

**Impact of the Limpopo Province Strategic Team (LIMPAST) Grain
Advancement Project on farmer's production in the Limpopo Province,
South Africa**

By

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A Master Dissertation

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In partial fulfilment of the requirements
For the degree of**

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DEDICATION

TO

My wonderful and caring grandmother Mrs. Ezereya Magomu whose support, encouragement, prayers and Love were my greatest source of inspiration; she turns 91 years in 2010

DECLARATION TO BE SIGNED BY THE STUDENT

I declare that the thesis that I hereby submit for the degree Masters at the University of Pretoria has not previously been submitted by me for degree purposes at any other University.

I take note that, if the thesis is approved, I have to submit final copies as stipulated by the relevant regulations by 15 July (for the spring graduation ceremony and 15 February for the autumn graduation ceremony), and if I do not comply with the stipulations, the degree will not be conferred upon me.

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The author

Catherine Namome

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Catherine Namome

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I praise God's name for guiding and keeping me safe during my entire study period.

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Degree: Master of Science (Agric): Agricultural Extension

ABSTRACT

This dissertation describes a study undertaken in Limpopo Province and is based on the GPAP project which was created under the auspices of LIMPAST through an established working partnership of ARC-GCI and LDA extension services. The study aimed at analysing the impact of the Grain Production Advancement Project on farmers' production efficiency; and to determine factors that could have possibly affected the implementation of improved maize cultivars and essential maize production practices at farmer level. In essence, two important phenomena of the study are addressed: train-the-trainer, and also train the farmer. Through the GPAP project, farmer groups were formed and capacitated. Extension officers seconded to the project were also capacitated to implement the project through On-farm trials, Demonstrations and Farmer Field Schools.

A combination of explorative and conceptual analytical techniques was used for data analysis. Explorative analysis was meant to present frequency analysis, and descriptive statistics. In conceptualization analysis, content analysis was used to confirm the descriptions of behaviour and content of documents. Three checklists were administered to respondents. The first checklist was used to ensure efficient group functioning of farmer groups, the second checklist was used to determine mobilisation of farmer groups and the third checklist determined the extent to which leader farmers implemented the training program for Aganang leader farmer group. A

questionnaire was also used to determine extension officers' perceptions on the following aspects:

- Farmer participation;
- Implementation tools;
- Production efficiency; and
- Factors that led to poor implementation.

A Screening Instrument was used to predict the chances of the selected individual leader farmers from the Aganang district, to be successful in farming.

Findings from the study indicate that 12 on-farm trials were successfully implemented and managed by extension staff and Farmer Field days were well attended in the first two seasons on the project. Farmer groups were formed and respondents revealed that the utmost reason for the formation of a group was to improve their maize production and to increase knowledge and skills. Only 33% of the groups have reached the task/performance stage of group effectiveness. The farmer groups performed on an average level due to the following reasons; there is still a dependency syndrome in farmer groups and a need to improve ownership acceptance by farmers. Extension respondents perceive that for a farmer group to perform efficiently the following needs to be in place: cohesiveness and teamwork, common goal, commitment, interest, self-reliance, participation and ownership. A total of 63% of small-scale farmers have only access to less than one (1) ha of arable land.

Adoption of maize cultivars was to a moderate extent and 40% of farmers implemented the recommended farming practices to a great extent. The utmost farmer constraints that were attributed to farmers' low implementation of farming practices included; drought, land shortage, financial support and labour shortage. However, there was a positive increase in the use of hybrid seed which also improved farmer's maize productivity levels. In the Aganang municipality, a total of 20 leader farmers were selected for a leadership development program. Nineteen leader farmers completed a Screening Instrument to determine their chances to be successful in farming. The Screening Instrument revealed that only one (1) respondent had a 50% chance to be successful, and three respondents revealed a 26-49% chance to be successful. The Aganang leadership development program provided skills and knowledge to farmers and it was revealed that the leader farmers implemented the

skills only to a moderate extent. Overall, the GPAP project had a positive impact on farmer's productivity efficiency but there is need for a re-look at the project with special attention to the following:

- Identification of high potential dry land production areas;
- The majority of farmer groups are too large and should be divided into smaller groups with clear, specific and measurable objectives; and
- Serious attention should be given to selected farmers with the best chance of success to participate in the project.



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LIST OF ABBREVIATIONS

AgriSETA	Agricultural Sector Education Training Authority
ARC	Agricultural Research Council
ARC-GCI	Agricultural Research Council-Grain Crops Institute
FAO	Food and Agricultural Organization
FFS	Farmer Field School
FSR	Farming Systems Research
FSR&E	Farming Systems Research and Extension
GPAP	Grain Production Advancement Project
KMK	KMK Training Services
LDA	Limpopo Department of Agriculture
LIMPAST	Limpopo Agricultural Strategic Team
NGO	Non Government Organisation
NQF	National Qualification Framework
NTK	Noord Transvaal Ko-operasie
OPV	Open Pollinated Varieties
SPFP	Special Program on Food Production

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

Limpopo Province depends economically to a great extent on agriculture where the majority of the population in this Province lives in rural areas, and agriculture has been the main source of their local economies and development for many decades. In 1997, the Agricultural Research Council-Grain Crops Institute (ARC-GCI) established a working partnership with the Extension Services in a number of districts in the Limpopo Province. This mutual trust that was built between the parties in this period prepared the way for cooperation and it created a good opportunity for agricultural development which was provided by the Limpopo based Grain Production Advancement Project (GPAP) under the auspices of the Limpopo Agricultural Strategic Team (LIMPAST), (Du Toit, 2001). In this project, on-farm experiments helped to create an environment in which extension officers, as equal partners in the technology development process, could reap the benefits of close interaction with researchers. In a bid to shift away from a linear model of technology generation and transfer to a more interactive process, information sharing and technology development in participation with farmers was encouraged. The main concept of the project was to train extension officers who would in turn be responsible to train farmers in all project activities.

As stated by Du Toit (2001), farmers have to participate in research. The Grain Production Advancement Project involved farmers in the form of farmer's research systems and the development of Field Schools. LIMPAST an Article 21 was formed after lengthy discussions between various farmer unions, the Provincial Department of Agriculture and the Agribusiness sector. The main purpose was to unite agricultural development and partnership within the Province, GPAP was a key role player in linking smallholder farmers to a large-scale grain buyer, Progress Milling Company, the largest miller in the Limpopo Province. The South African government, through funding and staff secondment, also supported it. The project operated in Limpopo and Mpumalanga Provinces, which were the two project areas in South Africa. Activities included community development, training of farmers and extension workers, mentorship with production advice from large-scale commercial

farmers, and strengthening of village level institutions. Progress Milling, a Polokwane based company mainly involved with grain milling in the Province had a long standing community development programme and education trust. The main drive behind the concept and organization of GPAP came from this company. The program had developed to such an extent that it was no longer possible to run the development programmes on an ad-hoc basis and a fully developed vehicle was necessary to carry the programme forward, this led to the formation of the GPAP. Figure 1.1 describes the four major activities of GPAP with the help of research development from Research institutions and Extension activities which involved extension officers and farmers.

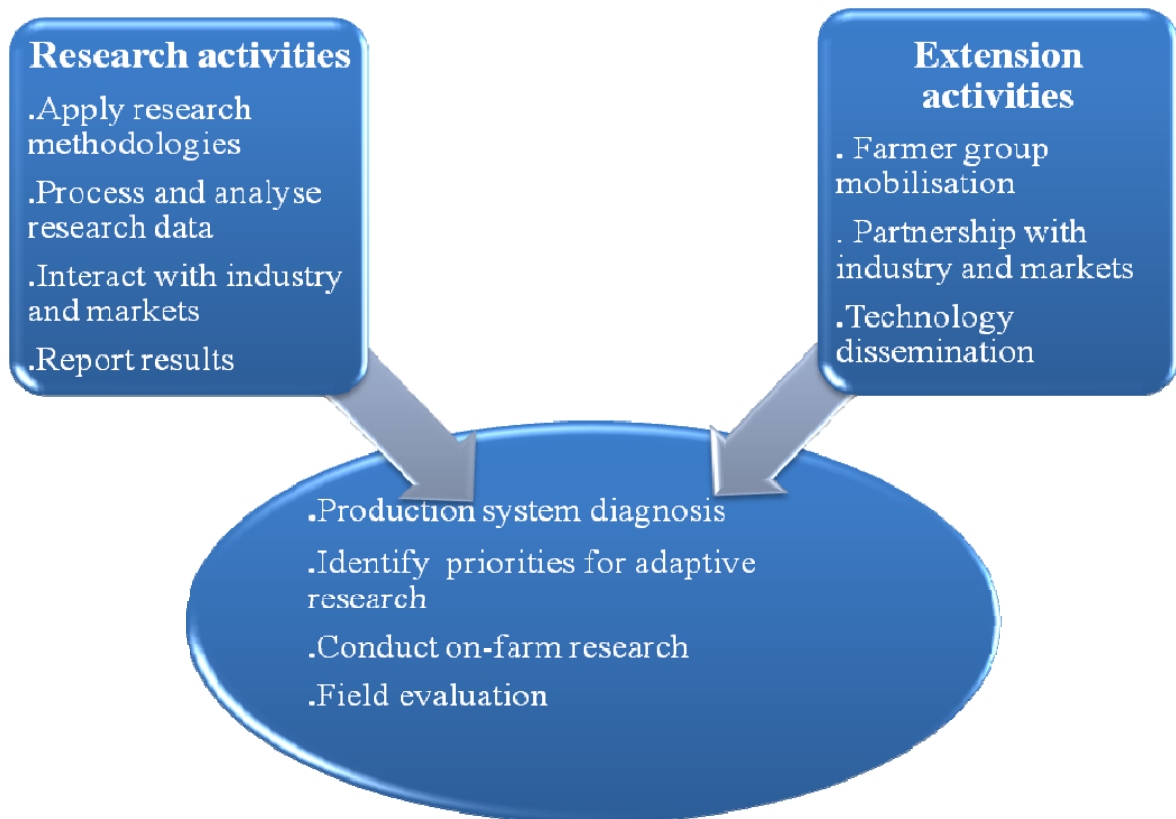


Figure 1.1: Research–Extension Joint Action interaction zone for the Grain Production Advancement Project

Source; *Du Toit, 2001, adapted by Namome, 2009*

This was achieved through four main fields of activity: Production system diagnosis; Adaptive research; On-farm research; and Field evaluation. These programmes were conducted in close co-operation with the provincial Department of Agriculture and Tertiary Education Institutions like the University of Pretoria. The empowerment of previously disadvantaged communities on the one hand and the need for household

food security on the other were aims which had been set by government for social and economic upliftment programmes, (ARC Report, 2007). The main goal was to link farmers in the project areas with buyers for their produce, and with other businesses and agencies for input supply, training, and credit facilities. GPAP further coordinated and encouraged the partnership between developed and developing agriculture in the Limpopo Province. Specifically the project objectives included:

- Impart technology skills to farmers in the Limpopo Province;
- Linking farmers with the markets (market, finance, inputs, transportation and warehousing);
- Help farmers to increase farm productivity;
- Assist farmers to use sustainable farming practices;
- Create job opportunities for the local people;
- Improve food security and alleviate poverty; and
- Stimulate economic spin-offs (ARC, 2007).

With regard to small-scale farmers GPAP supported them by facilitating access to:

- Agricultural Extension support;
- Input supplies;
- Infrastructure support;
- Training/capacity building and; and
- Agricultural information and marketing.

Due to limited financial resources GPAP formed a partnership with government and previously disadvantage communities at grass root level to create a climate conducive for participation and development.

1.2 PROBLEM STATEMENT

1.2.1 General problem statement

The GPAP project is one of the many agricultural projects that have been implemented in South Africa. Some of the projects have been regarded successful however some farmers have the least performance at farmer level. Regarding the GPAP, one can argue that the project was a success, however at farmer level; agricultural productivity does not indicate the full success of the project. Non-adoption of farming practices, developed from research findings, by farmers occurs for many reasons but it is typically the result of a logical thought process rather than an uninformed or unruly attitude (Stevens, 2007). Reasons for non adoption or poor adoption of recommended practices have been associated with factors like farmers' characteristics and socio-economic, institutional and environmental factors. Researchers (Düvel, 1991) argue that the independent variables namely: needs, knowledge and perception are the more direct and immediate causes of low adoption. With such varying ideas on what really affects farmer adoption, this calls for further investigations regarding other possible factors like the efficiency of farmer groups in developmental projects like GPAP.

Through GPAP, farmer groups were formed and capacitated with the major a focus on training of extension officers who are then responsible for the training of farmers in implementing the maize project through on-farm trial experiments and demonstrations. This was created with a view of linking research and extension in an attempt to increase the impact of technology development in participation with farmers. But there is a concern about the implementation of the acquired knowledge since it's not reflected at farmer level. In view of this, this study is designed with the main aim of analysing the impact of the project and to identify factors that affected implementation of acquired knowledge at farmer level basis, among maize production farmer groups in the project areas of the Limpopo Province.

1.2.2. Towards a Problem Conceptualisation

Production problems that farmers face are always interrelated. Attempts to solve a specific technical problem may create new problems if the whole complex of farmers' constraints is not understood. This complex situation is illustrated in the next figure.1.2.

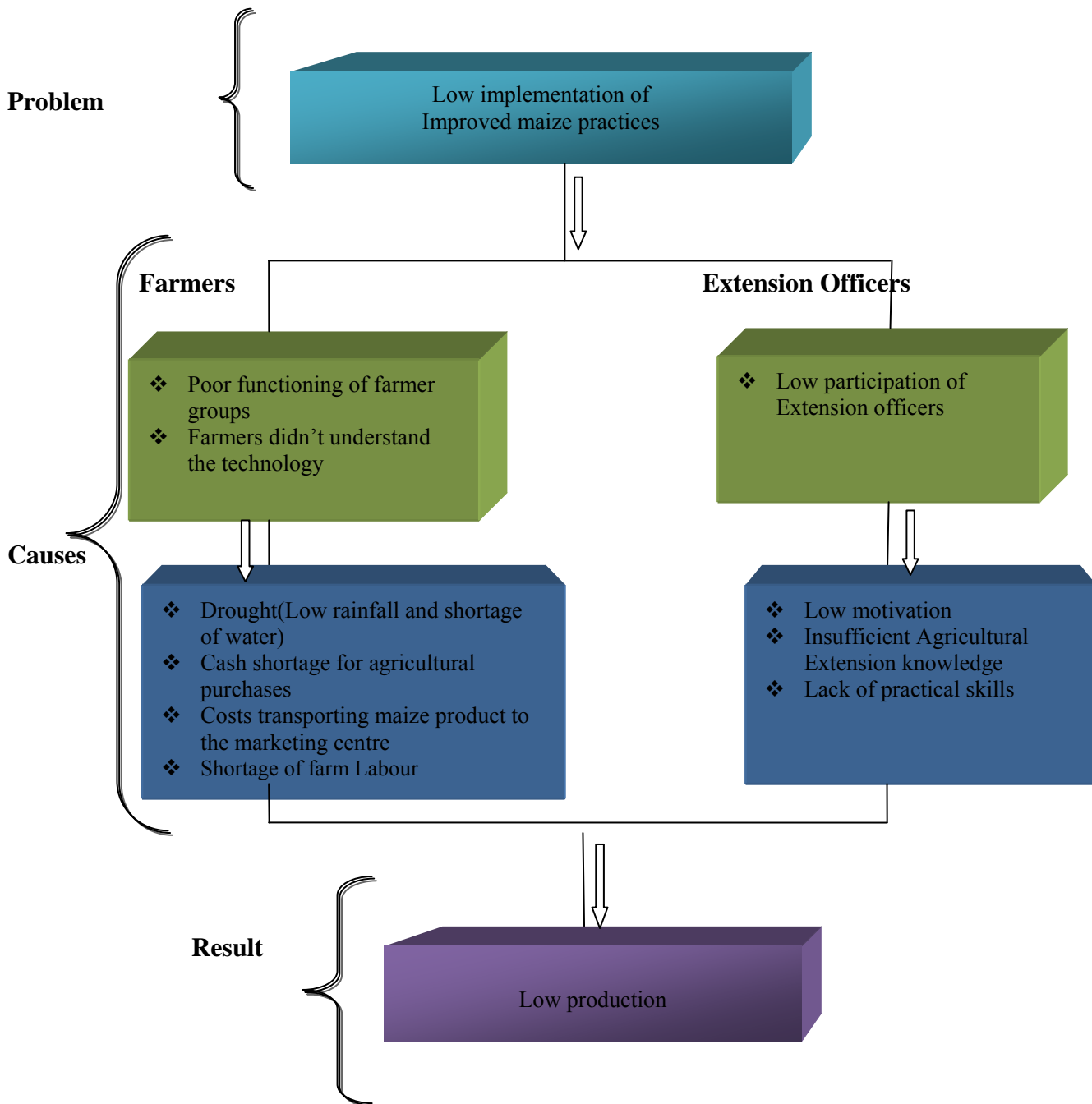


Figure 1.2: A conceptualisation of farmer constraints in farmer groups

1.3 OBJECTIVES OF THE STUDY

1.3.1 General objective

The general objective of this study is to analyse the Impact of the Grain Production Advancement Project on farmers' production efficiency and specifically the role of extension officers' involvement in the project. The study will focus on case studies namely; the evaluation of farmer groups and extension staff involved in the project. More emphasis is put on factors that could have possibly affected the implementation of improved maize cultivars and essential maize production practices at farmer level, namely; level of efficiency of farmer groups. Focus will be on project inputs and activities, farmer participation and further to explain the performance of farmers. Specifically, the objectives of the study are to;

- Review key implementation tools and their appropriateness to farmers during the implementation of the project.
- Investigate the level of farmers' participation in the implementation of the project through mobilisation of farmer groups and determine farmer's performance indicators and levels of productivity.
- Investigate factors and underlying causes of poor implementation or failure to adopt recommended technologies by farmers.
- Determine the success of the program to capacitate extension staff to implement an intervention program on improved maize production to farmer groups.
- Determine the impact of the leadership development program presented to the Aganang leader farmer group.

1.4 RESEARCH QUESTIONS

1. What implementation tools were used during the project implementation?
2. To what extent were farmers involved in the project?
3. What knowledge do farmers require in order to adopt the improved maize cultivars and production practises?
4. What services were provided by extension to farmers?
5. What other services were provided to farmers and by whom?
6. Which factors proper the development of effective farmer groups?

7. What factors impeded adoption of improved maize cultivars and essential production practices at farmer level?
8. What suggestions can be made to improve the effectiveness of farmer groups to enable farmers to farm successfully?
9. Do some farmers have a better chance to be successful than others?

1.5 OVERVIEW OF THE AGRICULTURAL POTENTIAL OF LIMPOPO PROVINCE

Agricultural productivity in Limpopo Province represents potential, given its rich fruit and vegetable production.

Table 1.1: Crops cultivated by farmers and the proportion of farmers cultivating specific crops

CROP	PERCENTAGE
Maize	10.1%
Sorghum	3.8%
Cowpea	0.8%
Fruits and Vegetables	55.0%

Source; *ARC Report, 2007*

The higher lying areas of Limpopo Province are devoted to cattle and game ranching. Despite favourable agricultural conditions, land scarcity in Limpopo Province among farming households, is one of the challenges to increased agricultural production, (Rwelamira, 2008). According to Meyer (1993) quoted by Rwelamira (2008), rural households in the Limpopo Province fall into four categories in terms of household resource access:

- Resource poor households, comprising of farmers who have no arable land or grazing rights (estimates range from less \pm 50% in former homelands Lebowa and Gazankulu to about 36% in Venda);
- Smallholders comprising households who operate below subsistence level and who usually do not sell produce. African farmers occupying small pieces of land (\leq 0.5 – 5ha), do not use any form of irrigation and produce at subsistence level;
- Progressive emerging farmers, comprising of households who use some technology and sell produce or livestock; and

- Market oriented commercial farmers comprising of households who make a living from farming. Such farmers are pre-dominantly found in the west of the provincial capital, Polokwane or the western region of the study area. Due to dryness there is extensive livestock production especially among the white commercial farmers, who own large tracks of land. Crops such as maize, potatoes, vegetables and citrus are grown by commercial farmers mainly under irrigation.

Table 1.2: Characteristics of farming households in the former homelands of Limpopo Province

Characteristic	Limpopo Province
Household with access to land agriculture (regardless land size)	74.1%
Landless households	25.9%
Households with access to animal grazing	37%
Reasons for farming <ul style="list-style-type: none"> • Subsistence • Profit • Other 	93.5% 4.5% 1.7%
Farmers that experience serious crop failure	24.3%

Source: Statistics South Africa, 1999, Rural survey

1.6 PROFILE OF FARMERS

The majority (63.4%) of farmers have small plot sizes of less than one (1) ha; only 36.6% of farmers farm on plot sizes of between one (1) ha and 10ha (ARC, 2007).

Table 1.3: Size of land area cultivated by farmers and proportion of farmers in each category

Land Area (ha)	% of farmers
<1	63.4
1	19.8
2	4.6
3	5.3
4	2.3
5	0.8
6	1.5
7	0.0
8	0.8
9	0.8
10	0.8
11	0.0

Source; ARC Report, 2007

1.7 SIGNIFICANCE OF THE STUDY

The underlying and fundamental nature of this research is to develop an essential understanding of farmer attitudes during the process of implementation of a project. Although adoption focuses on needs and perception, farmer group efficiency goes well beyond it. In South Africa's quest for a solution that can combat extreme poverty through better agricultural development, and improved farming practices, the insights gained from this study can prove useful not only to policy makers but also to farmers towards the importance of effective farmer groups for their own agricultural development. Regarding agricultural production, the recommended measures can be assessed in terms of their influence regarding the production and efficiency as well as their acceptability by farmers. The Limpopo Province is a highly prestigious agricultural zone in South Africa and any methodological success could be diffused quickly throughout the country.

1.8 OUTLINE OF THE STUDY

The study is organised into seven Chapters. The first Chapter introduces the problem statement and the objectives of study and providing an overview of agricultural productivity in Limpopo Province. The second Chapter presents an overview of the literature study on the sustainable agricultural extension approaches and methods. The third Chapter further presents the methods of how the research was conducted. Chapter 4 presents an analysis of stakeholders and a discussion of the implementation tools which were inform of case studies for the project. Chapter 5 presents the findings of farmer participation through mobilisation of farmer groups with the view of:

- Determining the success of the program through capacitating of Extension staff to implement an intervention program on improved maize production to farmer groups.
- Investigate the level of farmers' participation in the implementation of the project through mobilisation of farmer groups and determine farmer's performance indicators and levels of productivity.
- Investigate factors and underlying causes of poor implementation or failure to adopt recommended technologies by farmers.

