ENCOURAGED
8.k. Pesticide Storage:	
#1 Pesticides must be stored in accordance with local regulations and include the following minimum standards:	
#2 Pesticides must be stored in a sound, secure, frost resistant, fire-resistant, well ventilated (in case of walk-in storage) and well lit location which is located away from other materials.	#3 All shelving should be of non-absorbent material.
#4 The pesticide store must be able to retain spillage (e.g. to prevent contamination of water courses).	
#5 There must be adequate facilities for measuring and mixing pesticides.	
#6 There must be emergency facilities (e.g. eye wash, plenty of clean water, a bucket of sand) to deal with operator contamination and accidental spillage.	
#7 Keys and access to the store must be limited to workers with adequate training in the handling of pesticides.	
#8 An accident procedure, a list of contact telephone numbers and the location of the nearest telephone must be available within the immediate vicinity of in the store and next to the nearest telephone.	
#9 Inventory must be kept and readily available.	
#10 All pesticides must be stored in their original package.	
#11 Only chemicals approved for use on the crops produced in the crop rotation must be stored on the farm.	
#12 Powders must be stored on shelves above liquids.	
#13 Signs warning of potential dangers must be placed on access doors.	
8.l. Empty Pesticide Containers:	
#1 Empty pesticide containers must not be re-used and disposal of empty pesticide containers must be in a manner that avoids exposure to humans, and contamination of the environment.	#2 Official collection and disposal systems should be used if available.
#3 Empty containers must be rinsed via the use of an integrated pressure rinsing device on the sprayer, or at least three times with water, and the rinsate returned to the spray tank.	
#4 When rinsed, containers must be pierced to prevent re-use and be adequately labelled according to the rules of a collection system.	
#5 Empty containers must be kept secure until disposal is possible.	
#6 All local regulations regarding disposal or destruction of containers must be observed.	

REQUIRED	ENCOURAGED
8.m. Obsolete Pesticides:	
#1 Obsolete pesticides must only be disposed of through a certified or approved chemical waste contractor or supplying company.	
9. HARVESTING	
9.a. Hygiene:	
	#1 A hygiene protocol based on a risk analysis should be used to establish hygiene regulations for personnel to prevent physical, microbiological and chemical contamination of produce.
#2 Workers must have access to clean toilet and washing facilities in the vicinity of their work.	
#3 Workers must receive basic instructions in hygiene before handling fresh produce. Workers must also be made aware of the requirement to notify management of any transferable disease which may render them unfit to work in the vicinity of products destined for human consumption.	
9.b. Packaging on Farm:	
#1 Packaging must be stored so as to avoid contamination by rodent, pest, birds, physical and chemical hazards. Where products are field packed, packaging must be removed from the field overnight where a risk of contamination exists.	
#2 Reusable crates must be clean and re-cleaned where necessary to ensure they are free from foreign material which may be detrimental to the product and/or consumers health.	
10. POST-HARVEST TREATMENTS	
10.a. Post-harvest Chemicals:	
	#1 Use of post-harvest treatments should be minimised.
#2 Post-harvest chemicals must only be used in accordance with product label.	
#3 Growers must only use chemicals that are officially registered in the country of use, and for use on the crop being protected. Chemicals that are banned in the European Union must not be used on crops destined for sale in the European Union.	
#4 A current list of all products that are used and approved for use on crops being grown must be kept. This list must take account of any changes in pesticide legislation. In addition, growers must be aware of restrictions on certain chemicals in individual countries. Growers must consult their customers to determine if any additional commercial restrictions exist.	
#5 Growers must be able to demonstrate their competence and knowledge with regard to the application of post-harvest chemicals.	
#6 All applications of post-harvest treatments must be recorded in a crop diary or equivalent and include crop or product location, date of application, trade name, type and quantity of treatment used and name of operator.	

REQUIRED	ENCOURAGED
#7 All applications of post-harvest treatments must be recorded in a crop diary or equivalent and include the reason for application and machinery used.	
10.b. Post-harvest washing:	
#1 The source of water used for product washing must be potable, and must be filtered if recycled.	#2 Based upon risk assessments, sources of water for post-harvest washing should be analysed by a laboratory (currently accredited to EN 45001 or GLP or its national equivalent or that can demonstrate via documentation that it is in the process of gaining accreditation) for microbial, chemical and mineral pollutants at least once a year. Results of the analysis should be compared to accepted standards and adverse results acted upon.
11. WASTE AND POLLUTION MANAGEMENT, RECYCLING AND RE-USE	
11.a. Identification of Waste and Pollutants:	
	#1 All the possible waste products should be identified in all areas of the farm business (e.g. paper, cardboard, plastic, crop debris, oil, rock wool and other substrates).
	#2 All possible sources of pollution should be identified (e.g. chemicals, oil, fuel, noise, light, debris, pack-house effluent, etc.).
11.b. Waste and Pollution Action Plan:	
	#1 Having identified waste and pollutants, a plan should be developed and implemented, to avoid or reduce wastage and pollution, and whenever possible, avoid the use of land-fill or burning, by recycling the waste. Organic crop debris can be composted on the farm and, where there is no risk of disease carry-over, reused for soil conditioning.

12. WORKER HEALTH, SAFETY AND WELFARE	
12.a. Risk Assessment:	
	#1 A risk assessment should be used to develop an action plan to promote safe and healthy working conditions.
12.b. Training:	
#1 Formal training must be given to all appropriate workers operating dangerous or complex equipment.	#2 Records of training for each employee should be kept in the interests of operator safety.
	#3 Workers trained in First Aid should be present in both field and pack-house.
#4 Accident and emergency procedures must exist and instructions must be clearly understood by all workers.	#5 Accident procedures should be visually displayed and in the appropriate language of the workforce.
12.c. Facilities and Equipment:	
#1 First Aid boxes must be present at all permanent sites and in the vicinity of field work.	#2 Hazards should be clearly identified by warning signs where appropriate.
12.d. Pesticide Handling:	
	#1 Workers undertaking pesticide applications on the farm should receive annual health checks in line with guidelines laid down in local codes of practice.
12.e. Hygiene:	
#1 All permanent product packing and storage sites must have adequate pest (including rodent) control measures, particularly in areas for food handling, storage of packaging, storage of pesticides and storage of fertilisers.	#2 Workers should receive basic training in hygiene requirements for the handling of fresh produce. The training should outline the need for: hand cleaning, the covering of skin cuts, and the confinement of smoking, eating and drinking to permitted areas, etc.
	#3 To avoid establishing a breeding ground for pests and disease, premises should be clear of litter and waste, and have adequate provisions for waste disposal.
12.f. Welfare:	
#1 All employment conditions must comply with local and national regulations with regard to wages, workers age, working hours, working conditions, job security, unions, pensions and all other legal and health requirements.	
#2 Growers and packers must consult with their customers to ensure compliance with specific company policies regarding worker welfare.	
#3 On site living quarters must be habitable and have the basic services and facilities.	

13. ENVIRONMENTAL ISSUES	
13.a. Impact of Farming on the Environment:	
	#1 In the light of consumer concern, growers should understand and assess the impact their farming activities have on the environment, and consider how they can enhance the environment for the benefit of the local community and flora and fauna.
13.b. Wildlife and Conservation Policy:	
#1 A key aim must be the enhancement of environmental biodiversity on the farm through a conservation management plan. This could be a regional activity rather than an individual one.	
	#2 Each grower should have a management of wildlife and conservation policy plan on their property. This Policy should be compatible with sustainable commercial agricultural production and minimise environmental impact of the agricultural activity. Key elements of this plan should be to: <ul style="list-style-type: none"> • Conduct a baseline audit to understand existing animal and plant diversity on the farm. Conservation organisations can help conduct surveys to measure biodiversity and identify areas of concern. • Take action to avoid damage and deterioration of habitats. • Create an action plan to enhance habitats and increase biodiversity on the farm
13.c. Unproductive Sites:	
	#1 Consideration should be given to the conversion of unproductive sites (e.g. low lying wet areas, woodlands, headland strip or areas of impoverished soil) to conservation areas for the encouragement of natural flora and fauna.
14. COMPLAINT FORM	
# 1 There must be on the site a record available on request of all complaints made known to the supplier relating to all products compliance with requirements of this protocol. There are documents of the actions taken with respect to such complaints and any deficiencies found in products or services.	
15. INTERNAL AUDIT	
# 1. The grower must undertake a minimum of one internal audit per annum against the EUREPGAP Standard, this audit must be documented and corrective actions documented and implemented.	

