

**EFFECTIVENESS OF AGRICULTURAL DEVELOPMENT  
TRAINING PROGRAM: THE CASES OF TEFF AND LIVESTOCK  
FARMERS OF ALABA WOREDA, SOUTHERN ETHIOPIA**

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MASTER OF SCIENCE IN AGRICULTURE IN  
RURAL DEVELOPMENT AND AGRICULTURAL EXTENSION  
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## ACRONYMS

ATVET	Agricultural Technical Vocational Education and Training
BoARD	Bureau of Agriculture and Rural Development
CEPDA	Centre for Development and Population Activities
DA	Development Agent
EDRI	Ethiopian Development Research Institute
FAO	Food and Agricultural Organization
FPR/E	Farmers Participatory Research/Extension
FSR/E	Farming System Research /Extension
FTCs	Farmers Training Centers
HH	House Holds
HRD	Human Resource Development
HU	Haramaya University
ILRI	International Livestock Research Institute
IIRR	International Institute of Rural Reconstruction
IPMS	Improvement of Productivity and Market Success
IAC	International Agriculture Center
IKS	Information, knowledge, skills
KSAP	knowledge, skills, attitude and practice
m.a.s.l	Meter above Sea Level
M & E	Monitoring and Evaluation
MoA	Ministry of Agriculture
NGOs	Non Governmental Organizations
PADEP	Peasant Agricultural Development and Extension Program
PADETES	Participatory Demonstration and Training Extension System
PLS	Pilot Learning Sight
PRA	Participatory Rural Appraisal
PTD	Participatory Technology Development
PTM	Participatory Training Methodology
RISD	Rural Institute for Social Development
RAAKS	Rapid Appraisal of Agricultural Knowledge System
SMS	Subject Matter Specialist

## ACRONYMS continued

SNNPR	Southern Nations, Nationalities and Peoples Region
SVs	Supervisors
Sq.Km	Square Kilometers
SWOT	Strength, Weakness, Opportunity and Threats
TNA	Training Need Assessment/ Analysis
TOT	Training of Trainers
T&V	Training and visit

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# EFFECTIVENESS OF AGRICULTURAL DEVELOPMENT TRAINING PROGRAM: THE CASES OF TEFF AND LIVESTOCK FARMERS OF ALABA WOREDA, SOUTHERN ETHIOPIA.

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## ABSTRACT

*This study intended to examine the effectiveness of teff and poultry farmers' training process and outcomes in Alaba woreda. It was conducted, in four kebeles, through survey and qualitative method. The survey was undertaken on randomly selected trained and untrained teff and poultry farmers. The qualitative methods that were used at community, organizational and individual levels include: document review, focused/group discussion, personal interviews, and direct observation, and different tools such as, SWOT/force-field analysis, ranking, scoring, and rating. The data that are related with the training, context, process, changes in performances, and outcomes were collected and analyzed qualitatively and through descriptive analytical statistics and the chi-square. The results of the study revealed that: the gaps between the contents of the trainings and the identified needs of farmers were very wide because of lack of participatory need assessment. Training plan is based on quota from above; expected changes in performances are not indicated in the objectives, thus they are vague, incompatible and difficult to measure. Topics are very general and shallow, not thoroughly touching the prior needs of the farmers. Mostly, the training mix is more of theory and few practical, non interactive long lecture (talk) being one of the most commonly used methods. The urgency of trainings makes selection of participants "urgent" and creates unfair nomination, which is also affected by 'informal' criteria (personal relations and political outlook) and gender related biases. Conveniences of farmers in the arrangements of time and places of trainings are not considered genuinely and thus trainings can be under taken at peak cropping periods outside of their kebeles. These make the participation of women difficult and/or impossible, because of their multiple responsibilities. Thus, most of the trainings are male-biased. The group size is too large, and participation of farmers is very passive. Monitoring and evaluation of trainings did not exist and measurements of participant's reactions, learning, changes in on-the-job performances and outcomes of trainings have*

*not been undertaken systematically. Farmers responses indicate, differences in KS among trained and untrained farmers have been observed only in few job tasks. Although it is difficult to give the actual changes directly brought by trainings, majority of the farmers in the study indicated that there is change in productivity of teff and poultry, because of the improved variety and exotic breeds, respectively. The study also revealed that, change agents' trainings process was defective in planning, implementation, monitoring and evaluation aspects. Thus, to effectively implement participatory performance-based trainings, that are related with the actual work situations of the clients and that are aimed at achievable learning objectives: improvements through joint or participatory (bottom-up) planning, effective implementation, follow-up and evaluation activities must be considered starting from farmers/FTCs level. Inclusion of training activities properly in the performance appraisal and evaluation system of the organization, with relevant performance measurement indicators; building capacity of the stakeholders in participatory planning, implementation monitoring and evaluation activities of the rural development and extension activities as a whole and in participatory training methodology (PTM) in particular; gradual implementation of the FTCs, i.e., starting with small number to learn from and to build on the experiences obtained, and in general shifting the approach to participatory methodologies are among the recommended way outs.*

# **1. INTRODUCTION**

Ethiopia is a country where 85% of its population is rural and depends for its livelihood on subsistence agriculture. Various policies and strategies have been set to move the country's technology development and dissemination efforts of agriculture since the last century. These days, food security objectives have taken the main emphasis in the Agricultural Development Led Industrialization (ADLI) strategy of the country, which aims at transformation of agricultural production and productivity through technological means. Thus, among the different components of the agricultural development strategies, the agricultural extension service has been given critical role to play and the new extension program has been under implementation since 1994/96, through participatory demonstration and training system.

The history or evolution of the different methodologies of agricultural extension in this country implemented by the public extension organization, until now, shows that the approaches are based on, Transfer of Technology model (MoA, 1993). Since the existing Participatory Demonstration and Training Extension System (PADETES) is adopted from modified Training and Visit (T&V) and Global- 2000 model, it can be said it is not more than improving the technology transfer. Even though, some participatory elements are included, farmers' involvement in all stages of technology development and dissemination is very limited in practice. Hence, one can argue that participation has remained rhetoric in the extension activities.

Through out the work experience of the researcher, at various levels and with different responsibilities in the Ministry of Agriculture (MoA) in Southern Nations Nationalities and Peoples Region (SNNPR), one of the major problems he has recognized is lack of an effective training system in which trainings are undertaken effectively and efficiently. This refers to training process that is directed to the client problems and improvement of job performance, which is implemented under conducive learning situations and a process in which results and impacts are measured, reviewed and/or improved through participation of the concerned stakeholders.

Bureau of Agriculture and Rural Development (BoARD) is responsible for agricultural and natural resource development activities in the region. Agricultural Development Sub

Sector, being one of the major divisions, has different departments, namely: Crop Development & Protection Department, Livestock & Animal Health Service Department and Training, and Agricultural Technology Department with teams under each of them. The 13 zonal departments of Agriculture and Rural Development (DoARD), and the eight special woreda offices of Agriculture and Rural Development (OoARD) are technically accountable to the bureau. The other woreda offices of Agriculture and Rural Development (OoARD) are technically accountable to the zonal departments (see figure1). At woreda level, Agricultural Development Division, which is one of the two divisions organized under Agricultural and Rural Development Coordination, has three desks, with three teams each. These are: Crop Production and Protection department, Animal Husbandry and Health department and Training and Agricultural Technology Promotion Department. There are a number of Kebeles or development centers under each woreda, the total being 3765 in the region. Under each Kebele up to three development agents are assigned and the total development agents (DAs) in the region are 11373. Out of these, 2210 DAs are graduates and 2673 are on apprenticeship to be graduated from ATVET (Agricultural Technical Vocational Education and Training) colleges respectively. The remaining 4680 DAs are employed on contractual basis, while 1810 DAs are permanent employees with many years of work experience and expected to join ATVET colleges, if they qualify in the entrance exam.

Establishment of farmers training centers (FTCs) in each Kebele, has been under way since last two years, aiming at training of farmers in different agriculture and natural resource aspects. It is one of the sub components of provision of technical vocational education, and training in agriculture. Moreover, they are expected to play multiple roles as centers of information and exhibition, etc. Until now, 1500 FTCs have been established in different parts of the region, though trainings are not started yet. Based on package extension approaches of PADETES, various trainings have been provided in crop production and protection, animal husbandry and health, natural resource development and management, rural women affairs, rural technologies, communication and farm management activities to subject matter specialists at different levels (region, zone, woreda), to development agents, and to farmers. In this study, the agricultural development trainings, therefore refer to such trainings that are provided to farmers, development agents and subject matter specialists at various levels, concerning technical aspects of agricultural and natural resource management activities. They are one of the

major activities of the extension services and/or the rural development strategies. Most of the time, they are organized starting from the top or the region and/or from the zone to the woreda and/or to the development agents and/or to the farmers (Figure 1).

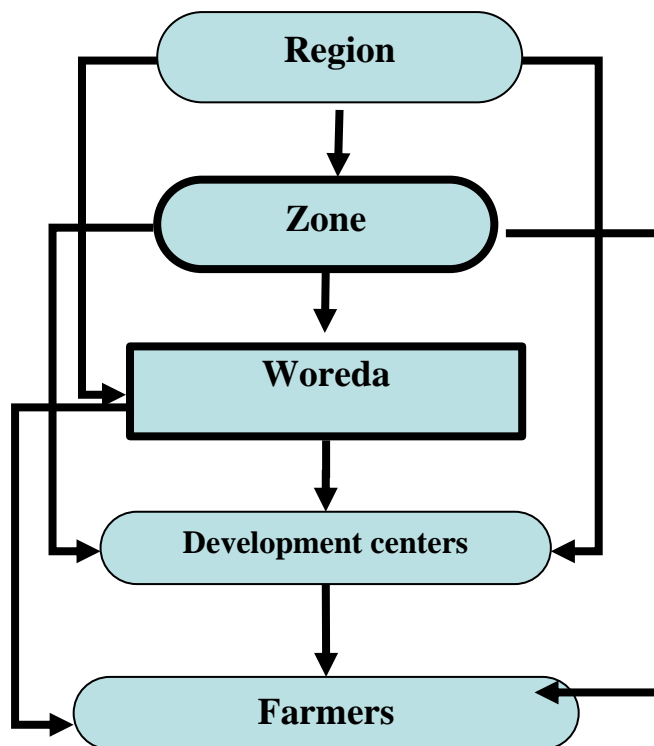


Figure 1: Routs of Trainings at different levels of BoARD

### 1.1. Statement of the Problem

In the agricultural change process, whether it is top-down or participatory, when there is an idea that shows the clients lack certain technical, social and/or organizational abilities (gap in knowledge, skill and attitude), communication workers may organize training activities, which are directed towards addressing the problems (Leeuwis, 2004). Thus, many events of trainings of extension personnel and farmers have been undertaken on various aspects of agriculture and natural resource development and management, in different parts of the region aiming at extending and developing farmers' capabilities for better performances in their farming. It is one of the major activities of the agricultural extension system that consumes large share of the resources (time, budget, etc). According to the financial data obtained from RBoARD, out of the total running costs (average of 2002/03-2005/06 ), including budgets from food security project, up to 20 %



of the costs are allocated to different trainings, with out including costs for follow up of trainings.

