

CHAPTER 1

INTRODUCTION

Almost every activity of man uses land and as human numbers and activities multiply, land has become a scarce resource. Land varies greatly in character, productivity and accessibility from place to place (Hawkies, 1978). Communication therefore becomes essential as it dictates variety of ways and alternative ways of utilizing a particular area of land (Whiteby & Willis, 1978). Communication should be understood in one of the following ways in order for one to realise his/her goals: (1) as a glue that holds everything together and a mutual process (Manning, 1987; Rogers & Kincaid, 1981). (2) Not simply the transfer of information which leads to action, nor is it simply a message given, a message and receiver, rather, it begins with pre-set understanding which make effective communication possible and probable and it must start in the right way (Reilly & Di Angelo, 1990; Manning, 1987; Sanford, 1982). (3) As intercourse by words, letters or messages, interchange of thoughts or opinion by individuals, groups or public (Sereno & Mortensen, 1970; Williams, 1992).

If communication is used wisely and effectively it can affect changes in the use of land use, not only applying for profitable use, but also for misuse and disuse. It is important to note that with communication, as with other types of activities, it is necessary to have criteria by which it is possible to gauge the success or failures of efforts (Fourie, 1984). It is not always possible to have exact indications such as “number of units produced” or “amount of money collected” because it is sometimes impossible to make external or objective measurements.

For instance it is possible to quantify a desired shift in an attitude if one can administer a standardised test. If for example communication is used to reach the goal of a 10 percent increase in production in a particular project, that 10 percent may serve as a criteria for the measurement of the success of the communication.

Communication networks that have been identified include: (i) the wheel type for Bapo II project and (ii) all-channel system for Rhenosterfontein and Schoongesicht project. Communication is again another tool that an extension worker uses in the three projects for technology consideration and technology transfer.

Assigned
There are three field crop projects in the Mankwe Magisterial District at the present moment, namely Rhenosterfontein, Bapo II and Schoongesicht. The general state of agriculture in these projects is unsatisfactory and there are many indications that agricultural production is sub-optimal. New technology and agricultural innovations may be a solution to some of the agricultural production problems in these projects, but the adoption thereof seems very slow and reluctant, leading to many unacceptable practices still being utilised by the farmers. Their farming background also contribute significantly to the adoption or non-adoption of innovations.

An innovation according Van den Ban & Hawkins (1996) is an idea, method or object which is regarded as new by an individual, which is not always the result of recent research, for example the matric system is still an innovation for some Anglo Saxon Northern Americans despite the fact that it was developed 200 years ago.

The Mankwe Magisterial District is serviced by the office of the Department of Agriculture, which is in Mogwase. It is now known as Mogwase Agricultural Development Centre (ADC) with eight Field Services Units (FSU's).

Mankwe according to the population census of 1991 has a population of 102 800, Batswana speaking people, constituting 86% of the total population and others 14%. Major classes of farming systems in this district are:

- i. Individual Modern Commercial farmers.
- ii. Farmers using intermediate technology.
- iii. Traditional small scale farmers.

Land productivity has declined in Mankwe field crop projects and other fields for several reasons. Common ones include: (i) general neglect of conservation farming resulting in impoverishment of soils, (ii) erosion and (ii) low productivity. There are some traditional systems that convert dung to polish and crop residues to fire energy. According to Makhalikane (1992), these factors contribute to deterioration of soil structure and loss of soil fertility.

Access to agricultural inputs is a major constraint to farmers and this may be due to lack of funds.

The three projects vary in productivity. The available area in these projects is not utilized fully as there are always unploughed spaces every growing season. Soils found in these projects include, Arcadia soils at Schoongesicht, small portions of Hutton and Arcadia at Rhenosterfontein and Glenco and Hutton soils at Bapo II. Land belongs to different tribal authorities and some to the State. All the projects are established on State Land.

The potential of the projects differ and many farmers are not even aware of the potential of their area for a particular crop. At the same time there is no scientific study done on the projects which farmers can rely on. For those who fertilize their crops even though not according to recommendations they do get good crops in good seasons.

Agricultural practices in the three projects include the following cultural practices: soil preparation (ploughing and levelling the soil), planting, fertilization, pest control, disease control, weed control (by hand and machinery) and harvesting (by hand and machinery). Fallow is practised but is not done purposefully. The land is left to fallow when the owner is bankrupt. Monoculture is also practised in all the projects. Farmers like to plant maize and sunflower but the latter dominates as farmers regard it as a profitable crop.

This study is undertaken on the understanding that man's advanced technical skill and implements can enable him/her to decide on the type of agricultural activities he/she would like to pursue and the production he/she would like to attain, without losing sight of the fact that his/her success or failure depends largely on his/her ability to overcome the obstacles presented to him/her by the environment in which he/she operates. It is also undertaken with the understanding that the purpose of extension should be to facilitate learning amongst farmers of projects and communities to promote agricultural production and improvement in the general quality of rural life (Fliegel, 1984; Compton, 1984) this study has also taken note of the fact that projects are "cutting edge" of development Gittinger 1972 cited by Erskine (1985)



The objectives of this study are therefore to: (i) to do a situation analysis for each project, (ii) to analyse and describe the recommended solution to the agricultural production constraints for each project; (iii) to analyse and discuss the communication network within each project; (iv) to analyse the contents and context of agricultural production communications by extension staff to project farmers and (v) to make recommendations on how to change the agricultural production situation on each project.

CHAPTER 2

PROBLEM BACKGROUND

Assignment 2.

2.1 OVERVIEW

The three projects have been operative between seven and nineteen years, but the general state of agriculture remain unsatisfactory.

The sub-optimal agricultural production which seems to exist can have serious economic consequences for the farmers, and eventually for the surrounding communities in the whole Mankwe district. In the surrounding areas there are commercial farmers who do achieve satisfactory crop yields, which suggest that the problem may either be technological in nature or could be a combination of technology, its application, socio-economic, and human factors.

2.2 CURRENT PROJECT SITUATION

The projects are operative, but there are some areas that lie fallow. Weeds are taking advantage of areas not ploughed and every year the density of weed population is increasing. *Datura stramonium* is the most common weed. A single *Datura stramonium* plant can produce between 2000 - 3000 seeds per plant of which a large number of dormant seeds can germinate under favourable environmental conditions in subsequent growing seasons. This means that bare surface areas will be exposed to infestation.

Farmers prefer minimum or reduced tillage methods, they prefer to plough, harrow and plant. This is good in cutting production costs. It is a tradition of project farmers to help each other with implements. These include tractors for purposes of ploughing and planting. The total area planted (maize and sunflower) for the three projects is 1221 hectares which is divided as follows:

- i. Rhenosterfontein - 329
- ii. Schoongesicht - 847
- iii. Bapo II - 45

2.3 **MOTIVATION AND NEED FOR THE STUDY** *Assignment no 2*

Apart from the aforementioned factors, this investigation was motivated by the concern that considerable potential for increased production does exist, even though inputs of extension workers and other agricultural co-operatives or service providers to farmers have not yet increased the yield. Further motivation is that, unlike other projects in the North-West Province, there has been no extension research of any significance.

There is nothing to assist the extension service to improve its effectiveness and strategies in disseminating information. The location of the three projects is known and the soil types. According to Bembridge (1997) classification of the farmers according to their degree of progressiveness can obviously be of great value to extension workers in planning effective communication. This could contribute significantly to the shift in production status of projects.

From this study the following outcomes could be achieved (i) accurate norms in the three projects could be established, (ii) analysis of findings could assist extension in planning its activities and developing extension strategies and programmes (iii) this study will also provide background for future extension research in the Mankwe district.

2.4 COMMUNICATION MODEL FOR PROJECTS

Communication focuses upon communication of information, the means used to communicate it, and the relationship between the people sending and receiving such information. It is therefore important for an extension worker to begin to communicate what farmers know, then take it further from there.

The communication model for projects is based upon: - who consult with who within and outside the project for information and the communication process as outlined by (Smit & Cronje, 1997) from sender, message, channel and receiver . This study takes a holistic approach to communication, practice adoption and efficiency in cropping.

The current network is not wide enough to enable them to resolve their individual production problems.

Some farmers consult extension as source of the message, but the opinion leader is also playing a major role to assist with some ideas in cropping. The opinion leader could thus also take the role of the sender of messages to the farmer.



2.5 LAND UTILIZATION

It is always important for the land to be utilized fully so that people can benefit from it. It should be utilized to its fullest potential, but it should be sustainable use. Hawkes (1978) pointed out that land varies in character and productivity and accessibility from place to place. Once the potential of the projects are established, projections in terms of tons per project can be made. The available land is not utilized fully as there are many uncultivated pieces of land which in turn becomes infested heavily by weeds. There are no available records that proved that land is utilized according to its potential and no planning has been in place with regard to rotational cropping nor utilization of uncultivated pieces of land.

CHAPTER 3

THEORETICAL BACKGROUND

3.1 COMMUNICATION - A THEORETICAL BACKGROUND

3.1.1 Definition

Looking on ways “communication” has been defined over the years by different authors brings us to a not-too-startling conclusion that, people define communication pretty much in relation to what they themselves decide to look at. According to Sereno & Mortensen (1970), communication involves intercourse by words, letters or messages, interchange of thoughts or opinion, by conference or other means, conversation and correspondence. Williams (1992) also defined the term, but outlined the levels at which communication takes place: (i) individual level, (ii) group level, (iii) organizational level (iv) public and (v) international level.

3.1.2 Objectives of communication

The objectives of communication is to: (i) inform, (ii) remind, (iii) bring about a certain activity or to persuade. The communicator and the receiver of information must have a common clear message to achieve the aims of communication (Kroon, 1995). Communication objectives also relates directly to the intention of either to get response from the recipient of the message or to evoke a certain behavioural reaction (Smit & Cronjé, 1992). This reaction then leads to the execution of a task and is an inherent part of the communication process.

The elements of behavioural reaction include thinking, talking, listening, perceiving and acting. Thinking is necessary to grasp the actual meaning of the communication message. Talking is an essential activity of the communicator and the receiver, who must provide feedback. Listening is an activity performed by the recipient although the communicator must also listen for feedback. Perceiving is necessary for collecting information and for learning. Acting, such as writing reports, relates directly to the communication process.

3.1.3 Communication as a process

A simpler way to define communication is the process of transmitting information and meaning. This process is used when there is something that the sender wants the receiver to know, understand or act upon. Communication take place between sender and receiver. Figure 3.1 illustrates the process of communication.

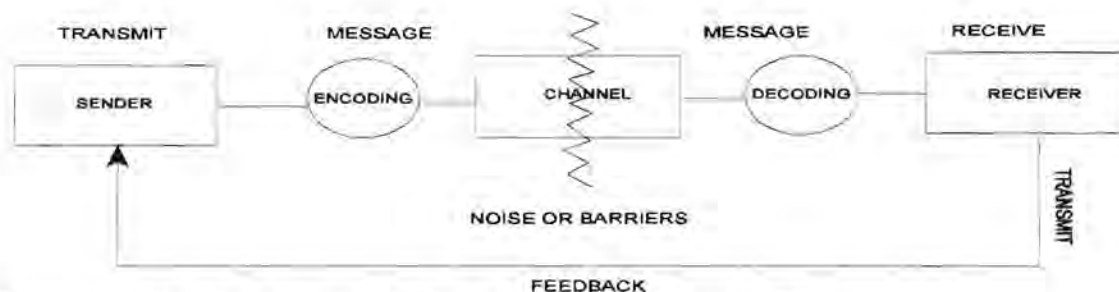


Figure 3.1 Steps in the communication process (Smit & Cronje, 1997)

The field of communication makes use of a number of terms to describe what happens during the process of communication. Many of these terms appear in Figure 3.1. The *sender* is the person who initiates the communication. The *sender* is the person with information, needs or desires and a reason for communicating them to one or more other people.

Encoding takes place when the communicator systematically translates the idea or intention into a form of symbols that the receiver understand. The communication *channel* is the means by which the message passes from the source to the receiver. The sender selects the channel for transmitting the message, while *decoding* has to do with the process in which the receiver interprets the message and translates it into meaningful information. The *receiver* is the person who senses and perceive the sender's message, while *noise* may be described as any factor that disturbs, confuses, or otherwise interferes with the transmission of the communication message, then the receiver has to decide if *feedback* is needed. It should be noted that one-way communication without provision for feedback indicates ineffective communication. It is therefore essential to encourage feedback and to monitor the effect of the message on the receiver.

3.1.4 Methods of Communication

There are four methods of communication that can be used, namely verbal, written, non-verbal and electronic communication (Kroon, 1995).

Verbal communication is used most often and is popular in the form of speeches and discussion. The advantage of verbal communication is that it is concise and that feedback takes place immediately.

Written communication includes notices, letters and anything else that can be put into written words and symbols. The advantage is that it is tangible, lasting and controllable. Disadvantage - it is time consuming. *Non-verbal communication* is neither written nor verbal. This is the communication of messages without the use of words. The purpose of non-verbal communication is to convey the feeling or attitude behind the message.