**APPENDIX 6
M1-M5**



BAVIAANSKLOOF
MEGA-RESERVE EASTERN CAPE

M1

Minutes of meeting on the possibility of establishing a Citrus Initiative in the Gamtoos River Valley on 22 September 2005 at the Patensie Citrus Administrative Offices.

Attendance:

A. van Zyl
D. Ferreira
M.W. Colesky
D.F. Malan
C.R. Ferreira
D. Rautenbach
K. & H. Scheepers
T. Joubert
M. Norval
P. Joubert
C. Scheltema

Mr. Anton van Zyl welcomed all present and was of the opinion that in the light of existing difficulties presently in the citrus industry – especially in/on the overseas markets – a concept like the Wine Initiative in the Western Cape – agricultural production in partnership with the conservation sector – is worth looking into to add value to our citrus products.

Matthew Norval, manager of the Baviaanskloof Mega Reserve Project Management Unit then gave a presentation on how the Biodiversity and Wine Initiative (B.&W.I.) was established and functions in the wine lands of the Western Cape. The response to this initiative was well received in the European wine markets and has developed to such an extent that an extension officer dedicated to the job had to be appointed and is working in close relationship with the South African Wine and Brandy Company (SAWB) – including WINETECH & WOSA

After some questions and explanations the meeting decided that the idea to develop a citrus initiative for the Gamtoos should be grabbed by both hands as it will add value to agricultural products to in the Valley. Matthew Norval also suggested that if there is enough interest in such an initiative the Baviaanskloof Project Management Unit will try their utmost to secure funds for the initial stages/activities of such a project.

Colyn Scheltema was then tasked to draft guidelines based on the Wine Initiative to be distributed amongst those present as well as to any other producer interested in such an action. This document will be discussed at a meeting during mid November 2005 to decide on final action to be taken. This will then lead to the inauguration of the Citrus Initiative and participants will be recognised in ways and means to be decided upon by participants in the initiative – also partly based on those of the B.& W.I. taking into account the citrus industry's own particular situation and for that matter perhaps also other agricultural products in the Gamtoos Valley.

Colyn Scheltema to arrange a suitable date for a meeting during mid November 2005 with Anton van Zyl.

Attached a photo of the group who attended the first meeting.



BAVIAANSKLOOF
MEGA-RESERVE EASTERN CAPE

Minutes of a meeting of the Biodiversity & Citrus Initiative
15 November 2005 at Patensie Citrus Limited offices, Patensie.

Present: D.M. du Preez, C.R. Ferreira, H. Scheepers, H. Venter, D. Rautenbach, D. Malan, D. Ferreira, M.W. Colesky, K. Scheepers, M.Norval, C.Scheltema.

Following on from the introductory meeting of 22 September 2005 the following decisions were made:

1. It is of crucial importance that **all** producers in the Gamtoos River Valley be involved in the initiative.
2. A proposal will be tabled at a meeting of the Board of Directors of Patensie Citrus Limited on 22 November 2005 to proceed with the initiative.
3. A Biodiversity and Citrus Working Group will be formed to represent the Baviaanskloof Mega-reserve, Patensie Citrus Limited and private producers who will drive the process and carry out tasks as required.
4. The next meeting will be scheduled in January 2006 to report back about proceedings and to form the working group.

The meeting was also informed of the following proposals:

1. The Working Group should meet in January 2006 to develop an action plan for the year; to agree on the mechanism/structure to manage the initiative; to agree on co-financing for the initiative, to develop terms of reference for the strategy development consultant and to develop the proposal (letter of enquiry to the Critical Ecosystem Partnership Fund) for implementation.
 2. If funds are approved and agreement is reached on co-funding the strategy consultant could be appointed in April 2006
 3. The strategy could be implemented in the last quarter of 2006.
-

M3

Biodiversity & Citrus Initiative
Working Group Meeting
at
PSB Chambers
April 18, 2006
15:00

Notes on proceedings of above meeting:

In attendance:-

P. Joubert – Gamtoos Irrigation Board

M. Norval – BKPMU

G. Uys – PSB

P. Dempsey – SFG

S. Groenewald – Agri

D. Malan – Agri

C. Viviers – PSB

W. Erlank – ECPB,

C. Scheltema – BKPMU

1. Welcome: G. Uys
2. Terms of reference for appointing consultant: Group in agreement to proceed with advertising by the Baviaanskloof Mega Reserve Project Management Unit for consultant to develop a strategic plan as set out in the terms of reference. Advertisement i) to be placed in one local newspaper and ii) be forwarded to all members to inform relevant institutions/groups on behalf of the Working Group.
3. Biodiversity Strategy for the Citrus Industry:
After recapping the aims of the strategy, M. Norval explain the funding procedure for the implementing of the Strategy. Decision: M. Norval to proceed with the drafting of the necessary documentation to procure funding for the implementation of the strategy. This draft will also be circulated for inputs and feedback by members.
D. Malan mentioned that it is of utmost importance that all citrus farmers have to benefit from this initiative. G. Uys emphasized that setting of standards will have to play major role.
4. CAPE Partners' Conference 6,7&8 June 2006: As participation of stakeholders in this initiative is important and will be of much assistance in our application for funding the project, a representative (leaders) from the citrus industry itself is invited to attend above conference. A short input (5min.) will support our endeavours to succeed with the initiative. Copy of conference proceedings (which indicates who should attend in terms of the development of a Biodiversity Business Charter representing a business commitment in seeking solutions to dilemmas facing the industry) and the invitation will be supplied to all members. As no-one presented himself available, G. Uys suggested that we can make use of his wife. This was provisionally accepted.
5. M. Norval welcomed and introduced Wayne Erlank the newly appointed Area Manager of the East Cape Parks Board.

Next meeting: Will be determined by the selection date of the Strategy Development consultant.

M4

Biodiversiteit & Sitrus Inisiatief

Op 'n vorige vergadering waar die onderstaande Werksgroep aangewys is, is besluit dat Matthew Norval 'n besprekingsdokument sal opstel wat deur die Werksgroep geëvalueer moet word.

Die finale dokument sal dan die raamwerk vorm waarbinne die konsultant die implementeringstrategie vir die Inisiatief moet ontwikkel.

Die dokument is gedurende Maart aan u verskaf vir kommentaar en insette vir finale goedkeuring op 'n vergadering wat belê is vir

Woensdag 19 April 2006

om

15:00

te

PSB-kantore

Werksgroep:

G. Uys

C. Viviers

P. Joubert

R. Ferreira – Radie

I. Grieb

S. Groenewald

D. Malan

P. Dempsey

K. Scheepers

K. Kitshoff

M. Norval

M5

**Biodiversity & Citrus Initiative
Gamtoosvallei**

Om tyd in te pas vir 'n vergadering is maar 'n probleem!

Soos op die laaste vergadering besluit, het Matthew Norval nou die advertensie vir 'n konsultant gereed.

Volgens punt 2 van die notule van 18 April 2006 sal 'n konsultant aangestel word om die strategiese plan vir die Biodiversiteit & Sitrus Inisiatief op te stel.