The contribution that training can make to agricultural development is undeniable, but some doubts arise over its effectiveness and efficiency. The feedback from participants of different technical and training methodology trainings, review reports, and discussions with agricultural development workers, at different levels of the region, and farmers indicate that the results and the outcomes are unsatisfactory and there are inadequacies in the ways trainings are designed, implemented, monitored, and evaluated. However, these are not based on empirical evidences. Some argue that it is difficult to judge the situation without any systematic study. Thus, this calls for further investigation. As indicated by FAO (1995), performance evaluation should be one of the key concerns of trainers, training managers, and policy makers.

Thus, evaluation of farmers' trainings has to be undertaken through assessment of the performances of farmers and change agents. It should be based on the performance evaluation that assesses the gap between the work performances of an individual and desired level of competency. The changes in performances that are determined by the changes in KSAP or behavior, in turn, determine the changes in the outcomes and achievements of trainings. The changes in KSAP or behavior are, in turn, determined by the effectiveness of the training process and activities that are undertaken at all levels especially at development agents and farmers levels.

Hence, evaluation of the effectiveness of the entire training programs should be undertaken within broader context through investigation of farmers' conditions. It requires examining all elements of the training process. This includes: the degree of genuine involvement of the clients and other stakeholders in identification and prioritization of their needs, formulation of attainable and measurable objectives, effective implementation, monitoring and evaluation of the trainings. The changes they brought on farmers' performances or what they should do after trainings must be the main concern.

According to the information of BoARD, document review and personal experience and observations, the experiences of the region (probably of the country too) indicate that systematic participatory planning, monitoring and evaluation of the entire process of extension program can be said totally neglected. This is also true for the training program.

Evaluations of farmers' trainings that investigate the extent to which agricultural trainings are achieving what they are meant to achieve, have not been performed in the region. This is also true for investigation of the existence, performances and relationships of the major and sub-components of the training program. The study of Ethiopian Development Research Institute (2004), that dealt with Agricultural Extension, adoption, diffusion and socio economic impacts of technology packages in the eight Woredas of the four regions, Oromia, SNNPR, Amhara and Tigray (two Woredas from each region), didn't include the training activities. Even in universities in Ethiopia, except some studies on package approach and determinants of adoption of some technologies, research has been rarely performed concerning the agricultural training process or activities.

Therefore, the magnitude, the nature and causes of the problems are not known clearly. Thus, problems that confront the different questions related to the process and the outcome of the training should be raised and examined for further improvement of the condition. Since there are no different training approaches for crop and/or livestock enterprise, teff and poultry farmers' trainings are considered as cases for the purpose of this study. It intends to examine farmers' training program, which is undertaken at various kebeles of Alaba woreda, including the development agents and the woreda subject matter specialists' trainings. It analyzes the existing conditions, problems and achievements in terms of knowledge and skill (KSs), and changes in performance and outcomes.

## **1.2 Objectives of the Study**

The general objective of the study is to examine the overall effectiveness of the program of teff and livestock (poultry) farmers' trainings.

The specific objectives are:

- to assess the effectiveness of teff and poultry farmers' training processes, and
- to assess the outcome and achievements of teff and poultry farmers' trainings in the woreda.

### **1.3 Research Questions**

The research questions, which are related with the general and specific objectives, are the following:

- How farmers' trainings are organized, implemented, and evaluated?
- What improvement do trainings bring in farmers' work performance and outcomes?

### **1.4. Scope and Significance of the Study**

As indicated in the problem statement, the development training program ranges from development centers to the regional level, including trainings of farmers, DAs and SMSs (at various levels) on different aspects of different enterprises. However, even though this study focuses mainly on teff and livestock farmers trainings of Alaba woreda because of resource limitations, it tries to partially address the trainings of DAs and SMSs of the Woreda. This was required to give a complete picture and because of their inter relatedness. The cost benefit analysis or efficiency of the trainings was not included in this study.

Development training activities are among the major functions of the extension services. Since the study tries to address the problems related to inadequacies of the process at all levels, especially at grass root levels, and as no study was undertaken in the region concerning the issue, it is hoped that this study will be relevant and will make significant contribution.

## **2. LITERATURE REVIEW**

In this chapter, the concepts and ideas, which have relevance to the study, are defined. In addition, the empirical studies, which form the basis for the conceptual framework of the study, are also reviewed.

### **2.1. Overview and Definitions of Concepts**

The different communication services, which define the different kinds of products that can be delivered by communication workers, can take many forms, not only in terms of the methods and the techniques used, but also with regard to the wider intervention purposes, which again relates closely to the assumed nature of the problematic situation. Depending on the situation, the problem may, for example, be regarded as a lack of adequate technology, conflict over collective resources, lack of organizational capacity, or as an individual farm management problem. Apart from these, there are also some general communication functions, which may be relevant within each of the different services or strategies. These includes: raising awareness and consciousness of pre defined issues, exploring views and issues, information provision and training (Leeuwis, 2004).

Training is a term, which covers a wide range of activities. Its length can vary from short-term training activities such as one-day demonstration, to longer-term professional courses that may last several months. Trainers are also diverse. Generally, FAO considers four main audiences: primary producers, technical specialists, professionals and students receiving technical education (FAO, 2002).

Human Resource Development (HRD) is one of the many strategies in achieving the vision for development in any country. Training can be one of the best ways to develop human resources. It aims to develop people's potential and enable them to use this potential towards the achievement of their vision of self –reliance and self sufficiency. It covers the development of peoples' KSA as they deal with their day-to-day life situation (IIRR, 1997, Marrissa, 1997).

When there is agreement in a change process that audiences lack certain technical, social and/ or organizational skills, communication workers may organize training activities or courses directed towards transferring specific knowledge and skills. Extension training

which is conventionally, referred to the process through which extension staff becomes equipped to do their job, provides change agents at different levels in organizations (management, field worker's etc) with insights and experiences for taking strategic and operational decisions in communicative intervention. It may cover technical, and/ or management issues, and it can take place in various ways. Method demonstrations and experiential practical are among some important methods that can be useful when interacting with farmers outside classroom or in a distance education setting (Leeuwis, 2004).

Trainings are important tools for assisting government officials, development personnel, extension experts and agriculturalists in the realization of their program objectives and plans. Often we are faced with the need to change something or to implement a new way of doing something. It allows us to orient those who will be involved in and/or affected by the change. We may also need to provide people with new knowledge and /or with new skills that are necessary to implement a change. Training is, therefore, a potential solution (FAO, 2002).

Therefore, the development training, selected as a focus of this study, refers to such trainings of farmers and extension staff undertaken in conventional and/ or participatory models. Thus, in the system where the role of extension and communication- intervention was looked on as transferring and disseminating ready made knowledge from research to farmers, or from 'early adopters' to other farmers, which is often referred to as the 'transfer of technology' model of extension (Chambers, *et al* 1989 in Hagman et al, 2000), it is obvious that the methods and techniques used follow the same manner, which holds true for training approaches too.

In the traditional approach of the training, it is the training staffs who design the objectives, contents, teaching techniques, assignments, lesson plans, motivation, tests and evaluation. The focus in this model is intervention by the training staff (Rama, *et al*, 1993).

As Hagman, *et al*, (1998) argued, the transfer of technology (TOT) model, which has been the prevalent practice for developing and spreading innovations in many developing countries, is based on the assumption that transfer of technology and knowledge from scientists to farmers will trigger development. Therefore, until recently development in

rural Africa mainly consisted of farmers and communities being told what to do, often by institution which has not taken the time to understand their real needs. The results tend to be poor, because rural people did not feel ownership of the ideas imposed on them. This situation is well reflected in the case of Ethiopia.

The style of the communication process is highly related with the evolution of its theories and approaches. Chambers (1993) argued that the values and the roles, and power relations have been changing from urban, industrialized, high technology, male, quantifying, and concerned with things, needs and interests of the rich, to people first and poor people first of all. The last first paradigm includes learning from the poor, decentralization, empowerment, local initiative, and diversity. Development is not by blue- print but by a flexible and adaptive learning process. The communication process is also becoming lateral, i.e., as mutual learning and sharing experiences as opposed to previous condition, i.e. vertical, order down, report- up (Chambers, 2004).

The evolution of technology development and dissemination shows shifting in paradigms to meet the challenges they are facing. The methodologies are changing with the changing of agenda from time to time, from TOT to facilitating social learning through Farming Systems Research (FSR/E) in 1970s, Participatory Technology Development (PTD) or Farmers Participatory Research and Extension (FPR/E) in 1980s (Chambers, *et al* 1989 in Hagman *et al*, 2000), and facilitating participatory learning, Rapid Appraisal of Agricultural Knowledge System (RAAKS) and Livelihood approaches in 1990s etc. The Participatory training, which emerged from such rethinking of development approaches, has become one of the participatory methodologies (RISE, 2002). Even though, the recognition of the need to move away from instrumental and blue print models to more participatory approaches has increased in different parts of the world, winds of changes of such development movements have not influenced Ethiopia's development efforts.

According to Scarborough *et al* (1997), a rethinking of extension approaches necessarily has implications for the training of extension workers. Sustainable agriculture and a move to farmer led approaches require extension personnel to have a deep understanding of farming systems and the interaction between agriculture and the physical and socio-economic environment. This is essential, if they are to adapt technical advice to the specific circumstances of individual farms and local environments. At the same time, their analytical skills must be developed, so that they can help farmers identify the complex

web of factors that underlie production problems and the potential for improvement. They need to be able to work closely with groups and communities, to facilitate community analysis of the local environment, to support the development or strengthening of groups which can take and implement decisions about the use of common property resources, to act as intermediaries, between farmers, groups and government institutions. Trainings in communication skills (particularly with group, but also in dialogue with individual farmers), PRA, in problem solving become increasingly important (Scarborough *et al*, 1997).

According to the above concept, this is not only a question of the content of training: the learning and teaching methods used in training institutions also need to be brought in line with the requirements of 'extension for sustainability'. Trying them out and then reflecting, with the critical help of peers and trainer, on the outcome, helps learn communication skills. An appreciation of the variability and complexity of farming systems comes as much from interviewing farmers about their farms as it does from textbooks and lectures. The role of the trainer becomes facilitating learning rather than imparting information. These training requirements do not diminish the need for a sound knowledge of agricultural science and technology indeed extension for sustainable agriculture requires extension personnel to have more, not less confidence in their scientific understanding of agriculture(Scarborough *et al*, 1997).

## **2.2. The Learning Cycle and Adult/Farmer Training**

Learning is defined as mind's ability to acquire process and retain new knowledge and information, and/or competencies generated among learners and/or a process of change in knowledge, attitude, beliefs and behavior (Hassen and Amdissa, 1993).

Kolb's experiential learning cycle requires the learner to progress through four different phases of continuous learning process: concrete experiences; observation and reflection; generalization and abstract conceptualization, and active experimentation. Effective learning requires the ability to apply or active experimentation of things we learn, based on the principles we have formed through analysis or reflection on our concrete experiences we had (Hassen and Amdissa, 1993).

In the learning cycle the following steps can be distinguished: orientation or a clear and shared understanding of how the learning process will be organized; generation of participants' concrete experiences that refer to description of the problem situation and the actual practices; diagnosis of/ reflection on/ the experiences; conceptualization and formulation of learning objectives; focused learning activities or active involvement of farmers in problem solving process; integration and translation of main findings to the work situation; reviewing their relevance and feasibility in the specific conditions of participants; developing new working practices and then starting the cycle and continues again(CEPDA1994,Sohn,1995,IAN,1995).