Some forms of non-verbal communication include the following:

Gestures refers to the movement of hands and body to convey certain messages, while *facial expression* include using of the communicators face, eyes and head together. The term *body language* is also often used and it refers to the posture of the communicator. Therefore body language reveals many things about himself or herself, for example an upright attitude usually conveys self-confidence and a positive state of mind, while the *interpersonal space* is the positioning of the body in relation to another person which also conveys a message. Intimate space extends from actual physical contact to about 45 cm between individuals. Personal space extends from 45 cm to 1,2 m between individuals. Social-advisory space extends from 1,2 m to 2,4 m between individuals.

The fourth communication method, namely *electronic communication* includes computer, telephone, videotapes and other methods that can be used as method of communication. Advantages of electronic communication is that quick and accurate information can be obtained. Disadvantages of electronic communication are that costs are particularly high, and in some cases, as with the use of video and television, there is no feedback.

Communication methods on the projects were mainly verbal and non-verbal in nature. Farmers in varying degrees talk to one another about farming and other things that influence their lives. The analysis was limited to and included only aspects concerning crop farming.

3.2 COMMUNICATION NETWORKS: A THEORETICAL OVERVIEW

3.2.1 Introduction *(ii) reambaldis*

The communication network within each project, is actually the “glue that holds everything together”. It is also “the electricity that powers up the place” (Manning, 1987). Without it there is nothing possible. It is a type of need satisfying behaviour and the ultimate objective of a planned communication will be the satisfaction of the need or needs from which communication originated (Fourie, 1984). Communication (as with other types of planned activities) must have criteria by which it is possible to gauge the success or failure of efforts. Communication must be planned for and must take into account local facilities, culture and local people’s wants and needs (Lionberger & Gwin, 1979:152). It is very important for extension to observe communication networks within the projects, as projects are regarded by Woods (1981) as the focal point of government action. This takes the form of specific targets for results, time tables, activities, resources input requirements, and other elements which can be monitored and evaluated.

It should also be noted that the goals of most government rural development projects are to (a) benefit the people in the rural areas and (b) contribute to the overall development of a country. Sometimes these two goals are not compatible with each other. Nevertheless communication networks are important.

A communication network consists of interconnected individuals who are linked by a patterned flow of information (Rogers & Kincaid, 1981).

Such information-sharing over time leads the individuals, to converge or diverge from each other in their mutual understanding of reality. The patterned flow of information will single out farmers who are preferred by most farmers and those with qualities of leadership, who will be an object of reference to the farmers. A leader is expected to be more influential than others (Jamieson, 1985). For communication to take place it has to start in the right way (Sanford, 1982). In a game of catch, the ball must be thrown in such a way that it can be caught by the other person so that he/she can toss it back. This process enables people to relate if they don't agree. Again intercourse by words, letters or messages, interchange of thoughts or opinion by conference describes a true reflection of communication (Sereno & Mortensen, 1970).

3.2.2 Factors influencing network development

Network development is influenced by numerous inter-related factors, such as group work, interaction, friendship, use of channels, propinquity and types of networks. This section will present a description and a brief discussion on the applicability of each factor to each project.

3.2.2.1 Group work

A group is a network of people who have intentionally invested part of their personal decision making power in the authority of a large social unit (called a group) in pursuit of mutually desired but separately unobtainable goals (Mabry & Barnes, 1980). This is to say in simple terms "some people agree to meet to work together in order to accomplish a common objective. This is a typical example of Bapo II project, where a committee meet frequently to discuss production issues.

A chairperson or any member cannot reach absolute conclusions about certain issues pertaining to some practices which involve capital. For the other two projects group work exists only when an activity involves all members in the project like erecting or repairing the project fence. In most cases it is every man for himself.

3.2.2.2 Interaction

A network exists if members are able to conduct their affairs together in a face-to-face interaction. There is continuous interaction amongst committee members of Bapo II project and between farmers in the other two projects. An occasional interaction of farmers of the two projects makes the work of the extension officer uneasy. Farmers meet mostly during soil preparation, planting and harvesting, and it takes place amongst those farmers who need assistance from their colleagues.

3.2.2.3 Friendship

Networks seem to develop along friendship lines. What starts out as friendship pairs or trios in an organization can quickly expand by the addition of friends to developing networks and such networks produce good decision making. Borrowing assets or lending of money is somehow associated with friendship. Schoongesicht and Rhenosterfontein farmers do assist each other with implements or advice but this is not just at random, it goes along friendship lines. The bond that keeps the Bapo II farmers together and the committee that runs the project, apart from the fact that they are from one village, is friendship that is playing a prominent role.

3.2.2.4 Use of channels

The more success a person has with a particular communication channel, the more likely he or she is to use that channel again (Gibson & Hodgetts, 1991). People who use a channel for one purpose and find it satisfactory are likely to use it for other purposes.

If extension officers want to convene a meeting with project farmers, they give a message to the chairpersons or influential people in that particular project to spread whatever kind of messages. For Bapo II, it is even easier if the messages reaches the chairperson, then an officer is sure of positive outcome. For the other two projects a few influential farmers have to get the message for effective and even spread to other project farmers.

3.2.2.5 Propinquity

People working closely together are more likely to establish regular informal communication lines or networks. If an individual is moved from one location to another, the person's former network will begin to contract and eliminate the individual as a member, whereas the new network will slowly absorb the person. At this point the individual is in a unique position to serve as a bridge between one network or clique and another. If an extension worker calls regular meetings of the project farmers, farmers who were not used to talking to each other will start to communicate on the subject of common interest, and networks will begin to form. Many lines of communication will be established, relationships interaction and group work will be enhanced and this will automatically pave the way to goal achievements, as farmers will no longer be a distance apart

3.2.2.6 Types of networks

Types of networks refer more to communication channels in companies and wage labour situations which are not applicable to any of the projects, and are therefore only briefly mentioned here.

- (a) A *regulative network* consists of the channels used to disseminate regulations, company policies, practices, and procedures. For example, it lets employees know that sick days may not be taken to extend vacation time.
- (b) *Innovative network* is a direct result of the participative management theory, which believes that many creative ideas can come from one employee.
- (c) *Informative/instructive network* furthers the organizational needs of adaptiveness, morale, conformity, and institutionalization.
- (d) *Integrative network* focuses on employee morale. The reward system functions here, whether it be a raise in pay or an informal pat on the back. The grapevine is also operative here.

3.2.3 Opinion Leadership: Theoretical Background

Opinion leadership, is the degree to which an individual is able informally to influence other individuals' attitude or overt behaviour in a desired way with relative frequency (Rogers, 1983). Opinion leaders are individuals who lead in influencing others' opinions about innovations. The behaviour of opinion leaders is important in determining the rate of adoption of an innovation in a social system. According to Düvel (1996), the influence of opinion leaders is the most important element, even though the extent, type and direction of influence remains controversial.

The concept of opinion leadership is therefore not only implicated in communication networks, but plays a crucial role in them. Opinion leadership on the three projects was measured with the sociometric method as described by Rogers (1983). There are a number of ways to measure opinion leadership that are briefly described here.

3.2.3.1 *Measuring opinion leadership*

Opinion leaders are usually identified on the basis of an enquiry (structured interview schedule) into the consultative relationship between themselves and other members of the community (Düvel, 1996). Rogers (1983) described four ways of measuring opinion leadership. The *sociometric* method consists of asking respondents whom they consult for seeking information or advice about a given topic. It is applicable to a sampling design in which all members of a social system are interviewed. Another method is what Rogers (1983) calls *information ratings*. This method makes use of subjectively selected key informants in a social system are asked to designate opinion leaders. The so-called *self-designing* method of Rogers (1983) is when each respondent is asked a series of questions to determine the degree to which he/she perceives himself/herself to be an opinion leader. His (Rogers, 1983) fourth method is what he called observation. This method identifies and records communication network links as they occur.

3.2.3.2 *Characteristics of opinion leaders*

Rogers (1983) in his answer to the question: “How do opinion leaders differ from their ‘followers’?” supplied eight very generalized “characteristics” of opinion leaders. He said that opinion leaders tend to have greater *exposure to mass media* than their followers. This in response to the original concept of the two-step flow hypothesis.

Opinion leaders must have interpersonal networks with their followers to be able to spread messages (about an innovation) to their followers. This requires the opinion leaders to be *accessible* to their followers. Their followers must be able to reach the opinion leaders to get the message concerning the innovation.

It has been shown (Rogers, 1983) that followers seek an opinion leader of somewhat higher *sociometric status* than their own. For an opinion leader to get recognition from their peer group about their expertise as far as *innovativeness* is concerned, they must be seen as early adopters. Research findings (Rogers, 1983) did not indicate that opinion leaders are necessarily innovators, sometimes they are, sometimes not. At the same time, these opinion leaders may act as opinion leaders for a variety of topics and some on single topics and been referred to as *monomorphic* or *polymorphic* opinion leaders. The *system norm* in a social system, appears to be affecting the degree of polymorphism amongst opinion leaders. When the norms of a system are more modern, opinion leaders are expected to be more monomorphic. In advanced societies a specialisation of roles exists, while in more traditional systems there are less role differentiation. Opinion leaders in such communities are likely to serve as opinion leaders for all issues. The concepts of who relates to who, in a social system is a fundamental principle of human communication which facilitates the transfer of ideas between a source and a receiver who are alike, similar or *haemophilias* (King, 1985). *Empathy* can also be enhanced amongst people in a social system.

3.2.4 Communication roles in communication networks

Widespread recognition exists that agricultural communication professionals have significant roles to play in the task of having agricultural knowledge at all levels (Evans & Dahl, 1984). A useful approach to studying network communication is to identify various members as holding the roles of gatekeeper, liaison, bridge, isolator, opinion leader or star and boundary spanner (Gibson & Hodgetts, 1991; Granovetter, 1974).

It should be noted that not every network member assumes one of those roles, but identification of those roles can be very helpful to the manager in understanding and using the informal communication system.

Communication in the three projects plays a major role in network development. It facilitates sharing of ideas amongst farmers within and outside a particular project. Farmers who could be classified as opinion leaders in each project become obvious through networks that develop in the projects.

3.3 ADOPTION OF INNOVATION

3.3.1 Adoption Process

New ideas, knowledge and farming practices must pass through several stages before they are adopted (Bembridge, 1992). Five stages of adoption have been identified and the following stages are often used to analyse the adoption process (Van den Ban & Hawkins, 1996).

- (a) Awareness - First hear about innovation.

- (b) Interest - seek further information about it.
- (c) Evaluation - weigh the advantages and disadvantages of using it.
- (d) Trial - test the innovation on a small scale to yourself.
- (e) Adoption - apply the innovation on a large scale in preference to old methods.

3.3.2 Rate of adoption

The rate at which an innovation (new farming practice or technology) will be adopted depends on the characteristics of the farmers, the social system, farmer's view of the nature of the innovation, exposure to communication channels and the extension worker's efforts (Bembridge, 1992).

3.3.3 Adoption categories

It is understandable that not everyone adopts innovations at the same rate. Some people accept new ideas years before others. People are divided into five categories of adoption being :

- (a) Innovators
- (b) Early adopters
- (c) Early majority
- (d) Late majority
- (e) Laggards

Classification of people in these different adopter categories by definition depends on the degree to which the whole group has adopted the innovations, and on the assumption that distribution of adoption over time is normal (Van den Ban & Hawkins, 1996).

3.3.4 Factors affecting adoption

A number of factors affecting the success of communication strategies are highlighted by Bembridge (1992)

- (a) The development of a society - The pattern of communication and the methods used will obviously not be the same.

Extension workers must know their areas and allow for these differences.

- (b) The educational level of the audience - this affect the type of media to be used. Obviously the written media has limited use in largely illiterate communities. It is useless even producing written material for people who do not read easily, even if they can read.

- (c) Characteristics of the innovation - this will obviously affect the communication of a new idea.

- (d) The channels of communication - the communication channel vitally affect the process of diffusion. The more intelligently available channels are used, the faster the diffusion of the idea through an area.

- (e) Coverage by extension workers - if the area under consideration is under-staffed, the extension staff cannot devote the time that they should to the process of diffusion, and this will be slowed down.

3.3.5 The extension worker's role in adoption

The extension worker can use stages of adoption to plan a communication strategy by:

- (a) Making all people who would benefit from the idea aware of its existence (awareness)
- (b) Providing more information about the idea, including cost benefit (interest)

- (c) Assisting farmers through demonstration and other means in reaching a tentative conclusion (evaluation/comparison).
- (d) Providing guidance in putting the idea into practice on the farmer's landholding or with his livestock (trial).
- (e) Providing additional information on large scale application and more detailed aspects such as inputs, credit and marketing (adoption).

At each decision-making phase, different types of information are needed.

3.3.6 Farmers' view of the nature of innovation

The speed of adoption of a new idea depends partly upon the farmer's view of the idea, technology or practice. Some characteristics may speed up the rate of adoption while some practices may have retarding factors. The following factors as described by Bembridge (1992), Van den Ban & Hawkins (1996) have an influence on the farmer's view:

- (a) Utility: If a new practice is viewed as a major improvement over existing methods, it is likely to be adopted.
- (b) Cost: New practices that are high in cost generally tend to be adopted more slowly. The subjective risk that a farmer associates with a new practice may also be related to his adoption of it.
- (c) Group action: Some new ideas require consensus and acceptance before they will be adopted.