Chapter 6 presents the study objective that determines the impact of the leadership development program presented to the Aganang leader farmer group. Discussions on the leadership development program are based on the application of a Screening Instrument to predict farmer's chance to be successful in farming and also identify specific limitations within the individual farmers' profile that could be addressed by specific human resources development program. Chapter7 shares a view on the summary, conclusions and recommendations.

CHAPTER 2

THEORETICAL FRAMEWORK, A REVIEW OF THE EXTENSION APPROACHES AND METHODS

2.1 INTRODUCTION

This Chapter provides the theoretical framework for this study, background information on Farming Systems Research and Extension (FSRE), and Farmer Field Schools since they were the extension approaches used during the project. Farmer group mobilisation was implemented as an extension method. The Chapter is intended to provide context for the analytical work that follows in the remainder of the dissertation. First, a discussion of the South African perception of extension, this will guide the researcher when discussing results of the research. Secondly, a discussion will follow of comparative analysis of extension approaches; FSR&E and Farmer Field Schools are presented.

2.2 A NEW CONCEPT OF EXTENSION IN SOUTH AFRICA

Over the years it became clear that there are a number of extension principles that underlines an extension approach and in 2000/2001 (Düvel, 2002), extension officials in South Africa identified and prioritised the following principles underlying an extension approach:

- Participation (empowered, ownership, inclusivity);
- Needs based (balanced between felt and unfelt needs);
- Evaluation Accountability;
- Programmed (mobilisation and organisation-goal driven);
- Sustainability;
- Behaviour change focus;
- Priority approach;
- Coordination/ constructive involvement of all role players(forming of linkages);
- Technical support; and
- Equity.

These principles paved way for an alternative understanding of extension or development and it is illustrated by means of a continuum.

A | ←

▼ Middle

→ | B

A: Is an approach that is pro-active on preparing the client for dealing with future problem situations and thus being more of an educative or capacity building or empowerment nature (bottom up approach).

B: Is a strictly advisory and reactive approach (based on request and restricted to advice or provision of a recipe, regarding the requested issue or a political decision) i.e. a top down approach.

Middle point: Between the two extremes, we find the middle point where felt problems are addressed not only to answer the specific request but also to provide insight and understanding of underlying principles so that the client can become more skilful and independent in future decision making situations (Düvel, 2002 adapted by Terblanche, 2008).

Table 2.1: Categories of different Extension Approaches

A	Middle	B
<p>Approach:</p> <ul style="list-style-type: none"> • Educational • Provides insight and understanding • Proactive • Focus on future problems • Promotes independence (Bottom up approach) 	<p>Approach:</p> <ul style="list-style-type: none"> • Reacts on requests • Focus on current needs • Uses opportunity to provide knowledge/ understanding • Increase skills of and independency in decision making. (Bottom up approach) <p>Priority approach</p>	<p>Approach:</p> <ul style="list-style-type: none"> • Advisory • Provides recipe/instruction • Reactive • Focus on present problems • Maintains dependence (Top down approach)

2.2.1 Non Negotiable principles of Extension

The new concept of extension allows any type of intervention/extension program/project to be linked to extension and this in itself could easily become a serious problem for the extension agent and the farmers. If the extension service and

therefore their extension agents want to be successful in extension and therefore agricultural development, there are a number of non negotiable extension principles that should become part of the agricultural extension services, and agricultural and human development program. These principles are:

a) The interrelationship between agricultural development and human development

Agricultural and human developments have an important relationship with examples clearly indicating that development will not take place if both aspects are not addressed on equal level. It is all about capacity building which does not mean promotion of human development outside the field of agricultural development but a mix that meets situation specific needs and circumstances. It is imperative that specific, clear and measurable goals be formulated and account given of their achievements through regular evaluation.

If a farmer or community is being provided with on or off farm infrastructure and/or equipment and starter packs , they need to be empowered to manage it and to take the responsibility to utilize, care, maintain and therefore to take ownership of it. If it does not happen there will be no development. To bring about empowerment in a situation where the beneficiaries do not really feel part or that it does not address their needs, is difficult and in many instances totally impossible. The challenge for extension will be to change the attitude of the farmer/community and the golden rule to bring about change is: “change the people”, if one cannot change the people- change the people. The challenge therefore is to equip people also to manage change. With change comes accountability and with accountability, responsibility of decision making, (Terblanche, 2005).

b) Needs based development

A development focus based only on the felt needs of the clients is discouraged; there should be conciliation between felt and unmet needs which is again one of the biggest challenges for extension agents. The conceptualisation (breakdown – cause and effect) of the felt needs to reconcile with the unmet needs is an essential skill needed by every extension agent to understand and facilitate the process, Stevens & Terblanche (2005).

c) Community participation (getting involved in forming of linkages and structures)

The importance of community participation in all aspects of agricultural development cannot be overestimated. What is needed is a total linkage structure for purposeful participation and coordination at all levels and it should start at community/client level. No one is in a better position to participate and to form linkages with the farming community than the frontline extension agent. The farmer is the extension agents' object of concern and that simply means that the agricultural extension agents work with people. The extension agent and his organisation must identify and give recognition to local structures for participation and the forming of linkages. It is the extension agents' responsibility to open up channels of communication and negotiations within and between structures to improve participation. If there is no development structure the establishment of such a structure is essential. This is only possible if the extension agent has become part of the community, Stevens & Terblanche (2005).

d) Change

The philosophy of extension is to "*Help people to help themselves*" which includes principles of change and more specifically behaviour change. According to Hugo (1971:14) cited by Terblanche (2005), the potential of the human race is fundamental to this principle. Extension work (community development) implies change and when will and desire are present change can greatly be facilitated. The will and desire comes from recognition of respect for human dignity, self-determination, individuality and self-help. Therefore the principle of community development is all about understanding human behaviour (Duvell, 2002; Terblanche, 2008).

2.3 EXTENSION APPROACHES AND METHODS

The backbone of all agricultural extension endeavours is the transfer of agricultural information to enhance the productive capacity of farmers. The adoption of new technologies and production approaches in farming activities is becoming crucial for countries. Agricultural extension has served a link between farmers to transfer best practices of one farmer to another (Umali & Schwartz 1994).

2.3.1 Farming Systems Research

2.3.1.1 The concept of Farming Systems Research

Farming Systems Research (FSR) began in the 1970's as an On-farm methodology to make agricultural research more relevant to farming practice in special circumstances where the gap between theory and practice was especially large (McCown, 2002). FSR was developed based on the premise that activities commenced with an understanding of the problems of farmers, with the input of local knowledge and practices as an essential part of innovation development. There are several different approaches to FSR that are sometimes presented as different entities (Carberry, 2001: 58). A system is conceptually defined as any set of elements or components that are interrelated and interact among themselves (Hildebrand, 1986), while as a farming system, by contrast, is defined as a population of individual farm systems that have broadly similar resource bases, enterprise patterns, household livelihoods and constraints, and for which similar development strategies and interventions would be appropriate. Depending on the scale of the analysis, a farming system can encompass a few dozen or many millions of households (FAO, 1998).

Whyte (1981) reveals that the beginning of FSR starts with a range of research and rural development projects within/for national research institutions. It is introduced in form of a rural development effort to reach a target population of farmers who are traditionally neglected by agricultural research. The initial elements used are On-farm experiments. These institutions pursued the conventional process of field research activities were identified and designed by senior researchers working on an experiment station. FAO publication (1998) states that FSR is aimed at enhancing the efficacy of farming systems through better focusing of agricultural research so as to facilitate the generation and testing of improved technologies.

2.3.1.2 Rationale and features of FSR

According to Cernea, Coulter & Russell (1984), implementation of a project must be consistent with the central rationale of the research approach. The rationale and features of an FSR approach as presented by Cernea et al (1984: 39) are listed below:

a) The ultimate objective of FSR is to increase farm productivity and income. Traditional agricultural research has been concerned mainly with the development of

technology and increase of knowledge; the dissemination of such technology and knowledge that has been beyond the domain of research. The FSR approach however, views increasing farm productivity as its final goal, one that can be attained only with the farmers' acceptance and use of the newly developed technology. The link with agricultural extension and the realities of the local farming community is therefore implicit, although such linkages are often neglected.

b) The biophysical and socioeconomic environment of each farm is different from that of any other, and the appropriate production technology for each farmer is also expected to be unique. The objective of traditional research has been to provide one or two sets of recommended practices to cover a large number of farms in a region; FSR recognises the uniqueness of each farm and strives to devise a congruent, appropriate package of practices for each farm Cernea, Coulter & Russell (1985)

c) The optimal package of technology for each farm cannot be derived solely from the results of trials conducted at experiment stations, but must also be based on existing farm practices and the results of actual farm trials. Whereas traditional agricultural research has relied mainly on research station experiments, the FSR approach requires more work with farmers on their own farms.

d) The design of optimal production packages for a large number of farms requires the participation of a large number of farmers to conduct farm-level research. Whereas traditional research has usually been conducted at a few locations by a few highly trained scholars, the FSR approach requires more people. Consequently, the methodology should be simple enough to be followed easily by the majority of the additional agricultural development workers.

The features presented above give an overview of how farm research has to be intensified, illustrating the need for involving farmers through farm trails instead of experiments at stations. In the GPAP project, FSR was one of the major approaches used and the project involved farmers to a greater extent. FSR as an approach involves less broad tools like On-farm trial experiments, demonstrations and tours. The GPAP project used demonstrations and On-farm trial experiments to implement

the project. More discussions are illustrated in Chapter 4 on implementation tools used.

2.3.2 Experiences of Farming Systems Research in Africa

The relevance of reviewing experiences from other parts of Africa is to create a link between applied Farming Systems Research of South Africa and Africa. According to Nigel (1989), he reveals that developing and promoting of Farming Systems Research in Africa evolved with the cooperation of national agricultural research and extension services of different nations. Countries like Ethiopia, Malawi, Kenya, Tanzania, South Africa, Senegal, Uganda, Zambia and Zimbabwe have been involved in the research approach with funding from development agencies and governments. According to Matata et al (2001), he reveals that there is a perception that FSR in Africa has not been a success per se however one can argue that FSR did contribute considerably towards agricultural development in Africa.

According to Collinson (1982:53-54), many new technical practices tested at research stations and recommended to farmers have not been adopted or have had only limited acceptance by a minority. It is often the researchers and policy makers who have determined what was useful and of highest priority for farmers, without being aware of farmers' own constraints and concerns. In Africa, hundreds of major programs have failed ranging from food crops to cash crops. The most frequent aspects have been adaptation to the social mores and customs of rural societies which have been neglected. However, some countries have progressed positively with FSR as an approach to implement their national extension programs. The methodology of FSR makes it possible to identify real problems, offer solutions and verify their validity before disseminating them (Collinson, 1982). Therefore with such arguments of FSR in Africa, the GPAP project has to be viewed as to what extent was the project successful with the concept of training extension officers in order to help farmers.

2.3.3 Farming System Research and Extension (FSR&E)

FSR&E represents a unique approach to agricultural research and extension; it was formulated in response to the complex and diverse production methods encountered on small often-mixed farms in the developing world (Zandstra, 1983). Farming System Research without Extension is an incomplete process (Lagemann, 1982).

Information moves from farmers to researchers through studies of representative farmers and farmer participation in the technology generation process, but technology does not move from researchers to farmers very well unless there is a vehicle. Including extension completes the circular process of Farming System Research by moving information from researchers to farmers (Johnson, 1986).

Boone (1985) defines Extension Programming as: a comprehensive, systematic, and proactive process encompassing the total planned, collaborative efforts of the adult education organization, the adult educator in the roles of change agent and programmer, representatives of the learners, and the learners themselves in a purposive manner and designed to facilitate desirable changes in the behaviour of learners and the environment in which they live. Therefore linking extension to Farming Systems Research (FSR) requires a more combined, integrated, continuous process. Research and Extension have a deep and abiding mutual interest (Johnson, 1986).

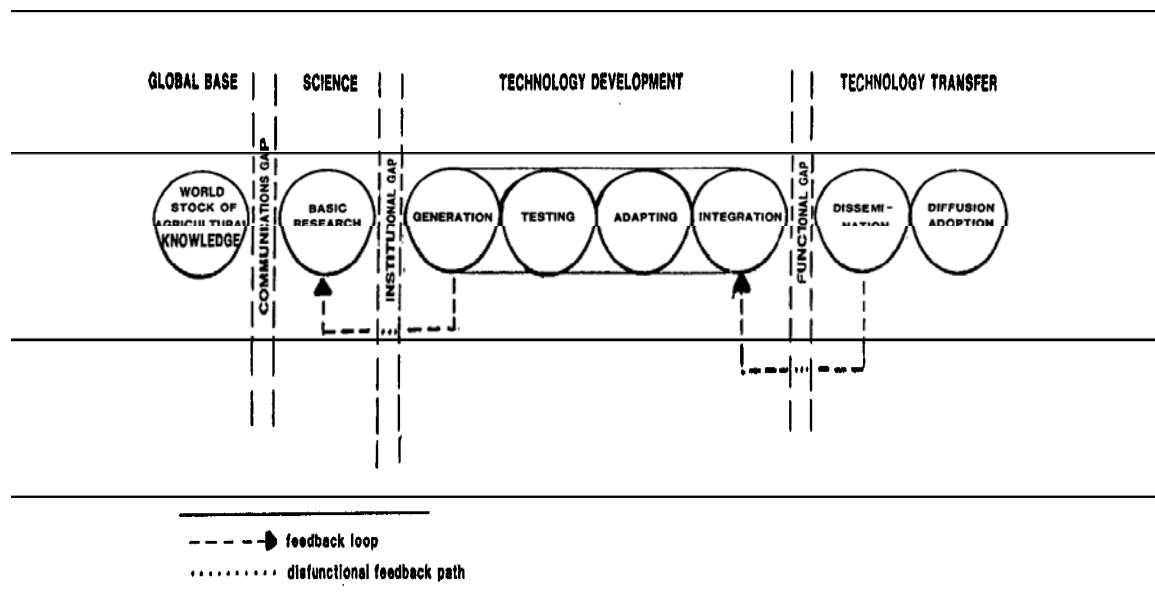


Figure 2.1: Agricultural research-Extension continuum

Source: Johnson, 1986

Johnson (1986) argues that for technology transfer to begin, in addition to a description of what technology should be transferred, FSR/E must also provide information about the end use of this information and to what channel it should be transferred. Most FSR programs do not systematically answer the question, ‘What are the geographical, ecological and socioeconomic limits where the improved

technology is applicable? (Johnson 1986). It is here that both research and extension need to co-evolve into a mutually functioning system that works together to answer the above questions Franzel (1984).

According to McDermott's (1984)'s argument, if an effective Farming System Research (FSR) program is to be implemented, extension will have to extend its band of activities toward the research end of the continuum just as research in FSR projects is broadening its band of activities towards extension. So far, however, extension has been effectively integrated into the FSR process. Johnson (1986) further states that for the transition from research to extension to be effective, research and extension need to recognize their common mutual interests that exist in the middle of the continuum. Heim (1990) reveals that it is particularly imperative that both play an active role during the farmer survey, on-farm trials, and interpretation/ packaging of results phases.

Hildebrand and Waugh (1982: 13) give an explanation that *FSR&E* deals mostly with conditions inside the farm gate. *FSR&E* is concerned with technology generation, evaluation, and delivery. It emphasizes on-farm biological research, and it's applied; farmer-oriented, agro-biological research, supported by the social sciences in a team effort, which includes extension responsibilities. The principal product is the technology and the primary clients are the farmers. According to Norman (1982), a Farming System is the result of a complex interaction of a number of interdependent components. At the centre of this interaction is the farmer, who is the central figure. Moreover, both farm production and household decisions of small farmers are intimately linked and should be analysed in Farming Systems Research (Poats Schmink & Spring, 1988).

2.3.4 Farmer Field Schools

2.3.3.1 The concept of Farmer Field School

The Farmer Field School (FFS) is a form of adult education, which evolved from the concept that farmers learn optimally from field observation and experimentation. The FFS concept originated as an imaginative response to the overuse of insecticides in irrigated rice systems in Asia in the wake of the Green Revolution (Tripp et al, 2005). Various Integrated Pest Management (IPM) Extension approaches were developed

and tested to address the problem, and the FFS concept was initiated in Indonesia on a small scale in 1989/90 and then expanded (Kenmore, 1996). FFS emerged from experimentation in implementing participatory farmer training activities in the Philippines beginning in the late 1970s. Refinements in the Philippine and a new major effort in Indonesia in the late 1980s led to the birth of the FFS movement (Pontius, Dilts & Bartlett, 2000). The educational philosophy of the FFS rests on the foundations of adult non-formal education, and reflects the four elements of the experiential learning cycle proposed by Kolb (1984): concrete experience, observation and reflection, generalization and abstract conceptualization, and active experimentation.

A typical FFS can be a group of farmers (roughly 20–25) who meet periodically (usually once a week) in a designated field throughout the major part of the crop cycle (Tripp et al, 2005:32). The farmers usually work in smaller subgroups and devote considerable time to agro ecosystem analysis, in which they are encouraged to make observations of important processes and relationships, such as improvement of productivity levels. Farmers draw the results of the analysis on flip-chart paper and discuss them. The FFS facilitator (typically an extension agent or NGO staff member who has had extensive training) encourages farmers to ask questions, using terminology familiar to them, and to seek answers, rather than lecturing or giving recommendations. FFS was developed to help farmers tailor their farming practices to diverse and dynamic ecological conditions (Tripp et al, 2005). FFS was introduced in Africa in the early 1990's in regions like West Africa, East Africa and Southern Africa. Pilot programs under development agencies like FAO's Special Program on Food Production (SPFP) for Food Security in Low Income Countries where implemented (Krueger, 1994). In West Africa FFS was based on the premise that participating farmers become researchers who tested various technological options available, during which process they are able to decide what technology is the best alternative for adoption in farming (Asiabaka & James, 1999).

2.3.5 Farmer groups

Farmer groups are described in the literature as part of the Extension methods that were used during the implementation of the GPAP Project. Farmer groups were used as a way of mobilising farmer participation in the Project. Farmer groups formed part of a way forward to develop farmers with the help of extension officers. The idea of using farmer groups in the project does meet the approval of extension officers, and it seems fit for the development of farmers. Farmer groups are a good place to start in examining new modes of delivering services to farmers, and in practical terms of the GPAP Project, the extension officers started off the farmer group with the participation of farmers. Farmer groups were the core institutions for empowering farmers to participate and benefit from the project. They enabled farmers to take charge and control the implementation of project activities. In the view of the GPAP Project, extension officers were facilitated to acquire knowledge and skills in order to enhance their capacity to help farmers perform and realise the outputs of increased productivity. Farmer groups can be grouped into two types namely: community based groups and community based farmer groups (Stevens & Terblanche (2004)).

Community based groups

This type of group functions at village or community level and could include a community level cooperative or farmer association dealing with the inputs needed by members, the resource owners, to enhance the productivity of their farming business based on the land, ware, goats or animals.

Community based farmer groups

These farmer organisations specialise in a single commodity and opt for value adding through improvement of production and expansion of markets. They are designated as output-dominated farmer organisations. These organisations have to operate in a competitive environment.

2.3.5.1 Working with small groups in Agricultural Extension

a) Mobilisation of a farmer group

Before group members can support each other as they make changes to practices and learn together are summarised in the following different stages of group development (Stevens & Terblanche (2004) cited from Tuckman & Jensen (1977) and Forsyth (1999)).

- *Forming or orientation stage*

When the group is forming, members often go through an orientation phase characterised by mild tension, uncertainty about the group's purpose, structure and leadership. This situation is further complicated by the absence of specific norms relating to behaviour and the attainment of goals as well uncertainty about their role in the group.

- *Storming or conflict stage*

In this stage, it is characterised by conflict within groups as members struggle to define their group goals, their relations with one another and the role that each member plays in the group. Its also part of the development where members tend to know each other.

- *Norming stage*

During this stage, inter member conflict is replaced with cohesiveness where the members develop a feeling of group unity and there is a strong sense of group identity, mutual support, trust and co-operation between members.

- *Performing or the task performance stage*

This is where each group member comes to regard other members as credible sources of support and advice, and a certain commitment to fellow members is illustrated, and groups reaching this stage indicate that a certain level of group maturity is achieved.

- *Adjourning or dissolution stage*

This is the final stage where members are finalising a specific task and changing of relationships is anticipated. The stage is planned within farmer groups and takes place when the goals have been accomplished.

b) The effective farmer group

Stevens & Terblanche (2004) state that effective farmer groups are the vehicle to work collectively towards change at farmer level and to the agricultural system in general. They further argue that group formation cannot simply be achieved by calling people together, however the formation and development of an effective farmer group is influenced by the skills of the group promoter and the adherence to certain basic

group dynamic principles. The mobilisation of farmers into effective groups is a process that takes time to develop to a point where it can be effective and where the members feel connected to it. Special attention need to be given to the following characteristics which were found to be critical with efficient study groups:

- Existing structure of the group;
- Shared vision and goals;
- Setting norms and building trust through active participation;
- Size of a group;
- Leadership;
- Networking;
- Development of human and social capital; and
- Monitoring and evaluation. (Stevens and Botha, 2003; Terblanche, 2000).

CHAPTER 3

RESEARCH DESIGN

3.1 INTRODUCTION

This Chapter outlines the methodology used and the specific data gathering tools employed in the study. The study focuses on both qualitative and quantitative data because first, it determines the effectiveness of farmer groups as perceived by extension staff and farmer groups themselves; secondly it reflects on how farmers can gain new knowledge and implement it. As stated by Mutimba (1997), the most obvious distinction between qualitative methods and quantitative methods is that quantitative methods produces numerical data and qualitative methods results in information which can best be described in words.

In relating to the relevancy of the study, the methodological approaches employed were based on specific activities which were part of the Grain Production Advancement Project; and quantitative methods like the use of questionnaires, checklists and the Screening Instrument. The Chapter is structured as follows; first section describes the study area; second section explains the sampling frame and sample design; and the third section discusses data collection tools. In the forth section the discussion is based on the data analysis.

3.2 DESCRIPTION OF THE STUDY AREA

3.2.1 Selection of the study Area

Limpopo Province was purposely selected as the study area because as indicated in Chapter 1, the Project was implemented in the Province. Furthermore, Limpopo Province was chosen because of the diverse agricultural practices and the production of maize and has the highest number of people depending on agriculture as their sole income. The study areas are indicated in the Table 3.1 below.