Farmer training is education that most often takes place outside formal learning institutions. It differs from education in schools because it is geared towards adult learning. Mature adults are self-directed and sufficient in most aspects of their lives. Adults tend to resent educators that fail to take this fact into account. They do not appreciate being talked down to or having their autonomy restricted in ways that show a lack of respect (Hassen and Amdissa, 1993 Rama, 1993).

In pedagogical learning, teachers decide the content to be delivered to students as well as how and when the teaching is to take place. Adults on the other hand, begin new learning ventures with some ideas of what they will gain from doing so. It is necessary, then, that extension agents discover what a farmer wants to learn. This may seem like a natural step and perhaps not worth much emphasis. Nonetheless, failure to accommodate a farmer's interests is a common pitfall. Extension agents often assume the teacher's role and decide for the farmer what they need to know. The drawback to this approach is that the farmer is apt to resist. Decisions on the content and method of training must be the shared responsibility of farmers and extensionists. The common purpose which emerges from such choices leads to sense of cooperation necessary for learning to take place. A cooperative spirit in adult learning is important because it allows for the sharing of useful knowledge and skills adults bring with them to a new learning situation. The past experience of adult learners is central to adult learning, so activities such as discussion, role playing, and skills-practice are designed which use that experience as a foundation for further learning. The other characteristic of adult learners which sets them apart from children has to do with their time perspective and how it affects their orientation to training overall. Adult learning is based on the principle that all experience contributes to a



learning process that does not end with the closure of a training event, but continues throughout one's adult life. It promotes learning by working on today's problems today. The immediacy of application is the determining factor in choosing the actual content of the training (Hassen and Amdissa, 1993, Rama, 1993, Sohn, 1995).

Adult learning is not widely practiced in the extension services which are predominant in the developing world. Small farmers in Third World countries are often told what is right ("modern techniques") and what is wrong ("traditional practices"), what to grow (often, cash crops), and where and when to market their produce. This approach to extension promotes dependency on outside inputs and expert advice (self-concept). It denies farmers the choice of what they want to learn (motivation). It does not focus on the Third World farmer's most immediate need to grow more food for their family (time perspective). Nor does it take into account a farmer's accumulated experience of the environment where her crops are grown. The environment in which small-scale Third World farmer lives is often dominated by uncertain weather, pests, diseases and price fluctuations. Farming in this environment is fraught with risks. Given the choice afforded her in a farmer training system built on adult learning principles, a farmer will avoid as much risk as she can. The extension worker's task, then, is to help the farmer reduce risks whenever possible through a sensitive choice of training methods and presentation of innovations that are appropriate to the scale and type of farming being practiced (Rama, 1993).

In general, the adult learning principles show that adult learning occurs when it is self directed, fills immediate needs, participative, experiential, provides feedback, shows respect for the learner, provides a safe atmosphere and occurs in a comfortable environment (Chauban and Stone, 1994, Sohn, 1995).

### **2.3. Participatory training**

Participatory training is an educational process that is based on the assumptions of adult learning, deciding on what they want to learn and the best way to learn. It encourages participants to see themselves as a source of information and knowledge about the real world. It refuses to accept that people do not know anything, recognizes the value of popular knowledge and encourages people to participate in their own learning process. When they are encouraged to work with the knowledge they have from experience, they can develop strategies together to change their immediate situation. The participants

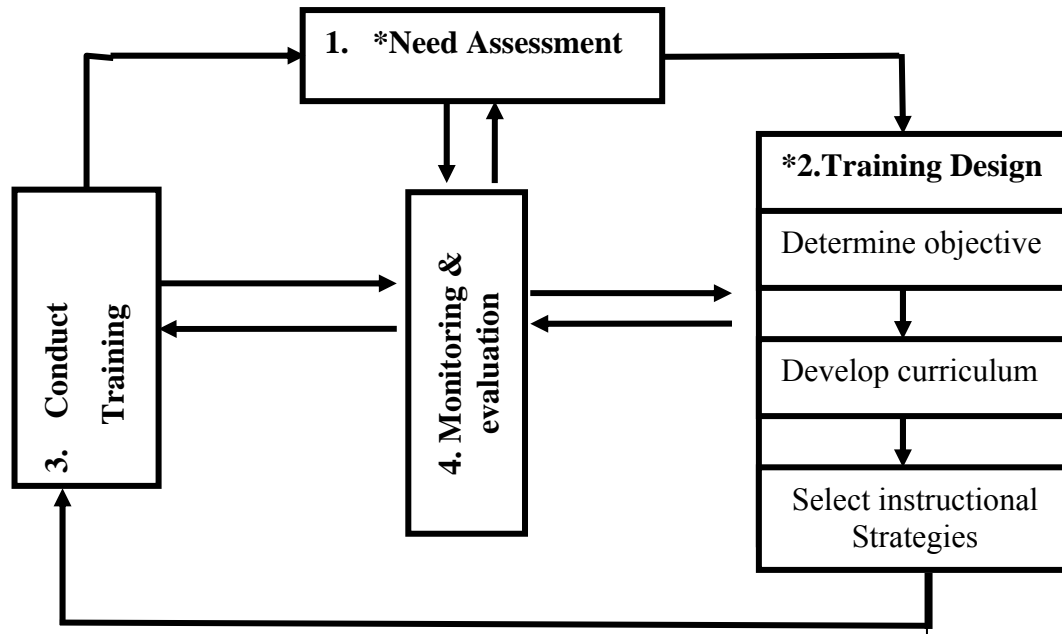
control the process of learning and the trainers play the role of facilitators. Thus, this process gives participants a sense of empowerment and they start recognizing their existing knowledge and its value. In doing so, they become more open to and actively share responsibility for seeking new knowledge. This enhances the learning Process and feeling of owner ship of the knowledge. Thus, participatory training becomes a tool and a strategy for social change when people start valuing the process of collective analysis. So, the first task of participatory training is to create an understanding that change is possible, that it is possible to change one's situation .The second task is to enable individuals and communities to identify what types of change they wish to achieve and how to go about attaining that (RISE, 2001).

## **2.4. The Training Process**

The systems approach to training is a result – oriented process designed to ensure that training is both relevant and effective (FAO, 2002). A systematic approach to training consists of logically structuring and sequencing the disparate types of activities, which make up a training program. This is achieved by the concept of the training cycle/ process which delineates these activities into defined and inter-related stages ranging from initial conception and formulation of training to its final delivery and evaluation (Hassen and Amdissa, 1993). According to FAO, in the broadest view, there are three phases of the training process: planning, implementation and evaluation phases (FAO, 2002). Specifically, four broad stages of training may be outlined: Need assessment, Design and preparation of training, conducting training, and M & E of training (Figure 2).

### **2.4.1. The Planning phase**

This phase includes the first two broad stages of training: Need assessment and design and preparation of training. Determining what you want to achieve and how you will achieve it. It is the curriculum development process, which includes a series of steps that it followed, and will help ensure consistent and effective training efforts.



\*No.1 and 2 refer to planning phase

Figure 2: The cycle of training (Adapted from Hassen and Amdissa, 1993).

#### 2.4.1.1. The Training Need Analysis

The TNA, being the beginning of a systematic approach to training, defines the scope and requirements of training and helps establish the objectives against which training results can then be evaluated (Hassen and Amdissa, 1993). If properly done, it makes the training, people, performance, participation and productivity centered (4 Ps centered). It is the process of determining if there is a discrepancy between desired and actual performances of the trainees. In order to determine if a discrepancy exists, an analysis of the situation must be conducted. This analysis leads you to decisions about the types of training and how much training needs to be conducted. It would be a waste of resources and frustrating to the trainer and trainees to design and deliver training on topics and skills where the trainees are already able and proficient (FAO, 2002, Miller, 2002).

Training is more effective in changing behavior, if it is related to one's actual work situation i.e. a felt problem, or a problem that is in some other way experienced as important or relevant. Individuals learn more when they themselves feel a need to improve or change than if they are "told" to learn something or change for reasons that are alien to them (Hassen and Amdissa, 1993).

#### **2.4.1.2. Design and Preparation of Training**

The Design and preparation of the training stage includes all those activities that are concerned with the development of a course. Broadly the sub-stages involved are: Defining objectives; Building curriculum, and choosing instructional design.

As it can be seen, this stage links back to need analysis in that it uses the results of TNA to establish training objectives. It has also forward linkages with course presentation in that the curriculum developed and the choice of instructional design (training aids and materials) define the scope for, and mode of delivery and management of, training. It is worth pointing out that a measure of ongoing monitoring and evaluation at this stage too, helps ensure the quality of envisaged program (Hassen and Amdissa, 1993, FAO, 2002).

##### **2.4.1.2.1. Training Objectives**

Once training needs have been identified, you need describe those needs as objectives worth meeting. Unless training objectives are developed a training activity cannot be systematically designed to achieve particular outcomes. It has been said, "If you are not sure where you're going, you're likely to end up somewhere else and not even know it". To avoid this situation, you must be able to state exactly what you want the trainees to accomplish and also what you are willing to accept as proof that they are able to do this. Objectives are statements of what trainees will be able to do after trainings (FAO, 2002). In the training context objectives arise out of 'gaps' and deficiencies identified in the process of needs assessment. They indicate what is to be done about those gaps by stating an end-of-training performance outcome (Hassen & Amdissa, 1993).

If objectives are inadequately formulated in the first place, even a good training program has really no chance to be effective. Faulty job analyses have sometimes led to such results. Suffering from incompatible training objectives is a weakness common to many programs (Lynton and Pareek, 1990).

##### **2.4.1.2.2. Training contents**

Training contents refer to the subject matters that are included in the training activity, which the trainees will be able to use to meet the training objectives. It will rarely be able

to include every thing you want to teach. Specifying objectives tells you where you want to go. Organizing contents into lessons plan helps you to plan the details of the lessons (FAO, 2002).

#### **2.4.1.2.3. Training methods and materials**

Training methods and materials provides trainees with learning activities and supports and help the trainers to effectively present and accomplish training content (FAO, 2002). Combination of methods and materials are preferable because some methods are most suited for presenting, others for encouraging participant involvement and yet others are best as activities out side the training room. In setting objectives, the emphasis is on the learners, rather than on the instructors (Hassen & Amdissa, 1993).

Examples of different learning styles include farmers who need to see and test results for themselves; farmers who are unsure how to do something; farmers who need to get their information from people they know rather than strangers, and farmers who need ideas expressed in a logical framework, that is consistent with their own worldview. Corresponding training methods are result demonstrations and on farm-trials; method demonstrations; training of master farmers to train their peers; and analogy and storytelling. When an effective match is made between training method and learner, the quality of communication between the extension agent and the farmer increases, trust is established and risk in the eyes of the farmer is reduced (ICE Audiovisual Communications Teaching Aids Packet, (P8) (PC/ICE) 1982).

Every body learns in his or her way. Thus, effective training requires using a variety of methods, including visual and auditory methods and aids. Effective training involves the learners in the use of several sensory modes or representational system, i.e. provides observation, discussion and practice (Hassen & Amdissa, 1993).

