



**Evaluation of Farmer Research Extension Group (FREG) as  
Extension Approach: The Experience of Sida - Amhara Rural  
Development Program in Kalu District, of Amhara Region,  
Ethiopia.**

**A Research project Submitted to Larenstein University of  
Applied Sciences in Partial Fulfilment of the Requirements for  
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Rural Extension and Transformation**

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## LIST OF ABBREVIATION AND DEFINITIONS

ANRS	Amhara National Regional State
ARARI	Amhara Regional Agricultural Research Institute
ASARECH	Association for Strengthening Agricultural Research in Eastern and Central Africa
BoARD	Bureau of Agriculture and Rural Development
BoFED	Bureau of Finance and Economic Development
CSA	Central Statistics Authority
DAs	Development agents, grassroots extension workers
EIAR	Ethiopian Institute of Agricultural Research
FRG	Farmer Research Group
FREG	Farmer Research Extension Group
Kebele	The lowest administrative unit
M&E	Monitoring & Evaluation
MoARD	Ministry of Agriculture and Rural Development
MoFED	Ministry of Finance and Economic development
OFR	On-Farm-Research
OSC	Orgut Scanagri Consortium
PADETES	Participatory Demonstration and Training Extension System
PEA	Participatory extension approach
Region	Highest administrative level of the country
SARDP	Sida Amhara Rural Development Programme
SARDP – PCU	Sida Amhara Rural Development Program coordination Unit
TAs	Technical assistant
ToT	Transfer of Technology
T&V	Training & Visit

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## **ABSTRACT**

Agriculture is the main driver of the economy and the source of living for the majority of the population in Ethiopia. However, its performance has been poor and unable to feed the ever increasing population. Thus there is a need to change this trend and ensure the food security of the population. Agricultural extensions which is believed to be the main driving force for improvement of production and productivity has not yet brought significant change in level of productivity. In the country, different extension approaches have been adopted in different forms and types. However, their contribution to the improvement of the country's economy and livelihood change of the rural poor is very limited. Designing and implementing appropriate agricultural extension services that contribute to sustained increase in production and productivity is vital. Extension activities has been the exclusive mandate and responsibility of government but there is a growing trend of involvement of other actors in the providing extension services by designing their own approach drawing lesson from the existing government extension approaches. One of the extension approaches introduced by Sida Amhara Rural development program (SARDP) is Farmer Research Extension Group (FREG) and has been implemented for five years in eight districts of south Wollo zone.

The main objective of the study is to make recommendations to the Amhara Regional state on FREG as an alternative extension approach through evaluating its working modalities and activities. The successfulness of the FREG approach has not been evaluated either to be promoted further as alternative approach or to improve it. In view of that this research was conducted in kalu district among eight districts where FREG has been operating. For the study, an evaluative research method was used. A total of 30 FREG members and 2 extension workers, 5 development agents, head of the district agriculture office, ARARI crop director were involved in the interview and empirical findings are gathered and analysed using both qualitative and quantitative techniques and using SWOT as analysis tool of the study.

As it is indicated from the findings FREG is found to be appropriate alternative extension approach to facilitate learning and knowledge sharing that ultimately improves the human and social capital of members. FREG as an approach has many relative advantage as compared to other extension approach that includes: Provide equal opportunity for both sex in the extension activities implemented under FREG, strengthen the link between extension research as a system, build the capacity of the farmers in technology testing and evaluation, improve productivity and production among FREG members and improve the income and livelihood of the FREG members. Major crops like maize, wheat teff grown in the area that have been tested and evaluated under FREG members have shown significant production improvement as the result of the introduced technologies and knowledge gained during the interaction of different stakeholders. Besides, FREG has also enhanced the participation and involvement of stakeholders in the process of technology evaluation and dissemination that pave the way for the institutionalization of the approach.

The overall assessment and findings of this study has shown FREG is an appropriate alternative extension approach to be scaled up by the regional government with some modification of the approach. Ensuring gender equality, involving stakeholders through the process, inclusion of marketing which was not considered as component of the approach, strengthening and creating the link between input suppliers and FREG should be considered during further improvement of FREG. Finally, realising FREG is appropriate alternative extension approach, SARDP should play proactive role in finding or creating responsible body to own the approach for its sustainability.

## CHAPTER 1: INTRODUCTION

Ethiopia is one of the least developed countries in the world with a total population of 77 million (CSA, 2006). About 84% of the population lives in the rural areas (CSA, 2006). Agriculture is the main source of livelihood for the majority of the people and contributes 50% of GDP, 90% of export revenues, 80% of employment, producing around 70% of the raw material requirements of agro-based domestic industries. Despite its lion's share in the economy the development of the sector has been slow for many decades.

As cited by ministry of Agriculture and Rural Development (2008) the performance of the crop production sub-sector over the last 30 years has been poor. It has failed to keep up with the demand from a growing population, as per capita food grain production has steadily decreased over this period. Whereas in the past Ethiopia had been self-sufficient in food, and a net exporter of food grains, it has been a net importer of grain since 1981/82. Population pressure, particularly in the highland farming areas, has led to a decline in farm size, which combined with increasing land degradation, and recurrent droughts, has contributed to declining crop productivity. The problem has been exacerbated by such factors as insecure land tenure, weak agricultural research and extension services, and inadequate input supply and produce marketing systems.

Fertilizer use in Ethiopia has been one of the lowest among Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECH) member countries in the region up until the mid 1970s. It has shown significant increase since 1993. Annual manufactured fertilizer imports are estimated at nearly 133,000 metric tons, valued at US\$ 32.5 million (FAO data for the period from 1991 to 2000). Ethiopians per capita fertilizer consumption for the above period was 12.4kg/ha/yr which is less than that for Kenya 27.4 kg/ha/yr (MoARD 2008). Low per capita fertilizer consumption affected the productivity of the major crops that results food insufficiency in the country.

The conventional top-down research and extension system, that assumes scientists as knowledge generators, extensionists as knowledge conduits, and farmers as passive knowledge recipients, challenged over the past several years, was one of the grounds for looking and testing other alternatives. Various assessments and studies conducted in Ethiopia have indicated that technologies developed at research centres without the participation of end users have little contribution to increased production and productivity and valued as low by farmers (Chimdo, 2008). This is due to the fact that the technologies that were generated from the view point of researchers had a little chance in meeting the actual farmers' needs and solving their critical problems. As a result the adoption by farmers of improved technologies developed in research centres was found to be very low and the return is said to be insignificant when one compares the investment in research and its outcomes. As it is repeatedly stated by practitioners and researchers alike, farmers are still mostly considered as passive recipients of technologies developed by researchers despite their rich experiences, knowledge and capacity to both investigate and generate useful ideas that would set and guide the research agenda. This has become important concern and focus of attention by individuals, policy makers and social researchers that ultimately led to the turning point to participatory research (Chambers, 1997).

Various approaches in agricultural extension have been initiated in Ethiopia for decades, which include: Transfer of Technology (ToT), Training & Visit (T&V), and Participatory Demonstration Training Extension System (PADETES) and Farmer Field School. Although they have contributed to the growth in agricultural production they have never produced the desired outcomes so far (Habtemariam, 2007). Despite due attention was

given to the agricultural extension for the introduction of modern agricultural technologies it has overlooked the knowledge and experience of the farmers (Belay, 2003). The extension approaches followed top-down, supply-driven system instead of encouraging the knowledge of the local people. The trend of past experiences of technology generation indicated that technologies have been generated for the fulfilment of academic interest with out focussing on the real problems and the needs of farmers (Belay, 2003). The extension systems were not designed in a way to enhance gender equity. Participation of the target group in the research and extension system (the design, implementation and monitoring process) is very limited and the concerns and interests of the targeted community are not considered in the extension system. During the design knowledge and experience of the local people as well as their innovations and innovativeness have not been considered. In the implementation process relevant actors that have high stake in the extension system were not identified and/or have been overlooked that affected the learning process among stakeholders (Ejigu and Water 2005).

In order to change the top-down approach and solve observed problems the extension approached have been changed from top-down to participatory methods. Especially in the late 1990s, participatory methodologies that enhance active participation of small groups of farmers in research emerged and become popular in many countries. These new methods of approaching farmers in the research process was found to be an entry point for minimizing the existing wider gaps between research, extension and farmers, a turning point to active participation of farmers and a means for matching needs and potential technologies developed in research centres (Leeuwis ,2004).

To strengthen the link between farmer, research and extension service, alternative extension approaches that can consider the interests and issues of all parties have been considered by different institutions. The Ethiopian Institute of Agricultural Research (EIAR) has introduced client oriented extension approach namely, Farmer Research Group (FRG) since June 2004. Development planners, researchers and extension workers have started to consider the farmers' knowledge and experience for the sustainability of development interventions and fruitfulness of their efforts (FRG project, 2004).

Towards that end, the Sida-Amhara Rural development Programme (SARDP) is attempting to improve production and productivity of small holder farmers through participatory on – farm research and informal seed system by involving farmers in a Farmers-Research-Extension Group (FREG). This approach is one of the participatory research and extension methods developed and being promoted in the region. FREG is, thus, built on the participatory On-Farm-Research (OFR) supported by SARDP and conducted by the farmers, extension workers and researchers. FREG has been established on the firm belief that farmers can be best researchers and disseminators of improved and accepted technologies towards increasing production and productivity of agriculture. Moreover, the approach is said to be flexible and appropriate for constantly inventing, adopting and adapting improved and accepted technologies that can easily adopt and adaptable to their circumstances (Ponniah et al. 2008).

## **1.1 Problem statement**

As it is stated above the extension approaches implemented over the years follow the top - down and supply-driven approach where researchers try to solve the farmers' problems, extension directly passes the information obtained by researchers while farmers are passive technology receivers. This could not directly address the real and felt needs of the farmers. In fact in some instances it has produced negative results

towards accepting and using improved technologies by farmers since it is distributed in blanket recommendations without considering the context of different agro-ecologies and interests/problems of the farmers. In order to address such issues SARDP has initiated a different approach to farmers' extension service and implemented in the program districts since five years. This approach is called FREG. FREG is a relatively new approach being implemented in the Region. However, it has not been scaled up and instituted as an alternative extension approach. The successes and failures have not been evaluated so far and hence it has not received the attention of the decision makers it deserved. Therefore, there is an urgent need to evaluate the FREG and make it alternative extension approach towards solving the farmers' problems with their active participation and ownership of the process since the existing extension system has not been found successful.

Thus this study is conducted to evaluate the FREGs performance and came up with the stated workable recommendations for the Amhara region.

## **1.2 Research objective**

The main objective of the study is to make recommendations to the Amhara Regional state on FREG as an alternative extension approach through evaluating its working modalities and activities in Kalu district of Ethiopia.

## **1.3 Research questions**

### **1.3.1 Main research question**

How successful is FREG as an alternative extension approach in Kalu district?

### **1.3.2 Sub-questions**

1. What are the key components of FREG that differ from the conventional extension system?
2. What is the perception of farmers, researchers, extension workers and other actors about FREG as an alternative extension approach?
3. What are the indicators for successful extension approach?

## **1.4 Organization of the Thesis**

This research is organized into six chapters. The introduction (chapter 1) presents, introduction, problem statement, research objective, research questions, main research question, sub-questions. Chapter 2 includes conceptual framework and literature review. Chapter 3 is devoted to, research methodology, data collection and data analysis. Chapter 4: Background. Chapter 5 covers the Results and discussions. Chapter 6 includes conclusion and recommendations.