Table 3.1: The location of study areas in the Limpopo Province

Study Area	District municipality	Local municipality
Mashahane	Capricorn	Aganang
Sofaya	Mopane	Maruleng
Tafelkop	Sekhukhune	Greater Groblersdal
Legolaneng	Sekhukhune	Greater Groblersdal
Zava	Mopane	Greater Giyani
Leeukraal	Sekhukhune	Makhuduthamaga
Laastehoop	Capricorn	Polokwane
Mothiba	Capricorn	Polokwane
Zebediela	Capricorn	Leppelle Nkumpi

Source: *ARC Report, 2007*

3.2.2. Geographic location

The Limpopo Province is situated at the North-Eastern corner of South Africa, shares international borders with three countries: Botswana to the west and northwest, Zimbabwe to the north and Mozambique to the east. The Province covers an area of 123910 square km representing 10.2% of the total area of South Africa. The population density was 43 per square kilometre and in 2001, and the total population of Limpopo was 5,273,642 (11% of the South African population). There is a low level of urbanisation as 89.3% of its population live in non-urban areas (Stats SA, 2003). Of the estimated surface area of 12 million hectares in the Province, 67% (8 million hectare) is used as arable land; of which 5.4 million hectares as natural grazing, 1.5 million hectares is for nature conservation, and 0.088 million hectares for forestry. Only 7.6% of arable land (0.61 million) is allocated to dry-land cultivation of staple foods, vegetables and fruits (under irrigation) which are the most important crops cultivated in Limpopo.

3.3 SAMPLE DESIGN AND SAMPLING FRAME

3.3.1 Sample Design

The survey and case study research design were used in this study. The design was selected to survey a selected number of farmer groups who participated in Project from 2000-2008 agricultural seasons. The extension officers seconded to the project were also surveyed. This was done in order to obtain data that is representative and also to describe how the Project was implemented.

3.3.2 Sampling Frame

The purpose of the sampling research was to obtain information with regard to characteristics, activities of the population. All data recorded during the project was provided by the ARC coordinators. A total of 13 farmer groups participated in the project where each farmer group had on average 25 members. Initially 260 farmers participated in the project and they were reached during farm demonstrations of improved maize breeds as well as other essential maize production activities.

Farmer groups were established in the seven local municipalities of the Limpopo Province. Municipalities of Polokwane and Aganang participated fully; a selected group of leader farmers from Aganang received further training from the project. These farmers from the Aganang municipality were screened using the Screening Instrument (which is not attached as an appendix due to piracy and intellectual property rights) in order to determine their potential to be successful farmers. Chapter 6 discusses the Screening Instrument that was used with leader farmers in the Aganang municipality. All extension officers seconded to the Project were trained (train-the-trainer program) with the view that the extension officers would then train the farmers.

3.4 DATA COLLECTION TOOLS

Data collection tools outline the methodology used to acquire and classify information from farmers and extension staff who participated in the Project. The tools used include:

- a) A questionnaire; which was used to determine extension officers' perception of their group effectiveness and to determine their perception on farmer participation in the project, and possible factors that led to low implementation. (Appendix A).
- b) Checklists were used to determine the effectiveness of farmer groups as an approach for farmer development. The first checklist ensured efficient group functioning (Appendix B). The second checklist was used for mobilisation of farmer groups (Appendix C) and the third checklist was for the Aganang leader farmer group (Appendix D).
- c) A Screening Instrument was implemented in order to determine the possibility of each individual farmer to be successful in farming. A case study method was also

used to collect data from the project, with special reference to the Aganang leader farmer group.

d) A comprehensive literature review was to assess the extension approaches and methods used during the implementation of the project.

3.4.1 Questionnaire and checklist

The questionnaire provided information concerning the involvement of extension agents with farmers after a training program. Extension officers were capacitated and were expected to assist farmers in various sectors, therefore the questionnaire was to determine perceptions on the following aspects:

- Farmer participation;
- Implementation tools;
- Production efficiency; and
- Factors that led to poor implementation.

Three checklists were constructed; the first checklist was used to ensure efficient group functioning. This checklist was used to determine the effectiveness of farmer groups as perceived by extension officers and to determine to what extent farmer groups influenced success in the project. The second checklist was for mobilisation of farmer groups. The third checklist used to determine the extent to which leader farmers implemented the training program for Aganang leader farmer group.

3.4.2 Screening Instrument

A Screening Instrument was used to predict farmers' success. The Screening Instrument, as developed by Lombard (1994), was implemented in a community with the objective to predict their farming success and to determine possible corrective actions to improve their farming success. Proposals from government of integrating disadvantaged individuals into managing agricultural farmland paved way for the creation of a Screening Instrument. Lombard, (1994) indicated the need for a selection Instrument to identify potential successful farmers in the land reform projects of the government. In his research he developed such an Instrument for consideration for implementation by Government and other development agencies. However, earlier, Ellis-Jones (1987) still regarded "farmer identification" as one of the major problems in allocating farmland to land reform beneficiaries, and at the same time striving for maximum sustainability. Realising that there is an urgent need for the implementation

of an identifying Instrument, this section will focus on the implementation of such an Instrument.

3.4.2.1 Construction and implementation of the Screening Instrument

It is a fact that relative low success rates are obtained in South Africa with the settlement of new farmers within the different land reform projects (Lombard, 1994). One of the main reasons for this phenomenon lies within the farmer himself/herself. Under the same circumstances some farmers will never be successful while others will always be successful. The latter group will surely possess certain attributes or characteristics that will enhance their ability to become more successful farmers. If potential farmers can be selected beforehand, according to certain appropriate criteria, also called selected criteria, the chances for success could be much bigger provided that the process can be scientifically supported. On the other hand, the outcomes of the Screening Instrument, namely the score, will assist in the focusing and planning of the training and support programmes to further capacitate the farmers already in a farming enterprise (Lombard, 1994).

Researchers, as quoted by Lombard (1994), identified thirteen variables that declare 89.98 % of the variation in farming success. Based on these variables, a questionnaire that consists of a range of questions in three different categories namely; the independent variables, the mediating variables and the dependent variables, was developed by Lombard (1994). The thirteen selected or identified criteria are grouped under the three different categories as follows:

Independent variables

1. Previous occupation
2. Previous farming experience

Mediating (or intervening) variables

1. Willingness to take risks (Asset/liabilities)
2. Perception of pre-condition for farmer settlement
3. Aspirations (needs)
4. Management (Perception of factors that prohibit the person to manage in an optimum manner)
5. Perception of interrelations
6. Perception of relative value of records

Dependent variables

1. Work/management approach (Time spent to manage)
2. Decision making behaviour
3. Profit orientation before farming
4. Community involvement
5. Advice from fellow farmers

Other variables may be added to further differentiate between individuals with the same score for more accuracy regarding the prediction.

A questionnaire with specific questions was constructed to obtain answers with regard to the above mentioned variables in an attempt to predict the respondents with the best chance to succeed in a farming enterprise. In this case, the Screening Instrument was implemented to a leader farmer group within the Aganang district, Limpopo Province. Nineteen of the leader farmers were identified as a representative sample of the group. These 19 farmers all completed the questionnaire during a training session at the Aganang Municipality offices and were evaluated according the mentioned variable factors. The results were analysed to identify potential successful farmers. For piracy and intellectual property rights, the Screening Instrument will not be attached to the thesis.

3.4.3 Case study method

As quoted by Mutimba (1997: 37-44) from (Becker, 1968), the term case study comes from the tradition of medical and psychological research where it refers to a detailed analysis of an individual case that explicates the dynamics of pathology. The method supposes that one can properly acquire knowledge of a phenomenon from intensive exploration of a single case. Fox (1969) maintains that the basic rationale underlying the case study method is that there are processes and interactions which cannot be studied except as they interact and operate in a single unit.

The approach aims at providing a comprehensive picture of a social unit as it functions in society by an in-depth study of the factors and forces conditioning its behaviour and by analysis of the sequence and interrelationships of those factors. It is the insights gained into the dynamics of human behaviour by detailed study of a social unit which make the case study particularly valuable as a research method (Van Dalen, 1982). Patton (1980) supports this view and suggests that the case study should

take the reader into the case situation, a person life, a group's life or a programme's life. The expansive exploratory nature of the case study can lead to formation of hypotheses. The knowledge that a particular condition exists in a unique instance suggests factors to look for in other cases Feder and Slade (1984).

The case study method requires the researcher to have a breadth and depth of the knowledge about the topic to enable him/her to recognise relationships and to know if they are consistent with existing theory and research, or if they contradict it (Fox, 1969). Two sets of case studies were conducted: Farmer case studies, and intervention case studies. The sets of case studies formed part of a continuum. The farmer cases studies were conducted to establish the level of farmer experiences in technology development whilst the intervention case studies were conducted to establish how researchers actually work with farmers in the field in carrying out the case studies. Two approaches identified by Roling (1990) were used simultaneously:

a) Participating in events

The promoter of the study participated in major meetings and workshop related to the case studied. This approach was particularly useful in gaining first hand impressions of how the various actors planned and implemented their research programmes and the level of interaction between them.

b) Assessing corporate ideology

In addition to impressions, gained from the approach above, actors were also interviewed specifically to establish the extent to which they saw themselves playing complementary roles.

3.4.3.1 Case studies

a) Farmer group and Extension group case studies

The farmer case study conducted was to determine the effectiveness of farmer groups. The purpose of carrying out farmer case study was to determine the extent to which farmers were involved in informal technology and knowledge generation in order to identify opportunities for their involvement in agricultural development. The case study was carried out by observing farmer participation over a period of 8 years. Three farmer groups were selected in different communal areas for an in depth

analysis. Extension officers as a group were evaluated with regard their participation in the project and the third case study was to determine the extent to which a leader farmer group implemented agricultural practices after an intensive training program.

b) Intervention case studies

Two types of intervention were studied; on-farm trials, and demonstrations. The main objective was to see how farmer participation was employed by different institutions.

i) On-farm trials

On-farm trials are conceived as a means to involve farmers in the research process Fenner (1990). They are seen as representing a smooth and logical interface between the three main actors in the research process namely: farmers, researchers and the extensionist. They are seen as presenting better opportunities for synergy between the three actors than on-station trials. The purpose for carrying out on-farm Trials was to establish the extent to which the opportunities for farmers can be met (Mutimba 1997: 42).

ii) Demonstrations

In a classical sense, demonstrations are represented as the last phase in the technology development process (Mutimba, 1997: 44). Technologies developed and tested on-farm are demonstrated on a wider scale and refined accordingly depending on feedback from farmers Feder, Lau & Slade (1985). An analysis of demonstrations supported by LIMPAST and other stakeholders was established to determine the extent to which farmers participated in the planning and implementation process. The researcher analysed LIMPAST project documents and ARC reports on the project to establish the objectives of the demonstrations and how the demonstrations were planned. Chapter 4 stipulates how demonstrations were used as an implementation tool for the project and it gives a wider discussion of how demonstrations were of importance to farmers.

3.4.4 Secondary Data Sources

Voss et al (1987: 156-170) defines secondary data as information gathered for the purpose other than the immediate or first application. The literature used was from various sources namely; books, conference proceedings, journal articles, newspapers and further included previous studies, and administrative records and reports.

a) *Previous Studies.*

Previous studies will provide in depth understanding of various activities in the Province. The University libraries and archives were searched as a first step. Reading materials from government departments, NGOs, and other local development agencies were studied and analysed for more background knowledge. Such reports were good for providing expert opinion regarding the problems and prospects upon which implementing program activities could be based.

b) *Administrative Records and Reports.*

Both government and non government organizations maintain records on their activities. Reports from the LIMPAST program were used and ARC reports were of great importance when sourcing more data to supplement towards the research.

3.5 DATA ANALYSIS METHODS

Data were analysed by means of content analysis and descriptive statistics. Due the limited number of respondents, data received could not be analysed statistically. Data was presented in the form of tables, charts and graphs.

3.5.1 Content Analysis

Content analysis is a technique for the analysis of qualitative data. Verbal responses, descriptions of behaviour and the content of documents as was the case in this study (Mutimba, 1997: 44).

3.5.2 Descriptive analysis

In analysing data, use was made of Microsoft Excel which produced graphs, tables, and charts.

CHAPTER 4

ANALYSIS OF STAKEHOLDERS AND IMPLEMENTATION

TOOLS OF THE PROJECT

4.1 INTRODUCTION

The objective of Chapter 4 is ideally to review the tools that were used during the implementation of the project and further to discuss the advantages and disadvantages of the tools. The chapter explains the Implementation Tools used to transfer and implement technologies to the farmers; providing some insight on how technologies were actually transferred and implemented by farmers. The chapter further establishes the roles of stakeholders towards the GPAP Project.

4.2 STAKEHOLDER ANALYSIS

The Grain Production Advancement Project was initiated by Progress Milling under the auspices of LIMPAST and the project was sponsored by the Maize Trust and the Educational Trust of Progress Milling. Other stakeholders include the ARC-GCI (who were invited to submit a project plan); the NTK Cooperative; the Limpopo Department of Agriculture (LDA); and the Agribusiness sector.

4.2.1 Agricultural Research Council's contribution to the project.

The ARC-GCI was one of the first stakeholders who were involved in establishing the project in 2002. The council became involved with the drawing up of a proposal for the project, negotiating for funding and conducting a diagnostic study on soil at respective project localities. The ARC-GCI further provided dedicated personnel to assist in the project and such personnel continued to be involved in the project during the time this study was conducted. The ARC-GCI also provided 50% of its funds to cover its personnel cost. The role of ARC-GCI in the project included the following;

- Supplying necessary technology;
- Conducting on-farm trials ;
- Training farmers and extension officers; and
- Providing support services (advisory services) as well as liaison with various stakeholders involved in the project.

According to information from the ARC-GCI report, the Institution played a significant role in the training of beneficiaries under the GPAP project. The focus areas in the training programs are: Training of Agricultural extension personnel and farmers through farmer field days, on-farm trials and specific skills programs presented in a classroom situation.

i) Agricultural extension personnel training

Training programs for extension personnel who were seconded to the project from the Limpopo Provisional Department of Agriculture were implemented with the support of the University of Pretoria. The capacity building program (training) for extension officers participating in the Grain Production Advancement Project (GPAP) comprised of; on-farm trial planning and implementation; Crop production management (including Group mobilisation); and work place monitoring and performance evaluation of trained extension officers. Detailed information on services that ARC-GCI has provided is illustrated below:

a) Planning and implementation of on-farm trials

The ARC-GCI provided training in the establishment of on-farm trials in order to empower Agricultural extension personnel in the following:

- A good understanding of the role and value of on-farm experimentation in the development of appropriate technology;
- Knowledge to plan and prepare simple on-farm trials;
- Skills to establish and manage their own on-farm trials; and
- Know-how to collect basic experimental data.

b) Crop production management training

The main objectives of the crop production management training were as follows:

- To equip participating extension personnel with the technical knowledge and skills needed to contribute effectively to improved grain production in their respective target communities;
- To create opportunities for the team of extension personnel to share mutual values concerning the technology package and the appropriateness thereof as offered to farmers participating in the project;

- To help extension officers to exploit the value of the Farmer Field Schools as forums to learn; and
- To equip the extension officers with the skills to mobilise the farmer groups into effective groups for sustainable agricultural development.

c) Monitoring and evaluation of trained staff

In addition to the capacity building program a purposeful attempt was made to assist the extension staff in the implementation of the acquired knowledge and skills. This was done by monitoring the progress and assessing the training outcomes. Evaluation was done by means of observations and collecting quantitative data. The simplified/practical evaluation system was based on the following criteria:

- Participation in trial activities;
- Farmer group mobility (effectiveness); and
- Commitment (Du Toit, 2001).

ii) Farmer training through field days at On-farm trials

The ARC-GCI organized field days at different localities. The technical aspects addressed during the field days included: maize variety (cultivar) selection; plant density; weed control; soil preparation and fertilization; legumes in the cropping system and pest control. Field visits to trial plots were the focus of these days and served as platforms for information sharing and interaction with farmers. Such techniques allowed extension officers to provide responsive lessons to farmers.

iii) Training of the Aganang farming community leaders

Community farmer leaders from the Aganang Municipality obtained training from ARC-GCI Skills for All and KMK training services (Agri SETA accredited service provider) as a pilot project.

4.2.2 Progress Milling

Progress Milling is mainly concerned with Grain Agri-processing and marketing. The Company is one of the Project founders and its role in the Project has been marketing and providing logistical support to farmers. Their main objective of getting involved in the project was to transfer entrepreneurial and business skills to farmers to enable them to produce acceptable market maize grain. Progress Milling is also provides the executive and secretariat functions for GPAP.

4.2.3 NTK

NTK is an agricultural business entity supplying agricultural inputs, marketing of agricultural produce, processing of maize, community development and project design, implementation and project management. The NTK has been involved in the project for five years and its role in GPAP is coordination, management, extension services and motivation of communal farmers to cultivate their land. According to the ARC Report (2007), NTK mentioned that its initial objectives for getting involved in GPAP were to:

- Promote maize production;
- Improve living standards of communal farmers;
- Link farmers to markets; and
- Create business for NTK.

4.2.4 Limpopo Department of Agriculture

The role of the Limpopo Department of Agriculture (LDA) is to provide extension services to farmers and manages irrigation schemes, where irrigation facilities are available. The LDA has been involved in the project since GPAP inception and serves as board member on LIMPAST. The LDA also shares similar objectives of linking farmers with the markets and helping farmers to increase their production yield. The Department indicated that in order for the project to improve, it must be realigned and restructured. A total of 18 extension officers were seconded to the project from the LDA.

4.2.5 Agri Limpopo

Agri Limpopo formerly known as Agri North is a commercial farmer union (member of Agri SA) based in Polokwane and has been involved in GPAP activities since the initiation of the Project serving on the board of directors. The Union provides advisory services to the project but it does not provide financial support directly to the project.

4.2.6 The Maize Trust

This is a trust founded in 1998 to promote the South African maize industry. The Trust serves the industry through financial support for institutions and organizations with programs aimed at market and production related research and development. The secondary objectives of the Trust are to fund the assimilation and dissemination of market information and to broaden market access for the benefit of the maize industry in South Africa. The mission of the Maize Trust is: To facilitate the continuous improvement of the entire maize industry in South Africa, to ensure that the industry becomes the leader in the region and that it is internationally competitive.

The objective of the Trust is to broaden maize production skills and to sustain rural maize production in developing communities in the Limpopo Province. The Trust provided funding in respect of the following maize related projects: Sofaya, Zava, Zebediele, Mashashane, Laastehoop, Mothiba, Tafelkop, Troya, Leukraal, Legolaneng, and Marapyane. According to the ARC Report (2007), the Trust indicates that it has been involved in GPAP since the beginning of the project. The Maize Trust indicated that it has invested as follows towards the GPAP Project:

Table 4.1: Expenditure by the Maize Trust

Year	Expenditure	Annual increase in expenditure
2002	R 632 254. 00	
2003	R 749 800. 00	R117546
2004	R 873 000. 00	R123200
2005	R 880 702. 00	R7702
2006	R 898 868. 00	R18166

As it can be noted from Table 4.1, there was a significant annual increase in expenditure from the Maize Trust in period 2002-2003 with an increment of R117546 and R123200 into the project respectively. From the period of 2004-2006, the Trust decreased the expenditure towards the project. LIMPAST requested a cut since there was an under spending from the previous year.

4.3 IMPLEMENTING TOOLS

The question is often asked: which extension methods or tools are the most effective? Which tools should be used under which conditions? Such questions seem to be less complicated however for effective implementation of a project it is important to assess (by what standard) the value of each method. There are vital questions to assess various methods by which information can be transferred to farmers. In an attempt to improve the transfer of technology, on-farm trials (experiments) and demonstrations were identified as ideal linkage mechanisms to improve research-extension collaboration in a process of participatory technology development.

It came to be a core activity in the partnership and worked effectively to integrate research and extension activities. In addition, local extension officers also played a key role to facilitate active farmer involvement in project activities. The project used an On-farm extension approach which included; On-farm trials, Farmer Field Schools and Demonstrations. These were used in the form of case studies for the project allowing more participation of farmers.

4.3.1 On-farm Trials

On-farm trials, in this context, represent the adaptation and testing or validation phases of the research and technology generation continuum. Here, technologies were adapted and evaluated, in participation with farmers and extension officers, to suit their specific agro-ecological and socioeconomic conditions (Du Toit, 2001).

4.3.1.1 Establishment of On-farm trials

Twelve maize variety evaluation trials were established during the implementation of the Project. The objective of setting up trials was to test the performance of the selected varieties under local conditions in selected target communities which could serve as a best practice of demonstration plots and also to serve as forums of technical communication and interaction with farming communities. Trials were planned in line with the seed provision strategy of the Limpopo Province with strong focus on Open Pollinated Varieties (OPV's). Responsibilities of the respective role players were negotiated with the GPAP management and Extension managers in selected districts.

4.3.1.2 Management of On-farm trials

As indicated, allocated extension officers in collaboration with local farmer representatives were fully responsible for the management of trials at the respective localities including the establishment, monitoring, full season weed and pest control as well as the harvesting of the trials. For every project area, there were extension officers and farmer representatives who were expected to identify production problems and to decide on the content of trials that would address the problems. The ARC-GCI was responsible for the provision of seed, fertilizer and the tools necessary to plant the trials. In addition, the Institution also provided technical assistance as far as possible.

Varieties selected;

- a. OPV's: – ZM 521
– ZM 611
– ZM 421
- b. Obatampa
- c. SAM 1037
- d. Hybrids: - PAN 67
-CRN 3549

4.3.2 Demonstration Trials

The International Agricultural centre and University of Wageningen (1953) describes a demonstration as a way of teaching new practices by showing evidence of success. New practices are delivered in order to convince farmers. Demonstrations are subdivided into five (5) categories: Results demonstration; Method demonstration; Field days; Tours and Individual method demonstration. Under the GPAP project field days were a priority due to the numbers of farmers involved.

The objective was to demonstrate to farmers that improved maize varieties increased production and further as a guide to improve their farming system. The following technical aspects were addressed: Variety selection; plant density; weed control; soils & fertilization; legumes in the cropping systems, weed and pest control. Field visits to the trial plots were the focus of the days and served as platforms for information sharing and interaction with farmers. The next table is an example of field days executed in the Province.

Table 4.2: Farmer field days

<i>Locality</i>	<i>Date</i>	<i>No. of Farmers reached</i>
<i>Tafelkop/ Nebo</i>	16 March	35
<i>Zava/Giyani</i>	23 March	150
<i>Sofaya</i>	6 April	40
<i>Leeukraal-Eenzaam (Nebo)</i>	7 April	55
<i>Laastehoop</i>	12 April	120
	Total	400

Source; *ARC Report, 2007*

Post harvest feedback sessions, were an initiative from NTK which proved to be very effective especially in terms of information shared on crop yield performance and implications of markets and technology with regards to future crop production activities.