Bogenoemde sal nou vir finale goedkeuring aan die Werkgroep voorgelê by 'n kort byeenkoms wat op

**Maandag 3 Julie 2006 om
14:00
in die
Raadsaal van PSB
sal plaasvind**

By voorbaat dank vir u belangstelling in hierdie belangrike aksie.

To find time for a meeting is very difficult!

During our last meeting it was decided to advertise for a consultant to develop a strategic plan for the Biodiversity & Citrus Initiative in the Gamtoos Valley.

Matthew Norval has drafted an advertisement for a consultant and would like the Working Group to finalise it. The group will meet on

**Monday 3rd July 2006 at
14:00
in the
PSB Chambers**

Thank you for your continuous support for this very important action in the citrus industry!

APPENDIX 7

PATENSIE BO-GAMTOOS LANDBOUVERENIGING

VOORSITTER:

Danie Malan
Posbus 215, Patensie, 6335
Tel (042) 2830535
Sel: 0722629822
E-pos: tierhok@lantic.net

SEKRETARIS

Ivan de Villiers
Posbus 1869, J/Baai, 6331
Tel(042)2960784
Sel: 0824634999
E-pos: ivan@agnet.co.za

Kennisgewing van vergadering

Datum: Dinsdag 20 Junie 2006
Tyd: 19h00
Plek: Ripple Hill Lodge

SAKELYS

1. Opening & Verskoning
2. Notule & Sake uit Notule
3. Korrespondensie
4. Bydraes tot Kronieke Boek
5. Aanvullende Sake (8)
6. SAP Patensie: Spreekbeurt - B. Adami
7. Sprekers:
 - 7.1. Anton van der Mescht: "Mediese skema vir boere Voorsorgfonds vir arbeiders"
 - 7.2. Linda Downsborough: "Leer prosse en interaksies"
8. Aanvullende Sake
 - 8.1.
 - 8.2.
 - 8.3.

BESTUUR: Danie Malan(Voorsitter), Frikkie du Preez, Petrus du Preez, Marthinus Colesky, Petrus Ferreira
S.G. Ferreira, Neels Schellingerhout, Norman Stevens

PATENSIE BO-GAMTOOS LANDBOUVERENIGING

NOTULE VAN VERGADERING- 21 Februarie 2006: RIPPLE HILL HOTEL
24 Persone teenwoordig.

1. **OPENING & VERWELKOMING:** Mnr. Danie Malan het almal welkom en Mnr. Norman Stevenson open met gebod. Die vergadering word ingelig dat Amanda du Preez bedank het as sekretarisse en Ivan de Villiers haar take sal corneen as sekretaris. Die administratiewe kontakpunt sal Petro by 042 283 0294 wees.
2. **VERSKONINGS:** Frikkie Du Preez, SG Ferreira, Doepie Le Roux, Johan Landman, SL en Amanda Ferreira en Hermanus Potgieter.
3. **NOTULE:** Die notule van die vorige vergadering word goedgekeur.
4. **KORRESPONDENSIE:**
Korrespondensie is ontvang vanaf die Oos-Kaapse Landbou unie oor die beheer van roukatte. T toestemming word ook gevra vanaf Survcy Development and Research Africa vir statistiek opnames. Die normale protokol vir toegang moet gevolg word.
5. **BYDRAE TOT KRONIEKE BOEK:**
Die museum in Patensie word bespreek. Die Museum vereniging wil 'n verteenwoordiger aanstel vir die vergadering. Merwo du Preez word aangestel en aanvaar die nominasie.
6. **SPREKERS:**
 - 6.1. **Arno Oberholser (Begroting terugvoer en nuwe produkte)**
Arno Oberholser stel vir Willie Nel en Hennie Swanspoel van Sanlam bekend wat terugvoer gee aan die vergadering oor die Minister van Finansies se ontlangse 2006 begroting. Hulle stel ook van Sanlam se nuwe produkte bekend. Lede wat belangstel kan Arno Oberholser kontak op 082 458 7948
 - 6.2. **Ivan de Villiers:**
Wapenwet
Ivan de Villiers gee terugvoer oor die Wapenwet en die voorgestelde veranderinge op die umstredo Wet. Die prosedure betreffende hernuwings, geldigheid van ou lisensies en oordrag van wapens word bespreek en 'n uitdeelsuk in die verband word uitgegee.
Minimum Loe vir plaaswerkers
Die minimum loen vir plaaswerkers word bespreek en die veranderinge in die verband word uitgelig. Die vrystelling van die minimum loen wat die Departement van Arbeid in 2005 aan sekere lede van die boerevereniging gegee verval met die bekendstelling van die nuwe Sektorale Vasstelling 13.
AGRI SEB
Die SEB telkaart en sewe faktore word aan die vergadering uitgewys en terugvoer sal aan die vergadering gegee word sodra die wetgewing in die verband gefinaliseer is. Die verwagte datum hiervoor is April/Mei 2006.
 - 6.3. **Danie Malan –Munisipale Verkiesing**
Danie Malan verskoon homself tydelik as Voorsitter en Petrus du Preez neem waar as voorsitter. Danie Malan staan as kandidaat vir Kouga 2006 vir die verkiesings wat plaas vind in Maart. Die strategie en voordeel om die kleiner partye te ondersteun word bespreek. 'n Versoek word geig aan die vergadering om met die werkers wat op plaas bly te praat oor die belangrikheid daarvan om te stem.
7. **AANVULLENDE SAKKE:**
 - 7.1. **Kapt. Ademi(SAPS)**
Terugvoer word gegee aan die vergadering oor die programme wat die area polisie geloods het betreffende die hantering van die probleme soos alkoholisme en dronkenskap in die gemeenskap. Terugvoer sal op elke Landbou Vereniging vergadering gegee word deur die plaaslike SAPS.
 - 7.2. **Toestand van paaie**
Die vergadering bespreek die swak toestand van paaie in die omgewing. Die paaie komitee moet 'n skrywe rig aan Marie de Villiers, Direkteur Paaie om die situasie uit te lig en aksie in die verband te kry.
8. **Volgende vergadering**
Die volgende vergadering is geskeduleer vir 20 Junie 2006