- (d) **Compatibility:** A farmer's attitude towards a new idea is often affected by his past experience with similar ideas.
- (e) **Complexity:** New practices that are relatively simple to understand and use will generally be accepted more quickly than more complex ideas.
- (f) **Visibility:** Practices also vary in the extent to which their operation and results are visible or can be demonstrated.
- (g) **Divisibility:** Some practices such as the use of fertilizers, weed sprays, or seed varieties may be divided for a comparison of trial results with previous practices. A practice that is divisible for trial will generally be adopted more rapidly than a practice that is not.

Combination of practices must operate in the right order to make it possible for a farmer to decide about and actually use new farming technology. This is always important for extension workers to remember.

3.4 CAUSES OF UNSATISFACTORY PRODUCTION:

3.4.1 Declining soil cover and fertility

It often happens that agricultural production is accelerated to meet demands of the growing population, but this usually happens at the cost of soil cover and soil fertility which in turn results in declining agricultural productivity (Pelser & Kherchloa, 2000). This suggests that a large number of rural populations that rely heavily on agriculture are likely to experience food shortages that could perhaps result in hunger and starvation.

The poorest of the poor are thus often the main cause of environmental degradation in their desperate pursuit of methods of survival. Because of their grave situation, they cannot even begin to think about conservation measures.

3.4.2 **Poor farming methods**

Land depletion jeopardises all efforts aimed at development and especially those aimed at achieving the priority objective of food self-sufficiency and food security. Pelser and Kherchloa (2000) and Imvbore (1994), Mora and Yield (1997) cited by Pelser and Kherchloa (2000) pointed out that several studies have revealed that the African Continent faces a series of interconnected economic challenges, which shows that development has not thus far been sustainable. This situation can be attributed to poverty, population growth, poor farming methods and climatic condition.

3.4.3 **Farming system in general**

Many forms of agriculture found throughout the world are the result of variations in local climate, soil, economics, social structure and history. Water balance, radiation, temperature and soil conditions are the main determinants of the physical ability of crops to grow and farming systems to exist.

Farming systems also depend heavily on the character of production, i.e. whether the crops are produced in a subsistence or a commercial economy. One of the main features of subsistence farming is that a farmer has to produce in order to live.

Consequently, he/she often resists changing production methods. The way crops are grown further depends on the level of technology and the land area available.

3.5 INCREASING THE PRODUCTIVITY OF TROPICAL CROPPING SYSTEMS

Crop production can be increased by one of the following:

- (a) by increasing the area planted to crops;
- (b) by raising the yield per unit area of individual crops, and
- (c) by growing more crops per year (in time and or in space).

Crop production is a complex process and in practice there are always constraints to the adoption of new practices which achieve high yields. These complexities and the constraints resulting from them can best be understood if one considers crop production to be the result of two multidimensional vectors, the environment (E) and the plant genotype.

3.6 CROPPING EFFICIENCY

Some factors that influence cropping efficiency are discussed below:-

1. Southern Africa faces challenges of increasing food production to keep abreast of a fast growing population. This is currently done by bringing forested or grazing land under cultivation. Modern methods, insufficient organic material being returned to the soil, and also sheet erosion, are fundamental causes of the declining fertility of cultivated lands (Pelser & Kerchloa, 2000)

2. Traditional cropping systems, such as slash and burn shifting cultivation were well adapted to the local ecology and they kept soil fertility intact (Pelser & Kerchloa, 2000).
3. Traditional forms of agriculture have been able to sustain large numbers of people on a small area, using intensive but ecologically sound methods on a sustainable basis (Pelser & Kherchloa, 2000).
4. Maize is the main crop cultivated in the North West Province and is grown mainly in the Lichtenburg, Bloemhof, Wolmaranstad, Potchefstroom, Klerksdorp, Koster, Swartuggens and Ventersdorp districts. Restricted areas in the Vryburg district are also cultivated under maize (Hattingh, 1994). Climate and low potential of the soil are limiting factors for maize production (Hattingh, 1994).
5. Problems experienced with sunflower are that it should be rotated with other crops due to plant diseases and bird damage. Sunflower can be cultivated on lower potential soils with higher clay content and even on vertisoils (Hattingh, 1994). The main production areas in the province are the areas of Bloemhof, Delareyville and Lichtenburg. In the Eastern Region sunflower is grown in the districts of Mankwe, Bafokeng, Odi 2 and Brits.
6. Soil productivity is often viewed as a practical extension of the concept of soil fertility (the capacity of the soil to supply nutrients to plants).

It can be defined as the capacity of a soil to produce plant yields within a specified environment and farming system. Factors affecting soil productivity include both soil properties and factors external to the soil such as choice of crops or cropping systems, rainfall distribution, level of fertilizer used and others (Sanchez, 1993).

7. The probabilities of a certain level of crop-available water over the growing season, when compared with the water requirements of the crops, give an initial idea of the suitability of the crop in the given soil-climate environment (Virmani, 1993).
8. On soils with low to medium water holding capacities, the crop will be caught in a water-deficit situation at the reproductive stage in most years (Virmani, 1993).
9. The natural performance of plants is influenced by the environment (soil and climate) as well as the inherent characteristics which every plant possesses (du Plessis, 1997).
10. The temperature and daylight conditions must be such that the growing season of the crops falls within the period of suitable temperatures and in some cases also the required length of the day (du Plessis, 1997).

11. The utilization of the rainfall must thus be achieved by means of correct choice of crops, cultivars, planting dates, plant population rates and fertilisation, (du Plessis 1997)

3.6.1 Crops

3.6.1.1 *Maize*

It has a relative poor adventitious root system which inhibits moisture withdrawal in the problematic soils (clay soils). It is influenced drastically by moisture stress during the flowering stage.

3.6.1.2 *Sunflower*

It has a well developed taproot system and fares well on soils with high clay content. It is not drastically influenced by moisture stress. It has a short growing season and has a short period from seed setting to physiological maturity.

3.6.2 Soil

3.6.2.1 *Acardia*

On clay soils a reasonable amount of water can be stored, but much of it is unavailable to plant roots. These type of soils perform best under natural veld. (Joubert, 1997)

3.6.2.2 *Hutton*

Hutton has excellent drainage, is suitable for all summer crops. Water logging does not normally occur in these soils. Nitrogen leaching may possibly occur in the sandy red soils (Joubert, 1997).

3.6.2.3 Glencoe

Has a moist soil climate. Becomes water logged easily when the hard plinth like layers is continuous. Soil is usually not very deep. Suitable for most crops, where the soil depth permits (Joubert, 1997).

3.6.2.4 Shortland

Has a dry soil climate. Best adapted crops are grain sorghum and sunflower, maize can be cultivated in areas where rainfall is higher than 600mm.

3.7 PLANNING FOR CROP PRODUCTION

Three steps in the planning that have to be carried out before grain production can be started on a sound basis are:

- (a) The identification of low potential soils that are economically too risky for grain production (marginal land or soil).
- (b) The grouping or demarcation of land to form crop production units.
- (c) The choice of an optimal crop sequence.

According to Ludick (1997) when a decision has to be made regarding which crop is to be cultivated on a certain piece of ground, it is necessary to do an analysis, up to gross income level for all adapted crops that are to be considered for cultivation.



3.8 THE INFLUENCE OF THE AGRICULTURAL RESOURCES ON CROP PRODUCTION RISK

Regarding the farmer, there are factors over which he has control, namely: type of tillage, fertilizer application, plant stand (density), choice of crop and cultivar, plant date, etc. These factors over which farmers have control if adopted and applied correctly, can minimise production risk. Crop production risk and farming are synonymous. Every farmer has a partner called “mother nature” and her unpredictability is never ending. Every farmer should however make use of long term weather data to try and minimize the risk of climate on his production.

3.9 FARM PLANNING BASED ON THE NATURAL RESOURCES

Beets (1982) listed various factors essential in farm planning as follows:

- i. Natural resources (climate, soil, etc.)
- ii. Human Resources (labour, entrepreneurship, etc.)
- iii. External inputs (fertilizers, insecticide, etc.)
- iv. Financial resources (credit)

According to Ludick (1997) in planning a farming unit the aim for the planner is the principle of “optimal resource utilization”. In applying optimal resource utilization there are three simple basic requirements to be met, namely:

- i. Agriculture has to be in harmony with the environment factors.
- ii. Agriculture should not be practised at the cost of agricultural resources.

ii Agricultural production has to be on an economic basis.

Plants of similar constitution according to Ludick (1997) should be grown in a particular location for specific products required by man.

Planning of natural resources should include environment that consists of micro-climatological and physical factors such as water radiation, temperature, evaporation and soil condition as well as human management, economic and political consideration.

According to Beets (1982) highest productivity is expected to be attained in areas with fertile soils, high temperatures throughout the year, a high and well distributed rainfall and farmers who have sufficient trained labour and access to external inputs, e.g. fertilizers, high yielding varieties seed and machinery.

It is sometimes possible to maintain the productivity of a traditional farming system without introducing external inputs by making better use of available resources. This can be done by planting at a right time, better weeding and correct plant population (Beets, 1982).

When introducing new technology and inputs into a traditional farming system the existing system must change in order to accommodate inputs. This change can either be dramatic or gradual through careful preservation of useful elements of the traditional system and adapting the system to increased quantities of inputs (Beets, 1982).



3.9.1 Managerial ability of the farmer

Beets (1982) pointed out that the level of education and the farmers' understanding of their environment and how best to exploit it greatly influences the character of the local cropping system.

When the farmer is progressive and determined to improve his condition, his success depends on his ability to introduce an improved cropping system. Yabsley (1987) listed some criteria used by farmers to select crops as follows:-

- i. The extent to which they are familiar with a crop.
- ii. The agro-ecological suitability.
- iii. The extent to which the crop fits in the farming system and cropping patterns.
- iv. Prevailing market price and the ease with which the crop can be sold.
- v. Relative production costs and labour requirements.
- vi. Seed supply.

3.9.2 Success in farming

Persistence, adaptability, willingness to work hard and luck have always been the major requirements for success in farming. Technical knowledge is increasingly important (Yabsley 1987). Utilization of all available resources also play a major role in successful farming. Yabsley (1987) also highlighted some important tips or factors that should also that be considered in order to make a break-through in farming as follows:-

- i. If the farm is small, you might not need to work on it full-time and you might find other employment.

- ii. Cost of living can be kept down.
- iii. Part-time farming can be a lucrative venture for those with the right skills and adaptability, but a difficult and costly business for the unprepared.

3.10 HYPOTHESIS

The hypothesis of the study was formulated as follows:

1. No significant extension occurs
2. Opinion leaders have an influence on decision making
3. Perception of farmers on cropping and cropping practices has an influence on production.
4. Non-adoption of correct agricultural practices has an influence on production.

CHAPTER 4

RESEARCH METHODOLOGY

4.1 INTRODUCTION

This chapter describes the research methodology that was followed, research goals and methodology, sample size and reliability of data.

4.2 CHOICE OF RESEARCH AREA

Agricultural projects were being used extensively in South Africa for development purposes. Mankwe district of the former Bophuthatswana is no exception. The researcher worked the area as an agricultural extensionist, and realised that not much documentation, nor records existed regarding the three projects. The production level from the three projects were also not satisfactory.

The research was therefore done to investigate and document the realities of the human and physical aspects of the three projects in Mankwe district.

4.3 ORIENTATION AND PLANNING

Statistical figures of the projects were extracted from reports and consultation was made about when and how projects were established. A list of farmers address and locations was obtained. Orientation and planning of this study commenced in October 1995. The object was to get a clear idea of the farming situation and gather data and information for planning of the survey. During this period of orientation a study of the literature was undertaken and extension staff consulted on various aspects of the survey.

4.4 INFORMATION SOURCE

Information on project sizes, farming systems, potential of projects, soil types and climatic condition was obtained from various reports from Technical Support Services (TSS) Potchefstroom and Extension Officers.

Information on rainfall was obtained from Agricentre Mmabatho, Pilanesberg and Mmabatho Airport. Data on historical background of the three projects was obtained from Directorate of Land Administration in Mogwase.

4.5 RESEARCH METHODOLOGY

The research essentially has a qualitative and descriptive nature and was done in a specific and logical sequence.

4.5.1 Major steps in the research process

The following steps were followed:

- Step 1* Literature search and gathering of available data.
- Step 2* Preparation of the survey (which commenced in 1996) and focussing of the investigation.
- Step 3* Compilation of a draft questionnaire, testing and adaption of the questionnaire.
- Step 4* Obtaining clearance from the Manager of the Agricultural Development Centre of the district and also various Extension Officers of the various projects. The latter played a major role in identifying the residences of some farmers.
- Step 5* Implementing the survey. Appointments were mainly scheduled over weekends. The survey took six months and was completed in September 1997.
- Step 6* Data analysis.
- Step 7* Research report writing and cross-validation.