Table 4.3: Post harvest sessions

Locality	Date	No. of farmers reached
Klipplaatdrift	18 July	42
Tafelkop	29 July	60
	Total	102

Source; *ARC Report, 2007*

Clearly it can be seen that the number of farmers that report back after implementation has reduced drastically where 400 farmers were reached during the field days and at post harvest sessions it dropped to 102 farmers. This indicated that there were underlying issues as to why farmers did not report back for post harvest sessions. Chapter 5 will stipulate emerging issues that could have been the hindering factors for full farmer participation.

4.3.3 Appropriateness of the Implementation Tools to farmers and Extension staff

Farmers experienced specific problems with the trial plots where germination was poor. Their main constraints being drought and some irrigation schemes failing, these were associated with climatic conditions and supply points of water. However not all trial plots failed, of the 12 trials established, 8 trials were planted independently by extension officers. This was a direct result of training in the establishment of on-farm

trials which was provided by ARC-GCI. The on-farm trials were specifically an advantage to farmers who took the initiative to get involved fully in project activities.

Demonstrations as illustrated before were well received and farmers spoke highly of them. They were particularly impressed by the new maize varieties. However, farmers did not implement these on any large scale because there were difficulties in acquiring inputs. Given that farmers were growing the crop basically for home consumption, they used different criteria when farming. For instance, farmers looked at drought, inputs, water, and long distances to the markets. When all these factors were taken into consideration, farmers limited their participation or involvement in the project.

Demonstrations were largely utilised however farmer numbers went on to reduce due to pressure on availability of resources. Farmers could not afford more funds for inputs. Poor funding of their agricultural activities for instance unavailable ploughing equipments defeated the purpose of further implementation of the maize cultivars. The trials and demonstrations further illustrate the need for more technological options for farmers. More discussions on farmer constraints are stipulated in Chapter 5.

CHAPTER 5

FARMER PARTICIPATION THROUGH MOBILISATION OF FARMER GROUPS

5.0 INTRODUCTION

The results of this Chapter act as an impact assessment of the findings and discussions. Results suggest that the perceptions of extension staff were the main focus of the study and are based on a concept that if extension staff were well equipped, then farmers would benefit from them. Therefore the results of this Chapter are considered in conjunction with those pertaining to the subjective assessment of extension staff.

In this Chapter key objectives of the dissertation are analysed, they include:

- Determining the success of the program through capacitating of extension staff to implement an intervention program on improved maize production to farmer groups.
- Investigate the level of farmers' participation in the implementation of the project through mobilisation of farmer groups and determine farmer's performance indicators and levels of productivity
- Investigate factors and underlying causes of poor implementation or failure to adopt recommended technologies by farmers.

This Chapter is introduced with a discussion on the development stages of successful farmer groups. As stated by Stevens and Terblanche (2004), group formation cannot simply be achieved by calling people together; however formation of an effective farmer group is influenced by the skills of the group promoter and the adherence to certain basic group dynamic principles. Therefore the need to evaluate the effectiveness of the groups was done with careful follow up and farmer groups in the GPAP project were assessed according to the intended stages of development of a farmer group. It should be noted that farmers and farmer groups required consistent mentoring from extension officers to ensure that concepts delivered in the training were followed through in the groups' activities until the groups moved towards self-reliance and self management.

The second section in the Chapter proceeds with a discussion on capacitating of extension staff. The section is based on a concept that if extension officers were well equipped then farmers would benefit from them. This therefore called for the training of extension officers with technical skills that would help to improve farmer productivity. The third section describes farmer participation and the level of productivity farmers obtained from the project. It specifies the extent to which farmers were involved in the project as well as providing an overview of farmer productivity before and after the GPAP project. The fourth section establishes the factors that led to poor implementation of project activities in some project areas.

5.1 FARMER GROUP MOBILISATION

Farmer groups pass through several stages of development which could be longer or shorter depending on group members. According to Stevens & Terblanche (2005), farmer groups have five classical stages which enable them to form effective groups. It is necessary that the dynamics of group development be facilitated well in order to get synergy between cooperation and combined action of group members and several skills that are needed to successfully guide a group through these stages (Stevens & Terblanche, 2005). Assessing group performance, a scale was developed where the highest level of the group development was awarded five (5) points and the least was awarded one (1) point. Farmers were allowed to evaluate to which level of development they were on.

5.1.1 Farmer group development in the GPAP project

Although 18 extension officers participated in the project to determine the effectiveness of their farmer groups and to mobilise farmer groups to be more effective, only 13 completed the questionnaire. The following findings are Extension officer's knowledge and perception of their farmer groups with regard to effectiveness of farmers.

a) Initiating the formation of the group

A total of 85% of the extension workers took the initiative for the formation of the group. Only 15% indicated that the farmers did play a role in the forming of the group. Extension workers took the initiative to form the group and farmers did not really play a role. The fact that the extension officers took the initiative is not a

problem. In many cases he/she needs to take the initiative. The challenge is to indoctrinate the members of the group to believe and accept that it is their group and that it is not the extension worker's group. However it should be noted that group members are responsible for the activities of the group and not the extension worker.

b) Existence of the group

The analyses of the data indicated that the groups in the survey have been in existence for 1 and 15 years. The majority of respondents, namely 77% indicated however that the groups are not older than four (4) years. The number of years a group exist is no indication or criterion of the maturity or effectiveness of the group. However, indications are that the longer the group exists the more difficult it could become to bring about change within the group. What is accepted today is that a group should adjourn or have to refocus when the objectives have been accomplished.

c) Group size

In Figure 5.1 respondents indicate the current size of the group as well as their perception of the ideal size of a group. There is enough evidence today that group size definitely has an effect on the functioning of the group. The smaller the group, the more time is available for discussions and members are directly involved and participate in activities. The larger the group, the less time available for discussions thus less direct involvement and participation for group members. Group members in smaller groups will change their opinions more toward consensus, while in larger groups there seems to be a tendency toward factionalism. Although research indicated that the ideal or optimum group size ranges between 5 and 7, it could only serve as a guideline. The optimum size must be seen as being dependent on the specific situation and circumstances such as the task, goal, and urgency of the problem.

5.1.2 Control Farmer Groups

Control farmer groups with an independent management were identified with a view to compare their level of development to the farmer groups that were involved in the project. Control farmer groups were quite large in numbers and they meet on a monthly basis on their farms for between 1-2 hours except for the Zava farmer group that meets 3 times a month. Table 5.1 below indicates data obtained from the groups.

Table 5.1: Management in a control farmer group

Group	Dan	Hospital group	Zava Giyani
Group formed	1999	1986	1987
Chairperson	Male	Male	Female
Monthly fee	R5	R5	R5
Group size	50	22	51
Farm size	0.5ha	10ha	13ha
Management of group	Select chairman and management every 3years	According to constitution, elect management every 3years	Elect chairman and management every 3years except treasurer

The farming activities involved includes: the production of maize, Ground nuts and Cowpeas. It can be noted that all these farmer groups are well organised and have a constitution that guides the programs of the group. This is a strong guide/point because it provides clear direction of development. Group member responsibilities are of importance in their farmer groups and include:

- Purchase of inputs
- Contract one contractor to cultivate their land

The general outlook of these control farmer groups is: they did not have access to free inputs, and extension services however their performance and commitment is greater than farmer groups that were involved in the project. When asked why they are successful; the farmer group members responded that they are united, and have accepted the knowledge of the farming group activities, have a common vision, and put their differences aside.

5.1.3 Appropriateness of the group size and reason for group formation

Data collected from extension officers required them to identify the current group size and the ideal or preferred sizes of the group that were suitable for better service delivery. In Figure 5.1, results show that six (6) extension officers suggested lower numbers of group members however not that far from what the actual numbers in farmer groups are.

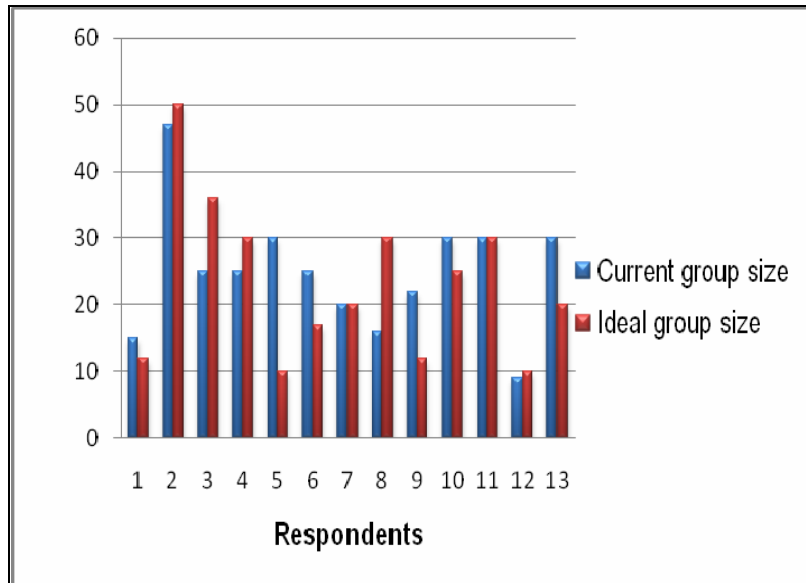


Figure 5.1: Current group sizes and the ideal group size as perceived by extension officers

Source: *Created by Namome, 2009*

Further analysis on the performance of farmer groups, presented the relationship between the level of development and the number of members (group size) in a particular group. It was important to assess whether larger groups resulted in a lower quality of performance compared to smaller groups. If the quality of performance is somewhat reduced in the larger groups then this could be the basis for allowing the formation of more and smaller farmer groups unlike where all farmers are grouped together in a single group.

In Figure 5.2, descriptive statistics were used and it showed that the higher the level of development in a group the better the performance. It was also noted that larger groups with group members of relatively 50 in number, struggled to develop while as

groups with fewer group members (20) managed to reach the final phase of development.

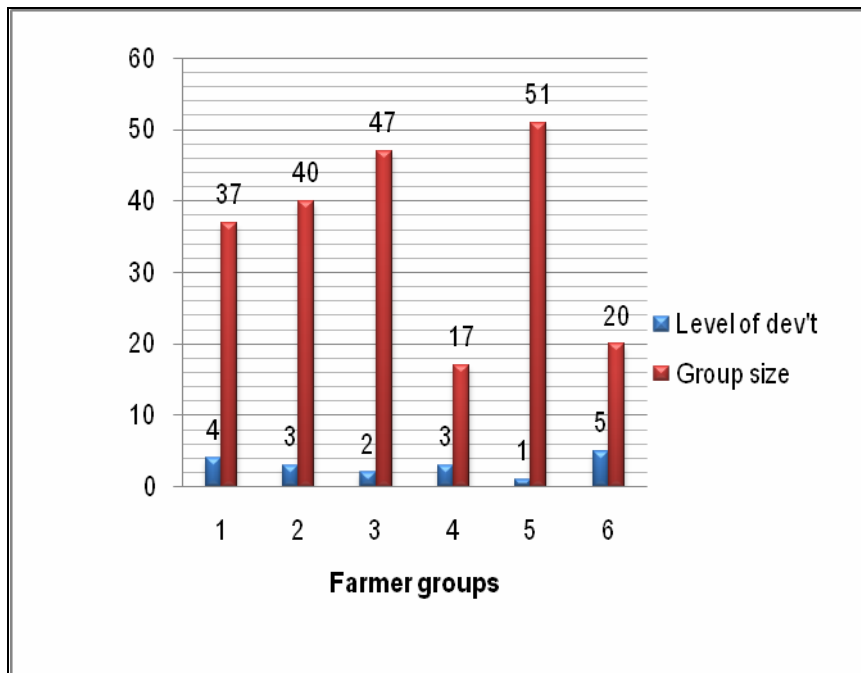


Figure 5.2: Relationship between the level of development and the group size
 Source; *created by Namome, 2009*

Respondents indicated several reasons as to why they formed their farmer groups however; all reasons were grouped to form seven (7) broad cluster reasons. The Figure 5.3 below indicates the frequency or number of times respondents indicated the reason to be of importance.

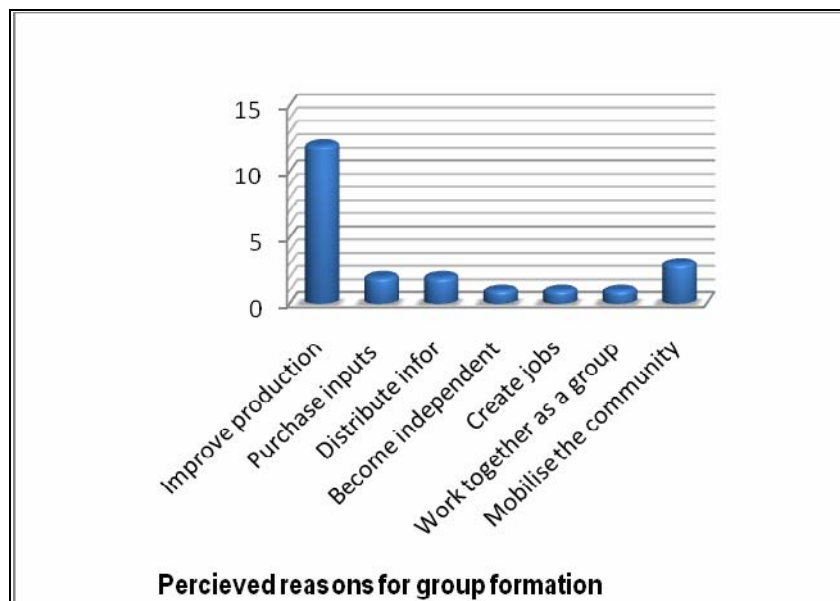


Figure 5.3: Perceived reasons for group formation according to respondents
 Source: *created by Namome, 2009*

Respondents indicated the improvement of production through the help of the GPAP project as the highest ranked reason (55%). However, reasons like to mobilise the community (15%), to become independent and to work together as a group (5%) were also mentioned. This could be an indication of a group that has already reached a certain level of maturity. Maturity is important as groups can be effective in increasing and improving farmer participation in the project and development.

5.1.4 Group effectiveness setting and the role of specific group dynamic factors

a) General role definition of members

According to extension officers' perception, only 54% of the group members do know their role within the group, namely what can the group expect from them and what they expect from the group. The respondents clearly indicate that members should define their roles and that they need to know what is being expected from them and what they could expect from the group.

b) Leadership structure (chairperson)

The importance of a leadership structure for efficient group functioning cannot be over estimated. The fact that according to the respondents, a farmer group member is the chairperson in all the groups is already a positive move. Aspects that need further investigation are to determine the reasons why a certain person has been selected and what can the extension worker do to support him/her. The Extension officer should play an important role to facilitate leadership development in farmer groups.

c) Meeting procedures

According to the respondents, the groups met regularly. This varied between monthly (31%) and when required to meet (23%). Only one respondent indicated that he/she is uncertain of the group meetings. During the group discussion the participants reach consensus namely meetings take place when necessary and as dictated by the program. Respondents indicated that they were not sure of time intervals and the length to which they have to meet. A total of 60% of respondents indicated to have been attending meetings on farmers' farms. Such initiatives from farmers imply that farmers are willing and embracing the farmer development aspect.

d) Goals and objectives of the groups

The respondents identified 26 objectives that were clustered into 8 broad objectives. The major problem was that the objectives defined were very broad and therefore not possible to measure. The data presented in the table below gives an indication of the broad objectives presented by respondents.

Table 5.2: Objectives of the groups as being perceived by extension workers

<i>Objectives</i>	<i>No. Of times indicated as an objective</i>	<i>%age</i>
<i>i. Improve maize production</i>	11	42%
<i>ii. Alleviate poverty</i>	6	23%
<i>iii. Form a co-operative</i>	3	11%
<i>iv. Undertake trials</i>	2	8%
<i>v. Make farming a business</i>	1	4%
<i>vi. Produce other crops</i>	1	4%
<i>vii. Solve problems</i>	1	4%
<i>viii. Start a broiler project</i>	1	4%
<i>Total</i>	26	100%

According to the above Table 5.2; 42% of the objectives indicated the improvement of maize production but without a bench mark namely; what is the current production and what is the derived level of production. Objectives identified by the groups do not disclose the important criteria of an objective namely; to be clear, specific and measurable.

e) Extension officer's involvement in group activities

All the extension officers indicated that they are involved in the group activities. In describing the specific roles the respondents are playing in the group, a total of 25 roles were described. These roles were then clustered into 6 broad roles that the extension officers were responsible for within the group and the data is presented in Table 5.3 below.

Table 5.3: Specific roles that extension workers play within the groups

<i>Roles</i>	<i>No. Of Times indicated as a role</i>	<i>%age</i>
<i>a) Motivating, encouraging, mobilising and supporting</i>	6	24%
<i>b) Giving advice and Demonstrating</i>	9	36%
<i>c) Co-ordinate and link members to other role players</i>	5	20%
<i>d) Facilitate the process (planning, organising and monitoring)</i>	4	16%
<i>e) Fulfil a mentoring role in the group</i>	1	4%
<i>Total</i>	25	100%

According to the data in Table 5.3, the role of an extension officer to give technical advice and demonstrate technical aspects to the group, was indicated nine times (36%), while the role to motivate, encourage, mobilise and support the group were indicated six times (24%).

However, 46% of respondents indicated that extension officers could play more than one role. This is not a strange phenomenon because it is often expected from extension workers to play different roles within the same group or community. What is of paramount importance is the fact that the Extension officer needs to be a specialist in at least one field of technical skills and knowledge to gain credibility.

f) Factors important for a group to function effectively

The respondents identified 23 different factors that were of importance for a group to be effective. The factors that were identified by at least four respondents are;

- Understanding and knowledge of the goals/objectives;
- Members accepting the trials as their trials; and other aspects identified include the following:
 - Commitment;
 - Trust and transparency; and
 - Team work.

During the discussion of the question by the two groups of extension officers the following were identified as essential factors for effective group functioning;

- Cohesiveness and team work;
- Common goal;
- Commitment;
- Interest;
- Participation;
- Self reliance; and
- Ownership.

g) Efficiency of the group

Figure 5.4 below discloses extension officers’ own perception towards an effective farmer group as well as how farmers would rate the group efficiently.

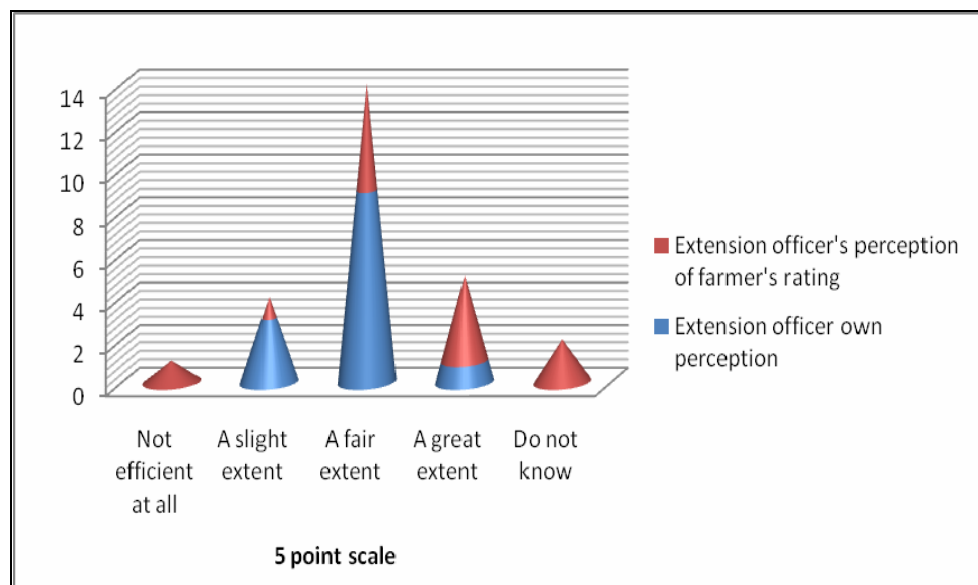


Figure 5.4: Respondents perception of the efficiency of the group

Source; *Created by Namome, 2009*

The majority of extension officers (92%) indicated that according to their perception the groups performed only on an average level (to a fair extent) and even slightly below average (to a slight extent). They further indicated (31%) that farmers would rate the efficiency of the groups higher (to a great extent) than their own rating (8%). According to the above Figure 5.4, there is definitely room for improvement in group

efficiency. The reasons for the current state of efficiency are according to the respondents the following:

Positive reasons

- They have a good knowledge of how to successfully produce maize;
- The group has stimulated some interest in the community;
- Land Bank now supports them with finance; and
- They have opened a bank account to purchase inputs together.

Negative reasons

- They still need to get involved in the planning and executing of activities;
- There is a lack of understanding and trust between farmers;
- There is a need to improve ownership acceptance by farmers;
- The majority of the farmer members are elderly people;
- Members are afraid to accept new ideas;
- Because the trials are on the farm of a specific person, the other farmers feel that he/she is the only person to benefit;
- Everyone does not participate freely;
- A dependency syndrome is still in place; and
- Extension approaches of the past still dominate the thinking of members.

5.1.5 Efficient group functioning

A checklist to ensure efficient group functioning was provided to extension officers and it was expected from the 18 seconded extension officers to complete a checklist to ensure efficient group functioning with the farmer groups they are responsible for. Only six (6) of the extension officers completed the checklist and the results are the following:

i. Stage of group development

Only 33% of the groups do find themselves in the performing or task performing stage.

ii. Goals/objectives of the groups

The following are examples of objectives that were mentioned by the groups:

- To practice modern farming;
- To become mentors in maize production;
- To fight against hunger;

- To increase farming production and income; and
- To create jobs in their community.

Not one of these objectives adheres to the criteria of being clear, specific and measurable. It is therefore totally impossible to measure impact or improvement of the project.

iii. Internal dynamic forces and its influence on the functioning of a group

a) Group atmosphere

Physical atmosphere

Only 50% (3) of the groups (± 75 farmers) indicated clearly that they meet on a farm at a specific time and for a specific length of time and meet according to a specific agenda.

Psychological atmosphere

Although 50% of the groups indicated that there is a warm and friendly atmosphere among the groups, 50% (3) of the groups indicated that they experience a problem with cooperation among their members.

b) Group standards and norms

All groups indicated that they do have a constitution but only 50% indicated that they implement the norms and standards as set within the constitution.

c) General role definition of members

All the groups indicated that each member does know what their role is but 50% indicated that they identified the importance of their role.

d) Group size

The average size of the groups which completed the checklist is 25. Group size varies from 12 to 51.

e) Leadership

A total of 50% of the groups do not know if the current leadership style is task or people oriented. Only 33% of the groups indicated that the leadership style is well balanced namely; task and people oriented.

f) Techniques used in the group activities

Table 5.4 below indicates what respondents perceive to be the techniques used to attain the group objectives.