#### **2.4.2. The Implementation phase**

It refers to doing what is necessary to achieve your goals and objectives. It is the process of putting the training programs in to operation. It is delivery of trainings. Once trainings have been adequately conceived, designed and prepared, it is ready for delivery.

The conduct or management of training broadly comprises of:

- Deciding the physical attributes of the training environment (training room etc).
- Structuring the plan and sequence of training activities, (how to start or end, etc).
- Choosing and using effective training methods and techniques to deliver it.

Training will be more effective if the individual translates the learning into concrete plans and actions that can be implemented on the job (Hassen and Amdissa, 1993, FAO, 2002).

#### **2.4.3. The Monitoring and Evaluation phase**

This phase or stage of the training cycle refers to the checking to see that you have succeeded in achieving your objectives and where necessary, making changes to improve training activity results in the future (FAO, 2002).

Evaluation is about assessing the effectiveness of the various aspects of training. It is an interactive process in which various stages of training are appraised from the viewpoint of their adequacy and contribution to achieving the training objectives. Evaluation can also play an important role in the re- orientation and modification of these objectives and the formulation, and launch of new training programs. It is thus far from a merely end- of training activity- rather as an integral component of training with strong presence in, and linkage with, all other stages (Hakimian & Teshome, 1993).

To make the training process effective, the stages and the sub- stages of the cycle of training should be treated in the way that makes them productive and fruitful. Analysis of the various aspects of training should be undertaken by organizations, which deals with learning especially extension organizations. If activities of training process lack systematic and periodic efforts of reviewing the results of the program, it runs into the danger of becoming ineffective and unsustainable. Improvement of the program from time to time coping-up with changing conditions becomes difficult, even impossible. Thus, analysis of the program is very important for any future improvement.

#### **2.5. Analysis/Evaluation of Effectiveness of Training**

Evaluation is an aid to training. It is a systematic process of obtaining relevant information and interpreting data to facilitate decision-making. Evaluation can take place at any point

in time in a training program. It is a decision making tool. Providing answers to questions relevant to training. The kind of information required has to be relevant to the question and should be systematically identified (FAO, 1995). In general, evaluation serves four purposes (Ahman & Glock, 1981; Sedre, 1985 in FAO ,1985): appraisal of the achievement of the individual; diagnosis of the learning difficulties of the individual trainees or a group of trainees; appraisal of the effectiveness of a training program, curriculum, training materials, procedures, and organizational arrangements; and assessment of the progress to help understand training problems and develop sound policy, (FAO, 1995). Therefore, training programs and projects are evaluated from different angles and view points: trainers and their institutions; trainees (their learning, reactions, post-training job performance and contribution) (Hassen and Amdissa, FAO 1993).

Program performance evaluation can include process evaluation, outcome evaluation and impact evaluation. Process evaluation assesses the extent to which a program is operating as intended. Typically, it assesses program strategy and specific program activities. The outcomes refer to changes in knowledge, skill and attitudes. The impact assessment evaluates the changes in people's lives or in communities that leads to a better living style, both on a personal and a societal basis (Bennett and Rockwell, 1995).

According to Lynton (1990), for evaluating the complete training program, the basic question is, simply, to what extent did the program achieve what it set out to achieve: this is the larger scale version of the question that trainers ask of every session, module, and larger part of the program. In most cases, detailed study will be required before strategic difficulties can be located and their strength assessed.

Knox (1986), explain that evaluation enables participants to make informal decision about their educational progress and help the training organization to decide on program goals and procedures. These aspects of program evaluation are, thus, integral parts of the teaching/ learning transactions. Thus, program evaluation; being inescapably a value-judgment concept (Hassen & Teshome, 1993) can be used for planning, improvement and justification (Brookfield, 1998).

The term effectiveness is relative. Typically, effectiveness is determined with respect to the achievements of a goal or set of goals. Human resource development effectiveness must be determined with respect to the goals of the program being examined (FAO, 2002).

Since the types of effects refer to technological, institutional, socio-economic, and environmental aspects, the achievements of a program should be seen from efficiency, effectiveness, relevance and sustainability point of view. Efficiency refers to quantity and quality of the products achieved in relation to the human, physical, and financial resources invested. Effectiveness refers to the grade or level to which the expected products, effects and impacts are achieved. Relevance is the grade or the level the project deals with the most important problems of the target group. The extent the products of the project achieved lasting effect and impacts within the target group and the extent skills and capacities are built up within the implementing agency refers to sustainability (Bennett and Rockwell, 1995).

Evaluation is conducted to help managers, employees, and HRD professionals make informed decisions about particular programs and methods. For example, if part of a program is ineffective, it may need to be changed or discarded. Or, if certain program proves effective, it may be replicated in other parts of the organizations. Training is functional and relevant only when it is evaluated. If HRD staff cannot substantiate its contribution to the organization its funding and program may be cut during the budgeting process, especially when the organization faces tough times (FAO, 2002).

Since a training program can be examined from a number of perspectives, it is important to specify which perspective will be considered. A model of evaluation outlines the criteria or focus of the evaluation effort. Among the different models of HRD evaluation, the five models listed in table 1 share many features, but differ in some ways. Considering all the criteria or addressing the entire process, i.e., the planning stage, the effects and impacts are very essential in effective evaluation of trainings (FAO, 2002).

According to FAO, in its simplest form, evaluation should address the question of whether the training program achieved its objectives (Campbell 1988). Basing training objectives on need assessment information, and then evaluating those objectives (Campbell, 1988, Robinson and Robinson, 1989) is the most parsimonious way of summarizing what training evaluation is all about (FAO, 2002) .



Table 1: Different models of HRD evaluation

<i>No</i>	<i>Models</i>	<i>Levels</i>
1.	Kirkpatrick. (1967--1983)	Four levels: Reaction, learning, Job behavior and results.
2.	CIRO (Warr <i>et. al</i> ,1970):	Four levels: Context, input, reactions and out come.
3.	CIPP (Galvin, 1983)	Four levels: context, input, process and products.
4.	BrinkerHoff (1987)	Six stages: Goal setting, program design, program implementation, immediate out-comes, impacts and worth.
5.	Systems approach (Bushnell, 1990)	Four sets of activities: Inputs, process, outputs, and out comes.

Source: FAO, 2002.

Kirkpatrick (1967--1983) suggested four criteria to evaluate training programs: (1) reaction, (2) learning, (3) behavior, and (4) results. Each criterion is used to measure the different aspects of a training program. Reaction measures how the trainees liked the program in terms of content, methods, duration, trainers, facilities, and management. Learning measures the trainees' skills and knowledge which they were able to absorb at the time of training. Behavior is concerned with the extent to which the trainees were able to apply their knowledge to real field situations. Results are concerned with the tangible impact of the training program on individuals, their job environment, or the organization as a whole. In addition to these, the other models include the planning activity in which the contexts and inputs are considered very important. Thus, the evolution of the models show combined way of using the criteria that includes the context, inputs, the process, the out comes and the impacts of the system.

Attempt was made to review different empirical studies which are related to this study and are presented for farmers' trainings and change agents' trainings in the following part:

According To Kefyalew (2006), considerations given to the needs of the farmers before designing the training was insignificant. No systematic and formal need assessment was conducted both by GOs and NGOs he studied. This was so because of the conventional approach and planning for farmers, instead of participating them. He also reported that, as

far as contents are related with the agricultural activities of the farmers, they consider them as relevant, but the degree of relevance varies with their priority needs.

Farmers' trainings that were provided by GOs and NGOs were reported to be more of theoretical dominantly given only through lecture and they are not participative. Selections of the farmers were done by the organizations based on their own criteria. Full time farmer and willingness are common criteria used by both GOs and NGOs whereas ability to pay down payment is additional criteria for GOs in most cases. The study indicated that farmers' trainings that were provided by GOs were generally male-biased. Inconveniencies of duration and length of trainings to the farmers are also stated by Kefyalew (2006). He mentioned that since decisions concerning these issues are made by the organizations without involvement of farmers, untimely trainings are provided in most of the cases. According to his findings greater than 50% of the farmers in the study indicated they were inconvenient in the time of trainings. The study also indicated that farmers do not prefer long and continuously provided trainings and almost all of them showed high preference in the trainings given in their village.

Kefyalew also stated that certain problems that are related with communication problem of change agents are reported from farmers. The study showed that trained farmers' attitude is favorable towards improved agricultural practices; their openness receptiveness and their knowledge were increased when compared with the untrained ones.

Training of Agricultural Extension Officers (AEOs) as stated by Bisen (1962) should include methods of approaching farmers, developing leadership, imparting knowledge and skills of improved farm practices.

Some of the areas for professional development of extension workers were reported by Taiwo (1971). They were developing an understanding of the history, objectives, nature, role, administrative procedures and policies of extension organization, developing skill in human relations, program planning, communication, evaluation and widening knowledge about different types of agencies and services provided support for extension program.

As per Halim and Islam (1973) most of the field level extension workers gave much emphasis to include courses on technical subject matter and extension teaching methods.

Perumal (1983) reported that field based training to village level workers (VLWs) and research based training to subject matter specialists (SMSs) were needed in the areas of extension, plant protection and agronomy with the university specialists as trainers.

Mani (1974) expressed that in service training should be more practical and problem-oriented than being theoretical.

Among the teaching methods, discussion and demonstration methods have been considered more effective followed by lecture with teaching aids as stated by Rizvi (1967).

Chowkidar (1968), considered demonstration, lectures, observations, group discussion and motion pictures as effective methods.

## **2.6. Conceptual Frame Work**

The meanings, the extents and the methods of measurements of the effectiveness of trainings are very broad. These include: the number and type of people trained; the number of the training events; participants' satisfaction at the end of the training; participants' learning at the end of the training; willingness to try or intent to use the learning at the end of the training; retention of the learning and on-the-job behavioral/performance changes after the training; the outcomes and impacts of the training, and additional number of people who were trained (cross-trained) by those who have previously attended the training and their change in learning, job performance and outcomes ( Lynton and Pareek, 1998, 2000,FAO,2002).

More over, as Lynton and Pareek put it, all partners in it determine the effectiveness of training: the participants, the system and the work organization. Just as the strength of chain is determined by its weakest link, so the least contribution from any one partner becomes the maximum overall level of effectiveness possible (Lynton and Pareek, 1998, FAO, 2002).

Trainings are conceived from the social, economic and/or environmental (SEE) problems or gaps of the existing work practices of the clients. They are organized when there is lack of certain technical, social and/ or organizational performance gaps, to transfer specific knowledge and skills. The level of effectiveness of the training process determines the

participants' learning at the end of the training and on-the-job behavioral or performance changes. This in turn determines the outcomes of the trainings. Each one of the variables depends up on one another (Figure 4).