4.5.2 The questionnaire design

The questionnaire was planned to meet the objectives (P4) and the hypothesis of the investigation (P 36). It was designed to collect information on the following aspects:

- i. Personal details of the farmers;
- ii. Production practices;
- iii. Production constraints;
- iv. Communication networks within and outside the projects;
- v. Relationship of farmers and extension officers in terms of the information they give them, and the extent to which they help them with some production practices;
- vi. Views of farmers about how they are faring with certain agricultural practices; and

- vii. The perceived success of farmers of the three projects.

Since the three projects were not the same, a separate questionnaire for the Bapo II Committee running the project was designed. See Annexure “B”. The questionnaire for farmers (Annexure A) was used for the other two projects.

Questions were designed in such a way that they proceed in a logical order to ensure that the discussion follow inter-related topics, moving from questions which would be quite easily answered to more complicated ones.

4.5.2.1 Meaning of variables or questions

To understand variables or wording used in the formulation of the questionnaire, it is necessary to explain some of the variables that were used.

4.5.2.1.1 Socio-demographic information

- i. *Name of the project:* Respondents were not asked the name of their project as the writer knew it.
- ii. *Names of respondents:* Respondents were asked their first names and surnames.
- iii. *Education:* Respondents were asked about their qualifications and the institution they attended.
- iv. *Employment:* Respondents were asked about the situation concerning employment of their households. Two categories were used, viz. casual and permanent employment

- v. *Age and age structure of the family:* Respondents were asked their age, and age structure of their households.
- vi. *Part-time or full time:* Respondents were asked if they regarded themselves as part-time or full time farmers.

4.5.2.1.2 *Socio-economic information*

- i. *Financial expenditure:* This refers to the money spent on food and clothes per month, as well as on agricultural production.
- ii. *Income:* This concerns the income of members of the household (wife, sons, daughters and others) and refers to income derived from cropping, other businesses and wages.
- iii. *Area cropping:* Respondents were asked the total number of hectares they are cultivating, and the length of time that they have been cultivating, and the number of hectares per crop.
- iv. *Yield:* Respondents were questioned about the yield that they normally get from crops they produce.
- v. *Success in cropping:* Respondents were expected to list the years during which they had made a success in cropping. They were also asked to give reasons why they think they were successful and to identify those crops that bring better financial returns to them.

4.5.2.1.3 *Communication*

- i. *Consultation within the project:* This refers to communication networks within the project, i.e. who consults who during which period of the cropping season concerning which aspects, and the frequency of consultation.
- ii. *Consultation outside the project:* This means with whom do project members consult outside the project when they have problems.
- iii. *Advice by extension officer:* Respondents were asked to elaborate about the specific advice and general messages they had received from extension staff.
- iv. *Help of the extension officer:* Respondents were asked if the extension officers were helping them with aspects of the practical side of farming, e.g. setting a plough.

4.5.2.1.4 *Crop production practices*

- i. *Ploughing:* Breaking up or turning over of the soil.
- ii. *Row planting:* Planting of crops on a straight line.
- iii. *Broadcasting:* Planting crops randomly (not planting in straight line).
- iv. *Planting depth:* The depth in cm or mm seed is put into the soil.
- v. *Planting date:* The day and month of planting.
- vi. *Application rate of fertiliser:* The amount in g or kg of plant nutrients that they apply to the crops.
- vii. *Fertiliser programme:* A calculated amount of fertiliser to be applied at planting and for top dressing in a production cycle.
- viii. *Fertilisation:* Application of plant nutrients to plants.
- ix. *Fertiliser application:* The amount of fertiliser applied to the soil.

- x. *Weed control*: The control of weeds by hand or by herbicides (chemical controlling of herbaceous plants).
- xi. *Pests control*: Refers to the control of creatures that are troublesome to crops (e.g. man, animals, insects).
- xii. *Harvest*: Collection of crops from the land when they are ripe.

4.5.2.1.5 *Crop management*

- i. *Early rains*: Rains that fall before the usual expected time.
- ii. *Late rains*: Rains that fall when they are no longer needed, i.e. when crops are just about to be harvested.
- iii. *Production inputs*: Refers to all items that a farmer will need to make his/her cropping successful e.g. seed, fertiliser, diesel, etc.
- iv. *Foreign material in grain*: Unwanted weed seeds in grain.
- v. *Plant population*: The number of plants per hectare.
- vi. *Marketing*: Refers to a place where farmers sell their produce.

4.5.2.1.6 *Soil management*

- i. *Soil analysis*: This refers to the scientific measuring of plant nutrients in the soil, in the laboratory by chemical means.
- ii. *Soil potential*: The ability of soil to produce specific amounts of a certain crop per hectare.
- iii. *Land capability*: Refers to the range of uses of a piece of land.

4.5.2.2 Type of questions

A combination of structured (closed questions) and unstructured (open-ended questions) were used. Unstructured questions were included in order to get both the perceptions and feelings of the farmers concerning several issues. Farmers were able to express themselves adequately.

4.5.3 Data collection

The survey was conducted using the drafted and tested questionnaires. The writer conducted all the interviewing. It was decided to use this method because the writer knew the situations. Reactions of the respondents could be noted and questions that were unclear could be clarified to give as comprehensive an answer as possible.

4.6 SAMPLE SIZE

The intention was to interview all the crop farmers on all three projects. At Bapo II, this did not materialise for a variety of reasons.

1. Rhenosterfontein has 13 farmers and only six were interviewed. The reasons were as follows:
 - a. One farmer refused to be interviewed because he was robbed of his money by people who had previously requested him to fill out some forms.
 - b. Four farmers have passed away.
 - c. One farmer could not be found.

2. Schoongesicht has a total number of 25 farmers of which only 15 were interviewed. The reasons were as follows:
 - a. Some farmers' lands were being cultivated by colleagues.
 - b. One person, because of frustration of debts, refused to be interviewed.
 - c. Two "can't get" type of people were untraceable

3. The writer interviewed the Bapo II Project's Committee of five members at Bapo II Project.

4.7 RELIABILITY OF DATA

The writer interviewed all the farmers himself. The objective of the survey was explained to farmers. Questions were written in English and during the interviews they were also translated into Tswana for the farmers, so they could understand better. Most of the farmers understand English and talk fluent English. It is believed that those who agreed to be interviewed supplied accurate data. Farmers did not have problems with answering the questions, except the question pertaining to income from cropping and from family members. As far as possible, information was cross-validated and checked for accuracy with other sources, e.g. records, reports, extension staff and agricultural specialists.



4.8 INTERVIEW PROCEDURE

The interviews were conducted by the writer mostly on weekends, holidays and after hours from 18:00 - 20:00. Many appointments which were scheduled with farmers failed, since they were not available during scheduled times. This has caused a delay in the research process. Influential farmers were used to secure fixed appointments for interviews. The questionnaires were given to those influential farmers to make appointments and this helped to commit the other farmers to be interviewed. This approach helped to accomplish the survey. The procedure during interviews was to:

- (1) Explain the purpose of the study.
- (2) Point out certain questions which are sensitive and the writer thought would allay fears of the farmer.
- (3) At the end the writer thanked the farmer(s) for having participated in filling out the questionnaire.

4.9 DATA ANALYSIS

Processing of data was done by hand, since the number of farmers was not big.

THE MANKWE DISTRICT: AN OVERVIEW

5.1 INTRODUCTION

Assign no 2

This chapter gives an overview and background of the Mankwe district and agricultural projects in terms of their location, administration, history and agricultural activities. This overview provides the broader context within which the projects operate and project farmers do their agricultural activities.

5.2 GENERAL INFORMATION AND ADMINISTRATION

Sitah's analyses

Mankwe is a big magisterial district which covers 351 500 hectares, 15 079 being arable land. The Mogwase Agricultural Development Centre (ADC) is situated next to the Mogwase police station and Mogwase shopping centre. Mankwe is made up of different tribal authorities and chiefs. Table 5.1 shows the different chiefs and tribal authorities.

Table 5.1 Chiefs and tribal authorities of Mankwe district (ANON, 1996)

CHIEFS	TRIBAL AUTHORITIES
Pilane	Bakgatla-Ba-Kgafela
Ramakoka	Baphalane
Sefanyetso	Bataung-Ba-Moubana
Mabe	Bathako-Ba-Matutu
Nluane	Bathako-Ba-Leema
Mogale	Bapo II
Shongwane	Balhalerwa
Monnakgotla	Bakubung-Ba-Kgofa

The tribal authority, Bakgatla-Ba-Kgafela under the chieftainship of Chief Pilane occupies a great portion of Mankwe with many villages under its tribal authority. There are eight Chiefs and 48 Headmen in the whole district. Villages vary greatly in size and population density. The sole agricultural activities within each village are influenced by the way villages are planned and the size of their allocated area, e.g. the village of Bakubung-Ba-Kgofa is planned like a township and there are few signs of agricultural activities. In this village, those who do have animals keep them at a designated cattle post. In other villages with small stands, new sites are planned. This effectively reduces the backyard cultivation of crops of some community members who have an interest in crop cultivation. The further you move from towns or shopping complexes, the more you find agricultural activities. The declaration of the Pilanesberg mountains as a game reserve has also reduced the area which could have been utilized for agricultural purposes. Large areas of grazing for livestock have been lost in this manner.

Mankwe is in the Eastern Region of the North West Province. Schoongesicht, Rhenosterfontein and Bapo II are at the extreme ends of the district. Schoongesicht is situated at the northern side of the Mogwase ADC, Rhenosterfontein at the southern and Bapo II at the western side of the Mankwe. The state of Agriculture in these projects is unsatisfactory, Bapo II being the worst. Except for Bapo II, almost all farmers are far from the projects. Eighty-five percent of the farmers who are cropping at Schoongesicht and Rhenosterfontein stay at Moruleng village and therefore they know each other very well. A map of the district with the location of the ADC and FSU's is shown in Figure 5.1.

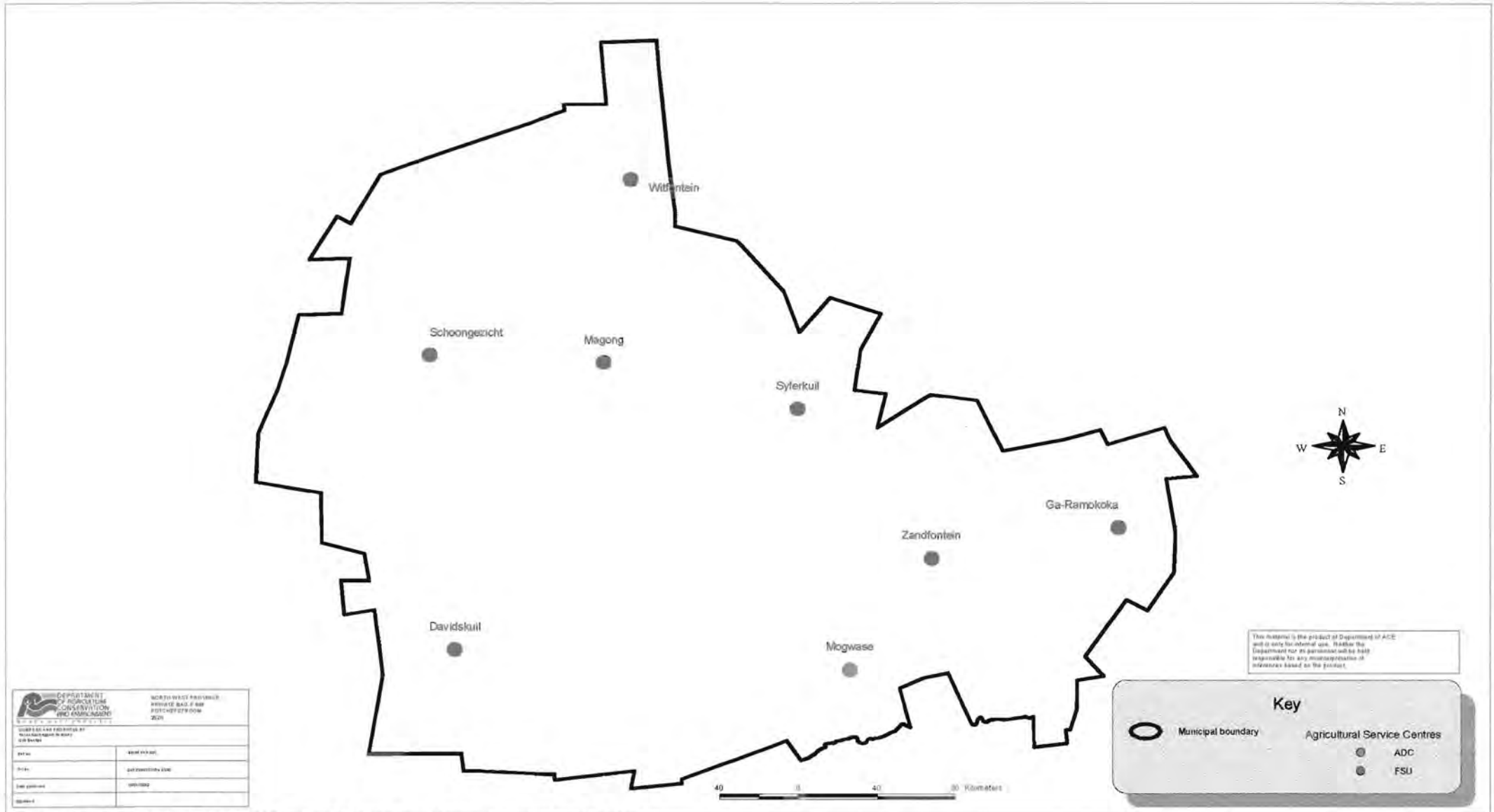


Figure 5.1 Location of ADC and FSU's in Mankwe district (2001)

The greater part of the district is occupied by State Land (61.9 percent) and all three projects are established on State Land. At Schoongesicht and Rhenosterfontein farmers are each allocated \pm 50 hectares of land. Farmers have made private arrangements among themselves, for cultivating the lands. At present there are farmers who are cultivating more than 100 hectares and others less than 20 hectares. Some farmers who do not have sufficient financial resources, do share-cropping or rent out their land. Bapo II farmers were allocated 70 hectares of land by the then Agricultural Development Cooperation of Bophuthatswana (Agricor). The Department of Agriculture can take any decision about the utilisation of any piece of land that belongs to the State.