Table 5.4: Techniques used by groups as perceived by respondents

Techniques	%age
Demonstrations	83%
Farmer days	83%
Tour visits	83%
Farmer field schools	67%
Lecturing/training by extension officers	67%
Discussion group	67%
Lecturing by specialists	0%
Presentation by neighbouring successful farmers	0%

According to the above Table 5.4, the groups to a great extent are only a listening group but there is an indication that group discussions (participation) do take place. It can clearly be noticed that farmers do not make use of lecturing by specialists, presentations by own group members or neighbouring successful farmers to address them.

g) Monitoring and evaluation

A total of 83% of the groups indicated that activities such as the on-farm trials are being monitored and evaluated. According to the above table, the groups who completed the checklist can be classified as somewhat effective but special attention needs to given to the following:

- The development of clear, specific and measurable objectives;
- Ensure that each group member identified the importance of his/her role in the group;
- Ensure a participative leadership style that is balanced between task and people oriented; and
- Make more use of own group members as well as neighbouring successful farmers to deal their success with them.

The implementation of a formal monitoring and evaluation system is essential to determine on time problems and to be able to adjust the program timely.

5.2 THE IMPACT OF THE CAPACITY BUILDING PROGRAM FOR EXTENSION STAFF

As previously indicated, seconded extension officers participated in a relevant and focused capacity building program. The program was implemented between 2003 and 2006 and comprised of three components:

- a) Planning and implementation of on-farm trials;
- b) Crop production management (including group mobilisation); and
- c) Work place monitoring and performance evaluation of the extension officers.

5.2.1 On-farm trial planning and implementation

Two separate courses were presented at the ARC Grain Crop Institute in Potchefstroom. The first course was presented with 10 participants (March 2003) and the second course with 8 participants took place in September 2004. Objectives of the training program are to enable the extension officers to acquire the following:

- Good understanding of the role and value of On-farm experimentation in the development of appropriate technology;
- The knowledge to plan and prepare simple on-farm trials;
- Skills to establish and manage their own on-farm trials; and
- Know how to collect basic experimental data.

5.2.1.1 Outcomes of On-farm trial planning and implementation training

From the 18 extension officers who participated in the program, 15 extension officers became actively involved in the implementation of on-farm trials although the planning and design was done by research staff from the ARC-GCI. In the 2005/06 season, 12 extension officers were able to establish their own trials without any supervision from the research staff.

5.2.2 Crop production management training

The objectives of crop production management training were;

- To equip extension officers in the project with the technical knowledge and skills they need to contribute effectively to improve grain production in their respective target communities;
- To create opportunities for the team of extension staff to share mutual values concerning the technology package, and the appropriateness thereof as offered to farmers participating in the project; and
- To help extension officers to exploit the value of Farmer Field Schools as forums for learning.

Eighteen extension officers all assigned to the project were trained in three consecutive sessions in the period of July to September 2005. Course facilitation at all sessions was done by ARC-GCI. The year program was concluded in a pre-seasonal planning session 29-30 September.

5.2.2.1 Outcomes of the crop production management training

In order to develop an assessment system for the training program, assignments on the topic of crop production management were handed out to be completed after the first session. Results were as follows:

Table 5.5: Scores obtained by extension officers from the training

Categories of marks obtained (%)	Number of participants
66-80	3
50-65	10
40-49	3
Average marks obtained: 59%	Total: 16

Only 16 of the 18 extension officers participated in the above capacity building program. Participations completed specific assignments to assess their knowledge and skills gained. The average mark obtained by the training was 59% and a total of 44%

of the respondents' performance was below the average of 59%. Only 12% obtained a mark of above 70% while 19% failed the program (less than 50%).

5.2.3 Monitoring and evaluation of trained Extension staff

The evaluation process was implemented during the 2005/06 production season. The practical evaluation system was based on the following criteria:

- Participation in trial activities (including all activities to ensure trial success);
- Group mobility (indicating Extension officer's role to involve farmers in the project activities including training); and
- Commitment (level of dedication to the achievement of project objectives and goals).

From the original 18 extension officers seconded to the program, only 12 stayed actively involved and they were individually evaluated by means of a simplified/practical evaluation system based on the following criteria and outcome is indicated in the next Table 5.6.

Table 5.6: The relative performance of extension staff after participating in a capacity building program

Extension officers	Project area	Evaluation criteria (10 point scale 1=poor, 10=excellent)				Total score (%age)	
		Participating in trial activities	Group mobility	Commitment			
1	T S Mackka	7	6	7	20	67	
2		8	8	8	24	83	
3		6	6	5	17	57	
					Average	64%	
4	Mopane	5	6	4	15	50	
5		4	2	2	8	22	
6		10	8	8	26	87	
					Average	53%	
7	Capricorn	8	7	8	23	77	
8		6	9	7	22	73	
9		7	7	6	20	67	
					Average	72%	
10	Sekhukhune Nebo	7	9	7	23	77	
11		3	7	4	14	47	
12		4	6	5	15	50	
					Average	58%	
Group averages		6.25	6.75	5.9	18.9	63%	

* Average relative performance=63%

According to the above Table 5.6, the average for the total group is 63% and 58% of the extension staff performed above the average of 63%. The extension staff responsible for the program in the Capricorn project area outperformed their colleagues in the other project areas with a relative performance of 72%. Only 2 extension officers obtained a relative performance of above 80% which is excellent. In order of priority (although the differences are not significant), Extension staff relative performance in group mobility is the highest (6.75) followed by participation in trial activities (6.25) and commitment (dedication to achievement of group objectives) in the third place (5.9).

5.3 CAPACITY BUILDING PROGRAM FOR FARMERS

5.3.1 Farmer field days and post harvest planning workshops

The extent to which farmers attended farmer field days and post harvest planning workshops are indicated in the next Table 5.7.

Table 5.7: Farmer participation in field days and planning workshops

Cropping Seasons	Farmer field days		Post harvest planning workshops	
	No. of days	No. of farmers	No. of days	No. of farmers
2003/04	6	558	11	251
2004/05	6	450	3	157
2005/06	11	174	9	215

According to the evaluation reports the following problems have been experienced with farmer field days:

- Too many non-technical issues are being discussed at open days; and
- The audiences attending the days are too large to allow effective communication and technology transfer.

In the 2005/06 season specific farmer groups were selected to attend the farmer field days changing the program from an open day to a more Farmer Field School program. Farmers however experienced throughout the project specific problems that need to be addressed namely:

- The occurrence of drought periods; and
- The inadequate and absence of mechanisation support leading to improper soil preparation; late planting and the outcome led low crop results.

5.4 FARMER PARTICIPATION IN THE PROJECT

The level of farmer participation was an essential aspect in the research thus leading to the objective to investigate the level of farmers' participation in the implementation of the project and determine their performance indicators and levels of productivity. A questionnaire (Appendix A) was completed by only extension officers involved in the GPAP project.

5.4.1 Farmer participation

According to the extension staff 60% of their farmers were fully involved in the project, 30% of respondents showed that farmers were fairly involved and 10% showed that farmers were not fully involved in the project. Using Table 5.8 below, respondents pointed out an estimate of the number of farmers involved in each farmer group and their level of involvement.

Table 5.8: Extension staff perception on farmer participation in the project

Farmer group size	Extension worker own perception n	Level of farmer involvement %	Level of farmer involvement
<10	6	60%	Fully involved
10-20	1	10%	Not involved at all
20-30	3	30%	Fairly involved
TOTAL	10	100%	

Table 5.8 above shows the possible number of farmers in each group and one can notice that the less the number of members the higher the percentage of involvement. One possible conclusion is that the fewer the number of farmers per group the better the farmer involvement. This could be an indication that the smaller the farmer group; the more effective the extension officers' intervention with the farmer group.

5.4.2 Extent to which the project met farmer needs

According to Table 5.9, a 3 point scale was used to determine the extent to which the project met the farmers' needs. The majority (50%) of respondents pointed out that

the project met farmers’ needs to a moderate extent; 30% respondents showed that the project did not meet farmers’ needs at all; however some 20% indicated that the project had to a great extent met farmers’ needs. It is essential that LIMPAST should seriously have a re-look at the project and to seek specific answers to address the farmers’ needs.

Table 5.9: Level to which project met farmer needs according to Extension staff perception

Efficiency scale	Extension worker own perception	
	n	%
i. Not at all	3	30%
ii. Moderate	5	50%
iii. To a great extent	2	20%
TOTAL	10	100%

5.5 IMPLEMENTATION OF THE GPAP PROJECT

5.5.1 The extent of implementation by farmers

A total of 40% of extension staff reported farm practices were implemented to a great extent while 20% indicated that implementation was to a fair extent and 40% clearly indicated implementation of farm practices was only to a slight extent. The question to be answered is, why did 60% of farmers still did not implement the farming practices transferred to them by means of the implementation tools?

The average adoption of maize cultivars as a farming practice by farmers was only moderate (4.7 on a 10 point scale). Only 10% of extension staff indicated that adoption of practices was extensive, a total of 30% indicated it was poor while 60% indicated a moderate adoption. With a view that there must be underlying factors extension officers were asked to identify their farmer perceived constraints and these constraints will be discussed next.

5.5.2 Constraints to poor implementation of project activities

Extension officers were given an option to mention constraints that they perceived to have been barriers for farmers to implement project activities. According to Figure 5.5

there are five (5) constraints which particularly affect the adoption and therefore implementation of innovative farming practices.

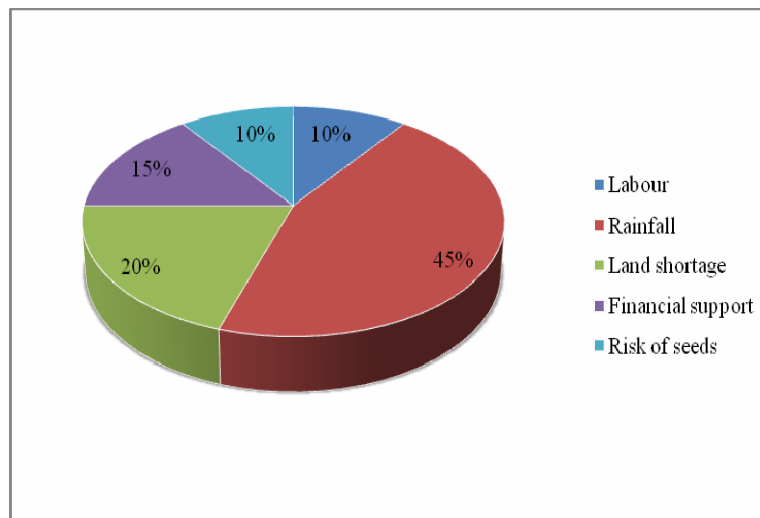


Figure 5.5: Perceived farmer constraints to participate: N=10

Source: Created by Namome, 2009

5.5.2.1 Rainfall availability

From Figure 5.5 it is clear that the largest percentage (45%) of respondents attributed rainfall as one of the major constraint for poor implementation of project practices and to agricultural development in Limpopo Province. Farmers experienced severe lack of rainfall which respondents attributed to several factors such as climate change. The Province is characterised by extreme climatic conditions such as frequent droughts and dry winters which are generally not amenable to agriculture.

5.5.2.2 Labour shortage

Labour shortage (10%); (as strong factor to farming) was reported to have been a major problem for the farmers. To explore this problem in more detail, the data was once again analysed in terms of farmers lacking any form of labour services and 70% fell into this category. According to extension officers, 30% mentioned that farmers were still using oxen for cultivating the land. The results highlighted their dependence on communal labour. Available power-driven labour (tractor) was hired by farmers who can financially afford and that put a strain on poor farmers who could not afford a higher payment to hire contractors. Services were sometimes not delivered on time

which later affects productivity too. For farmers who planted late due to labour shortage experienced low production levels.

5.5.2.3 Financial support

Financial capital (15%) is another need which was identified by respondents indicating that most of the farmers were of old age and depended on government pension, therefore financing their farm activities was a problem and specifically inputs. A total of 40% of respondents indicated that unemployment of family members is also a constraint- available funds are therefore used to rather purchase food for the household than to purchase farm inputs such as seed and fertilizer. There is a serious need for financial support needed to purchase seeds, fertilisers, pesticides and payment of labour therefore insufficient financial support is a major constraint that prohibits farmers to participate fully in the program.

5.5.2.4 Risk of hybrid seeds

Respondents indicated that farmers perceived the new seeds (hybrid seeds) to be of a high risk. One of the respondent acknowledged that farmers decided to use only the local seeds as being perceived as the safest type, in that way they believed no risk was involved. The concern of risk is a serious constraint that prohibits the adoption of new and innovative farm practices. Farmers need to observe from other successful farmers, in order to adopt any new varieties. One respondent reported that farmers said “they would not plant a seed from an organisation from outside the region even if they were giving seed for free,” I would wait to see someone else’s crop”. With such strong support towards their local seed against the hybrid seeds; definitely project activities would be abandoned.

5.5.2.5 Land shortage

From Fig 5.5, respondents (20%) indicated that land is one of the major constraints towards farmer involvement in the project. As being indicated in Table 1.3, 63% of the farmers do have to less than one hectare of arable land to cultivate. Most of the farmer groups are from the previous disadvantaged group and therefore do not have ownership of land. The fact that they do not have land ownership, no financial institution will support them with a production loan. What is needed is a total new look to farming in the project area. A possibility is to investigate a cooperative

farming system where all participating farmers are partners in a joint venture. Larger areas of arable land should be made available to those farmers (screened) with the best chance to be successful.

5.6 IMPACT OF GPAP ON CROP PRODUCTIVITY

5.6.1 Size of farms

The results indicate that according to the extension respondents the majority (75%) of farmers had small plots sizes ranging from 2/ha to less than 1/ha of land. Extension respondents also indicated that the size increased to between 3 and 5/ha after the inception of the GPAP project. This finding once again strengthens the need for a new farming system in the project areas.

5.6.2 Crop variety

Figure 5.6 below represents the percentages for the maize seed variety used by farmers. Respondents indicated that maize variety did have a positive impact. Before the inception of the GPAP project, over 70% of farmers used the local variety for their farming while only 20% planted the hybrid crop. This high percentage could have been attributed by a lack of financial support and farmers not willing to take the risk by planting a new variety. After joining the project, the proportion of farmers planting hybrid maize increased to 80% and the usage of farmers' own seed decreased to 15% while 5% of respondents did not indicate which variety farmers used after the GPAP project.

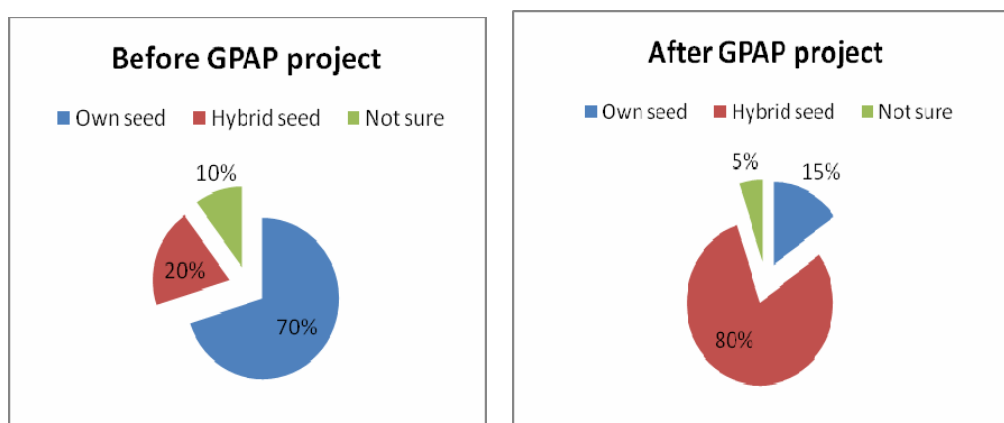


Figure 5.6: Crop variety used by farmers in the GPAP project

Source: *Created by Namome, 2009*

After the GPAP project a steady increase in the hybrid usage is noted, this increase in use of hybrid seeds must have been attributed by several factors like hybrid seeds

were promoted strongly by Progress Milling among smallholder farmers which was supplied by PANNAR Seed Company, and also the superior performance of hybrid maize as compared to the local seeds. This finding is positive although somewhat in contrast with what farmers mentioned as a constraint for poor implementation of project farming practices namely the risk of hybrid seed (part 5.5.2.4).

5.6.3 Land preparation

According to extension respondents' perceptions, it is indicated that before the implementation of the GPAP project, 75% of farmers still used oxen and hand ploughing in the preparation of their land, only 25% of farmers used tractors to plough. These farmers have been committed to the project and tried hard to make sure their land was prepared before the seasons started.

The majority of farmers pay for the services of a tractor in the periods both before and after participating in the GPAP project since most of them do not own tractors. As stated by ARC Report (2007), access to tractor services is limited and 39% of farmers indicate that they receive tractor services on time, 23% receive the services late while 36% indicated that receiving the service is inconsistent. This has not changed significantly even after the implementation of the GPAP project.

Extension officers further indicated that the percentage of farmers using broadcasting as a means of planting before GPAP was 45% and this practice dropped to 15% after joining the GPAP. The percentage of farmers practicing row planting increased from 56% to 87%. This is a clear indication that the GPAP project had a positive impact in improving the planting methods of farmers.

5.6.4 Agricultural productivity

5.6.4.1 Quantity of maize produced by farmers

Results from Table 5.10 show a positive trend in crop yields before and after joining the GPAP project. A total of 60% respondents indicated that farmers harvested on average 3 bags to 7 bags of maize from their farms before joining the project and over 70% of extension officers pointed out that farmers had experienced decreasing trends in yields before joining the project.

Additionally, respondents convey that maize yields have increased to about 70% upon joining the project. Respondents were asked to quantify the approximate production yields before and after joining the project (Table 5.10).

Table 5.10: Before and after GPAP as perceived by extension respondents

Maize yield (bags/ha)	Before GPAP No. of times indicated	After GPAP No. of times indicated
<1	3	1
3-7	6	4
8-23	1	5

From Table 5.10 above, it can be noted that the majority of farmers produced between 8 bags to 23 bags per hectare after joining the project. Respondents indicated that there was an improvement in the yield levels of maize.

5.7 GENERAL IMPACT OF THE GPAP PROJECT

From Figure 5.7, it is clear that the project had a moderate impact towards farmer's productivity efficiency. To effectively measure the impact of the GPAP project, respondents were provided with a 10 point scale, which indicated their perception on farmers' efficiency before and after the implementation of the project. The results indicate that the project has benefited the farmers to a moderate extent. The project is perceived to have a positive impact because it increased farmer's maize productivity and income.

A total of 70% respondents indicated that the GPAP project had a moderate impact on farmers' productivity, 20% of the respondents indicated that the project had an extensive impact on farmers' productivity while the other 10% of respondents indicated that the project had no impact on farmer's productivity. With a result of a moderate impact, this suggests that to some extent the project did meet farmers' needs. Although some (10%) respondents suggest that farmers did not obtain optimal benefits, this should not reflect as though GPAP project was a failure at farmer level.

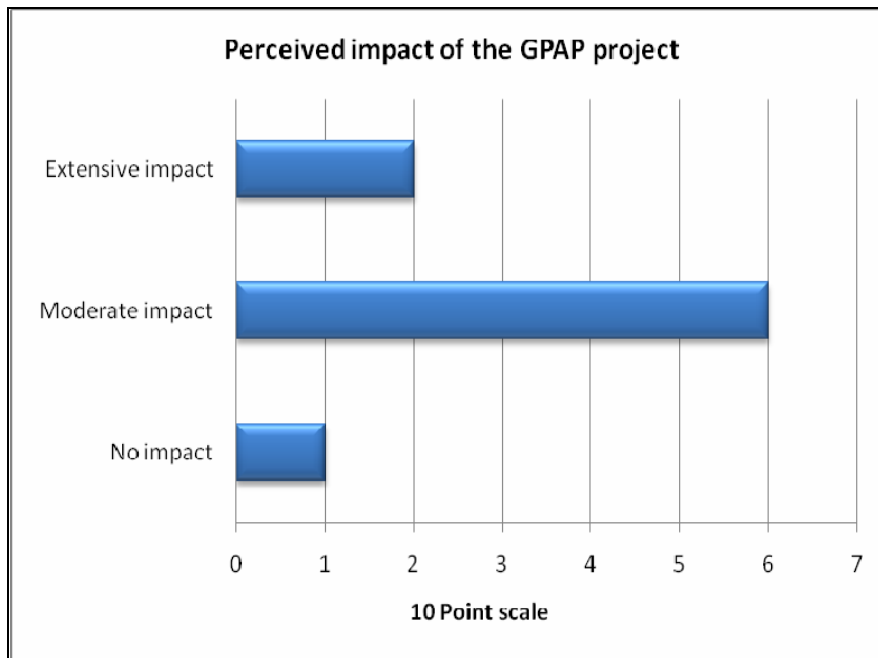


Figure 5.7: Perceptions on the overall impact of the project on farmer productivity

Source: *Created by Namome, 2009*

5.7.1 Perceptions about Incomes

It is clear from the results that the GPAP project was perceived to have a positive effect on farmers' income because of an increase in production per ha. The new varieties planted had a moderate increased effect on income. This is not only a view from extension staff however it reflected also in production output. The new and improved maize varieties improved farmers' output which directly improved their income. Respondents indicated that the higher production levels resulted into lower food expenditures. Improved productivity led to direct on-farm benefits but also contributed to higher wages and greater employment in rural labour market and thus also leading to lower food expenditure. The income generated by farmers was through sales of harvested produce from their field plots to Progress Milling. Before joining the GPAP project farmers did not receive significant amounts of income from the sale of their maize produce. Before joining the GPAP project farmer's income varied between R100-R700 and after joining the project the income increased to an average of R2000.

5.7.2 Perceptions on the impact of crop productivity

The results indicated that maize productivity has increased since the implementation of the GPAP project. The percentage increase in maize production ranges from 5% to 35% however these figures only indicate respondent's perception of whether farmers experienced an increase in production after the implementation of the project. The figures do not reflect the actual numbers of bags harvested, however it does indicate an increase in production.