## CHAPTER 2: CONCEPTUAL FRAMEWORK AND LITERATURE REVIEW

### 2.1 Literature review

#### **Successful Extension**

According to different literatures and my experience, successful extension can be measured using different indicators. For this research successfulness of extension evaluated against the following criteria or indicators.

- Use of group extension approaches
- Gender responsiveness
- Participation of stakeholders
- Farmers- research-extension linkage
- Replicability
- Increase production and productivity
- Increase household income

Based on the literatures review and practical experience the above indicators are discussed below.

**Use of group extension approaches:** From experience extension activities have been conducted on individual and group bases. From these approaches group based approach is found to be effective in facilitating extension. In view of this (Ponniah et al. 2008) confirmed about the relative importance of group approach as it is a vehicle and entry points for new technologies and facilitating learning activities.

According to Ponniah et al. (2008), a successful group has the following characteristics.

- Strong group bond
- Established communication pattern
- Participatory group structure
- Have rules and code of conduct
- Shared goal
- Cohesiveness
- Manageable group size (30-50)
- Quality leadership

**Gender responsiveness:** From experience, the extension approaches in the country were not responsive to gender that may result negatively for the success of different extension approaches employed for decades. In connection to this Ponniah et al. (2008) stated that men and women have different levels of access to extension services that makes women economically in active. Realising that gender based development efforts has significant contribution to achieve sustainable development; the inclusion of gender in any development efforts and initiatives is indispensable. In view of that; if extension is to be successful, it should be gender responsive and women should get due consideration in the extension and development efforts. However according to Ponniah et al. (2008) women substantial contribution in the agricultural activities is being systematically undervalued.

**Participation of stakeholders:** Extension by virtue of its nature requires the involvement of different stakeholders at every stage of the process. If extension is to be successful, the involvement of relevant stakeholders at equal footing is indispensable. In this connection Ponniah et al. (2008) discussed that most the developing countries extension system follows pattern of linear model where all stakeholders have no equal power relation in decision making about their development initiatives. He also indicated

the type of integration and collaboration is weak that hindered the learning and reflection process for the successfulness of the extension system.

Different people defined participation in different ways. Chambers definition of Participation is "... a process through which stakeholders influence and share control over development initiatives and decisions and resources which affect them" (Chambers, 2007). Leeuwis (2004) also indicated, participation can have normative, descriptive or literal meaning. Literally speaking, for some people to participate means something to take part in or to involve in. In this sense, everything people do is participation. However, such literary definition does not help much to inform interventionist on how to involve stakeholders in innovation process.

Participation when being introduced in development has faced both opponents and supporters to its approach. The justification or arguments are related to instrumental, responsibility and empowerment arguments. In the instrumental arguments, participation includes peoples' involvement in decision making process, implementing programs and sharing the benefits of development. Participation can be seen as the use of indigenous knowledge and expertise. In the responsibility argument, people's participation can generate a sense of ownership which in turn motivates people to maintain the project dynamics. It can be catalyst for further development efforts, can increase the capability of communities to handle their affairs and to control and exploit their environment .For empowerment argument, participation is considered to be an active process, can help to break dependency and can promote self awareness among people to control their problem (Naika & Siddaramaiah,2006).

Participation includes process through which stakeholders' influence and share control of development initiatives and the decisions on resources. Farmers' participation implies an acceptance that local people can, to a large extent, identify and modify their own solutions to suit their needs. It means that outsiders such as researchers and development agents support farmers in their own efforts to change their farming systems (Scarborough et al.1997). This support focuses on enhancing farmers' capacity to innovate, to experiment, to develop their farming system in a sustainable way and increase their control over resources and decision making on their farms.

Many different types of participation exist and can be classified according to the degree of initiative and involvement of beneficiaries the participation five levels (SAIEA, 2005) presented below.

**Inform:** The objective is to promote the public with the balanced and objective information to enable people to understand the problem, alternatives and/or solutions.

**Consult:** The objective is to obtain public feed back for analysis, alternative and/or decisions.

**Involve:** The objective is to work directly with the public throughout the process to ensure that public issues and concerns are understood and considered at all every stage and directly reflected in the planning, assessment, implementation and management of particular proposal of activity.

**Collaborate:** The objective is working together with the public as partners in each aspect of the decision, including development of alternatives and the identification of the preferred solution, and

**Empower:** The objective is to place final decision – making in the hands of the public.

**Farmers- research-extension linkage:** Extension activities are multi-dimensional and require multi-sectoral approaches. The sustainability of any extension approaches is determined by the participation level of relevant stakeholders from policy design to the implementation phases. Besides, the extension approach should have institutional and organizational support for its successful implementation. Relevant stakeholders in the system should have strong linkages, common goals and shared vision to the success of the extension system and to bring change in the livelihood of the rural community they are serving. However, the existing link between researchers, farmers and extension workers is weak and not to the anticipated level. In this regard Ponniah et al. (2008) stated that for decades the research and the extension farmer linkage especially in developing countries were based on simple model. He stated that, there should be paradigm shift from the simple model to new approach where farmers are the key actors in choosing, experiment and evaluate, while outsiders convene catalyze, advice, search, supply and support the learning and extension activities. Researchers, extension workers and farmers should perceive the significant of integration and collaboration in implementing extension activities. The traditional attitudes and practices towards integration and collaboration during the implementation of the extension activities hold back most of the relevant actors to be involved and contributed for the successfulness of the extension systems (Ponniah et al. 2008). As a result, sustainability of most extension approaches has been subject of discussion among stakeholders.

**Replicability:** Sustainability and replicability of extension system determined by the number of participants adopted and multiplied the technology or information delivered to the farming community. Replicability can be also determined by the fitness of the system to the context of the rural community. It is affected with many factors among which, the compatibility of the system, complexity of the innovation, affordability and observeability of the approaches encompassed with the system. In this connection Leeuwis (2004) indicated that the scaling up and adoptability of the technologies and approaches can be facilitated or hindered by trialability, observeability, complexity, compatibility and sustainability of the innovation. In technology adoption and dissemination farmers use their own experiences and knowledge to fit with their context. They did not take up technologies without considering the fitness of the technology to the local context. In this connection, Wettasinha et al (2003) stated that the community have the energy and the initiative to try or modify innovation to suits to the specific condition.

**Increase production and productivity:** Successfulness of the extension approach is measured by the changes brought in the livelihood of the clients. This will be realised if production and productivity is increased as the result of the extension service delivered. In this connection, Ponniah et al. (2008) explained that the success of extension is measured in terms of production increase. The need for agricultural extension approach is very important to achieve the desired results in terms of livelihood and production changes. In regard to this Leeuwis (2004) stated that the agricultural extension require to bring about new pattern of coordination through the facilitation of learning and negotiation process. In increasing production and productivity, it is not only one sector , which is believed to bring production change but the input suppliers, researchers, extension workers, business men and the farmers themselves. All of them have high contribution in increasing production by availing agricultural inputs and technologies to boost up production and disseminating information that enhance production knowledge and skill of the farmers. This explanation give insights coordination of different actors is vital to boost up production and productivity through joint efforts of different actors in the extension system.

**Increase household income:** The whole effort exerted in extension system is to improve household income and bring changes in the livelihood of the community Leeuwis (2004). Therefore successfulness of extension system is measured on

improvement of the life situation of the clients. However, practical experiences indicated that extension systems employed so far in the country have not contributed to the income and livelihood improvement of the rural poor.

**Farmers Research Extension Group (FREG):** The concept of FREG as an extension methodology was first introduced in Latin America by local agricultural research community as a focal point for participatory technology development and verification (Chimdo, 2008). As time goes on, the concept of FREG has spread first to Asia and from Asia to African countries. When the concept of FREG was introduced to Africa, there were resistances particularly by natural scientists who were biased in favour of applied research. However, it has started to gain attention and started to grow. FREG is a group of farmers who could be used as a tool for adopting and transferring improved technologies (initially developed in the research centres) to their fellow farmers in their locality. From the major extension approach that are believed to empower farmer and enhance knowledge sharing among farmers is, farmer to farmer communication that fits in line with FREG approach in communication and dissemination information between farmers.

Farmer to farmer extension as one of the participatory extension approaches is found to be effective since it gave the opportunity to share knowledge and experience from the field of fellow farmers. The approach was designed to facilitate the transfer of knowledge and technology from the neighbouring model farmers who have been exposed and adopt the improved technologies and practices. In connection to this explanation, Leeuwis, (2004) and Scarborough et al (1997) further elaborated that in the rural community, individual farmers have much expertise based on experience, on farm experimentation and/or training which could be relevant to other farmers. The rural community has informal way of exchanging information and knowledge using different means like markets, work parties, funerals, bars, celebration, community meetings and church service that an appropriate technological option can best be transferred and disseminated to the large number of farmers.

The main purpose of participatory approach like FREG is to enable farmers manage their own affairs and fulfil the following: 1) to increase the production potential of farming 2) to improve the relevance of the extension message to the need of farming community 3) to enhance learning through purposeful participation and group pressure 4) to enhance direct feedback from farmers to researchers 5) to increase the efficiency and effectiveness of the extension approach 6) to reduce the descending syndrome prevailing among farming community 7) to facilitate the involvement of stakeholders in the process of development; and 8) to achieve sharing of development cost between government and beneficiaries (Venkataranga and Siddaramaiah, 2006). Moreover, the system enables the community to choose variety for fulfilling their needs while the researchers share the scientific information (generated technologies from formal research centres), i.e. the farmers conduct trials/experiment and evaluate and select the technology that suit their needs circumstances.

## **CHAPTER 3: RESEARCH METHODOLOGY**

### **3.1 Selection of the study Area**

This study is carried out in *Kalu* district of South *Wollo* Zone, *Amhara* region. The study area is selected using purposive sampling from 8 districts where the SARDP programme has been in operation in South *Wollo* zone, *Amhara* region. The criteria used to select the study area include: representativeness of the district in socio economic and environmental matters, accessibility, farming system and food insecurity but with potential resources. In addition, resource and time limitations for the field work to collect data has been taken as a criterion. The study will focus on established FREGs that are functional in the district. Currently in the district there are a total of five FREGs with a membership of 128 farmers of which 111 are male and 17 female.

### **3.2 Primary data collection**

For this study primary data has been generated through various means, which include group interview of FREG members, Individual interview with Development Agents (DAs) and extension workers, interview the head of District Agriculture Office, and *Amhara* Regional Agricultural Research Institute (ARARI) crop director, group discussion with TAs, PCU, and Zone Agriculture and Rural Development Office. The sampling frame for the group was list of the 5 FREGs that contain a total of 30 FREG members (6 farmers from each FREG of whom 28 were male & 2 female) have been selected for the group interview. The selection of members was random from the five FREGs members list. The numbers of female members in the FREGs under study were only 2 and hence taken for the interview. In addition 2 extension workers from district agriculture office, 5 development agents who are working close in five kebeles, have been selected for the interview. The first field work at FREG level was conducted from July 16 to August 10, 2008 and the second field work discussion with development agents and extension experts were conducted from August 11 to August 18 for a total of 34 days.