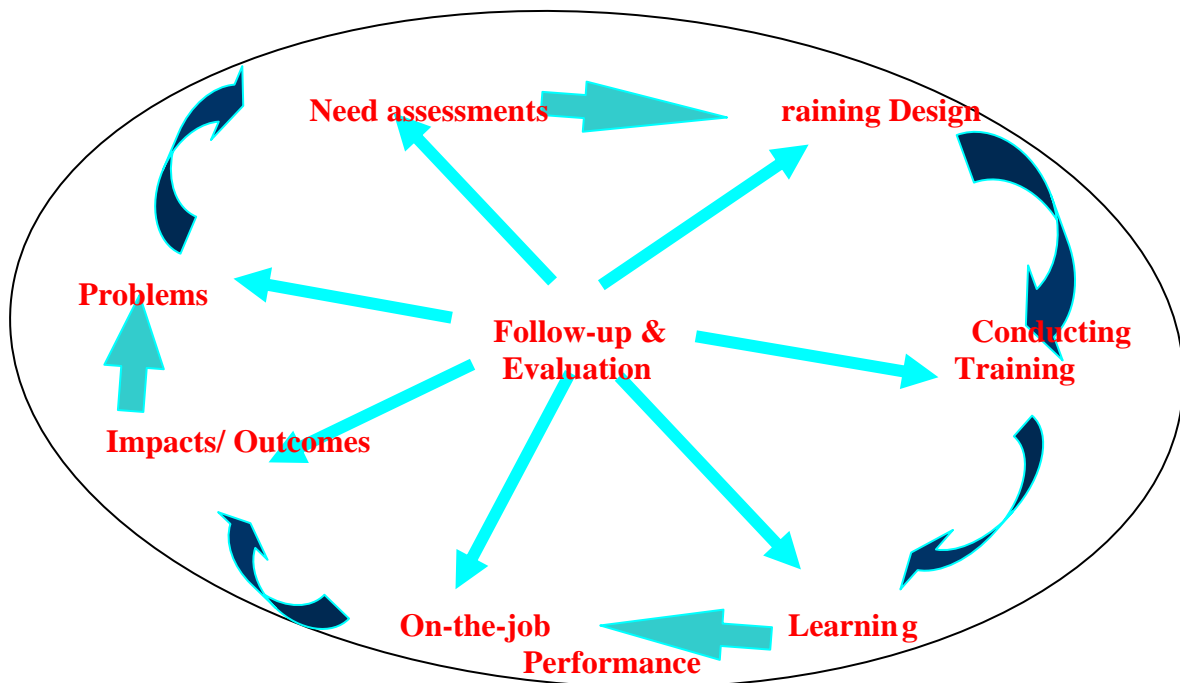


Figure 3: Elements of the measurements of training effectiveness

Thus, this thesis argues that measurements of effectiveness of trainings refer not only to the extent to which trainings are achieving what they are meant to achieve, but also refer to the degree of their responsiveness to the needs of the clients and the way the activities of the process of trainings are defined, inter-related and undertaken starting from it's conception and formulation to it's delivery and evaluation. Thus, it includes context, process, product and impact assessments. Therefore, effective trainings need to be: problem oriented; need based; with measurable and achievable learning objectives that show changes in knowledge, skill & attitudes, changes in job performance and outcomes within given time; implemented in conducive adult learning requirements(methods and materials); with continuous follow-up where activities and results are monitored ,reviewed and evaluated for further improvement of the whole system.

### 3. RESEARCH METHODOLOGY

This chapter includes selection and description of the study area, selection of crop and livestock enterprises, participants and the sample size, data collected, methods of data collection and data analysis.

#### 3.1. Selection and Description of the Study Area

The study was conducted in *Alaba* special woreda, which is one of the eight special woredas of the SNNP regional state (see Figure 4 & 5). Though, the process of training is similar in every woreda of the region, Alaba was chosen because of multiple reasons. These include: the lesser number of studies undertaken in the area, the relative potential of crop and livestock production and marketing and better opportunities for implementation of innovative extension activities as pilot learning site of IPMS\*.

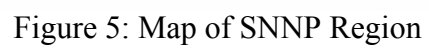
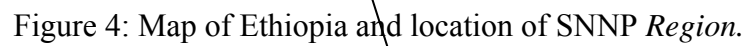
##### 3.1.1. The Region

Southern Nations Nationalities and Peoples Region (SNNPR) is highly diversified. The total area is 113543 sq. km (about 20% of the country) and its altitude ranges from 367 to 4207 m.a.s.l. Agro-ecologically, it is classified into 5 major climatic zones, Haroor /the hottest low lands (6.2%), Kolla/ the low land/ (49.8%), Woina Dega/medium/ (36%), Dega/the cool high lands/ (6.5%) and of Wurch /the coldest high land (0.7%). The annual rainfall and the annual mean temperature, vary from 400 to 2200 mm and 17 °C to 20 °C respectively.

According to Statistical Authority report of 2005, the total population is about 14,489,705 (7,286,558 male), which accounts for 20% of the country's total population. Out of the total population 91.6 % (13,271,123) are rural. The total households are 2.7 million and the average family size is six persons per family. It is not only characterized by high population density, but also inhabited by more than 56 ethnic groups. It is endowed with various fauna, Flora, landscapes, rivers, rift valley lakes, farming systems etc. Administratively, the region is divided into 13 zones, eight special Woredas, 133 'Woredas' and 3,765 kebeles, totally.

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*\*Improvement of Productivity and Market Success (IPMS) is a project undertaken jointly by MoA and ILRI in different woredas of the country. Alaba is one of the two project woredas of SNNPR.*



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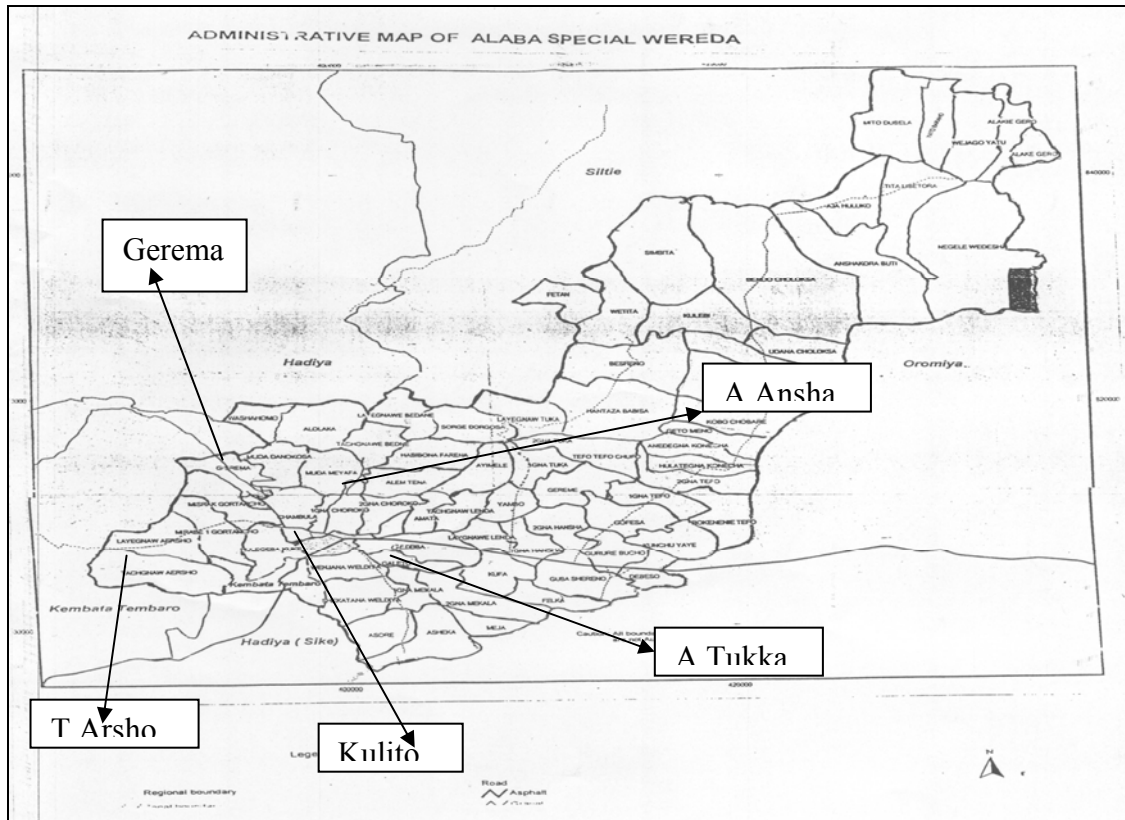


Figure 6: Administrative map of *Alaba* woreda and location of study *kebeles*

### 3.1.3. Alaba woreda

*Alaba* woreda is located 310 km south of Addis Ababa, about 85 km southwest of the Southern Nations Nationalities and Peoples Region (SNNPR) capital of Awasa. The woreda is located west of *Oromiya* region, north of *Hadiya (Sike)*, east of *Kembata Tembaro*, south east of *Silte* and *Hadiya* zones (Figure 5 & 6). It is one of the special woredas that are directly accountable to the regional state. It is divided in to 73 peasant and two urban *kebeles* (the lowest administrative unit) and *Kulito* is the capital of the woreda.

According to the 2004/05 population reports of the woreda, the total number of rural households is 35,719(26,698 male headed), with a total population of 210,283 (92420 are female) having 1.45% share of the region. Out of the total, economically active population (15-55 years of age) is 102,176 (55,668 male). It accounts for 49% of the total population.

The altitude ranges from 1554 to 2149 meter above sea level (m.a.s.l.), having agriculturally suitable land, in terms of topography. Agro ecologically, it is classified as woinadega. The annual rainfall varies from 857 to 1085 mm; while the annual mean

temperature vary from 17 °C to 20 °C with mean value of 18 °C. The area receives a bimodal rainfall where the small rain is between March and April, and the main rain is from July to September (Figures 7 & 8).

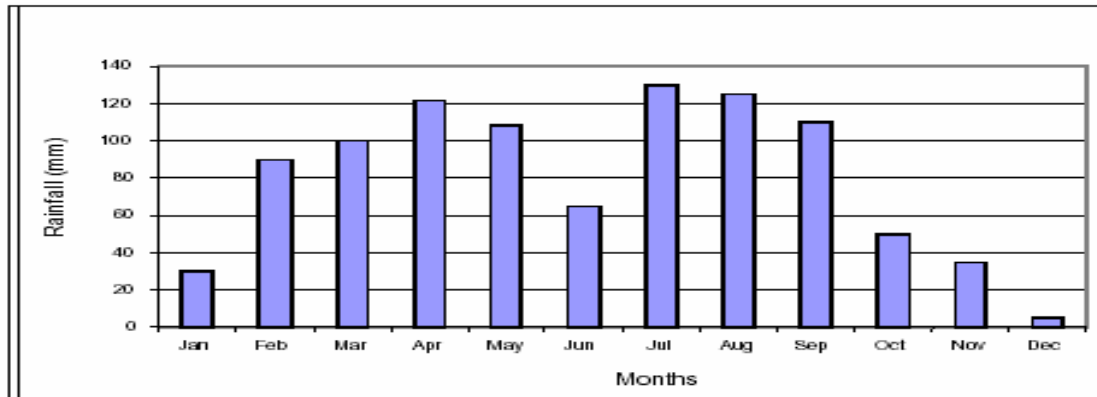


Figure 7: Rainfall pattern, Kulito station, Latitude 7o 22, Altitude 1850 m.a.s.l.