Vergadering vordaaag om 20h15

APPENDIX 8- THE PACKING HOUSE



Sorting the grades of citrus

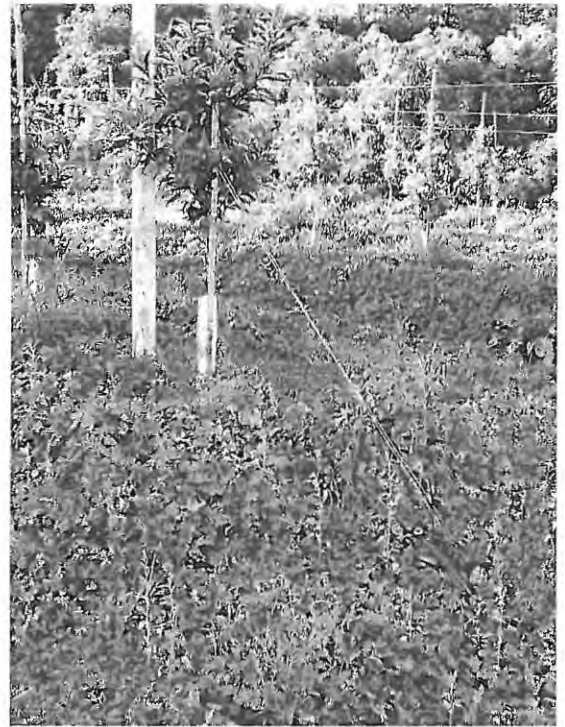


Packaging for export

CONSERVATION FARMING PRACTICES



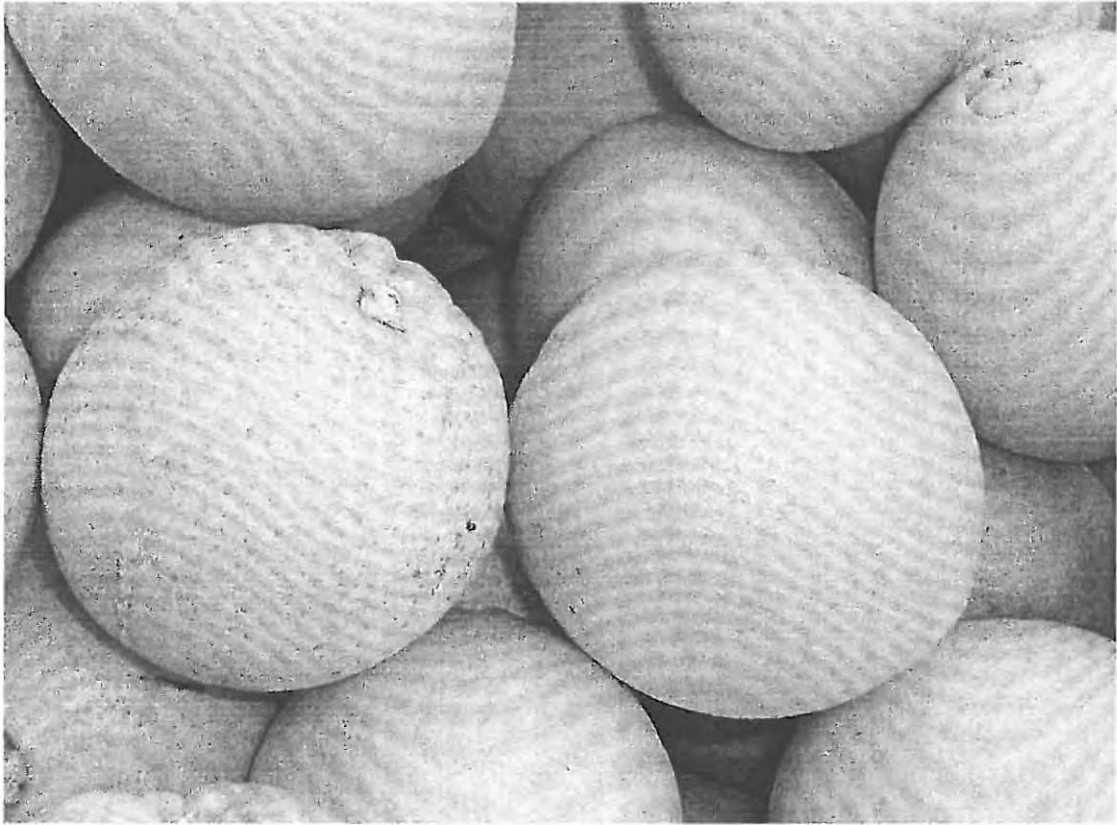
Mulch under the trees



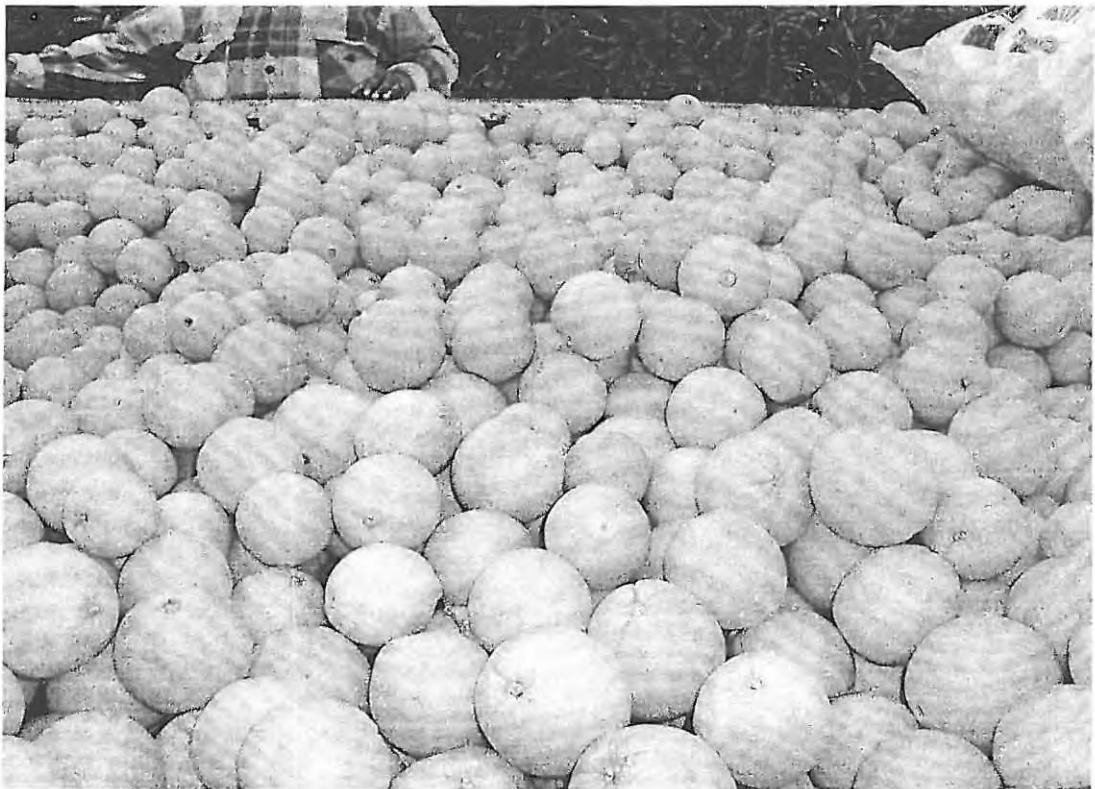
Fertigation Line



Drip Irrigation System, Drip Line.



Red skin orange on left which is caused by a fungus.



Variety of oranges going to the Packing house.