### **3.3 Secondary data collection**

Information from Ethiopian Institute of Agriculture Research (EIAR), Central Statistics Authority publications, Ministry of Finance and Economic development (MoFED), Bureau of Finance and Economic development (BoFED), Sida *Amhara* Rural Development Program coordination Unit (SARDP – PCU), District Rural Development and Agriculture Office, websites in the internet on various fields as agricultural extension and rural development were used as secondary sources for the purpose of this study. Collection of relevant information from different offices conducted from August 19 to August 21, 2008 for three days.

### **3.4 Data analysis**

The information generated through the methods stated above were analyzed using both qualitative and quantitative techniques. The quantitative data were analyzed using excel for the generation of figures like percentages and averages as well as graphs. The qualitative data was also analyzed through descriptive statistics that describes the characteristics of the FREGs under study using tables, graphs, averages/mean and percentages. SWOT analysis was also used as a tool to analyze the strengths and weaknesses of the FREG extension system and to identify the opportunities and threats of the system for its sustainability.

## **CHAPTER 4: BACKGROUND**

Before describing the agricultural extension of Ethiopia, this chapter provides the country profile of Ethiopia, Overview of the study area, Brief overview of Agricultural Extension in Ethiopia and SARDP and Rural Development

### **4.1 Country profile of Ethiopia**

Ethiopia is among the least developed countries in the world. The country, with a total area of 1,115 million hectare, has an estimated population of 77 million (CSA2006). Agriculture is the mainstay of the Ethiopian Economy. Smallholder farmers (who have less than 2 hectares and work their farm by themselves) account for about 95 percent of the agricultural output. Smallholder farmers are principally concerned with meeting their subsistence needs, and while in the most productive areas any surplus produce will be sold, the amounts are usually limited, while in the more marginal areas many farm households struggle to meet their annual food needs from their own production. Agriculture generates over 50 percent of the GDP and 90 percent of the total export earnings of the country. It is also estimated that agriculture provides employment for about 80 percent of the labour force (MoARD 2008).

Ethiopia has diverse agro-ecology. Altitude ranges from 200 meter below sea level to 4500 meters above sea level. Differences among regions in altitude, topography, soils, and climate and farming systems enable the country to produce a variety of field crops, fruits and vegetables and different and rare species of livestock. However, production and productivity of agriculture is very low and the growth in agriculture production has barely kept pace with the growth of population (MoARD 2008).

In most parts of the Country vegetation cover is small due to deforestation, which results in soil erosion and over all ecological imbalances, which in turn led to low agricultural production and productivity, frequent drought and famine. This seems to have become a salient feature and permanent problem of the country. Low technological development is also among one of barriers of efficient utilization of the country's natural resources. Even though different extension approaches have been implemented, to increase productivity and improve the livelihood of smallholder farmers, still many Ethiopians live below poverty line.

### **4.2 Overview of the study area**

#### **Location, Land feature, Soil type and Climate**

Kalu district is one of the 19 rural districts of the South Wollo zone. The district has an area of 923.76sq. km and is bordered by Albuko district in the west, Oromia zone in the east. Tehuldere & Worebabo districts in the North and Oromia zone in the South (Figure 1, 2& 3). It has approximately 35,997 hectare under cultivation. The average land holding of is 0.9 hectare.

The topography of the district is 3.0% plain, 23.5% sloppy (although not suitable for cultivation mostly it is still under cultivation), 55.5% mountainous and 18.0% gorgeous (very sloppy and rugged terrain along river valleys). Of the total area, the percentage of the cultivable land is 38.7% while grazing land and others is about 58.2% and 3.1% is covered by forest. The unused land for various reasons is 15%. The remaining 3% is used for other purposes.

The district is divided into 3 agro-ecological zones, namely, Kolla (low land, 1000-1500 masl) 10.9%, Woinadega (mid altitude, 1,500-2500 masl) 86.9% and Dega (highland, 2500-3000 masl) 2.3%. The district has bimodal type of rain fall distribution-Meher (main rainy season, Mid June to Mid September) and Belg (minor rainy season, March to May), where the annual average rain fall for that main season reaches 900 mm. The altitude of the district ranges from 1000 masl for the low lands to 3000 masl for the highlands. According to the traditional colour based soil classification of the district, there are four types of soils, namely Red soil 7%, Brown soil 38%, Black soil 21% and Gray soil 28%. This indicates that the district has good potential for different development interventions, which require different soil types (SARDP, 2004).

**Population**

The total population of the district (2006) is 220,860 of which 110,788 are male and 110,072 are female. There are 38,242 households with an average family size of 5.8 persons in rural areas. Out of the total households 17% are female headed. The population density of the area is about 239 persons per km<sup>2</sup> indicating that the district is one of the densely populated districts in the country (BoFED, 2008).

With respect to the settlement situation of the district 37% of the population is residing in the low lands, which is almost similar to that of mid altitude areas (37%). The remaining proportion (25.5%) of the population lives in the high lands.



Figure 1 Amhara National Regional State Administrative Maps  
 Source:<http://www.maplibrary.org/stacks/Africa/Ethiopia/Amhara/index.php>

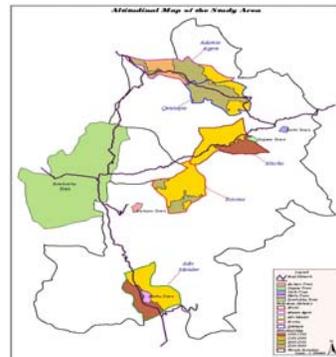
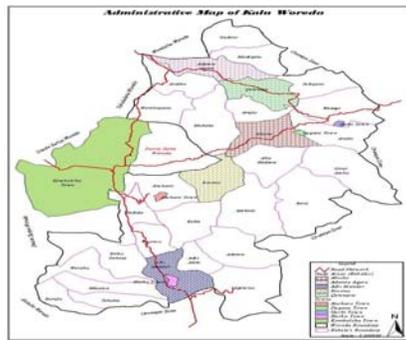


Figure 2 Administrative Map of Kalu District Figure 3 Administrative map of Study Area

Source: BoFED, 2008

### 4.3 Brief Overview of Agricultural Extension in Ethiopia

Agricultural extension has a long history in Ethiopia. According to Habtemariam Abate (2007) the history of agricultural extension in Ethiopian can be classified into four major epochs based on the time of introduction of each system and the nature of the extension system introduced. I) The early modernization period (1900-1910), ii) The missed opportunity (1910-1953), iii) The classical Transfer of Technology approaches period (1953-1974) and iv) Participatory Extension Approaches Period (1975 to present).

Similar historical review was presented by Belay Kassa (2003), which reveals that extension programs and policies have been formulated without due consideration to the farmers opinions and traditional knowledge system.

Agricultural extension work in Ethiopia began in 1931 with the establishment of Ambo Agricultural School, which is one of the oldest agricultural institutions the Ethiopian Ministry of Agriculture created (1943) but there was no separated division in the ministry's responsibility for extension work. Real Agricultural extension work began in the early 1950s following the establishment of the Imperial Ethiopian College of Agriculture and Mechanical Arts (now Haremaya University).

The Minimum Package Programme (MPP) was a two-phased (MPP1 & MPP2) Programme launched in 1971. The major objective of MPP-1 was not to bring about fundamental and structural changes but to achieve economic growth by improving the production and productivity per unit area of land and head of animal. The offerings of MPP-1 were limited to dissemination of agricultural technologies with provision of the associated essential inputs such as agricultural credit and marketing facilities (Habtemariam, 2007).

MPP-II was assisted by the World Bank, the International Fund for Agricultural Development (IFAD) and to some extent by SIDA. During its implementation (1981 - 1985), the MAP-II did not attain its stated objectives because of limited number of extension agents available in the country, who were made to cover as wide an area as possible without adequate facilities and logistical support (Belay 2003).

The MPP-II was phased out in 1985 and replaced by another strategy called the Peasant Agriculture Development Extension Programme (PADEP). PADEP was designed to bring about perceptible changes in peasant agriculture through concerted and coordinated efforts in the area of agricultural research and extension. PADEP employed a modified Training and Visit (T&V) extension system. T&V extension approach was adopted as a national extension system with major government financing until the replacement by the Participatory Demonstration and Training Extension System (PADETES) in 1995 (Belay, 2003).

The government of Ethiopia has adopted Participatory Demonstration and Training Extension System (PADETES) as the National Agriculture system since 1995. According to Habtemariam (2007) the objectives of PADETES include: improved level of income and quality of the life of the society, attain food self-sufficiency, build self-reliant and organized society based on the principles of voluntarism, promote the products to feed agro-industry, natural resource management and conservation through popular participation and improve the condition of rural women. As indicated above the objectives are very comprehensive which focused mainly on economic while neglecting social dimensions. PADETES is a package approach consists of different elements which, among others, include technical information, improved technology and agricultural practices, production inputs, credit and suitable extension methods. On the

other hand, it is a top-down approach, which ignores the farmers' innovativeness to create adoptable technology to their situation. As result the PADETES approach did not bring any change in the livelihood of the small scale farmers in Ethiopia (Belay, 2003)

#### **4.4 SARDP and Rural Development**

SARDP is a participatory rural development programme funded by the Swedish International Development Cooperation Agency (Sida) since 1997. The overall objective of SARDP is to contribute to poverty reduction of the Amhara Region by improving the food security conditions of the rural population in the targeted districts of East Gojjam and South Wollo zones (SARDP, 2005).

SARDP interventions have been planned, implemented and monitored by the benefiting communities and institutions, all using participatory approaches. SARDP has been implemented in three phases. SARDP strongly believes and promotes participatory approaches. As it has been seen in the three phases of SARDP, agriculture was the major intervention component. Accordingly participatory research and extension has been supported by the programme and adequate experiences gained specifically through participatory On-Farm Research (OFR). Under OFR approach, farmers, researchers and extension workers work together on the farmers' plots to test and adapt improved technologies developed by research centres by the active involvement and decision making of the farmers themselves. This approach has been developed into Farmers, Research and Extension Groups (FREGs).

The Sida Amhara Rural Development Program worked towards formation of the groups in program districts, the farmers as innovators and experimenters, and treating them as active and equal partners with the researchers and extensionists, rather than passive end users of technologies. SARDP provide technical assistance that contributes to developing new practices in crop production, livestock, natural resource and marketing and income generating interventions through FREGs. The FREG contributes in making use of indigenous knowledge and incoming technologies through enhancing collective learning by farmers, researchers and extension workers, instead of just pushing new incoming technologies to farmers with no or very little opportunities of learning about it. This helps farmers to learn about the new technologies and contextualizing it to their own realities. In Sida Amhara Rural Development Program districts FREGs were established by organizing meeting for farmers, experts from District Agriculture and Rural Development office and multi disciplinary experts from the Sirinka Agricultural Research Centre. In the meeting, the role of the farmers in the research and development process, the current agriculture extension program and inherent problems, the need to make research and extension more client oriented were explained and ideas exchanged. After thorough discussion farmers who are willing to closely participate in the research and dissemination process were identified and listed. These participating farmers formed the farmer research and extension groups (SARDP, 2006).

## CHAPTER 5: RESULTS AND DISCUSSIONS

This chapter discuss about empirical findings and discussion of the research. Major issues to be discussed in this chapter includes: Characteristics of FREG members , Description and Working modality of FREG under study areas, Participation of women in FREG, Participation of stakeholders in FREG, Linkage between research, extension and farmers, Replicability of FREG, Production and productivity trend in FREG members and household income and Improvement in Livelihood of FREG members. This findings and discussion was based on the field assessment through discussion and in-depth group interview of the respondents. The summary of each findings and discussion is presented as below.