Table 5.2 Land ownership in the Mankwe district (Anon, 1991(b))

Land Status	Percentage (%)
Tribal Land	23.5
Private Land	6.8
State Land	61.9
Trust Land	0.3

Mankwe district consists of 23.5 percent tribal land. The Department of Agriculture has absolutely no control over the utilisation of Tribal Land. A project is established on Tribal Land when a tribal resolution is issued to establish such a project. Bakgatla-Ba-Kgafela, Tribal Authority administrates the largest part of tribal land of Mankwe district. Only 6.8 percent of the district comprises privately owned land.

Schoongesicht project is the biggest of the three projects and most of the farmers crop in it. The three projects occupy 0,4 percent of the total area of the district and also make up 10.2 percent of the total area of arable land.

Table 5.3 Salient features of Mankwe district (Anon, 1991(a); Anon, 1994(b))

Salient Features	
Area (ha)	351 500
Arable land (ha)	15 079
Grazing (ha)	324 668
Density	33,55 person/km ²
Male	46.76 of the total population
Population	110 026
Growth (per annum)	2.79%
Unemployment rate	29%
Households	22 132
Household size	4.56
Literacy rate	68.6%
Dependency rate	4.2%
GDP per capita	R2 900
Average rainfall	500 - 600 mm/annum
No. of mines	6
- Chrome	3
- Platinum	2
- Others	1
No. of factories	56
No. of Wholesale and retail trade	197
No. of Motor trade	11
No. of Catering and Accommodation	70
No. of Community, social and personal services	2
No. of Primary schools	64
No. of Middle schools	33
No. of High schools	14
No. of College of Education	1
No. of Transport Services	21

Farming, like any other business, is essentially an economic activity and it is sensitive to changes. It is highly affected by various economic activities taking place within the district, region and country as a whole. Agriculture also contributes significantly to the growth of many countries' economy. Doll & Orazem (1984) describes it as a business of which its manager, the farmer, exceeds that of the average industrial manager.

In some countries agriculture is the largest single employer and is the main or only source of livelihood for over 50 percent of the population, and it contributes roughly the same proportion to the national income (Hains, 1982). In Mankwe there are also mines, factories and other contributors to its economy.

This has an effect on the poor performance of agriculture in the district. Young people who could have farmed, are attracted to these places in search of job opportunities. It also emerged during the interview that farmers are unable to rely only on agriculture for a living as it is unpredictable. They indicated that at mines or factories they are sure of a certain fixed amount of money every month. Labour is also scarce, and during weeding, people are reluctant to work in the fields presenting a big problem for farmers. They usually travel to other districts like Ditsobotla for workers.

Mankwe has a population of 110 026 and an economic growth rate of 2.79% per annum. It also has a high rate of unemployment. These features create opportunities for agriculture in the Mankwe district. Agriculture should be seen by Mankwe's inhabitants as an important source of livelihood, which can contribute significantly to the district's economy. A large portion of the agricultural land surface area (324 668 hectares) is for grazing purposes which leaves 15 079 hectares for cropping.

Table 5.4 Salient features of the Schoongesicht, Rhenosterfontein and Bapo II agricultural projects in Mankwe District (1997).

Salient Features	Rhenosterfontein	Schoongesicht	Bapo II
Rainfall	500 - 600 mm	500 - 600 mm	500 - 600 mm
Area (ha)	571	900	70
No. of Farmers	13	25	8
Male % of the total farmers	100%	100%	100%
Household size (average)	7.5	5.8	6.2
Literacy rate (write and read)	83%	73%	100%
Age (average in years)	57.5	55.5	67.6
Experience in cropping (average no. of years)			
- maize	20.2	-	18
- sunflower	11	14	14
% of farmers planting			
- maize	83	0	50
- sunflower	100	17	50

Schoongesicht farmers are utilizing 94 percent of the total area allocated to them, whilst Rhenosterfontein and Bapo II, 64 percent respectively.

Four farmers at Rhenosterfontein passed away in the growing season of 1996/97 and this has contributed to the reduction of the total hectares ploughed by the farmers. Their families, at the time of the survey, have not started doing anything. Therefore they were not yet ready to be interviewed. Farmers were unable to plough the whole 70 hectares allocated to them. Furthermore, 5,7 hectares of their land was allocated for vegetable production which left them with 64,3 hectares for cultivation of maize and sunflower.

The type of soil at Schoongesicht does not allow for the cultivation of maize. Farmers therefore have to cultivate sunflower. The area planted with sunflower at Rhenosterfontein is 42 percent and 21 percent for Bapo II.

The rainfall on all projects ranges from 500 - 700 mm per annum. Unfortunately there is no data concerning rainfall distribution and patterns. Distribution of rainfall throughout the year has an influence on the planting date of crops. If the rains are late, some farmers do not plant as they rely on others for implements.

5.3 CLIMATE ✓

Temperatures are not too high to disallow the possibility of agronomy or livestock production. According to Anon (1994(a)), frost does not have any negative effect on agronomy in the district. It is also important to note that for a crop to achieve economic importance in the farming system it has to fit into the existing climatic conditions. There is a variation between crops to tolerate extreme climatic conditions. Some crops can survive freezing temperatures during their dormant period, e.g. fruit trees and cereal, while others are killed by frost at any stage of their life, e.g. tomatoes, potatoes (Metcalf & Elkins, 1980). All the climatic factors like temperature, rainfall, solar radiation and wind are acceptable to the crops chosen by farmers of Mankwe. The only problem that they can encounter with them is their intensity and duration. For example, crop growth is closely related to day length, which in turn affect the amount of radiation available to plants.

Wheat achieves its optimum or maturity during periods of short days (Hains, 1982). Average rainfall for the district is between 500 - 600 mm per annum. Whether this will supply adequate water for crops, will depend entirely on rainfall distribution and intensity. Adequate water supply described by Hemy (1984), Hadfield (1985) and Letely (1985) is the supply that is above the plants wilting point and below field capacity.

5.4 SCHOONGESICHT PROJECT

5.4.1 Location

This project is located near Ramohibitsoana village, State Land. Other villages nearby are Magong, Kameelboom and Schoongesicht. With knowledge of the whereabouts of these villages, it will be easy to locate the project. Apart from these villages some farmers are from Moruleng, Kraalhoek, Witfontein and Ruighoek. However the majority of farmers are from Moruleng.

5.4.2 Brief historical background

The Agricultural Development Cooperation of Bophuthatswana (Agricor), a former parastatal, wanted to settle and establish farmers in Mankwe district. They therefor initiated the establishment of the Schoongesicht project which started in 1979. The bush was cleared for the first seven (7) farmers and later they were joined by five (5) farmers. The latter had to clear the bush for themselves due to lack of financial support. Each farmer was allocated 50 hectares and rental per hectare per year was R2.00 (Mahuma, 1995).

There are 25 farmers on this 900 hectare project, which is serviced by one Extension Officer who is stationed at Magong Field Service Unit (FSU). Agricultural specialists from the Tlhabane Regional Office are available for assistance. There are an elected project committee that took responsibility for the smooth running of the project.

5.4.3 Crops

Sunflower is the predominant crop at Schoongesicht. Wheat is planted when it is too late to plant sunflower, and it grows well under conditions almost similar to that of sunflower. It requires fewer days than sunflower to reach optimum maturity (Hains, 1982) and is therefore suitable to plant later than sunflower.

Wheat, maize and sunflower crops are marketed at “Magalies Graan Kooperasie” (MGK) at Northam. Market potential for each crop a farmer incorporates into his farming system, should be carefully considered. According to Barnard & Nix (1979), a farmer has to assess what quantity and quality of product the market will take at various levels. Apart from climatic or soil conditions, farmers of these three projects prefer sunflower, claiming that it brings good financial returns for them.

5.5 RHENOSTERFONTEIN PROJECT

5.5.1 Location

The project is located near Mogwase. It lies south of the Mogwase shopping complex, a distance not greater than three kilometres. It is also near Elandsriver and the Mogwase sewage farm.

Farmers of this project are from Ledig, Moruleng, Mogwase, Ramokoka, and Zandfontein. As is the case with Schoongesicht, the majority of farmers come from Moruleng.

5.5.2 Brief historical background

Mahuma (1995) indicated that this project started in 1982 with ten farmers. They were given the land by the Government. The bush was cleared for them and an agreement was made that, they should start paying rental for the land after two years. Each farmer was allocated 50 hectares.

There are 13 farmers on the 571 hectare project, which is State Land. Most farmers who are in the project were members of Reikemiseditse Primary Cooperative which has been terminated due to poor administration. This cooperative was selling agricultural inputs and it was administered by the committee. Some members of the committee lost interest and it ended up being managed by the chairperson, until it was closed due to bankruptcy.

5.5.3 Crops

Many farmers in the project plant sunflower while very few plant maize. During the survey farmers indicated that sunflower brings better financial returns than maize. Northam “MGK” is the only reliable market for their produce.

5.6 BAPO II

5.6.1 Location

It is located right at Bapo II village on a State Farm which is under Tribal use of Bapo II-Ba-Mogale. Accessibility to this project by community members is not a problem. All farmers are from the village and some of them are important members of the community.

5.6.2 Brief historical background

Ten farmers grouped themselves in 1991 to form a farmers' association for Bapo II village. They approached their Chief and Agricor and indicated that they would like to farm as an association. In 1992 they were given 70 hectares as well as fencing material to fence it off. Agricor added some capital on with which they debused their 70 hectare project. They are farming as a group, and they have elected a committee that practically runs the project. At the present moment (1997) the group has six members, since one farmer has passed away and three have lost interest in cropping.

5.6.3 Crops

Maize and sunflower are planted on 64.3 hectares and 5.7 hectares has been allocated for vegetable production.



5.7 SUMMARY

Agricultural projects were being used extensively in South Africa for development purposes. Mankwe district of the former Bophuthatswana is no exception. The researcher worked in the area as an Agricultural Extensionist, and after several years realised that not much documentation, nor records existed regarding the three projects. In this Chapter an over view was given of the Mankwe district as well as the three projects that make up this study

COMMUNICATION NETWORKS

6.1 INTRODUCTION

An analysis was made of communication on the three projects. Because of limited scope of the research, this analysis concerned a limited spectrum of communication aspects. This chapter discusses the content and context of communication, i.e. messages of extension staff to farmers on specific topics and aspects of farming, communication networks within the three projects, information flow to farmers and farmers' information source.

6.2 COMMUNICATION NETWORK IN BAPO II

As with other organizational structures, some form of networks to handle communication more efficiently and effectively is needed. Two main types of networks have been identified viz. a wheel type of network, which is applicable for Bapo II project and a all-channel type of network for Rhenosterfontein and Schoongesicht projects.

Table 6.1 below shows the communication network structure at Bapo II project. All farmers consult their chairperson before attempting to do anything or confirm their ideas with the chairperson.

Table 6.1 Communication networks of Bapo II project Mankwe District (1997) (n=5)

FARMER	FARMER CONSULTED
Boikanyo, H	Sepotokela
Maimane	Sepotokela
Boikanyo, P	Sepotokela
Petlele	Sepotokela
Sepotokela	None

The network resembles a wheel type as shown in figure 6.1.