Irrigation Canal



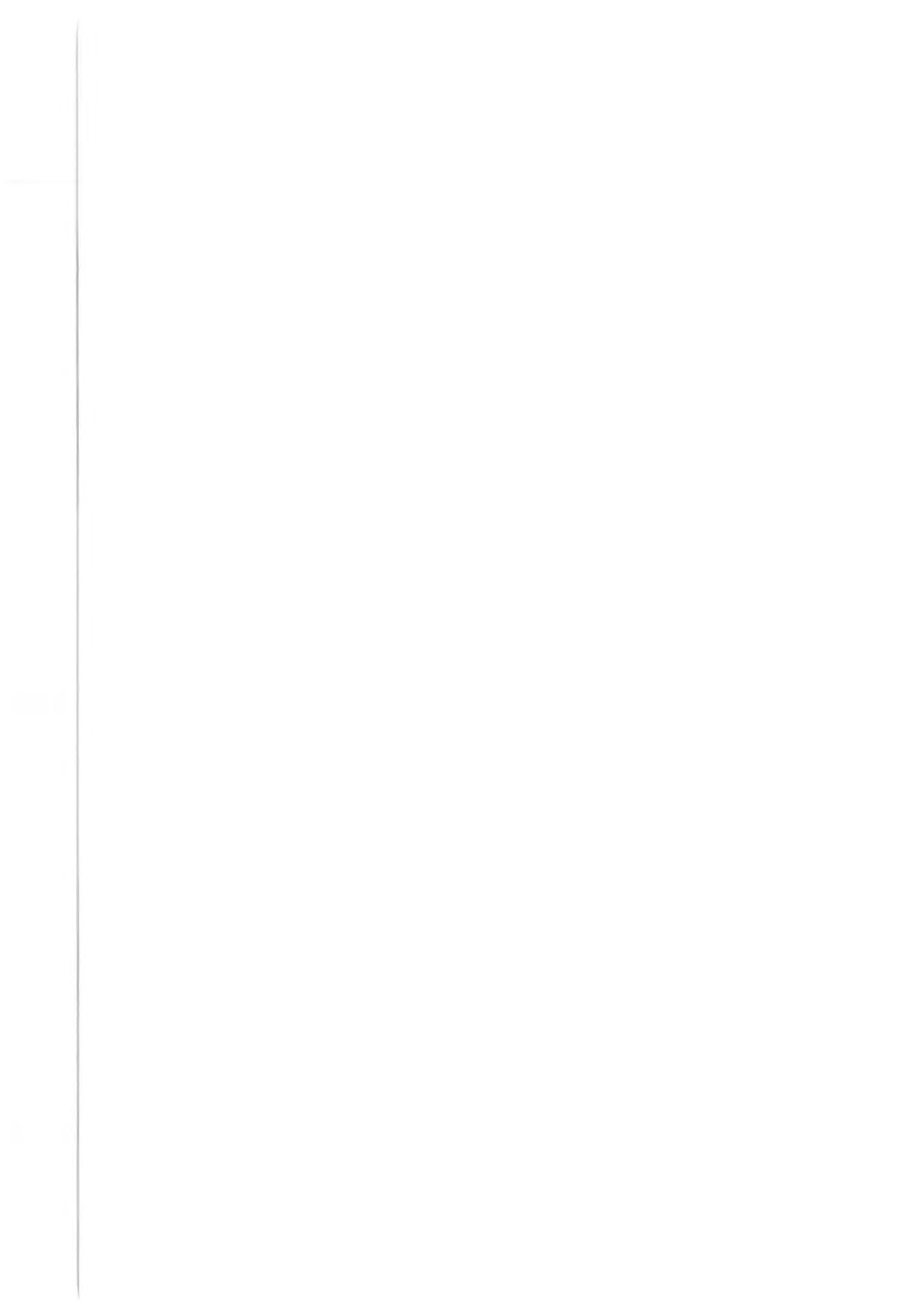
Young citrus orchard



A new field with irrigation line

Aerial view of Patensie





APPENDIX 9
Transcript of Interview with F3, 25 September 2006

Linda: Can you tell me a bit about your family history in the area, how you came to farm here?

F3: My father started here in 1908 and since then this farm has belonged to our family. I was born in this house, it was an older house.

Linda: How did this farm start?

F3: My father started, he was only, he had 2ha of land when he started here so he eradicated all the bush and he increased all the planting areas and he started with sweet potatoes, which was his main income in the beginning and also beans and later on tobacco and in the 1920's that is when they started in the Gamtoos with the citrus. We kept on planting tobacco until last year but at the moment the main crops are potatoes and chicory and vegetables like cabbage and pumpkin in between for rotation.

Linda: So earlier did you send all your citrus to the main packing house?

F3: Yes, we took it always from the start. Right in the beginning every farmers had to pack his own produce, citrus, and they did it all on a small scale by hand, no machines and then in 1936 we started with the co op and so we took all our citrus there. Last year we built our own pack house here.

Linda: Why did you decide to build your own?

F3: I think we can do it cheaper than they could do it.

And our tobacco we also took to the co-op at Patensie. We delivered it there and they distributed it through the country.

Linda: Can you tell me a bit about some of the conservation farming practices you use.

F3: We have started now with a different kind of cultivation. We mulsh the citrus trees with teff grass. We use some of our irrigated land to grow, sow teff grass and we cut it and through it around the trees. And it makes a great difference. It spares us a lot in weed killer and it keeps more moisture in the soil and if you take that mulsh and lift it, you can see it is living organisms beneath it. And some other people started here and I think it has been a great success is to go back to the natural, if you go into the bush you will always find the leaves and everything is lying on the ground and forming a kind of mulsh and where the field is overgrazed you find that the soil is hard and nothing grown there. It's the same with our cultivation of the citrus, if you keep on killing the weeds with weed-killer then the soil becomes hard and doesn't absorb the water properly.

Linda: So it helps with the productivity of the soil and retains moisture.

F3: Yes, yes

And even with planting our other crops like chicory or potatoes we stop ploughing. We just loosen; make the soil lose with a tiller and plant on the rest and the rest of the previous crop is lying on the ground and it is also forms a kind of mulching on top of the soil or in the top layer of the soil. And that's a new kind of thinking of the farmer and I think it is a great success.

We do not cultivate so often the land, especially we are not ploughing anymore.

Linda: Do you leave certain parts of the land fallow?

F3: Yes, we rotate the crops, very often. After the teff, its one season and then the next season we plant potatoes or chicory but it is a rotation. We never plant the same thing within 3 years with the same kind of produce. We don't produce the same thing

on the same land within 3 years. So every three years you come back with the same product.

Linda: So where do you get most of your information, conservation information from?

F3: You read, there are so many publications, magazines like Farmers weekly Landbou, and also in the last few years, the people who sell the insecticides, they are really trained very good. They help us. They are looking at what this farmer is doing and if it is a success, they come and tell you, so in that way, they are increasing information from one farmer to another. They are the biggest help at the moment. One of them told me that he is urging us to plant more teff even though he is selling insecticides and weed killers so that is in competition with him so he is selling less weed killers now but he is still urging us to do that.

Linda: Is there any information from the citrus packing house?

F3: They have an extension officer who comes round. But previous years they had 2 or 3 but at the moment only one and it's very seldom that he comes around. The other people that were selling the insecticides and stuff, they are now the people who are trained very good and they give you very good information. Sometimes or other, there are meetings to explain things and telling you which type of citrus to plant and when, how to grow it and different ways of growing things, potatoes and everything, you can get this information from those farmers days. But you must be informed of the latest information, everyday, there are so many things that come new every year and you have to do things, so you must always try to be up to date with your information and the way in which you are farming.

Linda: Did this information used to come from the farmers association?

F3: Yes, at most of the meetings they have some or other person informing us about income tax, medical insurance and also even the news ways of farming, like with potatoes and the use of manure. At every meeting there is some or other person who they get as a speaker for the evening.

Linda: Can you tell me a bit about these standards?

F3: Yes, you must be up to date with your Europegap, they are very strict on the, especially for the export of the oranges. Every year they come around, even more than once a year. You know even if you pack your oranges and you don't belong or comply to the laws and Europegap, there are certain stickers that you have to put on the export cases so it is in your favour to do it.

There are external consultants that come round and audit us and you must have everything on the record, this person was doing this job with this kind of insecticide and it took him this long and he wore this gear and everything.

Linda: Do you get lots of information with the standards?

F3: No not really, only the ways you have to keep your insecticides and the way the people must be trained to be able to work with different kinds of insecticides, some are very poison, so they must be trained, they must go for a course and even your tractor drivers. Almost all of our workers attended a course in connection with farming as well as first aid.

Linda: What are some of the main problems you face?

F3: Our main problem is the new labour laws. In some respect the laws help you and tell you what to do it says how much holiday to give them, so much sick leave and that you have got to pay for overtime on a Sunday, so that part of the law is alright. But to get rid of someone who is doing wrong on your farm, it is very difficult, you have to have a lawyer with you and some of them are very naughty and they can do you great harm.

Someone the other weekend broke into the citrus pack house and took the fork lifter and made turns and drove into the boxes and we could not just let him go, so that part of the law prohibits us to take more people in for labour. You are always afraid. I am not worried about the wages you have to pay, but previously we took the older people and gave them some light work but not with the same salary as the other but now you must pay them a minimum wage.

Linda: Do you have a problem with markets?