### 5.1 Characteristics of FREG

FREG is a small group of farmers who are interested to work in groups in collaboration with relevant stakeholders in particular with research and extension and consequently manage their problem through establishing a wide knowledge base. According to the FREG members and district extension workers (respondents) the main characteristics of the FREGs under study was identified as follows.

- Members are close neighbours who know each other.
- It is based on the equal partnership between farmers, researchers and extension agents who can all learn from each other and contribute their knowledge and skill
- It aims to strength the capacity of the FREG members solve their problems.
- It promotes member farmers' capacity to test, adapt and develop new and appropriate technologies/innovations.
- It encourages farmers to learn through experimentation, building on their own knowledge and practice to new ideas.
- Increased social bondage among members.
- It aims to increase production and productivity thereby improving their livelihood.

Moreover, from the field findings, the existing five FREGs have demonstrated the following characteristics that are commonly used in group extension approaches:

- Strong bond between members
- Participatory group structure
- By-laws
- Shared vision and goals
- Manageable group size which ranges from 20-30
- Democratically elected leadership

These characteristics have been shared by other authors (Chimdo, 2008, Ponniah et al. 2008) explain that FREG has the advantage of sustainable increase in production and productivity thereby improving livelihoods. The FREGs under study are engaged in crop variety testing, adaptation and dissemination to fellow farmers.

According to the findings, the FREG members are dominantly in the age group of 31-50 years (61.3%), which is considered the most productive age (Figure 4). The remaining age groups account 13.3% (18-30 years) and 23.4% (more than 50 years). This gives the opportunity to grow as most of them are in the age group of the productive age that enable them to demonstrate and convince the fellow farmers towards using improved technologies.

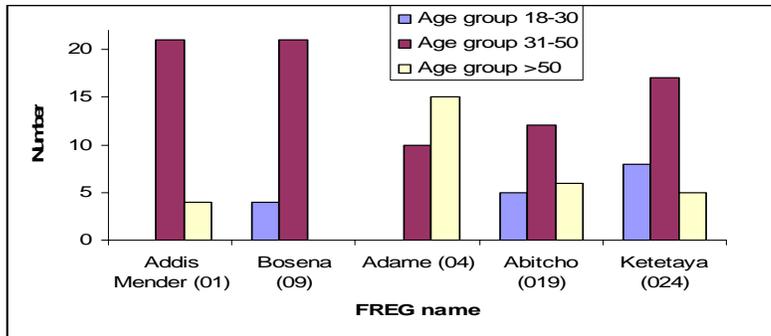


Figure 4 Distribution of FREG members by age group  
Source: own study

The other information collected on the respondents was the literacy level of FREG members considering that level of literacy is instrumental in increasing the farmers' ability to obtain and use information relevant to test and disseminate improved technologies. It is therefore expected to increase the FREG members' capacity to plan, implement and evaluate improved technologies on their own circumstances towards increasing production and productivity. The assessment result indicated that from the FREGs members 34.7% are illiterate, 37.2 % read and write 27.1% primary and 1% secondary levels (Table 1). There is a big difference between men and women with regard to literacy levels taking household members of the FREGs. All the women members are illiterate while 78.3% of men are literate. As observed during the field visits and discussions this has helped the farmers to be receptive to improve technologies and practices.

Table 1 Literacy level Attained by FREG farmers in the Study Area

Literacy level category	Education level in percent
Illiterate	34.7
Read and write	37.2
Primary (1-8 years)	27.1
Secondary (9-12 years)	1.0
<b>Total</b>	<b>100.0</b>

Source: - Field Assessment Results (2008)

## 5.2 Description and Working modality of FREG under study areas

According to the discussion with Kalu District agriculture office and the respondents in FREGs areas, it has been identified as all FREGs have a working modality agreed by the stakeholders (farmers, researchers and extension workers). These modalities include formation of FREGs, bylaws, guidelines; executive members (leadership) democratically elected by the general assembly, agreed meeting periods and contributions to the day to day management of the FREG activities. The details of the findings are discussed below.

As stated in the guideline for FREG formation and management, farmers with a variety of background can be a member of the FREG if they have common problems/needs and can understand each other. Membership is on voluntary basis. DAs, experts, researchers and other representatives from different organizations are usually considered as team members who are supporting and working with FREGs (mainly for technical support and facilitation (Chimdo, 2008).

The FREGs in the study area have been organized by interested farmers who live close to each other and fully take part in the whole activities of the groups. As described by the FREG members during the discussion, the main objective of the FREG approach is improving the technology testing, development, verification and transfer process using farmers themselves with the facilitation of researchers and extensionists. On the other hand, the district officials and experts explained that its objective can be said two fold. The first is to improve the capability of the agriculture extension system of the district and recommendations for Amhara regional state in designing and implementing client oriented extension by using participatory approach; and the second and main focus is to develop a sustainable extension approach based on participation of different actors with the active involvement of the end users themselves.

According to the FREG members and district extensionists' deliberate effort has been made to develop necessary binding rules and bylaws to maintain group unity and manage group performance during its life time starting from the time of FREG formation. Group rules and guidelines are written agreements made by the members in groups and can only be changed by the groups themselves. The rules clearly indicate what is expected from the members as a group and individually. Thus, it was learnt that these FREGs have bylaws. However, during the field visit it was observed that adherence to the agreed bylaws and guidelines were not practiced by some of the members. Over 50% of members strictly follow the rules while 50% are not as strict as others. 50% of members do not attend meetings although the bylaw has clearly stipulated that FREG members meet fortnightly as participation in the meetings is expressions of commitment by the members.

FREG requires strong leadership and commitment of the leaders. Strong leadership is especially crucial in building and maintaining cohesive farmers' groups and adherence to the group constitution/bylaw. The discussion result revealed that right after the formation of FREGs, members have elected their leaders, i.e. chairperson, secretary and treasurer in a democratic election process. These elected leaders are actively involved in the day to day activities of the FREGs and engaged in conflict management tasks although members usually use traditional methods for conflict management purposes. Women in the FREG leadership are limited (there are only 2 women elected in the leadership positions as executive committee members in the five FREGs) and hence there must be conscious effort to encourage women to represent themselves in the leadership positions. The major reason for limited role of women in the leadership is their limited membership. As repeatedly stated it is difficult for FREGs like any other development endeavours to be successful without the active participation of women in membership and leadership positions (Ponniah et al. 2008).

The FREGs under review have been engaged in testing, selecting and disseminating improved technologies either initiated by FREG member farmers or released by the research centres. The idea of the improved technology primarily comes from farmers based on their problems but the research centres will also provide tested technologies somewhere else for its adaptation by the groups. According to the FREG members the major initiation was the farmers themselves. Initially they were participants of On Farm Research (OFR) and thus have awareness on the importance of the FREG approach and hence they took the initiative to test and improve the technology they need. The FREG members have common interest and clear objectives in their mind when they form the FREGs. The result of the field visit and discussion with the FREG members revealed that the groups were organized to increase production and productivity in the area and improve their livelihood as they have been facing with problems of declining production and productivity before the start of the FREGs.

### 5.2.1 Components of FREG

FREG has major four components unlike the regular extension approaches. This makes FREG different from the conventional extension system by facilitating both social and technical issues. The components in FREG include:

- Participatory research
- Technology dissemination
- Capacity building training/learning
- Discussion forum for social issues.

Based on the information obtained from secondary data and discussion with SARDP TAs and extension workers of district agriculture office, the importance of FREG in its four components is summarised below.

Participatory research is the key approach to generate technologies and knowledge through involving the key actors in connection to the research agenda. Participatory research approach is appropriate methods of linking development and research. In view of that it is found that FREG has been playing a vital role to link researchers and farmers including extension workers to discuss and experiment based on the issues and problems identified by farmers. FREG has enhanced the problem solving capacity of the members due to the interaction and sharing of information and knowledge among farmers, extension workers and researchers.

The prior objective of FREG is to give room for farmers to test and evaluate the technologies in their field before dissemination at large and to request the technologies that can fit to the existing realities of the different context. FREG has been serving as technology testing and verification in participating the end users so that it enables farmers to choose the technologies to their situation. This gives an opportunity to farmers to be the part of research and extension which was not considered in the traditional extension and research in the area.

Building the capacity of farmers and extension workers through training is one of the most critical components conducted through field exercise and on the job training. This has been used as a medium for assessing feedback about the released technologies for researchers and extensionists. It has also helped to upgrade technical competencies of experts and DAs. It was stated by the FREG members that training has been provided to them annually specifically before the beginning of the main rainy season. The topics covered in the trainings are problem identification, selection of technologies for testing, testing procedures, land preparation, planting, weeding, harvesting, organizing field days, storing seed and crops, farmer to farmer information exchange and the overall management of the FREGs approach. The trainings are provided at the field level (on the farmers' plots). In most cases the trainings are provided by researchers and extensionists together but some times the extensionists alone provide the trainings. All the FREG members have passed through these trainings. 90% of the FREG farmers have expressed their satisfaction with the trainings since they are practical training and easily applicable on their own field. However, they recommended that it has to be given more frequently until they built adequate capacity.

FREG has also used as a forum of discussion on the social issues in addition to the technical issues. Since members of FREG are interacting and discussing social issues that are affecting their livelihood, it can be considered that FREG is serving as social discussion forum for members. As a result it increases social and human capital among members.

### 5.2.2 FREG versus current extension practices

Based on the findings from the field work FREG and the current extension approach have many differences in technology evaluation and dissemination, sharing knowledge and information. The summary of the findings are summarised in the table below.

Table 2. Comparison of Conventional extension and FREG approach

<b>Conventional extension program</b>	<b>FREGs approach</b>
Extension approach have been planned and implemented without the participation of the farmers	The approach make services more client oriented
Individual based approach	Group-based
Organized in 20-30 members group (government development team)	Usually organized in manageable way, 25-30 households and undertake only what is in the plan
Extension workers work only with the chair person and secretary of the group	All group members work with researchers and extension workers
It is affiliated to the existing political system	Only interested and organized members of the FREGs
Lose follow up by district extension workers and researchers	Close follow up by DAs and district extension workers and field assistant employed
Works with model farmers	All FREG members have active & equal involvement
Supply driven	Demand-driven (client-oriented)
Top-down	Bottom up but in consultation with researchers and extension workers.
No researcher involvement	Integrates research with extension and conducts testing and adapting of improved technologies
Blanket approach	Starts at pilot level and use that for scaling up
Inclined to one way communication	Interactive/two way communication
Members are passive recipients only	Members are treated as an expert and researcher who are equipped with the necessary skills and knowledge
Assignments (Quotas) imposed by Development agents	Technology dissemination between farmers by their own initiative

Source: - Field Assessment Results (2008)

From the table it can be summarized that FREG is client-oriented and demand driven, farmers full participate in research and extension by their own initiation, self-organized, integrated research and extension and interactive unlike the conventional extension approach.