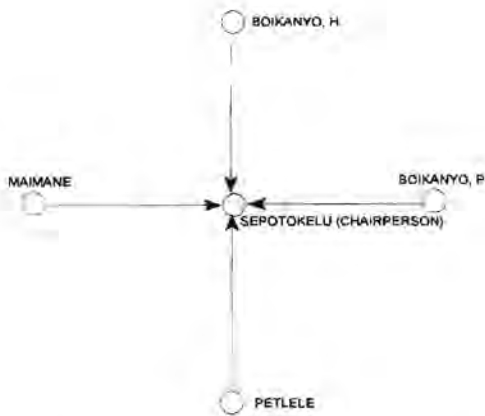


Figure 6.1 The typical wheel communication network of Bapo II Project, Mankwe district (1997) (n=5)

The wheel network system is characterized by one central figure who speaks to the other members of the clique and to whom everyone communicates directly (Gibson & Hodgetts, 1991). The 70 hectare project has eight members. Figure 6.1 illustrates the centrality of a certain person, in this case Mr Sepotokela during the time of survey. When the project was established in 1992 it had ten members of which five constituted the committee.

They had and still have the power to take farming production related decisions on behalf of other members who are actually employed in different towns away from Bapo II. The Chairperson holds most of the decision-making power and is the central figure in their communication network. Nobody can take a decision about the project without the Chairperson. Even government officials have to consult with the Chairperson if they want to see the project or if they want to make changes and suggestions. Committee members and other project members have indicated that they communicate to and through the Chairperson if they want to get or give information, present ideas or suggested changes regarding the running of the project. The Chairperson has the authority and the power to make changes on the project by himself, and inform the others during the next committee meeting. During the interview, the Chairperson was dominating others, speaking with authority. He would go to an extent of cancelling or correcting statements made by other committee members. He reacted truly like an autocratic leader, he was able to respond, comment or make suggestions to questions that seemed to be difficult, those that needed thorough application of knowledge. He would alert his colleagues about some answers they provided in previous questions so that there shouldn't be a clash of ideas especially when coming to financial matters and their working relationship with the Extension Officer. During the survey it became clear that all committee members were satisfied with the way the Chairperson was handling issues of the project, as there was no indication or facial expression which would portray an element of dissatisfaction. A situation like this where the Chairperson takes charge and responsibility of the project and also when there is too much reliance on him by other committee members and the autocratic leadership he displays, can lead to the project not reaching its intended goals and the collapse of the project.

Table 6.2 : The extent to which farmers take advice from opinion leaders at Bapo II project on maize and sunflower

Rating	Maize		Sunflower	
	Number of farmers	Percent (%)	Number of farmers	Percent (%)
0	0	0	0	0
1	0	0	0	0
2	0	0	0	0
3	0	0	0	0
4	0	0	0	0
5	5	100	5	100

- Legend :
- 0 - Never accept advice from anybody
 - 1 - Never accept advice of a person who seems not to be clear about his subject matter
 - 2 - Seldom accept advice
 - 3 - Sometimes do accept advice and put into practice.
 - 4 - Accept advice of a person who is clear about his subject matter.
 - 5 - Mostly accept any advice or suggestions, evaluate it and put what is relevant into practice

Table 6.2 clearly shows that, farmers rely and depend on their Chairperson for advices, suggestions an opinions as far as the running of the project is concerned. For both maize and sunflower 100 percent of farmers mostly accept any advice or suggestions, evaluate it and put what is relevant into practice.

6.2.3 Rhenosterfontein

Farmers in this project prefer to consult farmers they trust most to assist them. There is no farmer who is carrying the burden of having to assist all farmers in the project, but they are distributed almost evenly to those who have the know-how. This makes the project to have features of a typical all-channel communication network.

Khenene seems to be doing much for the project because he is even consulted by farmers who are references for others like Ditshwene, who communicates with Makgoba and Loeto. Table 6.3 and Figure 6.2, show who communicate with who.

Table 6.3 Communication networks of Rhenosterfontein project, Mankwe district (1997) (n=6)

FARMER	FARMER CONSULTED
Loeto	Ditshwene and Madisa
Ditshwene	Khenene
Makgoba	Ditshwene
Molate	None
Madisa	Khenene and Loeto
Khenene	None

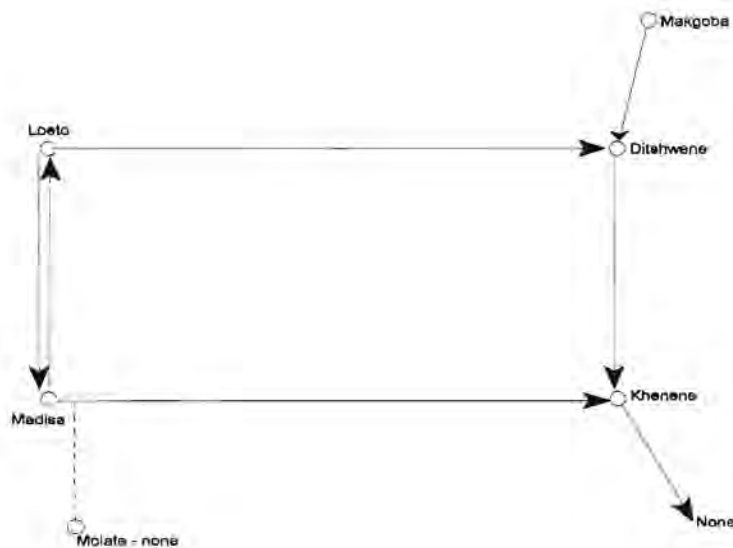


Figure 6.2 The all-channel type of communication network system of the Rhenosterfontein agricultural project, Mankwe District (1997)(n=6)

Rhenosterfontein is a typical example of all-channel network, even though farmers do not seek advice or help every farmer in the project. The all-channel provides the optimum in member participation, everyone talks to everyone else. Khenene seems to be the most attractive person in the whole project because many people talk to him, even those who do not go straight to him and they get his ideas indirectly like Loeto and Makgoba. During the survey he was identified as the most influential opinion leader. He was able to provide the interviewer with the list of all farmers of the project even their location, and number of hectares most are ploughing and planting.

Table 6.4 The extent to which maize and sunflower farmers take advice from opinion leaders at Rhenosterfontein project (1997)(n = 6)

Rating	Maize		Sunflower	
	Number of farmers	Percent (%)	Number of farmers	Percent (%)
0	0	0	0	0
1	0	0	0	0
2	0	0	0	0
3	1	16.6	0	0
4	2	33.3	4	66.6
5	3	50	2	33.3

- Legend :
- 0 - Never accept advice from anybody
 - 1 - Never accept advice of a person who seems not to be clear about his subject matter
 - 2 - Seldom accept advice
 - 3 - Sometimes do accept advice and put into practice.
 - 4 - Accept advice of a person who is clear about his subject matter.
 - 5 - Mostly accept any advice or suggestions, evaluate it and put what is relevant into practice

Opinion leaders are very influential and farmers believe in them and they take their advice. In Table 6.4, 33.3 percent of maize farmers and 66.6 sunflower farmers accept advice of any person who is clear about his subject matter and put it into practice, while 50 percent of maize farmers and 33.3 percent sunflower farmers accept advice or suggestions, evaluate and put what is relevant into practice. Only 16.6 percent of maize farmers do sometimes accept advice. This suggests that the influence of opinion leaders is not always the same. It varies from place to place or enterprise to enterprise. The extent to which their advice or suggestions are taken by their followers differs. More importantly, there is no farmer who rejected or never accepted advice of opinion leaders. They either take it rough as it is or evaluate the advice and implement what is possible.

6.2.4 Schoongesicht

Table 6.5 below shows how the communication network looks like at Schoongesicht project which is producing only sunflower. It clearly tells who are resourceful farmers in the projects and it also tells who are likely to be opinion leaders of the projects. There are many farmers communicating to Baloyi, Mathuba and Thipe, J.R.

Table 6.5 Communication networks of Schoongesicht project (Mankwe District (1997)
(n =15)

FARMER	FARMER CONSULTED
Mathuba	Moeng, Thipe, J.R., Mabone, Baloyi
Mabone	Mathuba
Baloyi	Mabone
Thipe, R.S.	Baloyi, Mabone, Mathuba, Moeng
Thipe, J.R.	Thipe, R.S.; Baloyi, Moeng, Mathuba, Mabone, Monareng
Monareng	Thipe, J.R., Mathuba, Baloyi, Mirwa, Phalatse
Ntshabele	Moabi, Mabone
Mothaga	Thipe, R.S., Thipe, J.R., Baloyi, Mathuba, Mirwa
Hhlatshwayo	None
Tlhasi	Molotsi, Ntshabele
Rakoo	Thipe, J.R., Ntshabele
Molotsi	Thipe, J.R.
Dluldu	Phatsoane
Phatsoane	Baloyi, Thipe, J.R., Mirwa

The ability to communicate is one of the main determinants of management effectiveness and is also an integral part of all management functions (Kroon, 1995:391; Smit & Cronjé, 1997:331). Communication links people and also makes transfer of technology easy. Figure 6.3 shows the all-channel type of the communication network of Schoongesicht project.

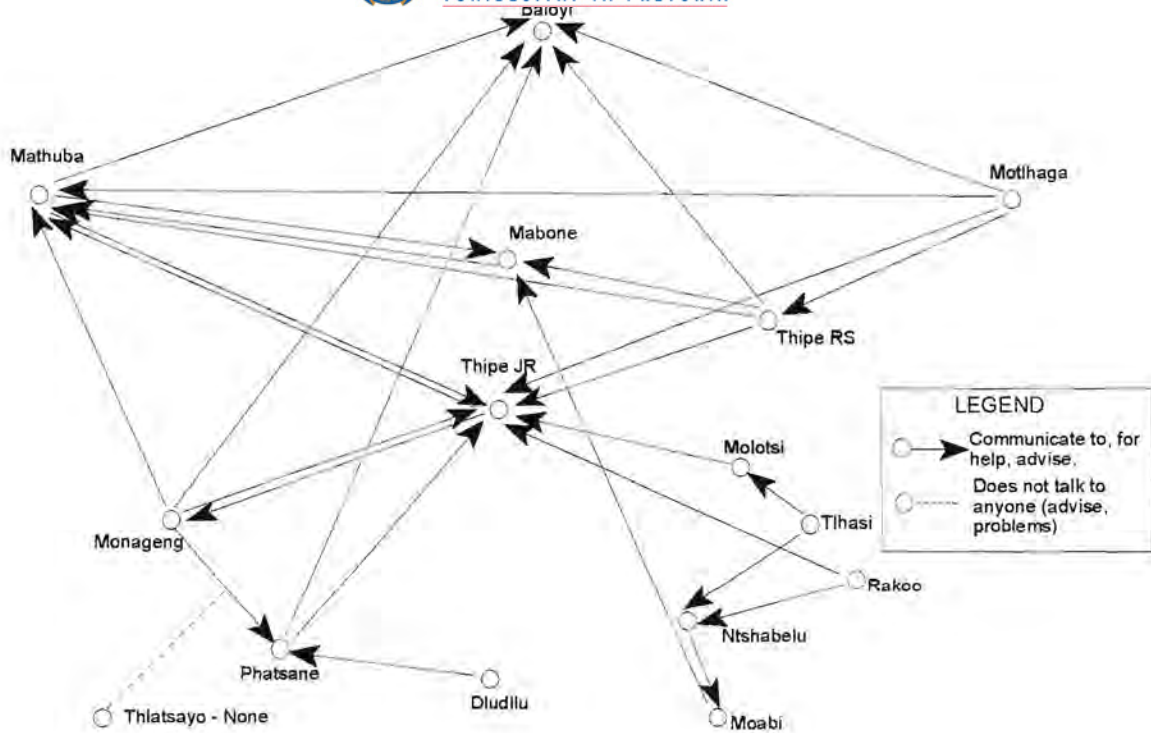


Figure 6.3 The all-channel type of communication network system of the Schoongesicht agricultural project, Mankwe District (1997)(n=15)

The all-channel network within Schoongesicht project provides optimum participation and exchange of ideas, almost everyone talks to everyone else except Thatswayo who is isolated. During the survey he indicated he does not consult anybody for advice, he ploughs, plants and goes back home. This network according to Gibson & Hodgets (1991) poses two positive aspects. Firstly, it tends consistently to produce the best decisions. This is because everyone has a chance to speak his or her mind and to receive the benefit of feedback from everyone else. Secondly, member satisfaction is extremely high. Farmers communicate freely with those who they feel will help them. Mathuba, Baloyi, Mabone and Thipe, J.R are the most resourceful farmers of the project.

During the survey it was clear that they have the capacity to be recognized as polymorphic opinion leaders, they are sort-of jack of all trades to their colleagues. Dlodlu, Rakoo and Tlhasi are not used as references in the project. Help, advice or suggestions are required mostly during ploughing, planting, fertilizing, weeding, pest control, harvesting and marketing and on buying of seed and fertilizers. Expertise from Extension Officers(s) or agricultural co-operatives is mostly required during planting and pest control.