F3: We take all our stuff to the market in Port Elizabeth and the citrus we export through an agent but that part is alright and then the tobacco, we take it to the co-op and then they sell it for us. But the problem is the market is fixing the price. But there are so many people that sell direct and now the people who buy the stuff from those selling direct, they give you the same price as the market price. But by selling direct, you take the buyers from the market away and the price in the market drops down because there is no competition. If anyone is taking their stuff to the market then all the buys will come to the market and then fix a price but now it is very difficult because selling direct you need not pay the market fees and the buyer says, listen, I will get you almost the same price as the market and you needn't pay the market fees. It's a difficult situation because some say by selling direct you add value to your stuff and indirect you lose.

So all our citrus is exported internationally except for the third grade, which is for the local market and juice, but now this year, they even took the third grade too, they exported it to make juice.

There are a few agents and you must work through an agent and then they send the orders to certain countries and they tell you where to send the citrus.

Linda: Do you have your own agent?

F3: There are 3 or 4 agents in this area. You obviously use the one where you are going to get the best service and the money. They take commission on every box they sell.

Linda: Can you tell me about your interactions with the Baviaansmegaresve project? (The Biodiversity and citrus initiative and proud partner programme)

F3: They started with the citrus initiative with Colyn and Matthew, they start with it but I do not know with what method with which they are getting going. I would like them to be more keen and make a date with every private packer and the co-op at one time at a meeting, all of them and explain and make a decision on what is the way forward. I asked Colyn and even said I would help him to get all the pack houses representatives there but I think it is still a bit slow. I'm not sure that all the people are aware of it. They have held meetings, but only with some people, not all the people and you must spread the word. It's not a programme that includes everyone yet.

End of transcript

APPENDIX 10

Interview with P1. Patensie Citrus Company (PCC). 25th September 2006.

P1: So just talking about these standards that the guys have to produce to, its about 50/50. On the one side farmers realize they have got to look at sustainability and conservation and a lot of them are doing it in any case, were doing it in any case. There are always a small percentage of culprits that always do things wrong, but it has improved the way guys handle chemicals, wear protective clothing, so the practical side of it. But its a 50/50 for most farmers. What the farmers don't like is that it is very prescriptive, its very rigid on some of the aspects and there is a lot of red tape and a lot of paper work, which I personally think is unnecessary and doesn't really add anything to the production side of it, the profit side of the thing because that is what most farmers look at, its profit. So some of them do get a little frustrated with them.

Linda: So the standards don't really add much to profits?

P1: No I don't think so... There is better control obviously and adding to profit is indirect really, because guys do have better control over the ways chemicals are used but I think for the efficient guys that were efficient in any case. Fertilizers haven't changed they are just recording it now, they have to do all the paper work and then go through that. So 50/50, the storage of the chemicals now is 500 times better, its under lock and key now so I think that guys were at risk in the past because the chemicals were standing all over the show, in sheds, next to the spray carts, all over but that has been tightened up now and I think we have all welcomed that. From my side I was in the field, working with the farmers before I landed in the pack house and that was something I saw, chemicals all over the place, kids walking around and playing near them so the tightening up of the practical side is a definite improvement. We are talking **Europegap** in general now.

What frustrates the guys is a lot of paper work and I think there is a bit of suspicion as well from producers and I also have a suspicion, bit obviously one realizes that we are in a global business now and you have to compete with other guys. But the supermarkets are getting their tentacles onto the farms now. I think that is a general perception now. They have absolute control now, sitting in the UK in an office and the systems are being set up and being tightened all the time so that buyer could go in theoretically on his computer and see exactly, it has already been set up like that now, the trace ability of everything, exactly what the guy sprayed on his farm, when he sprayed, hygiene of the workers... everything. So guys, farmers are a bit concerned about that in general because these guys are starting to get complete control of what is happening in their orchards. Which is good and bad, I can understand why the supermarket is doing it, they are walking away from the risk, so if there is a problem with the fruit they are passing it back to us. I can understand it from their side but the big question is, where does this all stop? How much control are we going to allow these guys to have in our production systems? That is just the one side of it. Obviously we all realize its good to have sustainable agriculture and I think the farmers here realize that more than anyone else otherwise they won't have a business in 10 years time so there is not a problem with that in general.

The other big problem guys have is there are all sorts of standards they have to meet, whether on Europegap, we have been there for 3 years now and all our farmers are accredited with that so there is not a problem that we are nit complying, the guys are all complying and we have had it for 3 years now for all the guys delivering fruit. But now the next thing is that Nature's Choice has come, which is from one supermarket, Tesco, so his fruit is now safer than someone elses, so that is

the perception, so now there is a battle for the safer fruit. M and S come and they have a different list so that is now where the real problems start.

Linda: So are the standards/requirements very different across Europegap, natures choice?

P1: Different but not totally different. They all have the sustainability aspects, but some of them will focus more on labour issues, some will focus more on environment some on more the whole trace ability system so it depends. We have about 50% of our crop, which is now Natures Choice complP1t, for Tesco. Again as I say, it's not that we are not doing it and are negative about it we are just wondering all the time that we are busy with it, one is wondering how and where does this stop and are we getting enough for the trouble the guys are doing now, for Tesco for example, are we really getting prices for Tesco. But we all realize what it's about. And there are more standards coming in all the time so M and S might come now, they are not there at the moment and come with a higher standard than Tesco now, so I think we have to be careful from our side that supermarkets say that this fruit is even safer than this guys, is that really necessary? It's all fruit at the end of the day.

Linda: Is there anything on the cards for a South African standards system?

P1: They are looking at SA stds now but I don't think they are going to meet the other standards. I just heard last week about the SA standards and its just going to be an absolute minimum, basic standard and it will just be a complP1ce of the SA standards as they are and will just be a summary of all of that. What farmers have asked for is one standard for supermarkets but it's not going to happen. Because of a the global market and competition, this guys wants and edge over that one, and this stuff is safer, I think this is what is happening. So that is why I say the motives of everything. Most farmers here are already busy with things, potatoes and so on, not only their export stuff, getting their soils right, and getting soil structure right and getting the inherent fertility of the soils so they are doing it in any case because that is the only way they are going to survive.

Linda: So do these standards really dictate what farmers can/should do?

P1: They dictate, fertilizers and chemicals used. There is a list which CRI puts out, Citrus Research International, with their discussions with all the guys worldwide about what chemicals are legal and what are illegal and what additional restrictions there are about what is on the labels, based on SA labels. So it could be that China or the USA have a different standard to what is on the label and additional restrictions that you have to have to pack for those people. So we have to comply to that. There are samples taken from every cultivars and even the inspectors take samples here for residue analysis, which is done before they start picking and they screen for all the major chemicals that we use, so that is being monitored.

Linda: So this is being done by external inspectors?

P1: External yes, we have none, external. It goes to someone at UCT I think, they do our analysis for us and those results are made available for the buyers and they also do their own inspections, especially in Belgium and the Netherlands. We are finding in practice, they are the strictest at the moment, they have the most questions to ask so they will also analyze fruit when it arrives on that side, just in the cartons as it arrives there so there is a whole network of inspections. We also have a list that we give to our farmers with the cut off date for certain chemicals. There are certain chemicals that are not allowed and that list is tightening all the time, either chemicals are not allowed to be used or their use period is being reduced.

Linda: About how many farmers bring their produce to the pack house?

P1: About 50

Linda: And how representative is that?

P1: It's about 50% of the valleys production. There are about 70, 75 farmers in the valley. There are 2 very big operators in the valley. Endoleni are the other big guys here. It's a family business, this is a farmers, was a co-operative is now a company with shareholders of about 50 farmers. They [Endoleni] are smaller in numbers but have very big volume, he is the biggest single guy in the valley here. So they most probably pack about 35%, we pack 50% and the balance is packed by 10-12 small pack houses.