### 5.2.3 Perception of FREG members

Respondents from group and individual interview showed that although there were some differences among FREG members had a positive and clear perception of what FREG is about (its objectives, working modalities and benefits). There was no any doubt about the importance of the FREG as alternative extension approach by FREG members from the outset. 90% of them conceived FREG contribute to attitudinal and behavioural change towards the adoption of improved agricultural technologies. This is a good opportunity to introduce and promote improved technologies in the area by non-FREG

member farmers through farmer to farmer exchange since they see it practically everyday by their own initiative. As it is stated by the FREG members at present non-FREG members are requesting to join the FREGs. This will enhance production and productivity in the district. The same perception is shared by all other stakeholders. According to ARARI, the researcher perceived FREG as alternative technology evaluation and demonstration method. In fact, the extension workers also favour the approach as a ground for the farmers to evaluate technologies.

#### **5.2.4. Benefits gained by FREG members**

The results from the group and individual interview and focus group discussion indicated that all FREG members have gained benefits substantially. The benefits include the following. Since the approach is basically fully participatory the farmers are enabled to empower themselves to identify their problems and needs, suggest solutions through intensive exchange of information between members, select the appropriate technologies for their problems and decide how to manage their own affairs. Under FREG approach farmers are the ones who decide to take or leave the technology provided by researchers/extensionist. But in the regular/existing extension programme farmers do not have choice but accept the package provided by the regional government if they want to get any input (improved seed, fertilizer, improved implements, etc...)

Moreover, they built capacity and confidence on improved application of technologies, which are observable in improving their production and productivity. This has been made possible through observable attitudinal change by farmers, which in turn is the result of outcome of the technologies on their production level. During the group discussions with the FREG members it was observed that farmers were proud of being FREG members since it has enabled them to open their mind and became receptive to improved technologies. FREG members are becoming initiated to look for improved technologies to the extent of asking researcher by moving to the research institutes as a result of being empowered through FREG.

### **5.3 Participation of women in FREG**

To measure how FREG was successful in involving women in the group, interview and focus group discussion was conducted. Accordingly, information obtained from the Kalu district agriculture office, the FREGs were organized and operational in the district since 2005. The FREGs have a total of 128 households (111 male-headed and 17 female-headed) and 627 family members in the five identified FREGs for the study. As identified from the empirical findings, all groups in the district are dominated by male members that truly reflect the usual observable fact in many rural areas of the region.

If an extension is to be fully participatory and successful it has to be gender responsive. The FREG approach is generally gender responsive. However, in practice the five FREGs have limited membership of women (13%), which left much to be, desired (Table3). But it is too early to conclude as such. The reasons are that there is small proportion of female-headed households in the kebeles (17%) and hence membership is limited accordingly. In addition, during the formation of FREGs members look for their male friends rather than women. The traditional practices also hinder women from participating and taking the initiative in these types of undertakings. On the other hand, the wives of the FREG members and follower farmers are indirectly beneficiaries of the technologies since they are part and parcel of the household.

It could be observed from the table that to improve women's involvement in farming and increase productivity, there must be a conscious effort and enabling environment to bring women in FREG membership in the district. SARDP has many interventions to promote gender equality in every intervention although so far women's participation in the FREGs has been limited due to traditional practices that hinders women to come out and involve in community organizations like FREGs. This is because changing traditional practices takes a long time as it involves behavioural change in the society. Thus there is a need to encourage and promote women's membership and participation in the FREGs so that the opportunity of increasing productivity is tapped. This has been the case all over the Country (Ethiopia) as described in the study conducted by Ponniah, et al. (2008). Therefore, in order to be successful the FREGs should involve women in a proportional representation so that it will be possible to tap the under utilized half of the community members -women (Scoones and Thompson, 1994).

Composition of women In FREG was not the same from one FREG to the other FRGE selected for this study. As can be seen from the table 3, there is also significant difference in sex composition among FREGs. There is no women member of the FREG in Ketetaya and Bosena while there are relatively better women representation in Addis mender and Adame (7 women each). Similarly, there are differences in the composition of age groups between FREGs. The major reason for this is that members are close neighbours and want to form FREGs with their age mates and who are like minded.

Table 3 Distribution of FREGs household by sex

Name of the FREG	Household		
	Male	female	Total
Addis mender (01)	18	7	25
Bosena (09)	25	0	25
Adame (04)	18	7	25
Abitcho (019)	20	3	23
Ketetaya (024)	30	0	30
<b>Total</b>	<b>111</b>	<b>17</b>	<b>128</b>

Source: - District Agriculture Office (2008)

#### 5.4 Participation of Stakeholders

FREG involves many stakeholders. Each stake holder has different roles; inclusive approach offers stakeholders an opportunity to widen their network, which may make participation more attractive. In participatory research and extension approach like FREG stakeholders have defined roles (Leeuwis, 2004).

As stated by the FREG members who participated in the interview and discussions, the major stakeholders are farmers themselves, researchers (from Region to Research Centres), Development Agents (DAs), district experts, cooperatives, Bureau of Agriculture and Rural Development, the donor and district administration.

The researchers provide the improved technologies (released by the research institutions) for testing by the farmers in their own circumstances or involve (technically) in testing the technologies proposed by farmers on their field/plot together with the farmers, i.e., the idea of improved technology could come from anywhere but what matters is testing, adapting and disseminating for others, which is being done mainly by the farmers themselves. They also provide capacity building interventions in the form of

training, working together, etc.... However, the regional level (ARARI) has not been actively involved in providing financial and technical backstopping, which needs to be strengthened.

The role of Bureau of Agriculture and Rural Development is to promote and scale up the FREG approach through institutionalizing it. But it has not been fulfilling its role so far as the bureau has not actively involved in the FREGs activities.

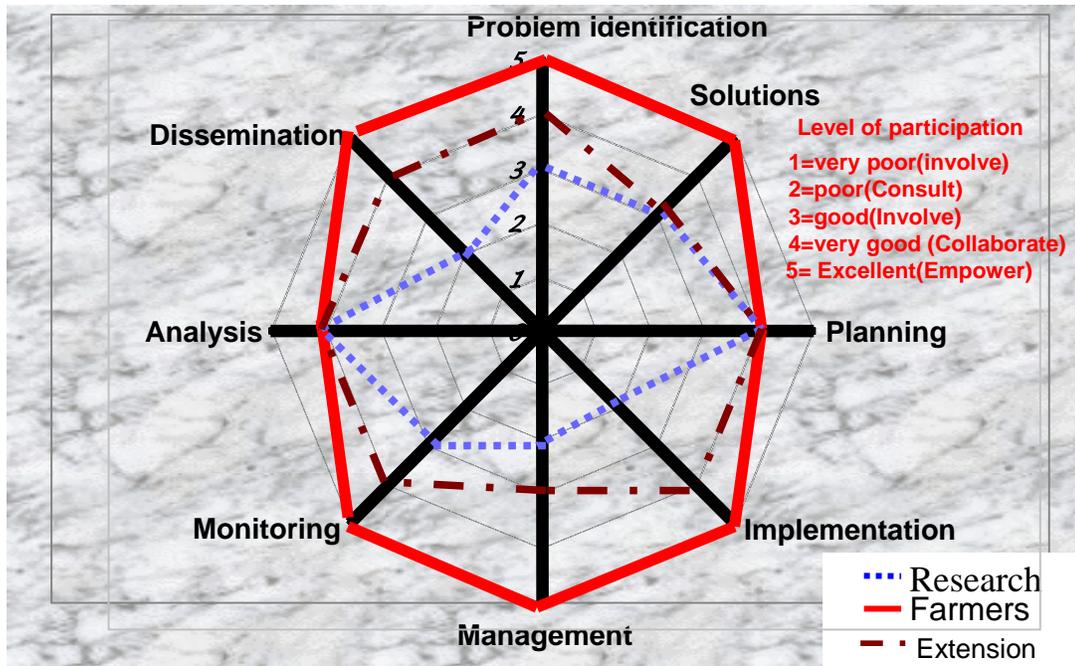
The farmers are the owners of the whole process and they involve in every activity of the cycle (Figure 5). As it is repeatedly stated earlier farmers identify their problems and set research agenda. Then they agree with researchers to test it with them or get other technologies tested elsewhere to be adapted by these farmers (FREG members). Then farmers conduct the testing in consultation with the researchers and extensionists. After evaluating on field days with other non-FREG member farmers, researchers and extensionists, they select the technology (crop variety and practice) to be disseminated and those to be further tested. Thus they play central role in the FREG approach.

DAs are the grassroots extension workers who work closely with the farmers. They assist the farmers in the day to day activities of FREGs. They serve as bridges between researchers, district experts and cooperatives. As it has been observed and assessed from field findings, DAs have not played their role in scaling up of FREG in the other member of the community. They involve in other political matters other than in extension works.

The district experts also work closely with the FREGs. Their role is mainly guiding them on the methods of implementing the planned FREG activities. They provide practical training on the field to farmers and DAs. They play active role in connecting and linking different relevant actors in FREG approach

Every kebele where this study was conducted has a multi-purpose service cooperative established by the farming community where the FREG members are also included. The roles of the cooperatives are mostly marketing (inputs to the farmers and crops to urban and rural consumers). As described above so far, some of the stakeholders have not played their roles as expected especially the cooperatives, ARARI and the Bureau of Agriculture and Rural Development. The level of participation of the relevant stakeholders in the research and extension continuum is presented diagrammatically in figure 5.

**Figure 5 Participation of farmers, researchers & extensionist in FREG (Technology testing -dissemination continuum)**



Adapted & modified from Sanginga, 2001

The above figure is the result of information collected from farmers, extension workers, and researchers, to evaluate their involvement and level of participation in technology testing and dissemination. For this purpose appropriate format was developed and given for each actor to evaluate themselves in technology testing and dissemination (Sanginga, 2001). Level of participation were cross checked with the participation continuum namely, inform, consult, involve and collaborate and empowerment (SAIEA, 2005). Based on these findings the level of participation in technology testing and dissemination has identified and the results indicated.

As can be seen from figure 5 each stakeholder has been given a weight to measure their level of participation in each cycle. From the diagram the major activities the FREG members engaged in include problem identification and prioritization (diagnosis), suggesting solutions (means), planning, implementation (testing of improved technologies, selection of the tested technologies and multiplication), management, monitoring, analysis and dissemination to fellow farmers. As it is observed farmers are the core of the FREG activities as discussed below.

**i. Problem identification (Diagnosis) and prioritization**

Problem identification and prioritization is the starting point for the participation of the FREG members once they are organized as a group. It is repeatedly stated in the previous chapters that generally production and productivity are low and in some instances declining before the start of the FREGs and other participatory extension systems in the study area. Farmers always question what to do with their problems

facing them daily. In fact it is this problem that initiated them to form the FREGs. During the FREG formation they were trained and oriented on how to identify and solve their problems. All the respondents said that they have fully participating in the problem identification and prioritization process at their will. The major problems in the area related to crops, livestock and natural resources. But the FREGs under study are organized specializing in crop production. Therefore, the whole process of problem identification, planning, technology testing and dissemination revolves around crop production.

Accordingly, the FREG members meet and discuss their problems at their meeting place in their kebeles in accordance to their priority and the means on how to tackle them. Problems are normally identified before the beginning of every cropping season when FREG members meet and identify problems to be solved by research (set research agenda) and how to communicate with other stakeholders towards solving the identified problems. Each member airs out his/her problem/s considered critical and prioritizes accordingly. Then they discuss and agree on the short listing of problems to be solved initially. They also invite the researchers and extensionists in the identification and prioritization process specifically for facilitation and technical assistance. After thorough discussion they come up with the agreed problems to be solved immediately by each individual farmer based on their interest.