CHAPTER 6

LEADERSHIP DEVELOPMENT: THE IMPACT ON THE AGANANG LEADER FARMER GROUP

6.1 CAPACITY BUILDING PROGRAM FOR THE AGANANG LEADER FARMER GROUP

The importance of strong leadership at community level cannot be over emphasised. It is the strong leaders who will change the problems and uncertainties of agriculture at community level into challenges and opportunities for growth. Agricultural leaders hold the key to change stagnated rural environments into economic viable agricultural systems bringing new hope and vision to farming communities despite many obstacles. The Progress Milling Educational Trust initiated and funded a capacity building program for a group of leader farmers from the Aganang district. The training program had the following objectives:

- To establish a core group of leader farmers who would be able to provide leadership to their respective communities;
- To equip the leader farmers with all the skills necessary to fulfil their leadership roles effectively;
- To develop strong links between the leader farmers, the Agricultural business sector and organised agriculture; and
- To establish a strong support system in order to maintain leadership capacity and to ensure a sustainable leadership component that serves the farming sector in the Aganang municipality (Du Toit, 2001).

6.1.1 Implementation Plan

The implementation plan included the following aspects:

a) Training Approach

- Candidates for the program were selected with the utmost care by the Educational Trust;
- A maximum of 20 participants were to be accommodated in the program;
- The program was not be a once off training experience, it would make provision for a process of monitoring and evaluation in order to: a) provide guidance and support to candidates at home, b) to determine the impact of the

program and c) to develop a follow up training and support system to the group of leaders; and

- The program was integrated within the NQF in order to give recognition and status to the training.

b) Focus of capacity building

- Management skills;
- Technical skills; and
- Leadership skills.

c) Training providers

- Management component–Skills for All;
- Technical component- ARC-GCI, Department of Agriculture and selected private agribusinesses; and
- Leadership component-KMK Training Services.

d) Assessment (monitoring and evaluation)

An effective Monitoring and Evaluation system was implemented to ensure quality control with regards to the training process and outcomes. Service provider was the Institute for Agricultural Extension, University of Pretoria.

e) Criteria for selection of candidates

Candidates for the leadership program had to prove the following:

- Able to read and write in English;
- Have access to land;
- Producer of a significant amount of grain;
- Provider of advice and guidance with regards to crop production and agriculture in general at local level;
- Actively involved in local group activities; and
- Acknowledged as a leader/potential leader among farmers in the community.

f) Time frame and program

The preliminary program and the level of training and credits obtained were as follows:

Table 6.1: Time frame and program for Aganang leader farmer group

Theme	Module	Duration
Management	Farming as a business	5days
	Planning and finances	5 days
	Marketing	3 days
Technical skills and Production	Production	1 day
	Understanding natural resources	2 days
	Cropping systems-best practice	2 days
Leadership	Farmer group mobilisation	2 days
	Group management	2 days
M&E/ Assessment	Monitor and Evaluate training impact	4 days
	Total no. of training days	22 days
	Number of training days including M&E	26 days

6.2 THE IMPLEMENTATION OF A SCREENING INSTRUMENT

As stated in Chapter 3, a Screening Instrument was used to assess and predict farmers' possible success in their farming enterprises. In order to ensure success as well as production stability, it was crucial that agricultural production be maintained which led to calls for a criteria that could enhance the probability to identify the individual with the best chance to farm successfully on a specific portion of farmland. This view was also supported by The Strategic Plan for SA Agriculture (2001:16) where the importance of the identification of new farmers is stressed. Njobe, (1993:6) in her paper, Beneficiary Identification, presented at a workshop on Land Distribution Options, proposed three basic principles to be considered in the Rural Restructuring Programme to enhance participation. These are:

- The need to address inequities in the ownership of and access to land which are as a result of the past government,
- The need to address poverty issues both as a consequence of the previous government as well as the poor rural economy, and
- The need to establish land use models, including agricultural productivity, which will ensure improvement and more effective use of land.

Njobe further proposed the implementation of a point system by which the individual's different attributes could be graded so as to enable a process of prioritization of participation (1993: 10). This proposal is supported in the Strategic

Plan for South African Agriculture as one of the key initiatives to provide targeted support to new farmers namely; new farmers from historically disadvantaged groups who have gained access to land by private purchase, rental, and bequests. This therefore led to a needs assessment which established farmer's requirements in terms of access to support services. Areas with the greatest needs were targeted for preferential support and service provision. As part of the GPAP Project, a group of 20 leader farmers from the Aganang district were selected to participate in a leadership development program. However, only 19 leader farmers completed the Screening Instrument, to determine their chance to be successful in farming, before participating in the training program.

The Chapter therefore discusses the results obtained from the Screening Instrument. Results are based on; Independent variables (selected and non selected criteria); Dependant variables (selected criteria), Mediating variables (selected criteria) and also the predicted chances of farming success for farmers. The final section of the Chapter assesses farmer implementation of the Training Program. Farmers were trained in skills such as; management skills, leadership skills, and production skills.

Results from the Screening Instrument focuses on the composition of the group regarding the gender, age distribution, levels of education within the groups and the identification of the farmers with the best chance to farm successfully. It also attempted to identify the variables perceived to be the more negative as well as positive areas of behaviour of the respondents as individuals as well as within the group. Differences between the individual responses as well as some trends will be mentioned, which leads to making of recommendations in the selection process as well as the level and type support to be rendered to the respondents. A summary of the statistical results of the Screening Instrument is Appendix E.

6.2.1 Independent variables – non-selected criteria

The independent variables give an overview of those attributes that might influence human behaviour but little can be done to change any of these attributes. The personal data, also regarded as some of the non-selected criteria, are presented in varies ways. It is interesting to note the differences regarding the composition of the group when

using gender, age and levels of education as variables. The scores to determine the probable chance to succeed in farming are also noted in this data.

a) Gender

Figure 6.1 represents the distribution of females and males as percentages of the group. The majority of the group were women (63%), which influenced the prioritising as well as the decision making processes to suit them according to their specific needs.

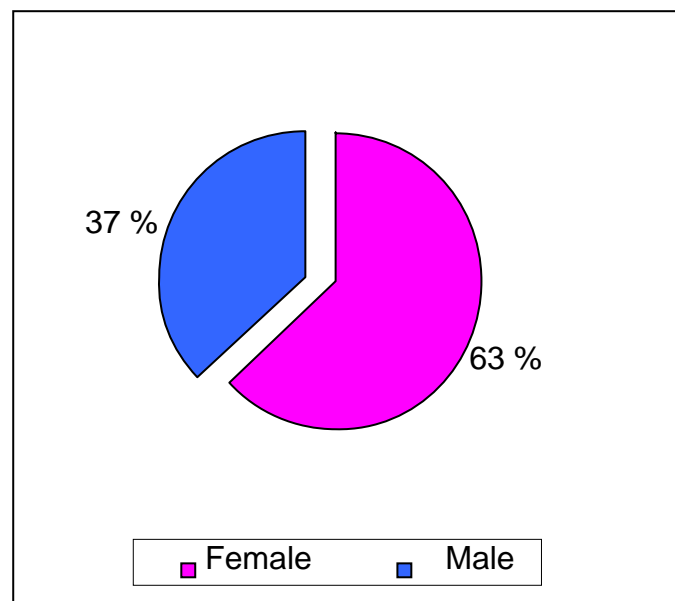


Figure 6.1: Gender distribution of the group

Gender is crucial when developing a farmer group, because women feel they need a voice in developmental aspects.

b) Age

Figure 6.2 indicates the perception that more men are economically active, working away from home, especially in the age group 40 to 50 years. This age group represents only 14% of the men as opposed to 33% of the females.

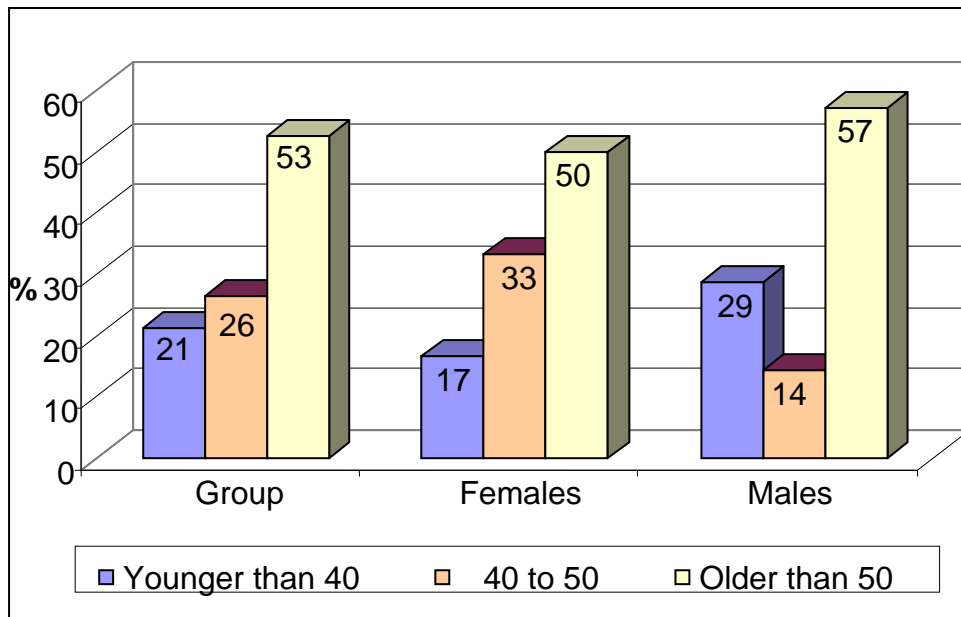


Figure 6.2: The age distribution within the gender groups

In the group younger than 40, the group consist of 12% more men than woman. The most significant fact is that agriculture depends mostly on people older than 50 years of age for sustainable production, namely 53%. The average age of the women in this category is 63 while the men are 61, with an average for the entire group of 62 years. The age of the respondents varied between 27 (a man) and 71 (a woman), with an average age 50.5 years for the combined group.

c) Level of education

Figure 6.3 below provides an understanding of the respondents' education levels and a comparison between male and female. The educational level is important for the fact that performance can be detected from the extent to which a farmer attained his or her education.

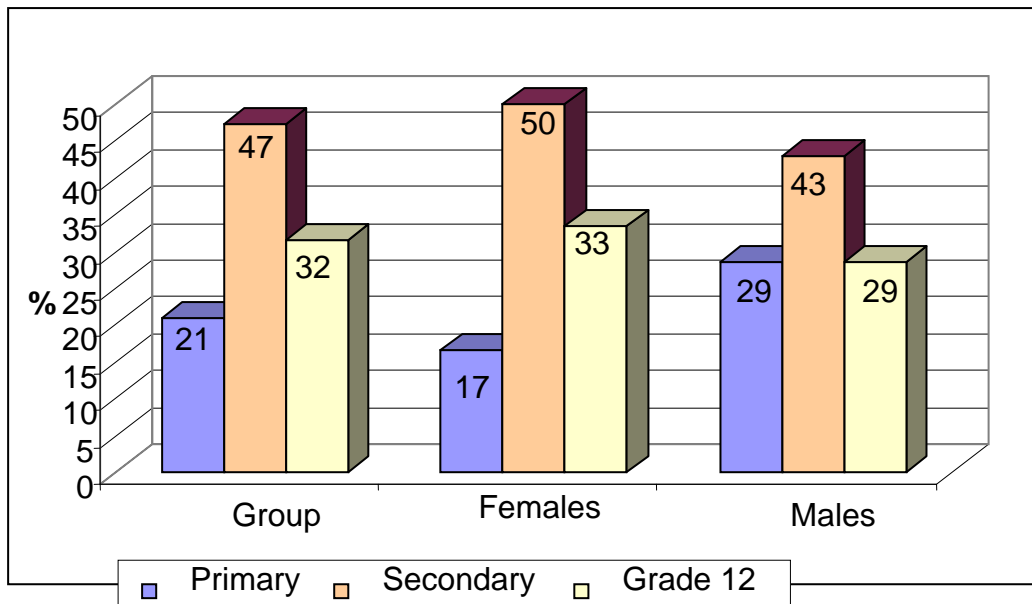


Figure 6.3: The level of education within the gender groups

The percentages in Figure 6.3 indicate that the female group might have a slight advantage over the men with regard to the level of education. Table 6.2 clarifies this statement further.

Table 6.2: Comparison of education levels within the gender groups

Level of education	Females	Men	Group average
Primary Grade 1 - 7	17 %	29 %	21 %
Secondary Grade 8 – 11	50 %	43 %	47 %
Grade 12	33 %	29 %	32 %

When comparing the education levels within the age groups, as indicated in Figure 6.4, the higher education levels are found in the two groups younger than 50 where 100% of the respondents possess of an education level of Grade 8 and higher. It is also significant to note that 75% of the group younger than 40 possess a Grade 12 Level, in comparison to the 20% of the other two groups.

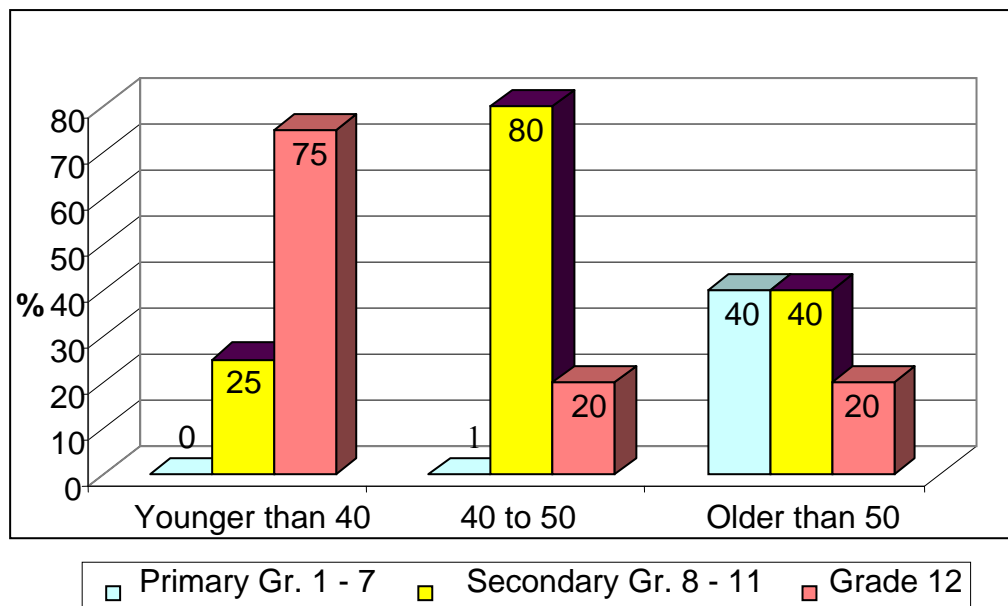


Figure 6.4: Education levels within the age groups

The majority of the group, namely 53%, possess education levels of Grade 1 to 7 (40%) and Grade 8 to 12 (60%). The latter group is supposed to be the group where the leadership, and therefore decision making processes are derived from.

Appendix E gives a detailed summary of the scores the respondents allocated to the specific selected variable. The final calculated scores, as well as the ratings of the respondents, are also documented in this Appendix. Table 6.3 also serves as a reference for the discussions in the rest of this section. The different variables will be discussed in an attempt to point out the differences within the different respondents as well as different gender groupings.

6.2.2 Independent variables – selected criteria

The independent variables give an overview of those attributes that might influence human behaviour but it is a given, in other words little can be done to change any of these attributes. In some cases two (independent variables) non-selective criteria, namely age and the level of education, are also included to calculate the final scores of the respondents. The two selected criteria of preference, namely previous occupation and previous experience, within the independent variables, measure the level of hand skills as well as farming experience of the individual.

a) Previous occupation

Thirteen (13) of the respondents did not complete this question and therefore this could be an indication of a high percentage of unemployment or very little artisan experience in the areas.

b) Previous experience

This refers to the relevant experience in farming and is measured in years of experience. Only one respondent was allocated a score of zero. The four respondents with the best chance of farming success have between three and six years of experience.

6.2.3 The predicted chances of farming success

The final results of the Screening Instrument are presented in Appendix E as well as Figure 6.5. A summary of all the variables is presented in Table 6.3. A distinction is also made between the gender groups and their performance according to the Screening Instrument.

Table 6.3: Scores according to gender groups

Score Category	No. respondents Females	No. respondents Males	No. respondents Total	Chances of success
< 01	4	1	5	Negative
01 – 95	6	4	10	0 – 25%
96 – 190	1	2	3	26 – 49%
191 – 285	1	0	1	50 – 75%
286 – 380	0	0	0	76 – 100%

The average success rate is below 50% in all the groups. However, when prioritizing the individual scores, the two highest scores are of a female gender namely; 50% (167.12) and 31% (103.44) respectively.

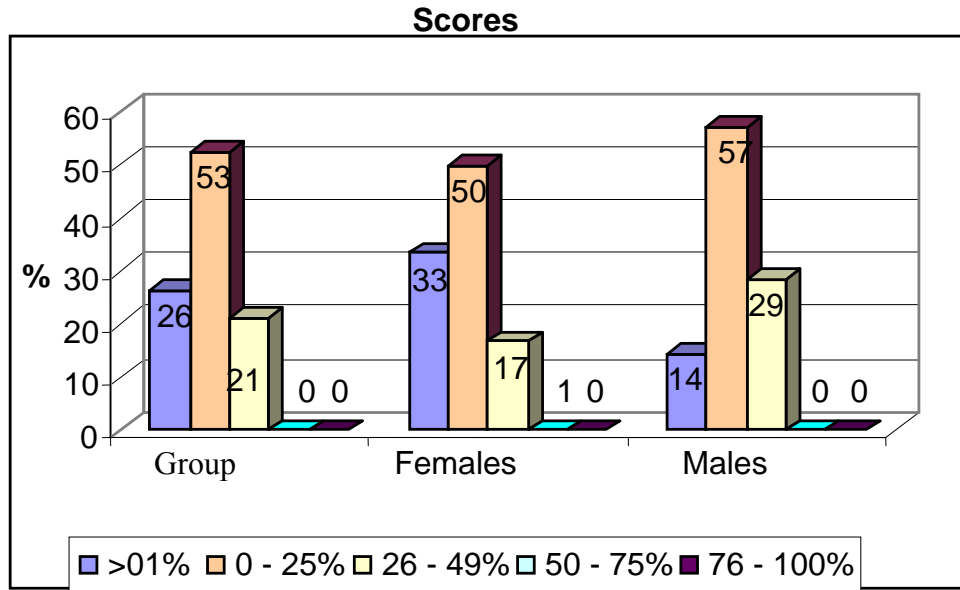


Figure 6.5: The probability of successful farming within the gender groups

The two respondents with the next highest scores are both men and fall in the category 26 to 49% with scores of 30% (100.42) and 29% (97.11).

Table 6.4 indicates that three of the respondents with a possible success rate of more than 25% are younger than 50 years of age and one (1) younger than 40.

Table 6.4: Scores according to age groups

Score Category	No. respondents < 40	No. respondents 40 – 50	No. respondents >50	No. respondents Total	Chances of success
< 01	1	0	4	5	Negative
01 – 95	2	2	6	10	0 – 25%
96 – 190	1	2	0	3	26 – 49%
191 – 285	0	1	0	1	50 – 75%
286 – 380	0	0	0	0	76 – 100%

6.2.4 Mediating variables – selected criteria

These variables also called the intervening variables indicate to what extent the individual in the group reacts or behave to the variables as described in the Screening Instrument. In some of the variables, like management, the score will indicate the level of skills already mastered by the respondent. These variables are important in so far as that the behaviour or competency of the individual can be influenced positively

through interventions such as capacity building, training and other types of support. In Appendix E the data regarding these variables are also reflected.

a) Assets or liabilities

Seven of the respondents did not complete this question. Although no scores could be allocated, it will be safe to assume that the picture will be negative and is an indication of the willingness of a respondent to take financial risks. The implication of this is that there is a real need for support regarding finance, infrastructure and other inputs.

b) Farmer settlement

Although very divergent, all the responses are positive, but conditionally. There is eagerness to farm but the majority of the responses noted a concern to ensure the sustainability of a future farming enterprise. Infrastructure, like irrigation systems and the availability of finance for implements and other inputs were some of the conditions mentioned.

c) Aspirations

With a 100% response, the indication is that there is a strong feeling and willingness to stay on the farm and at least provide for daily basic needs and livelihoods. The mind shift for increased agricultural production and profit making is visible but will have to be fostered in the training and capacity programmes. This variable could be a key point to focus on initially in order to enhance participation and foster a positive attitude. There is also a tendency for serving the community by creating jobs and ploughing back into the community. The respondent (no.12, the only respondent with a 50% chance to be successful) scored the highest point for this variable.

d) Management

Six respondents did not complete this question. This result supports the very low score of the group. It is clear that the enhancement of managerial skills should be important and a high priority effort of intervention. Except for one respondent, the responsibility for poor management is blamed on external factors e.g. funds, markets, more farming land, availability or lack of implements and other inputs. Only one respondent felt that the management function is his/her responsibility. The need for effective managerial and communication skills is emphasized.

e) Perception of interrelations

Only three respondents indicated an idea of this concept while nine respondents, including the respondent with the best chance of success, did not answer the question nor had any idea of the problem to find possible solutions. Knowledge is one of the factors that will help to solve this problem therefore it demands priority support.

f) Value of records

On average a very high value is placed on record keeping by the group. Eleven of the respondents felt that record keeping is of the utmost importance while only two did not respond; one of them is the respondent with the best chance of successful farming. However, with 15 of the respondents indicating the minimum score, there is a strong possibility of over-rating to the value of records. Training and support in helping the respondents to keep their own records and the effective analysing and interpreting of the records, will be a very good starting point of the intervention process. Aspects such as good and effective decision-making can be fostered.

6.2.5 Dependant variables – selected criteria

The dependent variables deal with the attitude and behaviour of the respondent regarding the selected criteria. A summary of the responses regarding these criteria is presented in Appendix E.

a) Work / management approach

Eleven of the respondents, including the respondent with the best chance to succeed, tend to rather manage than to work. Less time therefore is spent executing other activities than to farm themselves.

b) Decision making behaviour

Except for four respondents, there is a fairly well established perception of independent decision-making. The majority of the respondents will not only react on their own perception, but will also seek advice and information from other farmers and experts.

c) Profit orientation

Although there is a clear indication that there is little experience in terms of profit and commercial orientation, it can be an advantage when training is planned because it will be easier to train farmers correctly from the start rather than to re-train them.

d) Community involvement

Only two respondents did not answer this question. The indication therefore is that almost all the respondents are willing to be involved in the community activities.

e) Advice from fellow farmers / Extensionist

The response to this question was very vague and not interpreted the same for all the respondents. There is a positive indication that all the respondents, except one, will seek advice from one or more service provider. The way this question was answered might indicate some frustration regarding the respondents' prior experience with Extension delivery.