Table 6.6 The extend to which sunflower farmers take advice from opinion leaders at Schoongesicht (1997) (n = 15)

Rating	Maize		Sunflower	
	Number of farmers	Percent (%)	Number of farmers	Percent (%)
0	0	0	1	6.6
1	0	0	0	0
2	0	0	2	13.3
3	0	0	4	26.6
4	0	0	6	40
5	0	0	2	13.3

Legend :

- 0 - Never accept advice from anybody
- 1 - Never accept advice of a person who seems not to be clear about his subject matter
- 2 - Seldom accept advice
- 3 - Sometimes do accept advice and put into practice.
- 4 - Accept advice of a person who is clear about his subject matter.
- 5 - Mostly accept any advice or suggestions, evaluate it and put what is relevant into practice

From Figure. 6.3 it is evident that many farmers are talking directly to Baloyi, Mathiba and Thipe J. R. This could mean that they get their advice from them. Table 6.6 shows that 40 percent of farmers accept advice of a person who is clear about his budget, and 26.6 of farmers do sometimes accept advice and put it into practice. Out of the three projects, Schoongesicht project is the only one with 6.6 percent of farmers who are not accepting advice from anybody and 13.3 percent who seldom accept advice from other farmers.

This clearly shows that even if opinion leaders are in existence, it is not everybody who will accept what they say. Some people believe in their own knowledge and potential. Table 6.6 shows that the majority of farmers rely on advice they get from opinion leaders and they implement it.

6.3 MESSAGES FROM EXTENSION OFFICERS TO PROJECTS

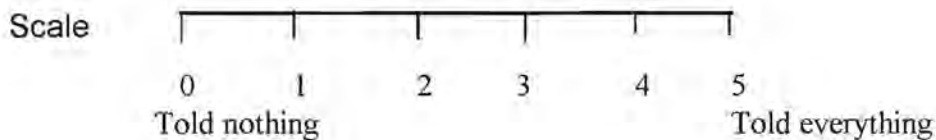
Communication between the Extension Workers and farmers must begin with some understanding of the context in which farmers live, operate their projects and make day-to-day decisions. The purpose of extension should be to facilitate learning and action amongst farmers of the projects and communities to promote agricultural production and improvement in the general quality of life (Fliegel, 1984, Compton, 1984).

Extension messages should be aimed at overcoming important constraints of farmers. Farmers growing maize and sunflower on few hectares will require inexpensive innovations that show good short-term results. Extension Officers should develop seasonal modules or schedules to address important issues on cultural practices. Tables 6.7(a) and 6.8(a) show the extent to which Extension Officers informed sunflower and maize farmers about production inputs and handling of crops at harvest. In the survey Project Farmers were asked to what extent Extension Officers informed them about various agricultural practices of the projects.

Only two aspects will be discussed here to show the trend. The same results were obtained from the other aspects.

Table 6.7(a) The extent to which Extension Officers informed maize farmers of Rhenosterfontein, Schoongesicht and Bapo II Projects about the importance of production inputs (1997) (n=26)

Rating	Rhenosterfontein		Schoongesicht		Bapo II	
	No. of farmers	% of farmers	No. of farmers	% of farmers	No. of farmers	% of farmers
0	5	83.3	-	-	5	100
1	0	0	-	-	0	0
2	1	16.6	-	-	0	0
3	0	0	-	-	0	0
4	0	0	-	-	0	0
5	0	0	-	-	0	0
	n = 6		n = 15		n = 5	



In table 6.7(a) it is essential to note that 83.3 percent of the farmers at Rhenosterfontein and 100 percent at Bapo II indicated that they were told nothing by Extension Officers about the production inputs. Only 16.6 percent of the farmers from Rhenosterfontein indicated that they were told something about the importance of production inputs.

In Table 6.7(b) the scenario of Table 6.7(a) remained unchanged for the farmers of Rhenosterfontein and Bapo II project. At Schoongesicht Project 33.3 percent of the farmers indicated that they receive some information about production inputs and 46.7 percent did not receive any information.



Table 6.7(b) The extent to which Extension Officers informed sunflower farmers of Rhenosterfontein, Schoongesicht and Bapo II Projects about the importance of production inputs (1997) (n=26)

Rating	Rhenosterfontein		Schoongesicht		Bapo II	
	No. of farmers	% of farmers	No. of farmers	% of farmers	No. of farmers	% of farmers
0	5	83.3	7	46.7	5	100
1	0	0	0	0	0	0
2	1	16.7	3	20.0	0	0
3	0	0	5	33.3	0	0
4	0	0	0	0	0	0
5	0	0	0	0	0	0
	n = 6		n = 15		n = 5	

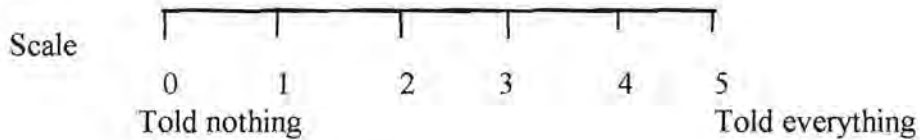


Table 6.8(a) and (b) shows the extent to which Extension Officers informed maize and sunflower farmers in Schoongesicht, Rhenosterfontein and Bapo II Projects about handling of crop at harvest.



Table 6.8(a) The extent to which Extension Officers informed maize farmers of Schoongesicht, Rhenosterfontein and Bapo II Projects about handling of crops at harvest (1997) (n=26)

Rating	Rhenosterfontein		Schoongesicht		Bapo II	
	No. of farmers	% of farmers	No. of farmers	% of farmers	No. of farmers	% of farmers
0	5	83.3	-	-	5	100
1	0	0	-	-	0	0
2	1	16.6	-	-	0	0
3	0	0	-	-	0	0
4	0	0	-	-	0	0
5	0	0	-	-	0	0
	n = 6		n = 15		n = 5	

Scale

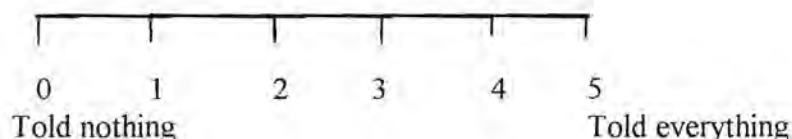


Table 6.8(b) The extent to which Extension Officers informed sunflower farmers of Schoongesicht, Rhenosterfontein and Bapo II Projects about handling of crops at harvest (1997) (n=26)

Rating	Rhenosterfontein		Schoongesicht		Bapo II	
	No. of farmers	% of farmers	No. of farmers	% of farmers	No. of farmers	% of farmers
0	5	83.3	9	60	5	100
1	0	0	0	0	0	0
2	1	16.7	1	6	0	0
3	0	0	3	20	0	0
4	0	0	2	13.3	0	0
5	0	0	0	-	0	0
	n = 6		n = 15		n = 5	

Scale

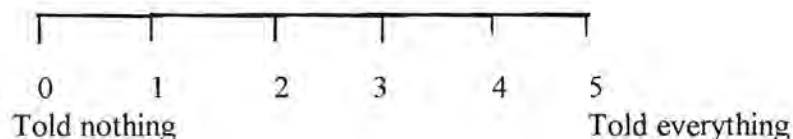


Table 6.8(a) and (b) shows that the scenario for Rhenosterfontein and Bapo II is the same as in Table 6.7(a) and (b) in which Schoongesicht is not planting maize.

Table 6.8(b) shows a slight difference at Schoongesicht where 60 percent of farmers indicated that they did not receive any information and 13.3 percent were told almost everything. For other practices like foreign material in grain, low soil potential and land capacity there is absolutely no difference with that presented in Table 6.7(a) & (b) and Table 6.8(a) & (b). From this it can be deduced that Extension needs to improve in as far as dissemination of information is concerned. Farmers won't improve unless Extension improves its service delivery. Identification of needs and available resources will make it possible for Extension Officers and Farmers to agree on programme objectives. It is important to know why Extension is under performing. This problem was however, not covered by this study, but should be brought to the attention of local manager. If problems exist, they should be addressed immediately.

It is very difficult to report on an open-ended questions due to the fact that there are so many different answers. Some farmers made very general statements, while others went into much detail.

In as far as analysis and discussion on communication networks within the three projects is concerned, tables and figures in chapter 6 were drawn for communication networks. The wheel type communication network of Bapo II project demonstrate the centrality of decision making. The all-channel network that was found at Rhenosterfontein and Schoongesicht, provides the optimum in member participation, that is everyone talks to everyone else. It allows a farmer to make decisions through consultation with as many colleagues as possible. When one considers the extent to which farmers accept advice from opinion leaders, it was clear that in all three projects the highest percentage was found between the rating of 4 and 5. That means that farmers consulted their leaders and implemented ideas that they felt were relevant and good. For example at Bapo II Project, 100 percent of Farmers would listen to the Chairperson and implement his ideas. Table 6.2, 6.4 and 6.6 show beyond reasonable doubts that opinion leaders have an influence on decision making. This implies that where there is a group of farmers in a project, Communication Networks should be studied to establish opinion leaders that could help with dissemination of information and decision making.

According to the farmers they received very little or nothing from Extension Officers with regard to information messages on agricultural practices. This warrants further investigation and action by the local Extension Manager. When one compares the low yield achieved in the three projects (Chapter 9) with the low intensity of messages from Extension Officers, it can be deducted that no significant extension occurs.

CHAPTER 7

FARMERS CHARACTERISTICS ✓

7.1 INTRODUCTION

This chapter gives an overview of the farmers of the Mankwe district and specifically refers to the Schoongesicht, Rhenosterfontein and Bapo II agricultural projects. The farmers are seen as being part of the potential of the three projects and therefore the chapter gives an overview of the characteristics of the project farmers.

7.2 CHARACTERISTICS OF THE FARMERS

7.2.1 Ethnic group

The term ethnic group refers to a social group or category of the population that, in a larger society, is set apart and bound together by common ties of race, language, nationality or culture Gwinn, Norton & Goetz, (1988).

Gudykunst & Schmidt (1980), citing Giles, Taylor & Bourhis (1973) indicate that ethnic group members identify more closely with those who share their language than with those who share their cultural background. Language and ethnic identity are also related reciprocally, i.e. language usage influences the formation of ethnic identity Gudykunst & Schmidt, (1980). On the other hand it has been shown that there are personal qualities or combinations of qualities that distinguish a particular individual from all others. There are also some characteristics that may be possessed in similar degree or kind by a number of individuals.

Many differences between individuals are better known to a certain social category or group which can define their position within the society. Some biological factors like age, sex, racial and intellectual differentiation play a significant role in different ethnic groups, as it defines precisely where one belongs within a society.

The factors, as discussed above, also influence group formation in the three projects. Bapo II for example, by virtue of being located in one village, people speak the same language and members of the project therefore obviously share the same cultural background.

On the other hand, because they are from different tribes and villages one can expect Rhenosterfontein and Schoongesicht project members to form small groups. Other factors that will enhance group formation are: locality, language, age, cultural ethnocentrism, scale of production, and social factors. The group ideal is for each to contribute positively to individual upliftment.

According to Van der Merwe & Welsh (1980) a democratic society should protect and provide opportunities for ethnic diversity and it should be viewed as a positive integral ingredient. Ethnicity at all three project sites did not seem to hinder progress and it could really be seen as improving relationships amongst farmers. It appeared to have positively influenced the sustainability of cropping activities, as farmers were obviously helping each other with implements and they freely shared ideas. Table 7.1 shows the tribal relationship of farmers at the different projects.

Table 7.1 The tribal relationship of farmers from Schoongesicht, Rhenosterfontein and Bapo II Projects (1997)(n=26)

Project	Tribal Relationship
Schoongesicht	Bakgatha-Ba-Kgafela Batlhalewa
Rhenosterfontein	Bakgatla-Ba-Kgafela Baphalane Bakubung-Ba-Kgofa
Bapo II	Bapo II

Even though there are two different projects, there seems to be an intimate relationship between farmers of Schoongesicht and Rhenosterfontein. 80 percent of farmers in these two projects belong to the Bakgatla-Ba-Kgafela tribe and their tradition and norms are similar and they associate well. In most cases they help each other with some agricultural resources. Bapo II is composed of farmers from one village sharing the same tribal values and norms.

7.2.2 Age distribution

Contradictory results have been reported on the influence of age on adoption behaviour, but according to Visser & Düvel (1991, citing Düvel, 1975), the importance of this variable tends to be overlooked because its relationship with practice adoption is often non-linear in nature. Table 7.2 shows age distribution of project farmers.

Table 7.2 Age distribution of farmers, per project (1997)(n=26)

Age Distribution	Number of farmers per project		
	Schoongesicht	Rhenosterfontein	Bapo II
35 - 44	1	1	-
45 - 54	7	1	-
55 - 64	5	2	2
65 - 74	2	1	3
> 75	-	1	-
TOTAL	n=15	n=6	n=5

During the interview farmers above the age of 60 were putting the blame on their sons for not taking care of their resources. As sign no 1 For success they expect their sons to help them in order to reap good crops. They also rely on their workers to do a good job since they are paying them for ploughing and planting, or other farmers to assist them by cultivating and planting their land. If there's something wrong then those who helped will also be blamed.

Rhenosterfontein is going to experience problems, because more than 66 percent of the farmers are over the age of 54. Possible implications would be failure to plough due to health or aging, the same applies for Bapo II project, where 100 percent are over the age of 54 years. responsibility to workers team.