As the diagram indicates, the degree of participation of the stakeholders in the problem identification and prioritization process varies. The farmers participate at their full capacity (empowerment) while extensionists and the researchers participate in to a lesser extent (at collaborate and involve stages respectively based on the weight given to them by the entire FREG members). But as members of the FREGs they involve at every stage of the participation process.

## **ii. Solutions (Means)**

Once they identify their critical problems farmers continue to design the means on how to solve them. During the orientation and training on the formation of the FREGs as well as their prior experience on On-Farm-Research, members believe that the main means to solve their problems is their participation in the research and extension activities by testing, adapting and disseminating the technology they consider suitable to their circumstances/environment. Based on their interest, plot size and soil type each farmer expresses his/her capacity and willingness to test the technologies/crop varieties. If they agree, they communicate to the researchers and extensionists to assist them in planning the activities. Over 80% of members responded that they have take the lead in the proposed solutions while 20% said they were passive recipients of the solutions suggested by researchers and extensionists.

The degree of involvement of the three stakeholders in outlining the means for solving the problems is different. The farmers are the ones that decide on the final selection of the solutions (with significant technical input from researchers) while researchers and extensionists are just involved in the technical assistance and systematizing the farmers' decisions.

## **iii. Problem identification /Planning**

As explained by the FREG members the planning process under FREG is fully participatory in the whole planning cycle. Most of the FREG members (95%) actively take part in the planning process while the remainder (5%) follow what other do. This is actually what has happened in adhering to the bylaws. This is because some of them are slow while others are not able to fully understand the mechanisms of FREG. As it is indicated in the literature review and verified by the various sections of this chapter, the level of participation in the planning cycle is at collaboration stage since every decision is

made by the FREG members. To support the FREGs in solving the identified and prioritized problems SARDP and research centres (which are also supported by SARDP) organize a workshop to discuss and formulate the proposal that leads to activity planning with the full and active participation of the FREG members/farmers. The venue of the workshop is normally at the district capital, which is not far away from the farmers and their fields. This will be followed by detailed activity planning by the FREG members for implementing the proposed plan. All the FREG members (men and women) participate in the proposal formulation and detailed activity planning at their place. During the workshop farmers will agree, based on their interest, on who will test what crop on how many hectares. From research centres researchers of crop, livestock and natural resources management participate in the workshops/proposal formulation and subsequent evaluation. Extensionists also support the farmers in the proposal formulation as team members of FREG. This is conceptually the same in all participatory agricultural research and extension approaches (Leeuwis, 2004, Chambers, 2007 Scoones and Thompson, 1994). Here all the three stakeholders (farmers, researchers and extensionists) participate equally.

#### **iv. Implementation and management**

Planned activities are implemented on the farmers' plots. The main actors for implementation are the farmers themselves with minimum assistance from the researchers and a fair involvement of extension workers. The sub - activities to be implemented include land preparation, planting, weeding, harvesting, and organizing field days for the selection of appropriate and improved technology and multiplication on their plots. The participating farmers select the improved technology using own criteria, which usually include productivity, maturity date, vigour, pest resistance, use of residuals for other purposes (like animal feed, roofing, etc...) and drought resistance. Just after the planning the farmers start implementing the activities on their plots. After the planning workshop the rainy season starts and farmers plant their crops based on the agreed methodology (spacing, timing, moisture requirement, etc...) and variety or type of crops in consultation with the extensionists. Farmers manage the day to day task, follow up of growth of crops and report to extensionists and researchers in case of any thing different occur from what they know and/or told. Then all the FREG members meet on that farmer's plot/s who report the problem/s and observe what has happened and agree on the solutions/measures to be taken.

With regard to participation in the implementation and management of the FREG activities respondents said that it is their full responsibility since no one comes and work on their plot of land once they decided to test that technology, 75% of them said, however, they need technical advice while implementing the technologies to fulfil the technical requirements of the technologies until we internalize it.

Moreover, field days are organized at least twice in one crop season (normally during flowering and harvesting stages) to evaluate the performance and select the type of crop that fulfils the agreed and set criteria stated above. It is here that the researchers actively involve in the implementation and management process. During the field days non-FREG member farmers and expert participate and select the best performing crops.

The crop varieties tested by the FREGs are wheat, teff, sorghum, maize (the major ones) and lentil, haricot beans, chickpea, sesame and finger millet (to some extent). Local varieties and improved seeds from the researcher centres were used in the testing process for comparison purpose. Moreover, farmers have improved the practices more than the researchers that adapt to their environment like spacing, timing and management.

#### **v. Monitoring and evaluation/Analysis**

Participatory monitoring and evaluation is one of the key activities in the FREGs approach. It involves all the concerned stakeholders (Chambers, 1993, Leeuwis, 2004, Scoones and Thompson, 1994, Ponniah et al. 2008, Chimdo, 2008) to track progress towards meeting the set goals (increasing production and productivity) and to take timely measures in case of constraints. Towards this end the FREGs under study conduct participatory monitoring and evaluation involving all stakeholders. According to the participants there are many stakeholders in the monitoring process. The implementation of the activities of the FREGs is monitored by farmers (daily), researchers (on selected times as stated earlier) and extension workers (fortnightly and up on request frequently). Thus the involvement of farmers and extension workers in the monitoring process is much more frequent than the researchers since the researchers involve only in critical times of the production process (planning/proposal, flowering, harvesting and field days). Monitoring takes place on the site/field covered by crops. However, 45% of the respondents said that they do not understand monitoring as such but they do it everyday without knowing it.

FREG members also participate in evaluating the performance of the technologies released from research by comparing them with local varieties in terms of yield, acceptance, market and general contribution to livelihood improvement for members. This is usually done after each harvest or season. The main tasks are to check whether objectives have been appropriate and achieved, identify any particular strengths and weaknesses for future improvement and improved technologies management practices.

In order to facilitate systematic monitoring and evaluation process and analysis it is vitally important to recorded/documentated information and gives a feedback to concerned stakeholders. Thus the activities and results of FREGs must be properly recorded and documented. Lack of keeping records on the group activity is often cited by stakeholders as one of the major drawbacks to measure the outcomes and development of the FREGs. Unless all the necessary records (technical, financial, managerial) are kept properly, it is difficult to know what progress has been made, what difficulties are encountered, what outcomes have been achieved and who did what in the groups' activity. This has not been the case in the FREGs under study. 70% of them have described that there is no as such properly documented record at the FREG level. The 30% of respondents have documented their own information at their home. This has also been stated by the DAs and district experts. They found out that record keeping is the most critical area to be improved. It is increasingly becoming difficult since there are frequent changes of DAs and extension workers.

Participants of the FREG are expected to report the progress of the FREG activities (performance of the crops being tested and multiplied for wider dissemination) on regular (monthly) basis to the extension workers. The report must be complete and fully describe the progress of the groups' activities. A format has been developed in consultation with the members and training has been given on how to use it for the FREG members. However, although there are reports submitted to DAs and other stakeholders, they are not complete and timely due to lack of proper recording and capacity.

#### **vi. Dissemination**

Once the FREG members select the good performing technology (crop varieties) they agree for their multiplication. Each member farmer multiplies the successful crop on his/her plot of land. After multiplying they sell to fellow farmers either through farmer to farmer exchange (the commonest one in the FREGs under study) and other mechanisms (cooperatives, agriculture and rural development offices).

Judged based on the aforementioned statements it is possible to summarize that the participation of the FREGs under study are successful as they fulfil all the indicators stated with some limitations that could be improved as they get experience.

### **5.5 Linkage with researchers and extension workers**

Linkage between Researchers, Extensionists and Farmers is vital for the successful technology development and delivery system. Direct linkages of the researchers with the farmers were created through on-farm research and seed multiplication and dissemination. This linkage has been used for testing, adopting, multiplying and disseminating improved technologies by the FREGs (Leeuwis, 2004, Ponniah et al. 2008). According to the discussion results by FREG members the relation between researchers, extensionists and farmers has been found strong as they work together towards strengthening the FREG approach in the study area. Most of the FREG members (65%) responded that they have close and smooth relation/linkage with researchers and extensionists while 35% of them said they have close relations with extensionists than the researchers.

Moreover, according to the district agriculture office FREGs have close links and intimate collaboration with other group members who have similar objectives so that innovations are better communicated from one group to another and views and experiences exchanged.

All these indicate that the FREGs measured in terms of the linkages among farmers, researchers and extensionists is said to be successful.

### **5.6 Replicability of FREG approach**

The other measure for the success of the FREGs is the number of follower farmers. Logically farmers will follow the application of technology if they see any benefit. Thus having lived in close proximity and exchange experiences the FREGs under study have got many followers within three years of time.

The FREG system enhances farmer to farmer information exchange. As studies showed farmers trust each other than outsiders and hence it is easy to transfer improved technologies and practices from FREG members to non-FREG members at a wider scale. The FREGs under study have disseminated the improved technologies (especially improved seeds of wheat, teff, maize and sorghum) to follower farmers (Table 4). So far there are 415 followers households. This is quite a good progress in disseminating the improved technologies within a short period of time, which implies that there is a good opportunity to increase follower farmers thereby increasing production and productivity in the area. The follower farmers are those who apply the improved technologies without being member of the FREGs but candidates to join it when possibilities opened. Follower farmers have started following the FREG members since their establishment because they are living together and share experiences. As a result the follower farmers were convinced that the FREG activities will improve their production and productivity and hence started applying the improved technologies and practices of the FREG members. As it is depicted in table 4, there are on the average 3 follower farmers formally recognized for each FREG member. If, as they get more and more experience, these FREG member farmers increase their followers to 50 or 100 since they are requested to do so, it will cover the kebeles in less than two years and the whole district in five years in providing improved seed and practices. The trend of replicability of the FREG approach seems encouraging if the approach has supported by the decision makers. The number of follower farmers is not similar in the five kebeles. There is no male

follower farmer in ketetaya. This is because most of the non-FREG member farmers are now engaged in production of fruits and vegetables which is being promoted by SARDP. They are attentively following the fruit production than the crops and hence have not yet given due attention to the FREGs in that particular kebele.

Table 4. Distribution of FREGs follower farmers

FREG name	Household		
	Male	female	Total
Addis mender(01)	165	15	180
Bosena(09)	70	17	87
Adame(04)	56	5	61
Abitcho(019)	80	4	84
Ketetaya(024)	0	3	3
<b>Total</b>	<b>371</b>	<b>44</b>	<b>415</b>

Source: - Field Assessment Results (2008)

Due to the increase in production and productivity of FREG members they have started to provide a considerable quantity of seed and improved practices to fellow farmers (non-FREG member farmers), which is a good progress towards promoting and sustaining the FREG approach. As stated earlier non-FREG members are eager to join the FREGs. As a result the follower farmers are increasing from time to time which is in indicators for the replicability of FREG as technology dissemination and knowledge generation.