6.3 THE IMPACT OF THE LEADERSHIP DEVELOPMENT PROGRAM

The findings and therefore farmer's expectations, experience and perceptions are presented and discussed under this section. The section represents to what extent farmers implemented the skills obtained from the training program.

A checklist was handed over to extension officers involved in the GPAP program which was to be completed individually with the 19 leader farmers. However, only 9 completed (checklists) were received from the extension officers. No reasons were given for the low feedback (46%). Two possible reasons could have been: The level of commitment from extension officers, since the checklist was to be completed with the observation of the extension officers; and/or farmers were not interested to complete the checklist. However, the results received from the 46% checklists will be discussed in the next sections. Encouraging however is the fact that farmer No.12 (with the best chance of success) completed the checklist indicating clearly the implementation of several aspects presented and discussed during the training program to support farmers to perform more effectively.

6.3.1 Management skills

a) Farming as a business

A total of (80%) farmers indicated that they had a productivity farm plan and indicated that harvesting will start in June/July. On average, farmers indicated that the total amount of rainfall received was 187mm with a range between 62mm–324mm. The majority (70%) of farmers indicated that there are signs of erosion on their farms. However, only one farmer took measures and indicated that sandbags were used to

control erosion. According to Figure 6.6, 80% of farmers indicated that they received rain gauge instruments, however 20% did not record their rainfall averages on farms. As stated by Chambers et al (1990) farmers need to appreciate the technology in order to have an inclusion in technology development. If farmers cannot participate fully in a project, then higher expectations set, can never be obtained.

With 80% of respondents having productivity plans, it needs to be mentioned that during the training program respondents developed a productivity plan for their individual farms. It shows farmers' commitment towards achieving their goals but one can never achieve better development without incorporating all project activities. Chambers et al (1990), further states that research and development encompasses a range of approaches and activities and has a role to play in all stages of agricultural development. Therefore farmers have to ensure that they complete all project activities.

Respondent No.12 (the one with a best chance of success in farm enterprises) does have a productivity plan, rain gauge and recorded all rainfall received. This farmer also experienced soil erosions but is the only farmer who erected conservation structures. This is a clear indication of a farmers' commitment towards achieving better agricultural development. It also strengthens the necessity to make use of a Screening Instrument to identify new farmers with the best chances to be successful as farmers.

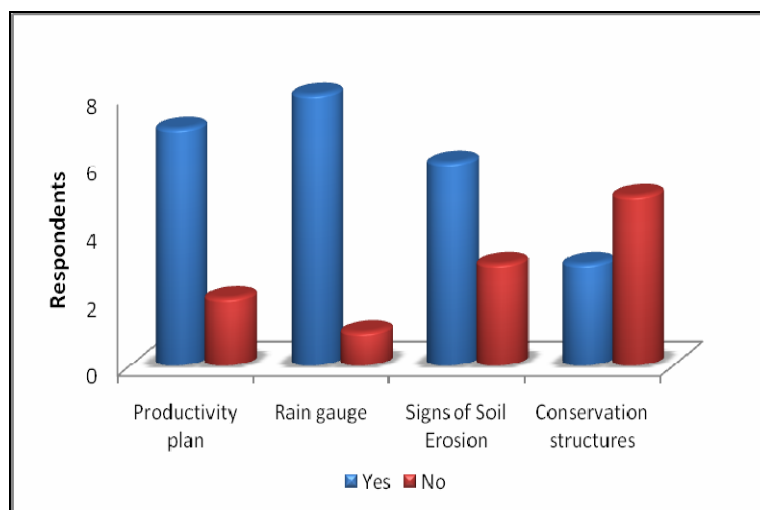


Figure 6.6: The implementation of essential aspects by respondents as indicators of farming as a business

Source: created by Namome 2009

b) Planning and Finance

On average, farmers mentioned that they spent between R1497.50 to R2315.00 in order to carry out their farm activities and further indicated that they purchased inputs like fertilisers, seeds and pesticides. Very few farmers presented receipts as proof of purchasing the items from agribusinesses. Progress Milling and NTK promoted hybrid maize cultivar. These seeds were made available to farmers at a reduced price. Marketing of the crop was done between the months of August to November with the help of Progress Milling. On average, farmers indicated to have harvested about 21 bags of Maize per hectare. Only one farmer indicated negative responses on the planning and finance aspects. When asked about what inputs were purchased, what it cost, and the quantity harvested, no responses were given. Table 6.5 indicates the seeds and fertilizers used with their percentages. The majority of farmers planted PANAR: 6479 cultivar and all farmers used the SASOL Nitro fertilizer.

Table 6.5: Types and Percentages of inputs purchased

<i>Crop inputs</i>	<i>Types</i>	<i>age%</i>
<i>Seeds</i>	Hybrid:	
	PANAR: 6479	60%
	SNK: 2147	40%
<i>Fertilizer</i>	SASOL Nitro	100%

6.3.2 Technical and Production

a) Soil Fertility and Crop management

The respondents in total cultivated 14ha and each individual farmer planted between 1ha to 2ha with their main crop being maize. Each respondent provided soil samples from their land. The importance of conducting soil tests when planning fertilizer application were communicated effectively to all farmers. When farmers were asked about this practice, 80% of farmers indicated that their soils were sampled and analysed.

Only a few respondents indicated that other crops were also cultivated (on average 0.5ha/farmer) on their farms namely; jugo beans, and cowpeas. All respondents indicated that weeding was done by hand hoeing although they indicated that weeds were not a serious problem. According to the respondents, the appearance of cutworms was a serious problem. Figure 6.7 below illustrates farming practices respondents used on their land.

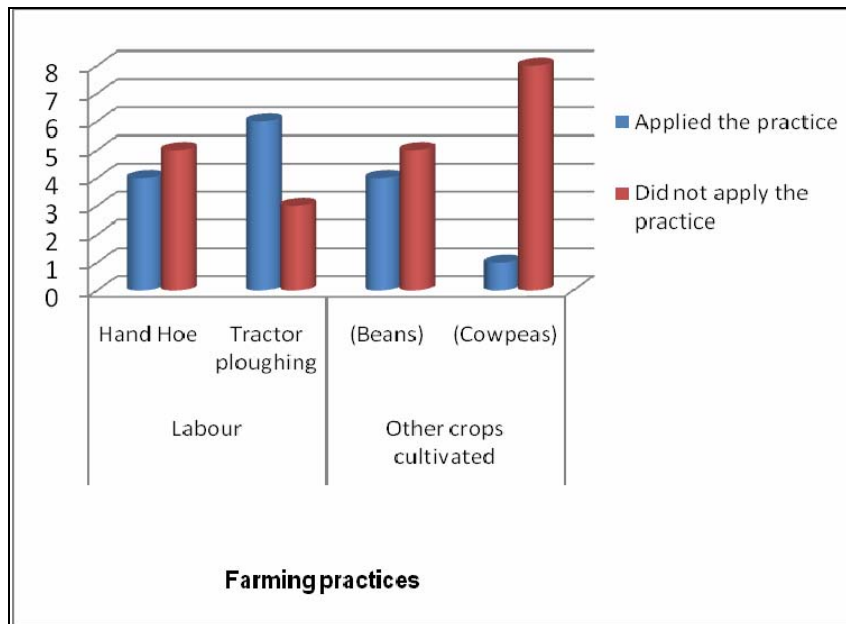


Figure 6.7: Farming practices implemented by respondents

b) Cropping systems

The survey gathered information from farmers on farming practices that were used in their portions such as intercropping, and crop rotation.

i) Intercropping

A total 80% of the farmers intercropped maize and other crops which included jugo beans, groundnuts, and cowpeas. Intercropping was basically used as a conservation measure to reduce soil erosion. However, some farmers indicated that intercropping was used in cases where land shortage was a constraint.

ii) Crop rotation

Extension workers recommend crop rotation for a variety of reasons including pest and disease control, erosion control, proper utilisation of nutrients and as a soil fertility improvement technique. Only 20% of respondents indicated that crop rotation is implemented as a practice. Respondents mentioned that there was a need to intercrop the maize crop with other crops due to limited land available. It was therefore not practical for farmers to follow specific a crop rotation practice. In fact, that is the main reason as to why farmers had a higher percentage of intercropping.

6.3.3 Assessment of leader farmers

The Aganang leader farmer group of about 22 farmers was assessed as regard to the training they received. Assessment was based on a) competence levels from the outcomes of the training program; b) language proficiency.

a) Competence level relative to the training outcomes

In general, it can be stated that the assessment proved that most farmer learners have shown a good understanding of what they were being trained on. Six farmers got percentages below 60 (50-57%) while 12 farmer learners (60% of the group that completed the assessment) achieved scores of 75% and higher. Specific questions that learners did not seem to have a proper understanding of were:

- i. Understanding of soil structure and items influenced by soil structure;
- ii. Calibration of a fertilizer spreader; and
- iii. Requirements for micro-organisms to function well in the compost pile. (Learners would incorrectly mention the materials needed to make compost) this could imply that the interpreter of the question was at some stage misleading the learners.

b) Language proficiency

It also appears that farmers find it difficult to answer questions that need elaborative explanations. Poor proficiency in English might be the main reason that they find it hard to express themselves eloquently. Age did not seem to have any significant role on the level of understanding. This could be attributed to the fact that older farmers were helped to understand questions and to write answers in English.

6.3.4 Leadership / Group dynamics

According to Lussier and Achua (2001) leadership is the influencing process of leaders and followers to achieve organisational objectives through change. Farmers were trained in leadership skills in order to realise that motivation and leadership are key to developing effective agricultural development. Leadership skills is an important part of managing a growing enterprise and Lussier et al (2001) further expresses that leadership skills are the key intangible resource that will leverage sustainable competitive advantage. According to Hannum et al (2007) leadership development is the expansion of organisation's capacity to enact the basic leadership tasks needed for collective work: setting direction, creating alignment and maintaining commitment. The Aganang leader farmer group were trained with a view

to show how participation in leadership development experiences connects to such visions as improving organisational performance or changing society for the better. Aspects in which Aganang farmer group were trained in are discussed in the next paragraph.

a) Farmer group mobilisation

Groups are best formed by farmers who rally around a common interest (Barrett, 1998). Respondents mentioned that they had formed farmer groups and five farmers indicated that they are the chairpersons of a farmer group. A farmer group is formed in direct response to special circumstances and access problems of farmers and facilitating better farm management. Groups are developed in order to create an opportunity for dialogue about problems and opportunities and advantages and disadvantages of different interventions. Group formation should be viewed as an institutional experiment in the sense as: a methodological goal to access relationships between group composition and dynamics of farmer interaction in technology development.

Although the different reasons for forming groups were indicated by the different respondents, group formation was mostly motivated by an interest in increasing farmer participation in agricultural development. Each group elected a chairperson and set its meeting dates. Monthly meetings were held where the farmers and the extension agent in each village discussed progress, problems and farmers' observations. This clearly shows that farmers implemented the skills obtained from the leadership training.

b) Group management

Farmers require training in institutional matters to strengthen their operations in groups. Mudhara & Salomon (2002) argues that farmers require introductory trainings on institutional development for example committee skills and drafting of constitutions. Mudhara et al (2002) noted that farmer groups need strengthening in areas like; organisational structure to deal with new demands; ability to plan and link to the wide range of support institutions, for instance, research, extension and local government, encourage active and broad participation by members and lastly be democratic in leadership management.

Therefore, in addition to farmer's experiences in other farmers' associations, farmers were trained to manage their farmer groups in their respective villages. This ensured that the farmers' discussions remained focussed and be pursued to some depth. A total of 80% of respondents mentioned that groups defined their objectives in their own terms so that farmers who clearly identify and subscribe to the objectives of the group become members. Respondents mentioned of having good progress in relation to managing of farmer groups with an emphasis of managing other community projects such as; poultry groups, livestock improvement groups, and land care projects.

Group leaders showed records which indicated clear progress in their farmer groups. In addition, the group leaders identified a benefit that would accrue to them from becoming a leader. This is achieved when the groups have concrete activities aligned to their common interest as encapsulated in the group objectives. Presumably, the members of the group who identify with the objectives will remain committed. Respondents further indicated that the training helped to collectively raise more issues to be considered in the development process. However six (6) respondents did not answer the question most probably because the group does not function effectively.

CHAPTER 7

SUMMARY, CONCLUSION AND RECOMMENDATIONS

7.1 SUMMARY AND CONCLUSION

The main objective of this study was to find out the impact of GPAP project on farmers' production efficiency. The analysis of such an impact was conducted and conclusions herein are based on the findings. This study started from the concerns expressed by stakeholders with regarding to the low levels of agricultural productivity, where agriculture was seen as one of the important sectors to develop the rural economy; it was therefore considered essential to establish the actual impact of the project on farmers' production efficiency. The study focused on case studies, typical evaluations of farmer groups and extension staff that were involved in the project.

The overall aim of this study was twofold; firstly, the study analysed and established the extent to which capacitating of extension staff would impact on the farmers' agricultural productivity, secondly it investigated whether training farmers themselves would have better success rates in their agricultural enterprises. The study endeavours to shed more light on the critical determinants of low implementation of project activities associated with low commitment of extension staff, drought, and lack of labour. In summary, the background of the study is from the ARC-GCI which established a working partnership with the Limpopo Department of Agricultural extension service. Under the auspices of LIMPAST, the GPAP was created and implemented in different districts of the Limpopo Province.

Through the GPAP farmer groups were formed and capacitated. Extension officers seconded to the project were also capacitated to implement the project through on-farm trials and demonstrations. Therefore the main aim of the study is to analyse the impact of the project and to identify factors that affected implementation negatively. The specific objectives of the study were:

- Review key implementation tools and their appropriateness to farmers during the implementation of the project.

- Investigate the level of farmers' participation in the implementation of the project through mobilisation of farmer groups and determine farmer's performance indicators and levels of productivity.
- Investigate factors and underlying causes of poor implementation or failure to adopt recommended technologies by farmers.
- Determine the success of the program to capacitate extension staff to implement an intervention program on improved maize production to farmer groups.
- Determine the impact of the leadership development program presented to the Aganang leader farmer group.

The study was conducted in the Province of Limpopo, with districts like Aganang, Maruleng, Greater Groblersdal, Greater Giyani, Makhuduthamaga, Polokwane, and Leppelle Nkumpi which served as main focal areas of the project. Data were collected using a structured survey instrument which evaluated extension officers on the level of farmer participation, and impact of the project. Checklists were also used to assess the extent to which the project met farmers' needs. Data analysis was limited to a summary of frequency tables and charts to determine the level of farmers' participation in the project. Due to the limited number of respondents, data was not analysed empirically however a strong conceptual framework was used to analyse the data collected.

The dissertation employed data/work from the University of Pretoria on training of extension officers, case studies of farmer mobilisation groups under the GPAP project. This Chapter holistically creates an understanding of how capacitating of extension staff is of great importance to farmer development and also screening of potential farmers could lead to successful farmer enterprises. There is no doubt that the GPAP program had a positive impact on farmers however in view of the purposeful approach to objectively address the research objectives; it is appropriate to summarise these findings. The following conclusions can be deduced from the entire results of the study.

7.1.1 Stakeholders and Implementation tools

The stakeholders who participated in the project are:

- Progress Milling in cooperation with LIMPAST who initiated the project and funded it through the Maize Trust and the Educational Trust of Progress Milling;
- ARC-GCI;
- Agricultural extension staff from LDA seconded to the project; and
- NTK-agribusiness.

The implementing tools (as extension methods) that were used to transfer and implement technology to farmers were:

- On-farm trials;
- Demonstrations; and
- Farmer Field Schools.

However the main tool through which these tools were delivered was the farmer groups. The 18 seconded extension officers participated in a specific capacity building program to enable them to deliver a service of excellence to the farming community.

This training program consisted of the following:

- Planning and implementation of on-farm trials;
- Crop production management (including group mobilisation);

According to the study the most important findings are that; only 12 on-farm trials were successfully planted and managed by extension staff however only 8 trials were independently planted by the extension staff. Farmer field days were well attended by farmers in the first two seasons but post harvest sessions were not well attended.

7.1.2 The effectiveness of farmer groups and group mobilisation

According to extension staff the average size of the farmer group is 25. The group size varies between 9 and 47 members. The most important reason for the formation of a group was because of the GPAP project namely; to improve production, and increase knowledge. The objectives defined by the farmer groups were very broad and totally impossible to measure. The most important objective of the groups is: to improve maize production (43%). The most important role that the extension staff played in the group is to give advice and to demonstrate results of on-farm trials (36%).

According to extension respondents the following factors are essential for effective group functioning:

- Cohesiveness and team work;
- Common goal;
- Commitment;
- Interest;
- Participation;
- Self-reliance; and
- Ownership.

A total of 92% of the extension respondents indicated that the groups performed only at an average level. The reasons for this level of efficiency are:

- Farmers are not involved in the planning and executing of activities;
- Farmers did not accept ownership of the activities;
- The majority of farmer group members are elderly people; and
- There is still a dependency syndrome in farmer groups.

7.1.3 The impact of the crop production management program for extension staff and farmers

Only 16 of the 18 extension staff participated in the crop management program. Participants completed specific assignments to assess the knowledge. Only 12% obtained a mark above 70% while 19% had a low progress in the program. The average mark obtained by the group was 59%. In a further evaluation of extension staff performance, only two extension officers performed below 63%. Farmer's attendance of farmer field days decreased from 558 in 2003/20004 to 174 in 2005/06 and the reasons for this are:

- Too many non technical issues being discussed during field days
- Communication at field days not effective because of large groups

According to the respondents smaller groups of farmers allow better participation by farmers. The majority of extension staff (50%) indicated that the project only met the farmers' needs to a moderate extent. The adoption of maize cultivars by farmers was only moderate. Only 40% of farmers implemented farming practices to a great extent. The most important constraints affecting farmers' implementation of recommended farming practices are:

- Drought (insufficient rain);

- Land shortage;
- Financial support; and
- Labour (lack of power-driven labour and equipment).

A total of 63% of all small scale farmers have only access to less than one (1) hectare of arable land. There was a positive increase in the use of hybrid seeds by farmers participating in the project. According to the respondents, production per hectare increased steadily with up to 35%. Farmer's income increased from between R100-R700 before the GPAP to R2000 after joining the project

7.1.4 The impact of the Aganang leadership development program on the Aganang leader farmer group

A total of 20 leader farmers were selected to participate in the program. Nineteen (19) of the leader farmers completed a Screening Instrument to determine their chances to be successful in farming. A total of 63% of respondents were females and the majority of the respondents (53%) are older than 50 years of age and 47% have a Grade 8-11 secondary school qualification. Nearly 70% of the respondents did not have any previous experience. According to results from the Screening Instrument, only one (1) respondent revealed a 50% chance to be successful, while three (3) respondents recorded a 26-49% chance to be successful. The other 16 respondents only revealed a less than 25% chance to be successful in farming. A checklist to determine the impact of the leadership development program was only completed with the help of 9 leader farmers. According to the completed checklist, 80% of the respondents did have a productivity farm plan, 80% did record the rainfall, and the majority of leader farmers did plant hybrid maize cultivars. The nine farmers in total cultivated only 14 hectares and only 20% indicated that they did have a crop rotation program. The leader farmer with a 50% chance to be successful was the only respondent who provided full evidence for purchasing of farm inputs. During the capacity building program for leader farmers some of the selected members disappeared and were replaced by other participants

7.2 RECOMMENDATIONS

Since research is not an end in itself but rather a means of improving the current situation; it is appropriate to propose recommendations based on the findings from the study.

7.2.1 Identification of high potential dry land production areas

It is hereby recommended that the Grain Production Advancement Project should only be implemented and expanded in the geographical areas of the Limpopo Province with the highest dry land potential for grain production. Research needs to be undertaken to identify crops which are more adapted to the lower potential dry land areas of the Province.

7.2.2 On-farm Trials

On-farm trials with the main objective to identify and demonstrate the potential maize varieties were successful. It is however recommended that attention and the implementation of different conservation farming practices should form part of the on-farm trials.

7.2.3 Demonstrations and Farmer Field Schools

Attention should be given to plan and implement well constructed Farmer Field Schools for farmers. It will be important that smaller groups of farmers should attend Farmer Field School days more regularly to allow sufficient time for hands-on training activities. Specific attention should also be given to the skills and knowledge of the trainers (extension officers) responsible for presenting the training programs.

7.2.4 Mobilisation of farmer groups

Attention should be given to the following aspects of the existing farmer groups to ensure more effective functioning of the group.

a) Group size

The majority of the farmer groups are too large and a serious effort should be made to divide the larger groups into smaller groups. This is specifically necessary where farmer groups are going to receive hands-on training during Farmer Field School days. The optimum group size proposed is fifteen (15) members.

b) Group objectives

It is of paramount importance to re-define the objectives of each group. All objectives must be clear, specific and measurable. What does the group want to achieve, where, who are involved, when, how; should be part of the group objective.

c) Factors essential for group functioning

The group facilitator (extension officer) should guide and facilitate the group activities to ensure the following:

- An atmosphere of cohesiveness and team work within the group and group members should at all times feel at home in the group;
- A common group goal;
- Members are committed to the activities of the group;
- Members have a serious interest in the activities of the group
- Each member knows what role he/she has to fulfil in the group and all members participate fully in all activities;
- The group is perceived as self-reliant; and
- The group has to take ownership and responsibility to account for all group activities.

7.2.5 Development program for Extension staff

It is today a pre-requisite that every extension officer should be committed and skilful to execute his/her task in a professional manner. Every extension worker should therefore adhere to the following:

- Agree and sign a contract to deliver a service of excellence; and
- Develop and implement a specific Continuous Professional Development (CPD) program for each extension worker to ensure that he/she has the necessary technical and extension skills and knowledge.

7.2.6 Farmer development

The majority of farmers involved in the GPAP project only have access to small areas of arable land. They do not own the land and there is no financial support to them. They cannot afford to purchase tractors and other farm equipments to cultivate the land effectively. Farmers rely on contractors who are unreliable. It is therefore recommended that the stakeholders of LIMPAST should urgently discuss and

investigate the possibility to identify large areas of arable land for crop production under dry land or under irrigation. It has also become a necessity to implement a Screening Instrument that will identify prospective farmers with the best chance to be successful. These farmers should form a cooperative that could lease the land from government or the, traditional authority and/or the municipality for a period of at least three (3) years.

Financial support (loan) should be extended to farmers in order to purchase inputs, make tractors and equipment available to them (and make them responsible for it). If the group of farmers have shown that they can farm the land in a sustainable manner, the lease can be extended or the farmers can buy the land. Further research is needed to determine the size of land necessary for a sustainable dry land and an irrigation farming venture in each region in the Limpopo Province.