According to farmers' information, the rain is unreliable, i.e., untimely, erratic and not evenly distributed. It is one of the major limiting factors of agricultural production in the area and the woreda has been recurrently affected by drought. Even though, the actual rainfall data for the kebeles under study are not available, Figure 8 of the farmers of *Andegna-Ansha* kebele, drawn on the ground, using different size of sticks provides the general conditions. The upper 'bar graph', in the figure, represents the bad conditions of these days, while the lower one indicates the normal rainfall condition.



Figure 8: Perception of rainfall incidents, drawn by farmers.



According to FAO classification system, the most dominant soil of the woreda is Andosol (Orthic), followed by Phaeozems (Orthic) and Chromic Luvisols (Orthic) (Figure 9). They are believed to be relatively fertile. The total land area of the woreda is 64,116.25 ha, of which 48,337 ha (75%) are considered suitable for agriculture. Grazing and forest lands accounts for 6.73% and 7% respectively. As a result of long history of agriculture and high population pressure in the area, vegetative cover is very low. Consequently, erosion hazards in the sloppy areas are enormous. Even though, there have been some efforts of soil and water conservation (SWC) over the last twenty years, huge gullies are observed towards the southern end of the woreda, where soils have totally removed beyond recovery.

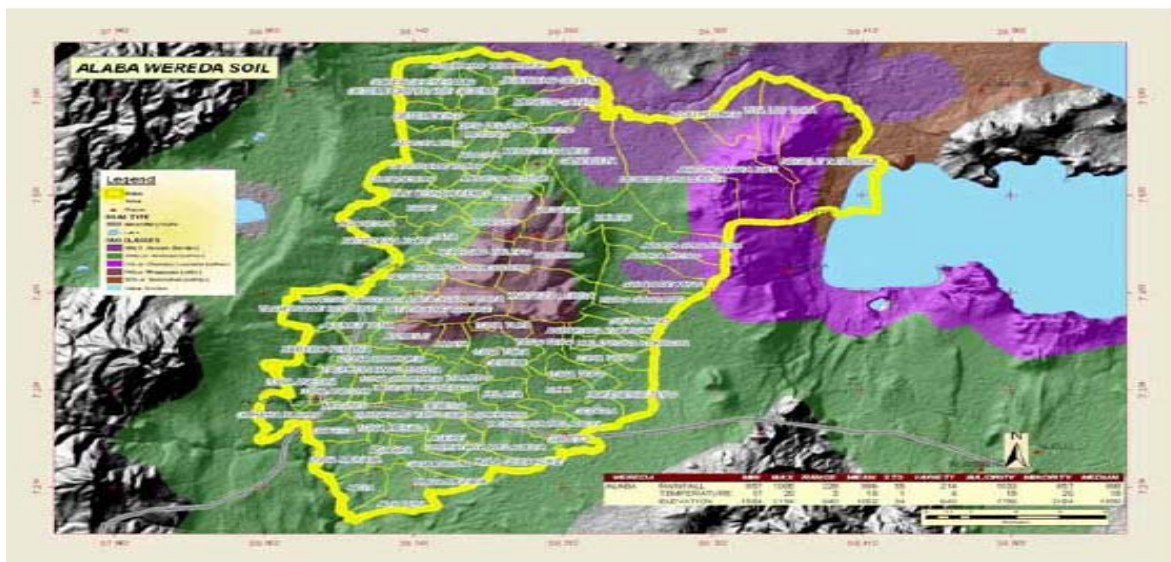


Figure 9: Soil map of *Alaba Woreda* (IPMS, 2006).

According to OoARD, since the last twenty years, domestic and livestock drinking water sources are getting depleted which is aggravated during drought periods. In addition to the common community managed ponds, household level water harvesting schemes are wide spread in the area. Developing irrigation is a recent effort in the area. There are four rivers, *Bilate* being the biggest. There is a high potential for irrigation, if appropriate water harvesting mechanisms are put in place. However, the water table for *Alaba* is very deep and use of ground water as a source of alternative irrigation is limited.

The crops grown in the area are maize, teff, wheat, pepper, haricot bean, sorghum and millet, which are mainly rainfed. Livestock are used for consumption, as major sources of

farm power and cash income through sales. Oxen are the major source of draught power. Donkeys are used for transporting drinking water for both domestic and livestock consumption and other goods. Free grazing and use of supplemental crop residues are common sources of livestock feeding, and shortage of feed is one of the major problems of the area. The common animal diseases reported include, anthrax, blackleg, internal and external parasites.

### **3.2. Selection of crop and livestock packages:**

The selection of crop and livestock packages as cases for this study was based on criteria developed through discussion with SMSs, DAs and farmers. These include:

- Time of introduction of packages: A package, which was introduced many years ago, was preferred, because the longer period of experience leads to enough lags between training and outcomes to manifest,
- The extent or coverage of the package in terms of number of *kebeles* and involvement of the households and their members,
- The contribution or the multiple usages of the enterprises for home consumption, sales/means of income etc and market opportunities.

Thus, among the different available crop packages, such as maize, wheat, teff, haricot bean and pepper, teff was chosen for the study because it fulfills the criteria mentioned on average. It is among the packages introduced earlier, starting from 1999/2000, and with good involvement of farmers, next to maize. More over, it is better in its contribution as a means of income and market opportunity. It is one of the cash crops next to pepper. Among the available livestock alternative packages such as poultry, dairy, fattening, sheep and goat packages, poultry was found to be better for this study, not only because it fulfills the criteria, but also for its additional advantages in simplicity of management, its higher contribution to the household nutrition and income, especially for women.

### **3.3. Selection of kebeles of the study**

According to the information of the *woreda*, the total number of Kebeles is 73 (OoARD, 2005), out of which 43 of them were classified as teff, haricot bean and livestock producing areas (IPMS, 2004). Livestock is an integral part of farming system in all

*kebeles*. However, its package activities, except poultry, are limited to few *kebeles*. The details for the year 2005 are given in Table 2.

Table 2: Livestock package activities of the woreda, 2005/06.

<i>No.</i>	<i>Type of Packages</i>	<i>No. of animals distributed</i>	<i>No. of kebeles covered</i>	<i>No. HHs involved</i>	<i>Year started</i>
1	Poultry	5442 Chickens	73	> 1500	2001/02
2	Dairy	230 Cows*	11	230	2004
3	Sheep	239 Sheep	3	239	2005
4	Goats	200 Goats	2	200	2005
5	Fattening	540 Oxen	8	540	2005

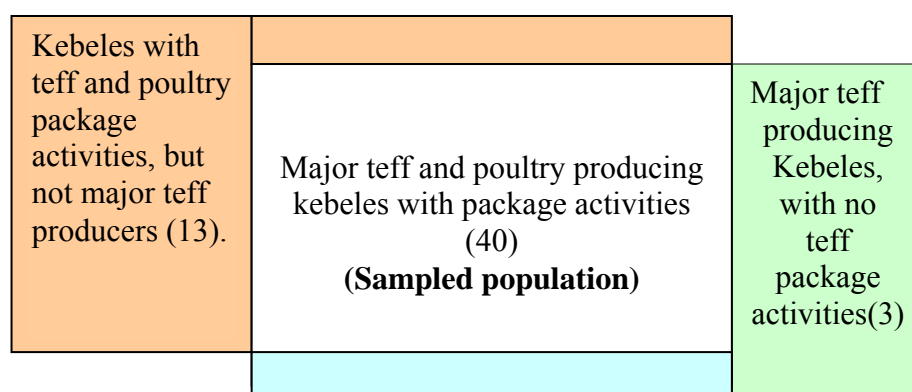
Source: OoARD, Alaba.

\* Cows distributed in year 2004 (1996 Eth.C.), and 2005(1997Eth.C.), were Holstein Friesian (130) and *Boran* breeds (100) respectively.

Out of the 53 kebeles in which the teff package activities have been undertaken in the year 2005 (data for the other years is not available at Kebele level), 13 kebeles did not fall in the 43 kebeles identified as teff, haricot bean, and livestock producers. Out of these, three of them did not have teff package activities. Thus, 40 kebeles were taken as a sample frame (See Figure 10 & Annex Table 1).

#### **Targeted population:**

Kebeles with teff and poultry package activities (53)



#### **Sampling frame population:**

Major teff and poultry producing kebeles (43).

Figure 10: Sampling Design of the kebeles.

Because of limitation of resources four kebeles were selected out of the 40 kebeles. To do so purposive sampling was used to avoid gender, distance and roadside biases, and assuming that the results of the study will be useful both for kebeles with and without FTCs, kebeles that have both male and female DAs and with and without FTCs from different zones of the woreda were included in the study. Thus, based on number of male and female development agents, zonation of kebeles and number of FTCs, constructed (Annex 1), the following Kebeles were selected; Andegna-Ansha, Gerema, AndegnaTukka and Tachignaw Arsho (see map of the woreda, figure 6).

Agro ecologically, all kebeles are under woina-dega (medium altitude) and totally dominated by mixed crop-livestock farming systems. The major crops grown include: maize, teff, haricot bean, pepper, wheat, barley, and coffee. The average land holding of the HHs in the study area is 2.65 ha. Out of this, 25%, 20%, 11%, 11%, & 33% of the lands allotted on average to maize, teff, haricot bean, pepper and other crops respectively. Generally, agricultural production system is rain-fed.

### **3.4. Selection of the respondents and sample size**

The respondents of the study include trained and untrained farmers and change agents (DAs, supervisors and SMSs ) working at different levels. The respondents and sample size for the farmers and the workers are given separately as follows:

#### **a) Sampling design of farmers**

##### **For quantitative study:**

One hundred ninety (190) farmers, i.e., 92 teff and 98 poultry farmers, both from trained and untrained groups were taken from each of the four selected kebeles proportionally to their size (see Table 3, figure 10 & Annex Table 3):

- For teff farmers training, 56 trained farmers, and 36 untrained farmers, male and female, were selected randomly from each kebele, proportionally to their size (see Table 2 and Annex Table 2).

- For Poultry farmers training, 68 trained farmers and 30 untrained farmers, male and female, were selected from each kebele, proportionally to their size (see Table 3 Annex Table 3).

Table 3 : Number of farmers sampled from each kebele

No.	Kebeles	Teff Farmers						Poultry Farmers						Total		
		Trained			Untrained			Trained			Untrained					
		M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
1.	Andeg.Ansha	10	1	11	4	3	7	8	2	10	3	4	7	25	10	35
2.	Andeg.Tukka	8	2	10	4	5	9	10	2	12	4	2	6	26	11	37
3.	Gerema	14	5	19	4	4	8	10	1	11	4	4	8	32	14	46
4.	Tachig.Arsho	13	3	16	6	6	12	34	1	35	5	4	9	58	14	72
	Total	45	11	56	18	18	36	62	6	68	16	14	30	141	49	190

M=Male, F=Female, (all are from female headed HHs). T=Total,

#### For the qualitative study:

Totally, groups of 20 teff and/or poultry farmers from trained and untrained categories existing wealth categories, elders, and youths from both sexes, (females both from female and male headed HHs), were chosen with development agents and supervisors, key informants and Kebele representatives from each Kebele.

#### b) Selection of change agents

The study of change agents training process was undertaken through qualitative method. Thus, DAs and supervisors of the selected kebeles, SMSs of the woreda and the region those who were participated in the study are shown as follows:

- All ten development agents (5 female), and all (five) supervisors (all are male) from selected four development centers/Kebeles (Annex V),
- The subject matter specialists (9) team leaders and heads of the three desks, Agricultural Development Division and WoARD heads (5), were included at woreda level (Annex V)
- At regional level, eight participants from different departments were included (Annex V).