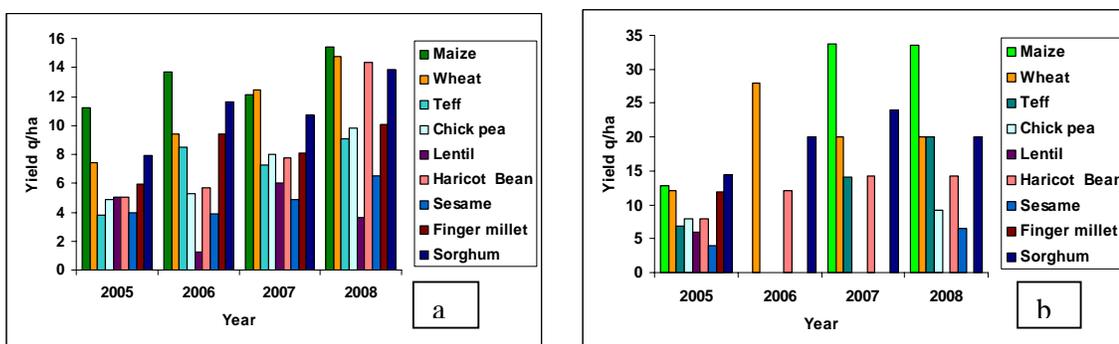
For instance, one FREG farmer said he was approached by 358 farmers to get improved seed but was able to provide only to 20 of them. Each of the FREG members said they have many people waiting to get improved technologies from them. This shows that there is a demand that outweigh the existing supply by a higher proportion.

Sustainability of FREG approach can be determined by its acceptability and replicability of the approach. Besides, other factors like existence of supportive policy and institutional support can also contribute for the sustainability of FREG. As stated by the district officials and extension workers, there is a policy that supports the approach although it has not been put in practice. The other critical factor is commitment of the group members and increase in production and productivity. From the discussions held with the farmers it was described that there is sustained increased in production and productivity and hence they believe it will continue as such. In addition, it has to be institutionalized at all levels and the concerned stakeholders (Bureau of Agriculture and ARARI) should take the FREGs as their task and allocate the required resources towards its realization. As it was observed during the group discussions this has been a limiting factor so far. Moreover, there is a need to provide adequate capacity building interventions in order to make the FREGs sustainable. The farmers stated that capacity building interventions are not up to their expectation.

## 5.7 Production and productivity change in FREG members

Production and productivity is most appropriate and major factor in measuring the success of extension approaches and programmes. Accordingly, the FREGs under study are measured in terms of the increase in production and productivity due to the introduction of the approach.

The major crops grown in Kalu district include maize, teff, and sorghum which account for the majority of cultivated areas. Productivity of these crops over the last 4 years showed a general increase that could be associated with the use of inputs like fertilizer and improved seed as shown on Figure 6. At the study area, sorghum followed by teff and wheat are dominant crops and the latter is less affected by unfavourable weather like shortage of rainfall so that it will give reliable yield. At the study area, however, productivity of these crops like maize, wheat and teff is remarkably higher than the district figure which again could be accounted to the use of improved seed obtained through farmer-to-farmer seed exchange practices of FREG members. The productivity of non-FREG members during the years under consideration for sorghum, teff and wheat is 9 qt/ha, 7qt/ha and wheat 12 qt/ha respectively.



Source: - Field Results (2008)

Figure 6: Productivity of major crops in Kalu district (a) Average productivity for 5 FREGs (b)

The amount of improved seed produced by FREG members has increased remarkably as depicted on figure 7. Seed for crops like teff and maize that were not produced before this undertaking is now become available in amounts as high as 170 tones per year and that could be the contributing factor for improved crop productivity in the study area mentioned before. In 2008 sorghum were not produced as expected due to shortage of improved seed. Generally the FREG member farmers produced improved seed and exchanged to fellow farmers so that the production productivity of the five kebeles significantly improved. This implies that both FREG members are good in producing the seeds and follower farmers are interested to buy and use them.

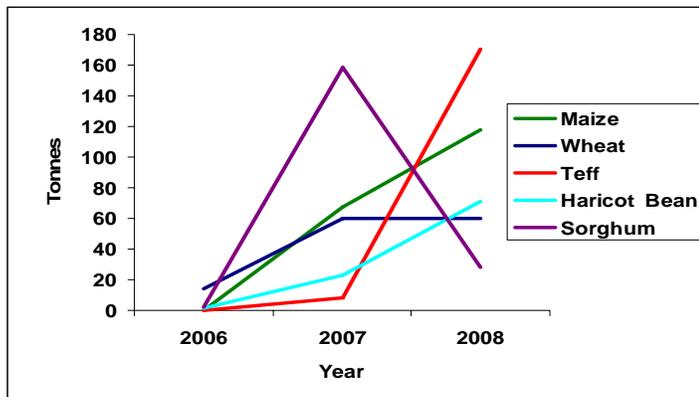


Figure 7 Improved seed of various crops produced and delivered by FREG members  
Source: - Field Results (2008)

### 5.8 Household income and Improvement in Livelihood of FREG members

The other measure for the success of the FREGs is household income. 80% of the respondent FREG members said that their income has increased by 100% while 20% said their income has increased by 50% annually. The increase in income is primarily the result of the increase in productivity of the crops in the same unit area of land since land size/ownership is limited in the country. In fact all of them said that the price of the improved seed they are producing could have been sold at a better price if the seed enterprises and cooperatives buy them. But over 50% of the seed is disseminated through farmer to farmer exchange. All these indicated that the FREGs are successful in increasing household income.

All the respondents said they have got quite significant improvement in their livelihood. All of them said now they are food self-sufficient through out the year while they were able to cover only 50% of their food requirement before the FREGs. All of them have sent their children to school. 90% of them sent two children each as far as the district town paying their living expenses (house rent, transport, school materials, etc...), which indicates that they have got quite substantial income from their activities as FREG members. Moreover, 92% of them have changed their home with iron sheet roofing since two years as well as the quality of their food and health care is improved. This has been observed during the field assessment.

From the discussions with the FREG members it was learnt that initially before the start of FREGs most of the members (60%) were economically in the lower strata of the kebeles population but after they joined FREGs their economic status improved and became the top 25% in those kebeles. Thus it could also be said that this has also contributed to their willingness to test and adapt improved technologies.

Generally, all the findings of the study as measured by the above indicators have shown that FREGs are contributing to the betterment of the members and hence could be concluded as they are successful although there are minor gaps that have to be filled immediately.

## **5.9 SWOT analysis**

To enrich the study findings SWOT analysis was done with FREG representatives, development agents, District experts and SARDP technical advisors and analysed the FREGs the status of the FREGs in terms of their achievements and problems for further promotion, which can show where the FREGs are as assessed by the participants. The result of the SWOT is summarized as follows.

### **1. Strength**

#### **Structure/organization of FERG**

- Interested and committed members
- Easy/simple chain of command
- Strong linkage among DAs, farmers, district experts and researchers
- Encourages interaction among members
- Improve capacity of the farmers
- Inclusiveness of membership (gender, age, religion)
- Adequate understanding of the modality

#### **Working modality of FERG**

- Have agreed and commonly shared bylaws and guidelines
- The members understood the modality of FERG
- Democratically elect their leadership (chair person, secretary and treasurer)
- Discussions are fully participatory and focus on major issues.

#### **Relation of FERG with other extension programs**

- Shows a growing trend of support to FERG
- No conflict with the regular/existing extension system

#### **Training**

- Conducted annually to strengthen the capacity of the farmers and DAs

#### **Planning**

- It follows a bottom up and participatory planning process that involves relevant actors
- Need/demand/problem - oriented planning
- Use PRA tool for problem identification

#### **Implementation**

- Strong link between framers, DAs and extension workers
- Good capacity to implement - farmer researchers emerged
- Good DAs and extension workers support and close follow up to FREG members during implementation
- Practical and on-the-job training to FREG members
- Annual farmers' field days organized to evaluate and select improved technologies.

#### **Monitoring and evaluation**

- Regular participatory monitoring evaluation conducted

#### **Role of stakeholders**

- Most of the stakeholders participated in the day to day activities of FREG
- SARDP commitment to provide technical and material support to FREG

## **2. Limitations/weaknesses**

### **Structure/organization of FERG**

- Inadequate regular meetings
- Inadequate recording and documenting minutes, plans and reports
- Member have not started contribution
- No properly organized market network
- Inadequate support from stakeholders

### **Working modality of FERG**

- No regular meeting
- Limited support from other stakeholders

### **Training**

- Refreshment training is not regularly offered to the farmers

### **Planning**

- Plan not synthesized/documentated at FREG office level

### **Role of stakeholders**

- Less follow up of relevant stakeholders
- Trained agriculture office staff turn over

## **3. Opportunities of FREG includes**

### **Structure/organization of FERG**

- Availability of improved technologies
- Availability of facilities
- Policy & strategy that support FERG
- Existence of interested and committed farmers
- Positive perception to research and extension by farmers
- Positive social acceptance to formation of formal and informal groups

### **Working modality of FERG**

- Common understanding of farmers, researchers and extension workers

### **Training**

- Existence of SARDP support

### **Planning**

- Farmers capacity to plan, implement and manage
- Abundance of follower farmers

### **Implementation**

- Good awareness and capacity exists at all levels
- Existence of three DAs at the kebele level
- Existence of farmers development committees and cooperatives at the community level

### **Role of stakeholders**

- Presence of research center at the proximity of operational areas

#### **4. Threats of the approach mentioned as follows**

##### **Structure/organization of FERG**

- Government and bilateral support may stop
- Government extension strategy might not support the system
- Inadequate involvement of relevant stakeholders in FREGs promotion.

##### **Working modality of FERG**

- Frequent turnover of DAs
- Inadequate support from relevant stakeholders

##### **Planning**

- Some requested technologies by farmers may not be available on time
- Increased price of fertilizers
- Use of seed for consumption

##### **Implementation**

- Lack of responsible body to look into marketing issues

##### **Role of stakeholders**

- Stake holder may not contribute as their role as required

Generally, there is no major difference between the SWOT analysis and the results of the interview and discussions. The over all finding of the SWOT analysis is depicted in Annex-1.

#### **5.10 Lessons learnt**

There are good lessons learnt through the implementation of the FREGs. FREG has contributed significantly to bring farmers and researchers together that led to acknowledgment by researchers of the rationality of farmer practices, and increased appreciation by farmers for the value of some experimental controls for assessing results of their experiments. It has helped to legitimize local knowledge within the scientific community.

It is learnt that members were instrumental to bring the idea, establish the group, prepare and approve the constitution where by several other farmers are now interested to become members, which shows the viability of the approach.

The sustainable function of the group depends on its record keeping. Records on all processes are important for the current and future activities of the group. Moreover, it is vital for monitoring and evaluation purposes, maintain information for future reference since well informed group makes better decisions. However, this has not been the practice so far and needs to be exercised for the success of the FREG approach.

The idea of FREG approach is shared by all stakeholders as it as been taken as alternative extension system. But it has not been institutionalized since ARARI and Bureau of Agriculture and Rural Development have not given due attention and the required support for its promotion.

### **5.11 Challenges**

New approaches like FREG will not be challenge free. During the implementation process various challenges were faced. Among the challenges is that the results of farmers' own experiments are not easily assimilated into scientists' analytical frameworks. From a researcher's point of view, there is still a significant barrier to create a truly research partnership with farmers.

The existing extension system is still framed within the supply-driven, top-down transfer of technology approach that does not give chance for farmers to test and adopt the improved technologies, which suits to their circumstances. Moreover, evaluations are based on adoption rates for standardized technology packages.

The other and most important challenge is the inability to institutionalize the FREGs approach as an alternative extension system.

Marketing is a key for the success of adopting improved technologies. Hence there should be properly organized market networks for the products of the improved technologies. Towards this end FREG has not been able to access such market network.