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APPENDICES

APPENDIX A: EVALUATION QUESTIONNAIRE FOR EXTENSION OFFICERS

Date of interview.....

SECTION A: PERSONAL INFORMATION

A1. Name of Extension Officer and Contact Details

a) Name:
b) Phone/Cell No.
c) Postal / Physical address
d) District where the project is located

A2. Gender

Female
Male

SECTION B: FARMER PARTICIPATION IN THE PROJECT

B1. Did farmers participate in the project?

Yes	
No, specify	

B2. If yes to what extent were farmers involved in the project?

a) Not involved at all	0-49%
b) To a fair extent	50-79%
c) Fully involved	80-100%

B3. Please explain your answer in terms of (a) & (b)

B4. Provide an estimate of farmers that were involved in your farmer group activities

No. of farmers	
<10	
10-20	
>20	

B5. Evaluate to what extent the LIMPAST project met farmers' needs

Not at all **Fair extent** **To a great extent**
 1 2 3 4 5 6 7 8 9 10

B6. If farmer’s needs were not met, what must be done?

SECTION C: IMPLEMENTATION TOOLS AND PRODUCTION PRACTICES

The project was implemented through specific tools which included;

- On-farm trials
- Demonstrations
- Farmer Field Schools (FFS)
- Training

Farmers were also trained in maize production practices;

- Production Management, and Morphology of the maize plant
- Maize variety selection, and Conservation tillage systems
- Soil fertility and cost effective fertilization
- Pest and weed control in maize, and Crop production management

C1. As an Extension officer, would you perceive these tools to have been effective for farmers’ productivity?

Yes	
No	
Uncertain	

C2. If yes, to what extent do you think the tools were effective in assisting farmers?

Not Effective	Moderate	Very Effective
1 2 3	4 5 6	7 8 9 10
a) On-farm trials	<input type="checkbox"/>	c) Farmer field Schools <input type="checkbox"/>
b) Demonstrations	<input type="checkbox"/>	d) Training of farmers <input type="checkbox"/>

C3. In your opinion, do you think farmers implemented the maize production practices?

Yes	
No	
Uncertain	

C4. If yes, to what extent did farmers implement the farm practices?

a) Not all	1
b) To a fair extent	2
c) To a great extent	3

- a) Production Management, and Morphology of the maize plant
- b) Maize variety selection, and Conservation tillage systems
- c) Soil fertility and cost effective fertilization
- d) Pest and weed control in maize, and Crop production management

C5. Please explain your answer in question C4 by giving a possible reason for the farmers' reaction.

SECTION D: PRODUCTION EFFICIENCY

Taking a comparison in farmer's productivity before and after joining LIMPAST, please provide an approximate of previous and current production efficiency.

D1. What was the size of farm land (ha?) What is the current farm land (ha)?

Before LIMPAST		After LIMPAST	
<1		<1	
1-2		1-2	
3-5		3-5	
Other specify		Other specify	

D2. How was/is land prepared for planting before joining LIMPAST and how are they preparing it now

Before LIMPAST		After LIMPAST	
a) Plough by tractor		a) Plough by tractor	
b) Disking by tractor		b) Disking by tractor	
c) Minimum tillage		c) Minimum tillage	
d) Other		d) Other.....	

D3.1. What seed variety was used before LIMPAST?

Seed variety	
Hybrid	
Own seed (local seeds)	
OPV	

D3.2. What seed variety is currently used after LIMPAST

Seed variety	
Hybrid	
Own seed (local seeds)	
OPV	

D4. If planting hybrid, what yield change have you observed before and after

Yield (bags/ha)	Before LIMPAST	After LIMPAST
<5		
5-10		
>10		

D5. Have farmers experienced any growth in crop yield in the farm group

Before LIMPAST		After LIMPAST	
Yes		Yes	
No (specify reason)		No (specify reason)	

D6. To what extent did the training of farmers impact on their production efficiency?

a) No impact at all	1
b) Moderate impact	2
c) Positive impact	3

SECTION E: FACTORS THAT LED TO POOR IMPLEMENTATION

Productivity at farmer level does not significantly indicate a successful adoption of maize cultivars and farming practices that farmers received inform of training.

E1. How would you rate farmer adoption of crop production practices?

Poor Adoption			Moderate Adoption				Extensive Adoption			
0	1	2	3	4	5	6	7	8	9	10

E2. According to you, what are the reasons why farmers did not adopt the crop production practices?

E3. Did you notice any other constraints which could or do particularly limit the successful operation or development of farmers?

SECTION F: TRAINING OF EXTENSION OFFICERS

F1. Did you receive any training on maize farming practices?

Yes	
No	

F2. If no, specify why,

F3. If yes specify who trained you

Institution/organization	
i.	
ii.	
iii.	
iv.	

F4. In which areas did you receive training?

Training received	
i.	
ii.	
iii.	

F5. Do you think you benefited from the LIMPAST training program?

Yes	
No	
If no specify,	

F6. If yes, would you consider taking on another farmer group that require farming guidance to a successful level?

Yes	5
No	4
Uncertain	3

F7 Motivate your answer

F8. To what extent do you feel that you were successful in your ability to contribute to farmer's success in farming?

Not successful	Somewhat Successful	Very Successful
1 2 3	4 5 6 7	8 9 10

F8. How would you rate your overall satisfaction with LIMPAST project activities?

Very Dissatisfied	Neutral	Very Satisfied
1 2 3	4 5 6 7	8 9 10

F9. Suggest any areas of improvement in the LIMPAST project?

F10. Please rate your perceptions of the overall impact of the LIMPAST project on farmer's productivity or success.

No				Moderate				Extensive			
Impact				Impact				Impact			
0	1	2	3	4	5	6	7	8	9	10	

Thank you very much for the time you took in answering the questionnaire. We hope to report the results of our study to LIMPAST stakeholders. We appreciate your contributions to the project.

.....

Signature

APPENDIX B: A CHECKLIST TO ENSURE EFFICIENT GROUP FUNCTIONING

Name of the group:

Chairperson:

Extension worker:

Date:

STEP 1:

⇒ **In what stage of development is the group?**

- i) Forming or orientation stage:
- ii) Storming or conflict stage:
- iii) Norming or “we-feeling” stage:
- iv) Performing or task performance stage:
- v) Adjourning or dissolution stage:

- Why is the group in that specific stage?
- Is it necessary to mobilise the group to move to another stage?
- What should be done?

STEP 2:

⇒ **What are the goals/objectives of the group?**

- i)
- ii)
- iii)
- iv)
- v)

- Is each objective clear?
- Is each objective specific with regard to:

- The people concern?
- The kind of change or behaviour change desired?
- The time dimension?
- Can the objective be measured?
 - Is there a benchmark?
- Did the group members participate in the development of the objectives?

STEP 3:

⇒ **Determine the influence of the internal dynamic forces on the efficient functioning of the group.**

1. Group atmosphere

(Pervading mood, tone or feeling that permeates the group)

- Physical setting
 - Where do the group meet
 - Time of meeting
 - Length of meeting
- Psychological atmosphere
 - Atmosphere of warmth
 - Members help one another to feel at ease
 - There is co-operation between all members

2. Communication

- Two-way communication
- Is communication between members promoted?

3. Participation

- Attendance of meetings
 - 80% - 100% = excellent
 - 50% - 79% = need to improve

(Identify reasons for poor attendance)

- < 50% = disaster!
(Need to do something drastic)

- Discussion time during meetings
 - Sufficient
 - Insufficient
- Do members do more than what are expected from them?

4. Group standards/norms

- Does the group have a constitution (written)?
- Do they implement the constitution?
- Availability of social intercommunication

5. Cohesion (esprit de corps)

- Is there a so-called “we-feeling” in the group?
- Do members identify with the group?

6. General role definition

- Does each member know what role he/she needs to fulfil in the group?
- Does each member understand how his/her role fit into the over-all structure and group objectives attainment?
- Do they understand the importance of their roles and how the performance of their roles contributes to group productivity?

7. Heterogeneity or homogeneity

- The presence of differences
- Do members of the group have different backgrounds, values, interests (farming commodities), abilities and skills?
- Do the group take these differences into account during planning sessions?

8. Group size

- What is the size of the group?
- Does the group take its size into consideration when planning for group member involvement and participation?
- Does effective communication take place within the group?

- Is there enough time for discussions and members to express their ideas?
- Does the group reach consensus resulting from discussions or is there a trend toward factionalism?

9. Leadership

- Is the leadership style and therefore the group, more people – orientated or more task-orientated in accomplishing its tasks, or well balanced?
- Is the group leader willing to do the job?
- Is the group leader a popular person?
- Does the group leader have the ability to lead the group?
- Is a shared leadership style evident in the group?
- In a truly democratic group leadership is diffused. Every member is a leader whenever he/she contributes an idea to achieve the objectives – Is this true for the group?

10. Techniques

(The means or methods used in group situations to bring about group action and behaviour change)

The group + the techniques = the objectives

- What techniques do the group use to attain the objectives?
 - Lectures by specialists
 - Lectures by Extensionists
 - Lectures by members of the group (part of tasks)
 - Lectures by fellow farmers (not members)
 - Demonstrations
 - Trials
 - Discussion groups
 - Farmer days
 - Tours/visits
 - Farmer field Schools
 -
 -
- How effective are the techniques used?
 - Did it bring about change?
 - Were the objectives met?
- Is the group a “working group” or a “listening group”?

11. Monitoring and Evaluation

- Does the group evaluate periodically their activities and performance?
- Do they adjust the objectives if necessary?
- Does the group re-evaluate its constitution from time to time?
- Does the group compile monthly, quarterly and annual reports?
- Do they keep records of their activities?

STEP 4:

⇒ **Determine the role of external dynamic forces that influences the effective functioning of the group.**

1. Multiple group membership

- Are the members of the group also members of other group activities?
 - Does it influence group member's participation in the group?

2. Parent organisations

- Are the members of the group also members of organised agriculture?
Provincially:
Regionally:
Ward or village level:
- Does organised agriculture know about and recognised the group and the role it play in agricultural development?
- Does the group report back to the parent organisation about activities?
- Does the Department of Agriculture know about and recognised the group and the role it plays in agricultural development?

3. The community

- Does the community know about the existence of the group?
- Does the group invite the broader community to their activities (farmer days, etc.)?
- Does local government know about and recognised the group activities?

APPENDIX C: A CHECKLIST FOR MOBILISATION OF FARMER GROUPS

Please answer the following questions about your own experience with and /or understanding of:

1. An existing group

Who initiated the formation of the group?

- (a) Yourself
- (b) Another Extensionist
- (c) The farmers
- (d) Other, please describe
-

How long does the group exist?.....

Group size (number of members).....

What according to you is the ideal size for a group?.....

1.5 Does every member in the group know what his/her role is within the group?

- a) Yes
- b) No
- c) Uncertain

1.6 Do you think it is necessary that group members should know their role within the group?

- a) Yes
- b) No
- c) Uncertain

1.7 Why was the group formed? Describe briefly.....

.....
.....
.....

1.8 Who is the chairperson of the group?

- (a) A member (farmer)
- (b) Myself as the Extensionist
- (c) Another Extensionist
- (d) Other, describe

1.9 How often does the group meet?

- (b) Once a week
- (c) Fortnightly
- (d) Monthly
- (e) Other, please describe.....
-

1.10 What are the purpose (goal) and objectives of the group?

.....
.....
.....



.....
1.11 Are you involved in the activities of the group?..... Yes/ no

1.12 If yes, what role do you play. Describe briefly.....

.....
.....
.....
.....

1.13 What according to you are the factors/aspects that are important for a group to function efficiently? Name them.....

.....
.....
.....
.....

1.14 If you take the above factors/aspects into consideration, how efficient does the group function currently, use the following scale:

- (a) Not efficient at all
- (b) To a slight extent
- (c) To a fair extent
- (d) To a great extent
- (e) Other (explain).....

.....

1.15 With regard to your answer above (a – e), what are, according to you the reasons for the level of efficiency, describe briefly.....

.....
.....

1.16 How efficient do you think will the members of the group rate their group, use the same scale as in question 1.14 ?

1.17 Does the group have a constitution (rules& norms)?..... Yes / No

If yes is it in written format: Yes / No

Do you think it is necessary to have a constitution? Yes / No

Explain your answer:.....

.....
.....

1.18 Describe some of the successes that the group has achieved in the past.

.....
.....
.....

1.19 Did the group identify their needs? Yes / No / Don't no

If yes, please mentioned their needs.....

.....

.....
If no, or don't no, what according to you, are the needs of the group ?

.....
.....
.....
.....

1.20 Gender of the group:

- (a) All male
- (b) All female
- (c) Male and female members

1.21 Educational level:

- (a) Illiterate (can not read & write)
- (b) Some members (minority) can read & write
- (c) Majority members can read & write
- (d) Other, describe:

.....

1.22 Do you think it will be possible to make use of an existing group to convey a message/knowledge/information to? Yes / No
If yes, why and how would you go about to do it?

.....
.....
.....
.....

If no, why?.....

.....
.....

2 Forming a new group

2.1 Please name and describe briefly the most important aspects that you will take into consideration when there is a need to form a new group:

.....
.....
.....
.....
.....
.....

2.2 According to you, how important is it to take the following aspects into consideration when forming a new group? Use the following scale to indicate the importance of each aspect and motivate your answer:

Scale: 1 2 3 4 5 6 7

Where 1= not important at all

Where 7= absolutely important

- a) Identify the needs of the farmers: Scale point:
Motivate your answer:

- b) Gender composition of the group: Scale point.....
Motivate the answer

- c) Level of education of members: Scale point.....
Motivate the answer

- d) Cultural differences: Scale point.....
Motivate the answer

- e) Farm size of the members: Scale point.....
Motivate the answer

- f) Size of the group: Scale point.....
Motivate the answer

- g) Farm income of members: Scale point.....
Motivate the answer

- h) Farming knowledge/skills of members.....
Motivate the answer

- i) Farming knowledge/ skills of the Extensionist: Scale point.....
Motivate the answer

- j) Commitment of members: Scale point.....
Motivate the answer

- k) Participation by members: Scale point.....
Motivate the answer
- l) To identify leadership structure in the group: Scale point
Motivate the answer

- m) Developing of goal/objectives by group members: Scale point
Motivate the answer

- n) Identifying and addressing possible conflict situations: Scale point.....
Motivate the answer

- o) Group cohesiveness: Scale point.....
Motivate the answer

- p) How homo/heterogeneous the group is: Scale point.....

- q) Use experts to address the group: Scale point.....
Motivate the answer

- r) Use own group members to address the group: Scale point.....
Motivate the answer

- s) Use mainly the Extensionist to address the group: Scale point.....
Motivate the answer

- t) To continuously evaluate the group activities: Scale point.....
Motivate the answer

- u) Necessity to develop a constitution: Scale point
Motivate the answer

2.3 Please describe the role that you will play in the formation of a new group.

APPENDIX D: A CHECKLIST FOR THE TRAINING PROGRAM FOR AGANANG LEADER FARMER GROUP

Checklist of implementation: To be observed and completed by the Extension officer.

Questions	Answers
<p>1. Management</p> <p>1.1 Farming as a business</p> <p>a) The production/activity farm plan – 12 months Jan 2007 – Dec 2008 Does the plan exist: Yes /no</p> <p>If yes – when does the farmer envisage harvesting the current crop? (month)</p> <p>b) Total amount of rainfall since Sept 2007 – March 2008.</p> <p>c) Is there a rain gauge on the farm? Yes/no</p> <p>d) Signs of erosion on the farm. Yes/no</p> <p>e) Conservation structures erected in the erosion areas. Yes/no</p> <p>If yes describe the structures:</p> <p>1.2 Planning and finance</p> <p>a) What will it cost to plant a hectare of maize in 2008 on the farm? R/= Name the inputs:</p>	



<p>b) Did you purchase any inputs for the 2007 season?</p> <ul style="list-style-type: none">- Yes/no- If yes show receipts of purchasing:- What:- Quantity:- Cost:- Where purchased: <p>1.3 Marketing of the 2007/2008 crop.</p> <ul style="list-style-type: none">i) When:ii) Where:iii) Expected yield:	
<p>2 Production</p> <p>2.1 Soil and soil fertility</p> <ul style="list-style-type: none">a) Size of land planted<ul style="list-style-type: none">- Maize:- Other crops:b) Plant density<ul style="list-style-type: none">- Maize:- Other crops:c) Soil samples being taken<ul style="list-style-type: none">- Yes/nod) What fertiliser used?e) Maize variety planted in 2007f) Maize variety to be planted in 2008. <p>2.2 Crop management and mechanisation</p> <ul style="list-style-type: none">a) How was the land cultivated before planting?	



<p>b) Weeding</p> <p>i) How?</p> <p>ii) Signs of weeds in land:</p> <p>No weeds</p> <p>Yes: but not a serious problem</p> <p>Yes and a serious problem</p> <p>c) Signs of insect and pest problems</p> <p>- No signs</p> <p>- Yes: but not a problem</p> <p>- Yes: and a serious problem</p> <p>2.3 Cropping systems</p> <p>Any legume crops planted:</p> <p>- Yes/no</p> <p>- If yes which legume:</p>	
<p>3 Leadership</p> <p>3.1 Farmer group mobilisation</p> <p>3.2 Group management</p> <p>Farmer name and signature:</p> <p>Extension officer name and signature :</p>	

APPENDIX E: SUMMARY OF THE RESPONSES FROM FARMERS AS WELL AS CALCULATIONS.

Independent variables						Mediating variables							Dependent variables						TOTAL 1+ 2 + 3	Actual %	Score category	Ranking
Respondent	Previous occupation	Previous experience	Age	Education	Score Total 1	Asset/liabilities	Farmer settlement	Aspirations	Management of interrelations	Value of records	Score Total 2	Work/management approach	Decision making behaviour	Profit orientation	Community involvement fellow farmers	Score Total 3						
1	11.75	15.70	16.95	10.17	54.57	31.43	-3.93	17.90	12.49	17.51	-32.18	43.22	20.04	-34.70	41.34	54.00	-75.03	5.65	103.44	31	26-49%	2
2	11.75	0.00			11.75	0.00	0.00	8.95	12.49	35.02	-32.18	24.28	10.02	-52.05	20.67	18.00	-50.02	-53.38	-17.35	Neg	0-25%	
3	23.50	7.85	6.78	10.17	48.30	31.43	-3.93	26.85	24.98	0.00	-32.18	47.15	20.04	-34.70	41.34	0.00	-50.02	-23.34	72.11	22	0-25%	
4	35.25	15.70	13.56	10.17	74.68	31.43	-7.86	17.90	0.00	17.51	-32.18	26.80	10.02	-34.70	41.34	54.00	-75.03	-4.37	97.11	29	26-49%	4
5	0.00	7.85	10.17	10.17	28.19	-31.43	-7.86	22.38	12.49	35.02	-16.09	14.51	10.02	-34.70	20.67	18.00	-75.03	-61.04	-18.34	Neg	0-25%	
6	11.75	7.85	10.17	10.17	39.94	31.43	-3.93	26.85	12.49	0.00	-16.09	50.75	20.04	-52.05	62.01	18.00	-75.03	-27.03	63.66	19	0-25%	
7	0.00	23.55			23.55	0.00	-7.86	17.90	12.49	0.00	-32.18	-9.65	20.04	-52.05	20.67	18.00	-75.03	-68.37	-54.47	Neg	0-25%	
8	0.00	23.55	16.95	10.17	50.67	0.00	-3.93	17.90	12.49	8.75	-32.18	3.03	10.02	-34.70	20.67	18.00	-50.02	-36.03	17.67	5	0-25%	
9	35.25	23.55	7.08	10.17	76.05	31.43	0.00	26.85	12.49	0.00	-16.09	54.68	20.04	-34.70	20.67	18.00	-75.03	-51.02	79.71	24	0-25%	
10	0.00	23.55			23.55	0.00	-7.86	26.85	12.49	0.00	-16.09	15.39	20.04	-52.05	0.00	18.00	-75.03	-89.04	-50.10	Neg	0-25%	
11	0.00	23.55			23.55	0.00	-3.93	17.90	12.49	8.75	-32.18	3.03	10.02	-34.70	20.67	0.00	-50.02	-54.03	-27.45	Neg	0-25%	
* 12	0.00	15.70	13.56	10.17	39.43	31.43	-3.93	35.80	0.00	0.00	0.00	63.30	30.06	0.00	41.34	18.00	-25.01	64.39	167.12	50	50-75%	1
13	0.00	23.55	6.78	10.17	40.50	31.43	-7.86	8.95	12.49	35.02	-32.18	47.85	30.06	-34.70	20.67	18.00	-50.02	-15.99	72.36	22	0-25%	
14	0.00	23.55	16.95	10.17	50.67	0.00	-3.93	17.90	12.49	17.51	-32.09	11.88	10.02	-34.70	20.67	36.00	-50.02	-18.03	44.52	13	0-25%	
15	0.00	15.70	6.78	10.17	32.65	31.43	-3.93	26.85	0.00	0.00	-32.18	22.17	10.02	-34.70	20.67	18.00	-50.02	-36.03	18.79	6	0-25%	
16	0.00	15.70	13.56	10.17	39.43	31.43	-3.93	26.85	0.00	0.00	-32.18	22.17	10.02	-34.70	20.67	18.00	-50.02	-36.03	25.57	8	0-25%	
17	0.00	15.70			15.70	31.43	-3.93	17.90	0.00	0.00	-16.09	29.31	10.02	-34.70	20.67	18.00	-50.02	-36.03	8.98	3	0-25%	
18	0.00	15.70	13.56	10.17	39.43	31.43	-7.86	17.90	12.49	17.51	8.05	79.52	10.02	-34.70	20.67	36.00	-50.02	-18.03	100.92	30	26-49%	3
19	0.00	15.70			15.70	31.43	-3.93	17.90	0.00	0.00	0.00	45.40	20.04	-34.70	20.67	36.00	-50.02	-8.01	53.09	16	0-25%	
min	11.75	35.25	3.39	3.39	53.78	-31.43	-19.65	8.95	12.94	0.00	-32.18	-61.37	10.02	-52.05	20.67	18.00	-75.03	-78.39	-85.98			
max	35.25	23.55	16.59	13.56	88.95	62.86	-3.93	35.80	37.47	35.02	-8.05	159.17	30.06	-34.70	62.01	54.00	-25.01	86.36	334.48			
* 12	0.00	15.70	13.56	10.17	39.43	31.43	-3.93	35.80	0.00	0.00	0.00	63.30	30.06	-17.35	41.34	18.00	-25.01	47.04	149.77	45	26-49%	1