Linda: So which are the main countries you export to?

P1: Mainly Europe but it changes all the time, Europe is usually about 50%, maybe 60% this season.

Linda: So this packing house has been here quite a while

P1: We started packing here around 1928/1929. It was a farmers co-operative so we been up and running about 70/75 years. We changed to a company about 6 or 7 years ago, for different reasons, which I am not too sure we should have done. There is still debate about that, whether a co-op should change to a company. In a co op you have funds here which they rotate and its about the way you vote, basically you vote on your turnover. Companies are on shareholding and is completely separated and personally not so sure of we are on the right track. But a lot of guys changed for political reasons after 1994, there were all sorts of fears. But we are a company now, most of the shareholders are producers not all of them, but most of them. This specific packing house was built in 1990 and one at the back which was commissioned in 1999, 2000. We were initially on a property down in the middle of town.

Linda: So talking about 1994, pre 94 and post 94 have there been big differences in legislation for example?

P1: No not really, obviously things do change all the time, but nothing major. But there has always been labour legislation so the labour here has been allowed to be unionized. There have been more procedures yes, definitely, more rigid labour procedures and the way you handle labour but not a problem really. Wages, we are above the minimums so I really don't think there has been anything major. In fact we have just operated like we have always operated.

Linda: What sort of problems do you face with markets?

P1: Markets are a big thing yes, you have to decide where to market the fruit. What the one big change has been is that we have started to do direct marketing, that is actually a major change. In the past 100% of the fruit went through **outsparn** so that has been a big change. We were packing just 2 brands for Outsparn, one for Europe and one for the Middle East. We were fairly restricted in the markets before 1994, it wasn't a major restriction, the fruit was sold. There were some markets that we couldn't get into but in general the markets have opened up more, there is no restriction that I am aware of at the moment. Politically. If there are restrictions its more of restrictions as a way of just stopping the fruit from going into certain countries but the markets are opening up all the time. There is always a big fanfare at the beginning of the year that this is a big markets that is going to pay well, but after 3 or 4 seasons it just dips into the same as the UK or Europe. The big things is that we packed everything for Outsparn , up till about 7 years ago and then we made a big marketing change. Obviously Outsparn wasn't allowed to be single channel marketing anymore, its multi channel so we have gone that route. At the moment we pack very little fruit for Outsparn but we are packing for them at the moment. But we are really doing about 55% of the marketing ourselves now directly to supermarkets. That has been the big change and has had a huge impact on the way we operate this plant; it has become more difficult.

Have to have Europegap no matter if you go direct or through a supermarket. If you are going to a supermarket you need to be accredited and they check on that and want the lists of the farmers, the guys packing and the guys supplying you, they want a list of what is happening on a daily basis. They do check on that.

Linda: And has Europegap only been around 3 years?

P1: 3-4 years. This is the 4th year now. From when it started we started complying, we were warned. Initially we didn't have 100% of the producers but after a while we got all of them. It took us about 2 seasons to get all the producers.

Linda: Was it quite difficult to try and convince farmers to join?

P1: Yes, it was a huge battle. Initially it was a huge mind change for them.

Linda: And if they didn't want to?

P1: They had to do it, if they wanted to pack their fruit here.

Initially you take the progressive guys first, that want to do it, they prove that they can do it and pass the inspection, or they get accredited and then you take the next lot and the next lot and then you can sit with the stragglers that you just have to ouch through the whole thing. Farmers work like that, they are always different, different personalities, so we managed to get them though that. And once you are running on the system you just need to keep the pressure there, just keep it going on an annual basis. They do moan about the money, it's a lot of money, R3000 per inspection, which is a lot for some of the smaller guys. So they are querying the cost, because the guy sits there for about an hour and a half and he audits them, so they want to know how that can be R3000. And we know it's a registered company, profit orientated sitting in Europe, so that's another questions, where does all this money go to? Most guys are not comfortable with the idea, they prefer something else, they are happy with standards but they would prefer for it to be done in a different way. But as I say, we do get all the guys through eventually and they know if they want to pack here they have to be accredited.

What is difficult is when you get additional, like the Natures Choice for Tesco, that is more difficult because now guys are saying, well I will do it but what do I get back for it? And Tesco doesn't always pay the best prices so now you are sitting there with that fight amongst the guys. Is it compulsory, no it isn't, I'm not going to do it, I have Europegap. Another guy says he is going to do it but he wants R1 or R2 more for his fruit... I would prefer just one standard, and then you can put your fruit in where you want it. That's what we need. Bt now you are getting one supermarket that wants safer fruit or you want farmers that don't necessarily have better quality fruit than the next guy, he is just looking for some marketing edge into a channel which the other guys hasn't got. So he says, I will accredit myself and get accredited one step higher and then I have the edge compared to my neighbour. So he might be getting into a market maybe and it's in the newspapers and all over the show but he hasn't really got better fruit. He has just seen a gap and gone for accreditation and got into a marketing channel. There is a lot of politics in the thing, guys have struck a new deal or accredited themselves with an ISO, it's just a marketing ploy. I always say the guys with the best fruit are the old guys farming up in the mountains somewhere and he just keeps going with his old way, the ways he has always done it and he probably has the sweetest and best colour fruit at the end of the day. The guys with their modern systems, and we see it here, don't always have the best quality fruit, sweetest fruit, so there is a contradiction there I think.

Linda: Was it hazap?

P1: We are actually busy with it at the moment, its critical control points, hazard analysis and critical control points. So we have started with that but don't want to go too far with it, we are just going with the flow really. It's pointless being one step ahead of the pack, you just need to be there in the pack and moving to the forefront

of the pack, that is our philosophy here, otherwise you are going to spend a lot of money unnecessarily and not really get the advantages, so we are just moving as we are being pushed at the moment. It's not a negative thing I don't think, it's just a practical thing. We are also going for BRC (British Retail Consortium) at the same time as Hazap. Some of the supermarkets are starting to ask, have you got this, have you got that? A lot of it's all window dressing and that's why we get a bit negative about it, rather work on the practical stuff, getting the place clean, get the hygiene right not all this wear white jackets and hair nets... But they want it, so we just move as, when they start pressing you move a little faster. We find that if they need fruit they take fruit and it doesn't matter. If the market is very full then they start becoming selective.

We get audited regularly by some of the buyers, we have had 2 or 3 audits by buyers and we are achieving about 80-85%. Some of these things, obviously they want 100% but a lot of it is just paper work, you need long lists of procedures and whatever so in light of that we have just said that we will focus on production this season but we have this in the back of our mind but next season we will tackle this. We need a consultant, which is costing money, R20 000 just for the consultant and then you just have to make sure you go through the procedures. So it's good in a sense in a place like this, especially in a hygiene sense.

We are just scared that with things like the BRC and Hazap that the standards the guys are applying are actually for factories producing food, cakes, canned food where there can be major complications if the food is not right but this fruit is going through chlorine baths, sanitations, it's going through everything. The chances of something going really wrong with the fruit, it's a rot in the container and when that happens they just take them out, but for someone to get sick because the fruit hasn't been handled correctly, chances are very low. But if you were in a meat factory or fish then contamination can cause major problems but we don't have that sort of scenario here but we are being asked to enforce the same kind of rules, which is quite stupid.