## **CHAPTER 6: CONCLUSION AND RECOMMENDATIONS**

The main objective of the study is to make recommendations to the Amhara National Regional State on FREG as an alternative extension approach through evaluating its working modalities and activities in Kalu district of Ethiopia. Based on the findings and discussion in the previous chapters, it is evidenced that FREG has been accepted by members and the neighbouring farmers as appropriate approach for technological and social changes in their own rural communities. The conclusion and recommendation presented below.

### **6.1 Conclusion**

From the empirical findings and secondary information obtained in the district agriculture office, FREG as approach has four components unlike the regular extension system namely: Technology testing and dissemination, participatory research, capacity building and discussion forum for social issues. This makes FREG appropriate to bring all rounded changes in the livelihood of FREG members. Besides, FREG has an approach that differ from the conventional extension approach including: FREG is client-oriented and demand driven, farmers full participate in research and extension by their own initiation, self-organized, integrated research and extension and interactive unlike the conventional extension approach.

From the empirical findings, farmers perceive FREG as appropriate extension approach in addressing the need and concern of farmers. Despite there is some differences between farmers in perceiving FREG, 90% of the respondents appreciate FREG in creating space for farmers views and experiences in the technology evaluation and dissemination. The perception of extension workers and researchers is also similar with farmers emphasising that FREG has significant importance as technology evaluation and dissemination that can be considered as alternative extension approach with further improvements.

Successfulness of FREG was also measured based on the criteria set to measure successful extension approach. Hence FREG has been found as successful extension approach due to its components and approaches employed by the FREG. The summary of each criterion is presented below.

Group extension approach has been found the typical characteristics of FREG that contributed for the establishment of strong social bondage and for the development of social capital among members. Based on the empirical findings, use group extension approach in FREG has contributed for technology testing of improved technologies development, verification and transfer process through the vital role of the end users. Besides, it is confirmed that group extension approach used under FREG has facilitate the knowledge sharing and learning process in the course of technology testing and evaluation.

FREG has special focus on gender balance by providing equal opportunity for both sexes. However, the number of women in most FREG is relatively low than men. This due to the fact that women households are low in number as compared to men in each village that resulted low opportunity for women in participating in the socio economic matters, as reflected in their participation in FREG. Moreover, since FREG is established on interest and proximity, most of members organized their FREG to whom they are

either relative or close in any matter that contributed the likelihood of women to be excluded to be member of FREG as their interest.

As discussed from the previous chapters, involvement of stakeholders was not equally considered in the FREG. According to the empirical findings, farmers have been playing the central role in the technology evaluation and dissemination however; the level of involvement of other stakeholders like ARARI, BoARD and cooperatives was not to the anticipated level despite FREG as an approach has a room to involve all stakeholders.

As indicated from the findings, the linkage between famers, researchers and extension workers is found to be strong Farmers and extension workers have close interaction and communication than researchers in the testing technologies and evaluation.

Replicability of the FREG activities is being multiplied by the non FREG members. As it is discussed in the previous chapter, FREG members have their own followers that are learning and adopting technologies and knowledge to test by their own. This indicates that FREG is being replicable and sustainable in the area.

The production and productivity of FREG members are increased as a result of knowledge gained and technology provided from different sources. To support the findings by empirical evidence, productivity of major crops like teff, wheat and maize have shown increasing trend in productivity.

Household income has increased as a result of the increment of production and productivity through the introduced technologies and capacity building activities. From the empirical findings, it is confirmed that some of FREG members have increased their income by 100 % and 50 % since they joined FREG.

Practice with those of research and development organizations in an interactive learning process towards increasing production and productivity thereby improving their livelihoods. It involves diagnosing local problems then identifying, testing, adapting and disseminating new techniques and practices that help to solve the identified local problems. This is what has been found during the field assessment.

## **6.2 Recommendations**

From the empirical findings and discussion it is found that FREG can be taken as appropriate alternative extension approach with the following improvements.

- Improve women participation and ensure gender equality throughout the FREG approach
- Work aggressively to involve major stakeholders to institutionalize and scaling up of FREG
- Marketing should come out as one of the major components of FREG which was not considered before in FREG approach
- Strong link between input suppliers and FREG should be established and input suppliers should be one of the major stakeholders in FREG.
- Capacity of the FREGs members needs to be built regularly

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### Annex-1 SWOT Analysis on the FERG

Issues	Strength	Limitations/weaknesses	Opportunity	Threat
Structure/organization of FERG	<ul style="list-style-type: none"> <li>-Interested and committed members</li> <li>-Easy/simple chain of command</li> <li>-Strong Linkage among farmers, district experts and researchers</li> <li>-Encourage interaction among members</li> <li>-Enabled the farmers to build capacity</li> <li>- Inclusiveness of membership (gender, age, religion)</li> </ul>	<ul style="list-style-type: none"> <li>- inadequate regular meetings</li> <li>- Inadequate recording and documenting minutes, plans and reports</li> <li>- Member have not started contribution</li> <li>- No properly organized market network</li> <li>- inadequate support from stakeholders</li> </ul>	<ul style="list-style-type: none"> <li>- Availability of improved technologies</li> <li>- Availability of facilities</li> <li>- Policy &amp; strategy that support FREG</li> <li>- Existence of interested and committed farmers</li> <li>- positive perception to research and extension by farmers</li> <li>- positive social acceptance to formation of formal and informal groups</li> </ul>	<ul style="list-style-type: none"> <li>- Government and bilateral support may stop</li> <li>- Government extension strategy might not support the system</li> <li>- Inadequate involvement of relevant stakeholders in FREGs promotion.</li> </ul>
Working modality of FERG	<ul style="list-style-type: none"> <li>- Have agreed and commonly shared bylaws and guidelines</li> <li>- Adequate understanding of the modality</li> <li>- Have democratically elected Leadership</li> <li>-Discussion fully participatory and focus on major issues</li> </ul>	<ul style="list-style-type: none"> <li>- No regular meeting</li> <li>- Limited support from other stakeholders</li> </ul>	<ul style="list-style-type: none"> <li>-Common understanding of farmers, researchers and extension workers</li> </ul>	<ul style="list-style-type: none"> <li>- Frequent turnover of DAs</li> <li>- Inadequate support from relevant stakeholders</li> </ul>
Relation of FERG with other extension programs	<ul style="list-style-type: none"> <li>- Shows a growing trend of support to FREG</li> <li>- No conflict with regular/existing extension system</li> </ul>			
Training	<ul style="list-style-type: none"> <li>Conducted annually to strengthen the FREGs</li> </ul>	<ul style="list-style-type: none"> <li>-Refreshment training is not regularly</li> </ul>	<ul style="list-style-type: none"> <li>- existence of SARDP support</li> </ul>	

		offered to the farmers		
Planning - Problem identification (including research agenda) - Prioritization	- Follows a bottom-up and participatory planning process involving relevant actors -Need/demand/problem oriented planning -Use PRA tool for problem identification	Plan not synthesized/documentated at FREG office level	- Farmers capacity to plan, implement and manage - Abundance of follower farmers	- Some requested technologies by farmers may not be available on time - Increased price of fertilizers - Use of seed for consumption
Implementation	-Strong link between farmers , DAs and experts - Good capacity to implement - farmer researchers emerged - Good DAs and expert support and close follow up to FREG members during implementation - practical and on-the-job training to FREG members - Annual farmers' field days organized		- good awareness and capacity exists at all levels - Existence of three DAs at the kebele level - Existence of farmers development committees and cooperatives at the community level	- Lack of responsible body to look into marketing issues
Monitoring and evaluation	- Regular participatory monitoring and evaluation			
Role of stakeholders	- Most of the stakeholders participated in the day to day activities of FREGs - SARDP commitment to provide technical and material support to FREG	-Less follow up of relevant stakeholders -Trained agriculture office staff turn over -	-Presence of research center at the proximity of operational areas	-Stake holder may not contribute as their role as required

## **Annex-2 Checklists for FREG members**

Name of farmers Association: -----

Name of the FREG: -----

District: -----

1. How do FREG members organized?
2. What are the working modalities of FREG?
3. Who are the relevant actors that have been involved in the FREG extension system?
4. What are the perceptions of FREG members towards FREG? How do you explain it?
5. What are the extension activities of FREG?
6. How do FREG members participate in problem identification, in problem prioritization, implementation and monitoring in testing technologies?
7. How do FREG members interact with extension workers and researchers?
8. How do the researcher and extension workers assist you in the implementation of FREG activities -their role?
9. What are the technologies tested in FREG members?
10. What are the experiences gained by the members through FREG?
11. What are the mechanisms of testing technologies through FREG so far?
12. How do the non participating farmers benefit the outcomes of FREG activities?
13. What are the benefits from FREG extension services?
14. How much the FREG extension service contributed to household income?
15. What are the challenges faced by farmers during implementation of FREG?
16. How the FREG program is going on?
17. Others comment on FREG?

Thanking you for your collaboration

### **Annex-3 Checklists for Amhara Regional Agricultural Research Institute**

Name: -----

Responsibility: -----

Organization: -----

1. Was there any FREG program in Amhara region so far?
2. When did ARARI start the FREG extension approach in the Amhara region?
3. Who are the relevant actors that have been involved in the FREG extension system?
4. What are the perception of researchers, extension workers and farmers on FREG as alternative extension approach?
5. What are the components of FREG?
6. What are the experiences gained in the FREG group members?
7. How do FREG members participate in designing, implementing and monitoring FREG programs?
8. How are the technologies tested and disseminated in FREG?
9. How is the multiplier effect of FREG on other farmers in the area?
10. What is the role of extension workers in FREG program?
11. What roles FREG approach played in improving the living condition of the rural households in the region?
12. What mechanisms are in place to institutionalize FREG into the main extension system?
13. What are the lessons drawn from FREG in your institution?
  
14. Others comment on FREG?

Thanking you for your collaboration

**Annex-4 Check list for District Agriculture and Rural Development Office**

Name: -----  
Responsibility: -----  
Organization: -----  
Region: -----

1. Do you think FREG as an alternative extension system? Why?
2. What differentiates FREG from the current extension systems?
3. Who are the relevant actors that have been involved in the FREG extension system?
4. What is your role in FREG activities?
5. How did technologies tested and disseminated in FREG?
6. How FREG is integrated in the conventional extension system?
7. How is the multiplier effect of FREG on other fellow farmers in the area?
8. What mechanisms are in place to institutionalize FREG into the main extension system?
9. How do you communicate with SARDP in the promotion of FREG?
10. Others comment on FREG?

Thanking you for your collaboration

**Annex-5 Check list for the District Extension worker (Development Agent)**

Name: -----

Responsibility: -----

Organization: -----

District: -----

1. How do you understand FREG? Please explain what FREG is all about.
2. How do you differentiate FREG from the current extension systems? Can you explain the difference between FREG and what you did in the past?
3. What is your role in FREG program?
4. Who are the relevant actors that have been involved in the FREG extension system?
5. What are the specific problems faced by the extension worker in FREG services?
6. How do you manage FREG and the regular extension approach in the same village?
7. What are the components of FREG?
8. How can the extension systems organized to satisfy the needs of the farmers?
9. What could be the role of different stakeholders in solving the problems in FREG?
10. How do SARDP communicate with extension workers in promoting FREG program?
11. What is the role of SARDP in promoting FREG in the district?
12. What do you suggest for the promotion of FREG?

Thanking you for your collaboration