### **3.5. Type of data and data collection methods**

Both qualitative and quantitative information on the training, context, process, i.e., planning, implementation, monitoring and evaluation, and data related with changes in performances, outcomes were collected, at community, organizational and individual levels. The specific aspects on which data collections focused include: training needs assessment; training plan and design; training performance and management; monitoring and evaluation of training; changes in KSs, performances and outcomes, or achievements.

Issues related with overall extension approach and management, linkage with in organization among departments, teams, subjects *etc* and among region, the *woreda*, development centers and farmers and linkage with other related agencies such as research were briefly addressed wherever necessary.

The study was undertaken through qualitative and quantitative research methodologies. Since the qualitative methods are more telling, insightful, and convincing, and the quantitative methods at the same time are useful in order to further assess the significance and relevance of qualitative findings in a wider perspective (Sarantakos, 1998, Lohr, 1999, Bryman & Burgess, 2000) both methods were useful and used in combination to get different aspects of data in different depths.

The study started with general information collection on number and types of trainings, package activities etc through review of documents and personal interviews at the *woreda* and regional bureau level.

Focused and personal interviews with decision makers and subject matter specialists at *woreda* level were undertaken to select the study kebeles, crop and livestock packages.

After selection of the study areas, through group discussions that were held with the supervisors and development agents of the kebeles, participant farmers were identified, contacted and arrangements for both qualitative and quantitative studies were finalized at kebele level.

Understanding of the farming systems through community analysis is very necessary, since factors that underlie production problems and potential for the improvement vary with the specific circumstances of farmers of each local environment (Tesfaye, 2003). The

dissection of a job event into its component parts allow trainers to understand what farmers and agricultural workers actually do in the course of their work. It helps in determining the most important elements and steps within a job task. Knowing what is required for completion of the job task and the actual performance helps to determine the extent of the problem or the current proficiency rate to complete the task. Thus, assessment is required to gain an understanding of the current knowledge and skill (KS) levels of trainees. It is very important to focus the training on the desired and important skills, which they do not possess already. Even though, direct measurements of KSAPs are better for measurements of the gap analysis, it can be seen through perception of clients and service providers as far as qualitative and quantitative methods are applied in combination. Since qualitative method techniques such as triangulation are used starting from the beginning up to completion, data can be checked for clarity and completeness throughout the study. Thus, since these ideas are very crucial for evaluation of any development training efforts, the checklists (Annex III) and the interviews (Annex IV) were prepared in such a way for the qualitative and quantitative studies, respectively.

At farmers' level, assessments of the existing conditions or inventory of the level of gaps of KSs concerning teff and poultry production were undertaken through participatory situational and task analysis based on the checklists prepared as a guide. It was performed with participation of groups of farmers that are composed of different categories: trained and untrained farmers from sexes, existing wealth categories, elders, and youth in each Kebele. In addition to the situational analysis related with training process, outcomes and achievements, these groups of farmers were also used to develop the needs and major issues to be considered in the training designs of the teff and poultry trainings of their *kebele* through participatory training need analysis (TNA) and training plan. The latter one is not only to indicate the possible options, but also to use the farmers' needs as indicators or benchmark for evaluation of farmers, DAs and SMSs training performances and future plan. Therefore, data on the following activities, such as:

- Understanding of the farming systems and factors that underlie production problems,
- Knowing what is required for completion of the job task and the actual performance through dissection of each job into its components and through listing of critical tasks, based on experiences of farmers,
- Assessments of farmers existing experiences and problems they faced on each task,

- Extent of the problems or the current proficiency level through rating at three levels, whether they can complete the task , partially complete, or cannot complete at all,
- Percentage of participants according to the above rate or responses for all tasks of both jobs, for trained and untrained farmers;
- Comparison of the trained farmers with untrained farmers,
- The extent of the treatments of the training needs identified by the community through provided trainings,
- Knowledge, skill and attitude changes attributed to trainings,
- Analysis of the performance, the strength and weaknesses of each element and sub elements of the training process, and
- Assessment of changes in on-the-job application and out comes of trainings were included.

In general, the qualitative methods used at this level include: direct observation, group discussion (Figure 11), focused group interviews and personal interviews, through various tools, such as: SWOT and/ or force field analysis, ranking, scoring, and rating.



Figure 11: Farmers' group discussion at Ansha FTC



For quantitative study, i.e., to undertake survey, structured interview schedules were prepared for trained and untrained farmers separately (Annex IV). From four purposively selected kebeles, 190 farmers' households were chosen proportionally from their total households (Table 2). The schematic representation of the sampling is given in Figure 12.

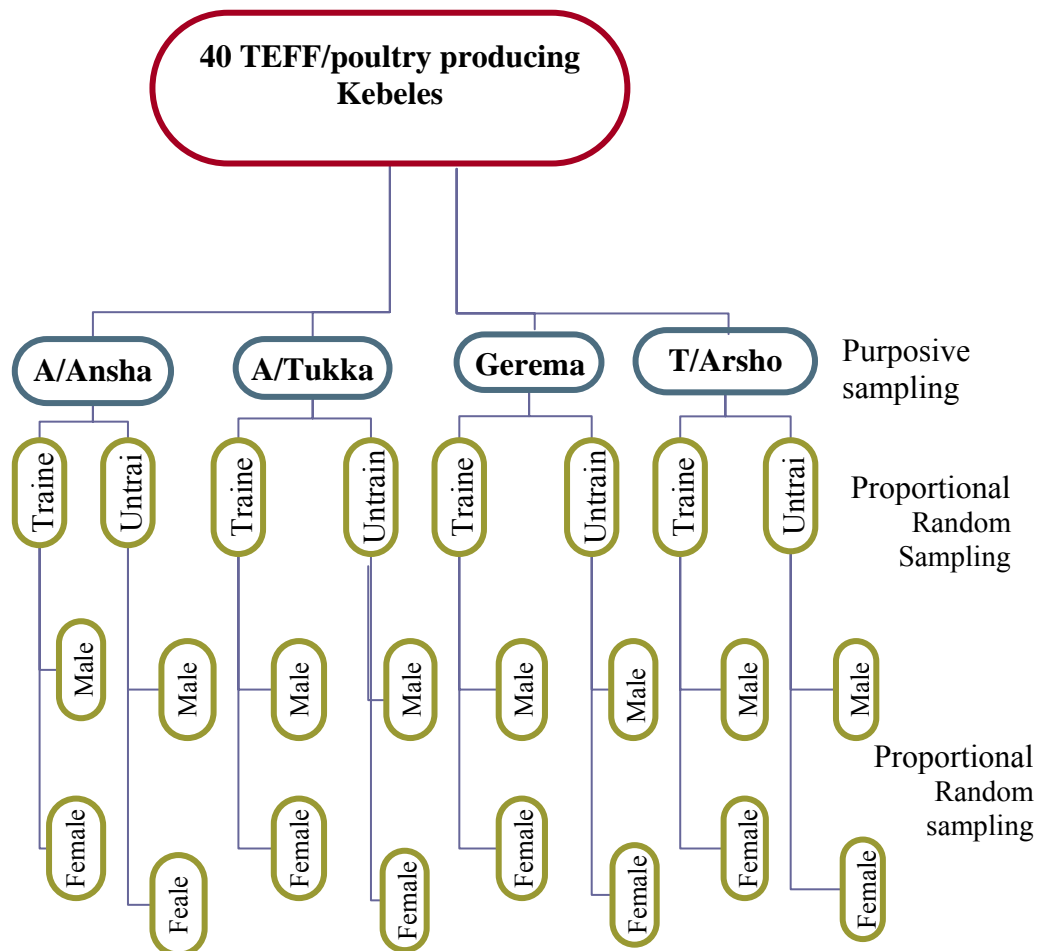


Figure 12: Schematic representation of sampling.

The SMSs, supervisors and DAs trainings evaluation depends mainly on the personal and group discussions with the development agents, supervisors SMSs and decision makers. Here, SWOT/force field/ analysis, rating, scoring, document review and direct observation of the trainings were used at all levels.

### 3.6. Data Analysis

The qualitative data were continuously analyzed throughout the study and checked for completeness and clarity. SPSS 12.0 for windows were used for quantitative data

process. Descriptive analytical statistics such as percentage, average and chi-square tests have been used for the quantitative data analysis. Qualitative and quantitative data were integrated as necessary and presented through description, tables, figures and diagrams. The results are presented separately for farmers and change agents' (DAs and SMSs) trainings.

In the farmers' training part, the confidence level (KS gaps) of farmers that are related to the different tasks of each job, chi-square tests for the trained and untrained farmers' and farmers' training needs that were identified through the assessments are given in comparison with the trainings provided. Then, training process analyses, that include TNA, training design, implementation and evaluation of trainings, for both jobs, have been presented next. The result and outcomes analyses, which include, changes in learning, on-the-job performance and outcome of training is given separately for both jobs. The change agents' training process analysis, which is treated in the final part of the following chapter, is given as part of the first objective of the study.

## **4. RESULTS AND DISCUSSION**

The findings of the study will be discussed in two main parts: Farmers' trainings, each part dealing with poultry and teff separately, and change agents' (Development agents' and subject matter specialists') trainings.

### **4.1. Farmers' Trainings**

The results of the study at farmers' level, that were obtained through both qualitative and quantitative methods will be described and discussed in integrated manner for teff and poultry farmers separately. In this part, analysis of the training process that includes results of situational and task analysis of teff and poultry production, farmers' training needs identified by the community and comparisons with trainings provided, and analysis of all elements of training cycle are given first. Then, followed by the analysis of the changes in learning, performances and out comes of trainings.

#### **4.1.1. Analysis of farmers' Training process**

In this part, the results of the training process that includes analysis of the situational and the training requirement (TNA), and analysis of training design, implementation and evaluation are given based on the results of the qualitative study and the survey findings.

##### **4.1.1.1. Teff farmers training need assessment (TNA)**

The training needs, which are identified through these assessments, are compared with the trainings provided, not only to examine the responsiveness of the trainings to the needs of farmers, but also to show the extents of the KS changes that can be attributed to the trainings. They were identified through assessments of the situational, task and KS gaps that deal with the situation of teff production, starting from land preparation up to harvesting, including cost benefit analysis activities. Based on farmers' experiences the inventory of the existing practices, the problems and their contexts, the extent of the gaps, the desired and the actual performances of each activity of teff farming were identified. The differences between individuals from the desired performances were assessed through responses of trained and untrained farmers, on the level of knowledge and skill gaps of

each task (confidence level of farmers, whether they can complete the task, partially complete, or cannot complete at all).

The chi square test is used to check whether there is association between the responses of trained and untrained farmers (Zar, 1966). The similarity in the frequency of the responses of farmers in the different category of KS levels, indicate that there is no difference between them assuming that all other factors are similar. This means, the training brings no changes on each job task or the training does not treat the task.

Thus, the summary of results of farmers' responses on the levels of KSs of each job tasks (Table 4) and their detailed discussions are presented in the following sections.