7.2.3 Education

Education must be seen in terms of training people for an unknown future. According to Botha & Lombard (1991) education should be empowering in the sense that it must first equip people to make effective decisions about their own lives and secondly it must furnish people to bring about commonly desired change.

Bembridge (1997), citing Rogers & Burdge, (1972) sees it as a basic and crucial factor in changing attitudes of more traditional farmers, overcoming mutual distrust in interpersonal relations, hostility towards authority, lack of innovativeness, fatalism and limited aspirations. There is a big variety in educational levels of farmers on an inter- and intra project basis, which will undoubtedly influence their decision making processes and their approaches to agricultural activities. Table 7.3 shows the different levels of education of the farmers of each project.

Table 7.3 Farmers' level of education of Rhenosterfontein, Schoongesicht and Bapo II Projects (1997)(n=26)

Level of education	Number of farmers per project		
	Schoongesicht	Rhenosterfontein	Bapo II
Never been at school	1	1	-
Grade 1 - Grade 3	3	-	-
Grade 4 - Grade 6	1	-	4
Grade 7 - Grade 9	7	1	1
Grade 10 - Grade 12	2	2	-
Tertiary qualifications	1	2	-
	n = 15	n = 6	n = 5

If formal education of Grade 4 and above is taken as indicative of being literate, then 100 percent of Bapo II, 73 percent of Rhenosterfontein and 83 percent of Schoongesicht farmers would be considered literate. Rhenosterfontein has one farmer holding a diploma and another one a university honours degree, whilst Schoongesicht has one farmer with a post matric certificate. 19 percent of farmers have a very low education level that could be considered illiterate.



However, nowadays it is likely that there are one or more members of a household who are literate and can interpret for those who may not be literate. (Bembridge (1997) come to a general conclusion, based on available information, that approximately half a million small-scale farmers are likely to have a degree of literacy which would enable them to read farming publications, at least in their own language.

This statement could possibly be applicable to farmers with an education level of grade 3. If the level of literacy is at a level where farmers can read and write in more than one language, then dissemination of written information by Extension Officer to farmers would not be a problem especially if they can read their own language. Access to written information is usually limited by a high level of illiteracy. From Table 7.3 it can be concluded that 19 percent of farmers in this survey may find it impossible to read simple and short messages in their own language. This however, was not investigated.

7.2.4 Experience

Experience of farmers in the three projects differ significantly. Farmers are exposed to different cropping practices, soil type, micro-climatic condition, crop types etc. Table 7.4 below shows the differences in number of years in cropping.

Table 7.4 Number of years in cropping for farmers of Rhenosterfontein, Schoongesicht and Bapo II Projects (1997)(n=26)

Experience	Number of farmers per project		
	Schoongesicht (n=15)	Rhenosterfontein (n=6)	Bapo II (n=5)
4 -12	9	1	-
13 -21	3	3	2
22 -28	1	-	2
29 - 37	1	1	1
38 - 46	-	1	-
>47	1	-	-

20 percent of Schoongesicht farmers have more than 28 years of experience in cropping, Rhenosterfontein 50 percent and Bapo II project 40 percent. In the next chapter experience in cropping will be checked against yield. This will tell if experience has an influence on production

7.2.5 Marital status

All farmers are married or have been married. Two have lost their wives, but they live with family members. The average family size is five members. In cases of polygamy the family size is eight members. Table 7.5 shows the marital status of the farmers.



Table 7.5 Marital Status of farmers at Rhenosterfontein, Schoongesicht and Bapo II Projects farmers (1997)(n=26)

Marital Status per project	Number of farmers per project		
	Rhenosterfontein	Schoongesicht	Bapo II
Single	-	-	-
Married (one wife)	11	5	4
Married (polygamy)	3	1	-
Widower	1	-	1
Divorced	-	-	-
	n = 15	n = 6	n = 5

During the interview, all farmers made it clear that their wives are not involved in farming. They pointed out, however, that their sons and grandsons are taking part in the project. For those who have another means of income, apart from farming, their children run their farms for them. Polygamists of Schoongesicht and Rhenosterfontein plough more than 50 hectares of land, and because of their big families most of them have other sources of income. They have tractors and other agricultural implements, they don't rely on borrowing from their colleagues.

7.2.6 Household

7.2.6.1 Household composition and employment

Table 7.6 Bi-variant analysis of household composition and income of farmers at Rhenosterfontein, Schoongesicht and Bapo II projects (1997)(n=26)

HOUSEHOLD COMPOSITION PER PROJECT	INCOME FROM FAMILY MEMBERS			TOTAL INCOME PER FAMILY CATEGORY		
	0-500	501-1000	>1000	0-500	501-1000	>1000
Rhenosterfontein						
Category "A": Male <2	-	-	-	0	0	0
Female <2	-	-	-	0	0	0
Category "B": Male 2-4	-	-	-	0	0	0
Female 2-4	-	xxx	xxx	0	0	8700
Category "C": Male >4	-	-	-	0	0	0
Female >4	-	-	-	0	0	0
Schoongesicht						
Category "A": Male <2	-	-	-	0	0	0
Female <2	xxxxxx	-	-	1800	0	0
Category "B": Male 2-4	-	-	-	0	0	0
Female 2-4	xxxxxxxx	-	-	1800	0	0
Category "C": Male >4	-	xx	x	0	0	4000
Female >4	-	xxxx	-	1000	0	0
Bapo II						
Category "A": Male <2	xx	-	-	300	0	0
Female <2	-	-	-	-	0	0
Category "B": Male 2-4	xxx	-	-	550	0	0
Female 2-4	-	xxx	-	400	0	0
Category "C": Male >4	-	-	-	-	0	0
Female >4	xxx	-	-	500	0	0

Legend : x = Number of family members. Total income is their collective contribution per income category

Male < 2 - Families with males less than two

Female < 2 - Families with females less than two

Category A, B, C - Grouping of family members by gender intervals

Males and females constitute a normal family and number of males and females varies from family to family. Tables 7.6 shows the distribution of families according to gender. In all three projects the greatest average number lies between the range of 2-4 in category "B". It is expected that each member contribute something towards the development of the family. Family members with an income between 0 -500 for Bapo II are making a good contribution to their families. In the same income level for females less than two (<2) consisting of six (6) family members as well as in the range of 2- 4 consisting of eight (8) family members are contributing only R1800-00 to their families each. It is expected that they should be contributing reasonably to their families because of their size. It was made clear during survey that although some family members are casually or permanently employed they keep their own money, for their own purpose. Families with family members greater than four (>4), enjoy the benefit of a good income. It is R4000-00 for males and R1000-00 for females at Schoongesicht. A strange situation was discovered at Rhenosterfontein which shows zero contribution by males in the category "B" in the range of 2-4 when females contribute R8700-00. This means, females really do take care and are also committed to the upliftment of their families.

Table 7.7 Bi-variant analysis of household size, income from cropping and family contribution at Schoongesicht,

Rhenosterfontein and Bapo II families (1997)(n=26)

HOUSEHOLD SIZE PER PROJECT	INCOME FROM FAMILY MEMBERS			NET INCOME FROM CROPPING			TOTAL INCOME PER FAMILY CATEGORY		
	0-500	501- 1000	>100 1	0- 4000	4001- 8000	>8001	Family	Croppi ng	Total
Rhenosterfontein									
Category "A" <4	-	-	-	x	-	-	-	-	15000
Category "B" 4-8	-	-	xxx	-	xxx	-	13200	13000	26200
Category "C" >8	-	-	xx	-	-	xx	6000	19000	25000
Schoongesicht									
Category "A" <4	xxxxxx	-	-	-	-	xxxxx	200	64000	64200
Category "B" 4-8	xxxxxx	-	-	-	-	xxx	400	72300	72700
Category "C" >8	-	-	xxx	-	-	xxxxx x	5000	81000	86000
Bapo II									
Category "A" <4	x	-	-	-	-	-	300	2000	2300
Category "B" 4-8	-	-	xxx	xxx	-	-	1000	2500	35000
Category "C" >8	x	-	-	-	-	-	550	2000	2550

Legend : x - number of family members
< 4 - Household size less than 4
Category A, B, C - Grouping of family members by gender, intervals of two

Table 7.7 shows that in all projects a good income comes from cropping. In Schoongesicht the total income from cropping is R217300. Bapo II, because of its size and number of farmers only made R6500-00 from cropping. Family members are always making a contribution as far as their families are concerned. Rhenosterfontein families contributed R19 200-00 to their immediate families, whilst Bapo II because of its size contributed less. It is expected that the bigger the family size the bigger its contribution but this is not clearly revealed.



This is only evident at Schoongesicht where bigger families produce good income from cropping of (R8100-00) and a family contribution of R500.00. Table 7.7 clearly shows that Schoongesicht is making more money from cropping than the other two projects.



Table 7.8 Bi-variant analysis of employment status and income from cropping and family contribution of Schoongesicht, Rhenosterfontein and Bapo II families (1997)(n=26)

EMPLOYMENT STATUS PER PROJECT	INCOME FROM FAMILY			INCOME FROM CROPPING			TOTAL INCOME	
	0-500	501- 1000	>1001	0-4000	4001-8000	>800 1	Family	Cropping
Rhenosterfontein								
Category "A" Casual -								
Male <2	-	-	-	-	-	-	0	0
2-3	-	-	-	-	-	-	0	0
>3	-	-	-	-	-	-	0	0
Casual - Female								
<2	-	-	xxx	-	x	xx	0	0
2-3	-	-	xxx	-	x	xx	18700	32000
>3	-	-	-	-	-	-	8000	41000
Category "B" Permanent -								
Male <2	-	-	-	-	-	-	0	0
2-3	-	-	-	-	-	-	0	0
>3	-	-	xxx	-	-	-	0	0
Permanent - Female								
<2	-	-	xxx	-	-	-	0	0
2-3	-	-	-	-	x	x	17200	17000
>3	-	-	-	-	-	xxx	6000	35000
Schoongesicht								
Category "A" Casual -								
Male <2	-	-	-	-	-	xxxxx	400	38000
2-3	xxxxx	-	xx	-	-	x	4000	107000
>3	xxxx	x	xx	-	-	-	1000	20000
Casual - Female								
<2	-	-	-	-	-	xxxx	-	-
2-3	xxxx	-	-	-	-	-	-	-
>3	xxxx	-	-	-	-	-	-	-
Category "B" Permanent								
- Male <2	-	-	-	-	-	xxxx	100	38000
2-3	-	-	-	-	-	xxxx	4000	101000
>3	-	-	-	-	-	xxx	-	-
Permanent - Female								
<2	xxxx	xxxx	-	-	-	-	0	-
2-3	-	-	-	-	-	-	0	-
>3	-	-	-	-	-	-	0	-
Bapo								
Category "A" Casual -								
Male <2	x	xx	-	-	-	-	700	312.50
2-3	-	-	-	-	-	-	0	0
>3	-	-	-	-	-	-	400	312.50
Casual - Female								
<2	-	-	-	x	-	-	0	0
2-3	-	-	-	-	-	-	300	312.50
>3	-	-	-	x	-	-	0	0
Category "B" Permanent								
- Male <2	-	x	-	-	-	-	650	312.50
2-3	-	-	-	-	-	-	0	0
>3	-	-	-	-	-	-	0	0
Permanent - Female								
<2	-	xx	-	-	-	-	0	0
2-3	-	-	-	-	-	-	0	0
>3	-	-	-	-	-	-	0	0

Legend: x - Number of family member

casual - male <2 - number of families with less than two males

casual - female <2 - casually employed

Category A, B, C - Grouping of family males and females casually employed or permanently employed

The employment status of the families of project members shown in Table 7.8 seems not to be good. For example, there are no people employed as casual at Rhenosterfontein project and as result there is no income that they bring to their families nor can they become involved in cropping. A very strange situation is found at Schoongesicht project where the total family income amounts to R18700-00, and cropping to R32000-00 for category "A", 2-3 range, as compared to R0-00 for Bapo II in the same category and range. In all projects family members employed permanently are the ones bringing livelihood to their families and, also participate in cropping. Cropping is one activity that needs enough capital to make a success out of it. The major income in Rhenosterfontein and Schoongesicht projects is in category "B", 2-3 range whilst in Bapo II it is from range <2 in both casual and permanently employed family members. In category "B" at Rhenosterfontein there is absolutely no contribution for males who are permanently employed in the range of <2 to >3, both from cropping and contribution from family. During the survey it was indicated that, they are less interested in cropping and for family upliftment. They use their money for other purposes other than family matters. They still hold that their parents are responsible for smooth running of the family. Females in the same category contributed a significant amount.

7.3 SUMMARY

Factors such as ethnic group, age, education, experience, marital status and household composition were identified to describe contributed to the characteristics of farmers in the three projects. The influence of these factors on the yield of maize and sunflower will be discussed in Chapter 8. In this chapter these factors were used to best describe the farmers in the three different projects. Household composition was discussed under:- household composition, household size and employment status. Tables 7.6 & 7.8 revealed the contribution of family members to the income of the household. The conclusion can be made that most families do not rely only on agriculture for an income. There are contributions from family members with casual and permanent jobs