Linda: And just finally, the pack houses role in communicating with farmers

P1: All the time, we have a lady that has the major job of communicating with the guys all the time. We communicate quite strongly by 'sms' now. Before that it was actually a nightmare because you have to sort out production for the next week. It's not like a normal factory where people buy in stock and it can stand there, you are sitting with 50 guys outside here, who has his own labour problems, he is picking faster, picking slower, fruit is smaller, fruit is bigger there are all sorts of things out there that you have to coordinate all the time. So we do hold meetings with the guys probably once a month, once in 6 weeks, depends. Mostly they are marketing feedback meetings to give them some idea, but we do throw in some production things there as well, just to keep them more or less up to date. In the past we used to put out a lot of newsletters, we have actually stopped that now because there is a lot of competition in the valley for the fruit, to get it to the pack houses. We try to put as little out in writing as possible because that stuff floats all over between anybody so we will inform guys verbally at meetings and give them a run down of what is happening in the markets, what the prices are like, what is happening with the production side, what our problems are on this side, progress of the crop, export percentages, any issues in the market that we are picking up. And then our secretary here, she is on a weekly program with the guys to deliver fruit, Thursday morning she has a deadline where she needs to know what everybody is doing with deliveries for the next week, which is to match the production side according to what we are able to put through the plant here. Sometimes she has to ask people to pick slower which is the last thing they want to hear, because the fruit is not static, it is sitting on the tree waiting to be picked. And that is one of the major problems here, you are rushed for some times, it's a seasonal thing, peaks at some times depending on the

cultivars that the guys have. We are in major navel peak at the moment but we don't have storage facilities for the fruit and it doesn't store well, you have to get it off the tree quickly, into the carts and sent off. So communication is all the time. The guys are on an hourly turn to deliver the fruit, and the pack house might be running slower for whatever reason, labour problems because this is labour intensive, it's all manual here so if your labour is 20% down on a day then your production is going to be 20% down. So we just communicate via sms and let them know what is happening. If you don't communicate with farmers you have problems...big problems

They are not always happy with what you do pack-outs are too low or we are putting the fruit in too slowly, 2 major issues from a farmer's point of view. He wants to deliver his fruit and get his trailers back and pick the next lot and start again so you are on a very tight schedule here and we can't store fruit really. We do have the wooden bins where they can be stored for 3 days, we don't have big cold rooms, I don't think its very economical for a seasonal business like this. Rainy days we have problems because then guys get behind and when the season ends the season ends so you have to push the fruit through faster.

Look I am not negative about all these standards and things and complying, I realize one has to do it. A lot of them are, in general in some aspects its good to have standards especially with the chemicals and all that, safety and storage of the stuff which was a necessary change. We not too convinced about some of the other issues.

END OF TRANSCRIPT

APPENDIX 11

Case Report of Discussions with B1, 11 September 2006.

On 30th August the Mega Reserve project hosted an open day in the Cambria area of the Baviaanskloof, the aim of which was if people wanted to know anything about the megareserve and its existing projects then they were able to come along and ask questions, get information etc. This event was very poorly supported by people, farmers, landowners. The reason for this being the timing and that many farmers were busy and behind with harvesting etc. He feels that the farmers in the GRV are only really interested in the Proud Partner Programme (PPP) and the proposed biodiversity and citrus initiative (BCI).

When did the PPP start?

It really took off in March of this year, 2006. "Was first thought up end of last year though, but I have taken it on seriously from March". Hoping to get 100 members by the end of the year. Convincing some of them has been hard work.

How have you been able to do this, how do you convince them?

Most farmers are already half way there. Some people are scared about the fact you have to sign something, they feel they are going to be signing away their rights to land and property. Talk about the importance of conservation and conservation farming methods. For citrus farmers, by applying to Eurepgap standards they are already half way there and eligible to become PPP members.

How does one benefit from become a PP member?

There is a competitive marketing strategy attached, for retail, industry and tourism/hospitality. Able to say that they comply with certain standards/ meet certain requirements, adhere to legislation for example and do not plough virgin land or develop without the appropriate permission and documents.

The PPP is useful to assist farmers in creating awareness and the broader education of people/ farmers/ far labourers.

Communication between the farmers or actual landowners and the Department of Economic Affairs, Environment and Tourism (DEAET) is blocked. (* Its is not that it is 'blocked, but it needs to be opened up in a more appropriate way) They do not want

to talk to DEAET. That channel needs to be opened up as DEAET are to be part of the PPP, when they take over management of the Mega Reserve.

At the end of each year, partner members are required to complete a self assessment form in order to renew their membership to the PPP. Members do this themselves because "the BPMU does not want to play Policeman". This self assessment form checks if they are still meeting certain standards. The BPMU then take a small random sample check, through an independent consultant.

How did you first introduce the PPP to the farmers in the GRV?

We first explained the concept of biodiversity and the importance of it. This is what we used to break the ice. For example we would say, do you adhere to Eurogap and other and other relevant legislation. Then things start to open up because they realize they are already doing a lot of things already. "In the Citrus Industry, the PPP can be used as a marketing tool, by adding the Logo it will become known that the produce/product or land on which it was produced is managed by people that are conservation minded". (They adhere to certain standards), it's all about conservation and biodiversity.

What other forms of contact do you have with members/ farmers? Do you offer any sort of information/ conservation information to them?

Newsletters and brochures with odd bits of information, updates on programmes and progress are sent out to all PPP members. (Sent out to members because they are prepared to work with the BPMU and should therefore receive some sort of benefit). "We are not responsible for giving agricultural advise to people/farmers". However the Unit, via B1 can be involved in giving advise where needed and when requested from them. For example if someone asks for something specific then they will do their best to help/ assist or guide. "But we don't want to preach to people or impose on them". So things are rather ad hoc. Meetings happen when needed, on a needs basis, there is no real set/formal time for meetings. Communication from the Unit takes place through B1 who then makes contact with a few *Opinion Leaders* in the community. Opinion leaders are people like (** the chairman of the local Agricultural Association – C1), who are well known and respected within the community and there are quiet a few other opinion leaders in the area as well. Messages are then

relayed to other members of the community through them. "We like to keep people informed, the channel is there, but it's not a good one, it's an informal channel". The ECPB needs to make the communication more solid/formal.

The BCI

"Conserving biodiversity is not a programme , it is a revolutionary process". It's like when man landed on the moon, one small step for man and one giant leap for mankind... People need to take small steps first, get a few people interested, before being able to leap. Can't get everyone involved straight away.

How did you first introduce the idea of a citrus initiative to the farmers?

We approached the managing director of the Patensie Citrus Board, and basically explained what we envisioned, intended to do. Explained the ideas and the fact that we are/were worried about the expansion of agricultural land, the clearing of land and the rapid development of the industry. A curb in expansion is needed. There is legislation in place but most people tend to ignore it. Explained that "the BCI may be a way to curb this expansion, as we need to expand vertically and not horizontally". We then had a meeting with the rest of the Citrus Board members where Matthew explained how the whole initiative works in the Western Cape and how successful it has been. We then followed this up with 2/3 formal meetings.

The BCI extends from the first tree in the GRV to the last one, in other words **all** producers should be involved in this project. So we went to the main packing house first, but some of the private packers got upset, also need to keep them happy, but we are making progress here.

What still needs to be done in the BCI? How far is the initiative?

We still need to develop the implementation plan and appoint the consultant who will be responsible for this planning process. So it is still early stages

What sort of participation is there for farmers in the whole planning process?

People will be free to comment on the implementation plan and discussions around it can take place. The advert for the consultant will also be placed in all the local media/newsletters/papers etc. The PCB, private packers and the BPMU will all be part of the final decision process of deciding on the consultant for the planning of the initiative as well as in the final draft of the consultant.

Are most people generally excited about the BCI?

Landowners seem to be grabbed onto the big idea/ the big picture and are looking into the future. They are thinking about finances and what the future may bring with the initiative. We, the BPMU, are worried that they may be too excited. So there were very few negative feelings towards the whole initiative. There does however seem to be some confusion between the PPP and the BCI, which needs to be sorted out (* the difference between these two concepts is however getting more and more clearly as of lately and the landowner in the valley has a better understanding).