Table 4: Farmers' responses on the level of KSs of each job tasks

No.	Job tasks	Trained farmers (n=56)						Untrained farmers(n=36)						$\chi^2$ (p value)
		No gap		Some ideas		Wide gap		No gap		Some ideas,		Wide gap		
		n	%	n	%	n	%	n	%	n	%	n	%	
1.	Plowing methods	36	64	18	32	2	4	20	56	16	44	-	-	1.423 (0.233)
2.	Sowing time	42	75	13	23	1	2	22	61	14	39	-	-	3.085 (0.214)
3.	Seeding rate	22	39	31	55	3	6	3	8	25	71	8	21	13.653 (0.001***)
4.	Selection of varieties	28	50	26	46	2	4	16	46	18	50	2	4	0.398 (0.812)
5.	Using improved variety	36	64	18	32	2	4	13	36	18	50	5	14	8.117 (0.017**)
6.	Application rate of DAP	8	14	38	68	10	18	1	3	20	55	15	42	8.864 (0.018**)
7.	Application methods of DAP	6	11	41	73	9	16	-	-	23	64	13	36	7.811 (0.02**)
8.	Application rate of urea	3	5	36	64	17	31	-	-	12	33	24	67	12.435 (0.002***)
9.	Application methods of urea	3	5	36	64	17	31	-	-	13	37	23	63	10.861 (0.004***)
10.	Identification of HCs	3	5	29	52	24	43	-	-	18	50	18	50	10.861 (0.004)
11.	HCs' methods of application	2	4	28	50	26	46	1	3	17	47	18	50	0.135 (0.935)
12.	HCs' Time of application	1	2	26	46	29	52	4	11	12	33	20	56	4.475 (0.107)
13.	Application rate of HCs	2	4	22	39	32	57	-	-	17	46	19	54	1.687 (0.4390)
14.	Threshing methods	27	48	23	41	6	11	22	61	11	31	3	8	1.467 (0.480)
15.	Harvesting	46	82	9	16	1	2	32	89	4	11	-	-	0.444 (0.505)
16.	Storage	26	46	18	32	12	22	18	50	12	33	6	17	0.3222 (0.851)
17.	Cost: benefit analysis	-	-	56	100	-	-	-	-	36	100	-	-	-

Note: \*\*, \*\*\* show significance at  $p \leq 0.05$ , and 0.01 respectively, non significant otherwise ( $\chi^2$  Test). The degree of freedom for each of the job task of both categories is 2.

### **a. Land preparation**

Land preparation is carried out in dry months by oxen. The plowing frequency varies from six to eight times based on the rainfall condition of the area and the soil type. As to the plowing frequency, most of the farmers explained that they have no problems in this aspect and have knowledge and skills accumulated through their experiences.

The plowing is done vertically up to the fourth/seventh tillage and horizontally at the end against the slope of their plots. According to the reasons of the farmers, this is to make the tillage easier for their oxen, which could be seen from gravitational and or soil structure point of view. Since the soils get hard at the beginning, the plowing gets difficult. The furrows or the drainages are also made diagonally towards the sloppy parts of their fields. Thus, erosion problem is observed in the farmers' plots especially in *Gerema* and *Tachignaw Arsho kebeles*. Even though, this method of land preparation is taken as one of the reasons or factors of erosion problems in the sloppy areas, some farmers still defend or argue for their actions. According to these farmers, as far as the last tillage is done horizontally, vertical plowing of the preceding tillage does not create problem. However, they couldn't deny that when the rain comes before they plow horizontally the soils get eroded easily and faster. This indicates that still the problem is not well understood by the community. According to the findings of the survey, 68% of the trained farmers and 56% of untrained farmers replied that they don't have any gap or problem concerning plowing method. They explained that they had and still have enough knowledge and skills obtained from experience. On the other hand, no one of them indicated their gap is wide and the remaining 32% and 44% of trained and untrained farmers are in-betweens respectively. Even though, farmers think that they have knowledge about the consequences of plowing methods, their conditions indicate that they are not aware of that. The chi square test also shows that there are no significant differences between the trained and untrained farmers (Table 4) indicating that this issue was not addressed in the trainings conducted.

Direct observations of the fields and discussions with farmers reveal that erosion is one of the major problems of the areas of the study. The gullies are very wide, long, deep and going to encroach most of the farmlands. The watershed management that calls for collective action along the area, through inclusion of upstream and downstream

communities, is at its initial or infant stage. When compared with the expansion of the gullies, the action taken to stabilize the whole system is at a very slower rate. The soil is very fragile. Any action, which accelerates the erosion problem, such as drainages in and along the side of the farms and the roads and vertical tillage towards the slope, are observed forming somewhat "small drainages" or connections to the nearest bigger gullies. Due to this problem, farmlands are decreasing, the roads get cut, and bridges are becoming 'risky' to be crossed. Floods have taken them in many rainy seasons. The problem is increasing and becoming serious in *Gerema* and *Tachignaw-Arsho* kebeles. One interesting case mentioned by farmers was that leaching and washing of fertilizers and seeds from upstream to downstream brought better production to the farmers in the valley areas without application of fertilizer and even without their own seeds. According to the information of farmers, the formations of gullies have been accelerated since the last five to ten years, because of the cumulative effects of different soil erosion factors. However, with all these conditions or problems, externally introduced practices and/or indigenous actions that are developed from experiences of farmers themselves have not been observed concerning soil and water conservation. As indicated by the farmers, the *teff* training did not consider any erosion problem, which is in line with the result of the chi square test mentioned above.

Thus, this condition show that just passing what is sent from the top starting from the region without any amendment according to the prevailing conditions of the area brings ignorance of such serious issues. The problem is not only lack of joint planning from bottom, but also lack of integration among different disciplines. Otherwise, as far as the soils are washed down, what is the importance of adding fertilizer and using high yielding varieties of crops without conservation measures? If planning was from bottom and based on systematic need identification, it could address the real problems and farmers can be trained on their major limiting gaps (felt and/or unfelt needs) in their job tasks. This implies that when trainings are designed, one should not look at a crop and its management in a narrow way, but consider the entire farming system including natural resource management issues.

#### **b. Sowing Time**

The survey results and group discussions indicated that, since the time of sowing is related with the rainy season of the area, almost all farmers have knowledge about proper sowing

time, which is accumulated through experience. Out of the total farmers interviewed, 75% of trained and 61% of untrained farmers indicated that they don't have any problem concerning the appropriate sowing time. The remaining farmers indicated that they have some gap. There is no significant difference between trained and untrained farmers (Table 4). According to farmers' group discussion, the main problem related to the sowing time is unreliability of rainfall, not the KS differences between the trained and untrained farmers.

### C. seeding rate

As to the knowledge of the proper seeding rate of teff, 39%, 55% and 6 %of the trained and 8%, 71% & 21% of untrained farmers explained that they have no problem, have some ideas and wide gap respectively. In this case, they are significantly different from each other, showing the trained farmers are better in this aspect (Table 4). However, the result of the findings of the community level group discussion of farmers is very different. The seeding rates given by the farmers of the four kebeles are given as follows in Table 5.

Table 5: Seeding rates of teff used by farmers in the study areas

No.	Kebeles	Seeding rate per ha.
1.	<i>Andegna Ansha</i>	30 kg/ha
2.	<i>Andegna Tukka</i>	40 kg per ha
3.	<i>Gerema</i>	22 to27 kg/ha
4.	<i>Tachignaw Arsho</i>	30 kg/ha

Source: farmers group discussions

The recommended teff seed rate for this area is from 25-30 kg/ha. The variation from the recommended rate is high for *Andegna Tukka kebele*. Different probable reasons could be attributed to these variations. First: the seed rates given in the trainings were not as such different, but farmers may not apply it due to different reasons, such as variation in local measurements and fertility differences. Second: may be forgotten by farmers or not as such emphasized on the trainings, thus farmers continue using the knowledge they had. Farmers confirmed that both ideas exist in combination and there is some gap in this aspect among the trained farmers. This indicates that farmers try to adjust the learning according to their conditions. Thus, it is necessary to assess the changes they made and



their reasons for their decisions, through continuous follow-up activities for any further adjustments or improvements in their action.

The percentage distributions are almost similar for trained and untrained farmers, but in opposite direction, i.e. lower gap for trained and higher gap for untrained farmers. If trainings were effective, trained farmers levels of knowledge gap could get narrowed.

#### **d. Selection of varieties**

As to the variety selection, the criteria used by farmers' include: productivity, color, quality (good odor, free of impurities) and water absorbing capacity of the flour. It is only women who mentioned the last (but not the least) criterion. More over, farmers explained such best quality seeds are obtained from some selected areas, such as 'Megere'. Farmers compare the Megere teff with the improved seed (DZ cross 37) provided from office of Agriculture and Rural Development to be used for re-sowing in case of crop failure. It is also one of the varieties included in the package activity.

Table 6: Comparison of improved Vs local varieties of teff

<i>No.</i>	<i>Criteria for comparison</i>	<i>DZ cross 37</i>	<i>"Megere"</i>
1.	Productivity	1	0
2.	Color	0	1
3.	Flour	1	0

1 =Very good/better      0 = good;      Source: Farmers' groups

Therefore, as can be seen from Table 6, DZ - Cross 37 is preferred for its productivity and water taking capacity of teff flour, while "Megere" is chosen for its color. Even though, farmers describe some of the characteristics of the improved variety, they could not name it. Since DAs are new assignees, it was difficult to get the name of the variety. It was identified by the woreda SMSs of crop production. This indicates that identification of the variety of teff through naming and stating most of its characteristics were not included in the trainings. However, it could be one of the indicators of the mastery of the knowledge provided in the trainings.

As to the knowledge gap of the farmers, in the variety selection, all of the group discussion participants and all trained and untrained farmers interviewed in the survey

agreed that most of them have some ideas or knowledge of choices of varieties accumulated through experience and need more, if appropriate. The findings of the survey showed that, 50%, 46% & 4% of the trained farmers and 46%, 50% & 4% of untrained farmers indicated they have no gap, some and wide gap of KS in this regard. The chi test shows that there is no significant difference between the two categories (Table 4).

The results of the survey also indicated that, 64%, 32% & 2% of the trained farmers and 36%, 50% & 14% of untrained farmers responded they have no gap, some and wide KS gaps in the use of improved variety. They are significantly different from each other, showing that trained farmers who have used the improved variety have got more experiences in the different characteristics of the local and improved varieties.

#### **e. Fertilizer Application**

The Fertilizer types used by farmers of this area for teff production are DAP and Urea, with recommended rate of application of 100 kg, and 50 - 100 kg per hectare, respectively. The application rates, used by farmers, in the study kebeles are given in the following Table (7).

Table 7: Fertilizer type and rate used by farmers

<i>No.</i>	<i>Kebeles</i>	<i>DAP kg/ha</i>	<i>urea kg/ha</i>	<i>DAP: urea ratio</i>
1.	Andegna Ansha	25-50	25	4:1
2.	Andegna Tukka	50	-	-
3.	Geremma	50	-	-
4.	Tachignaw Arsho	35-50	25	2:1

Source: Group participants of the study kebeles

Farmers also explained that, if more than 50 kg/ha urea was added, lodging would occur. Thus, based on the fertility of the soil and availability and price of urea, their rates of application vary. As can be seen from Table 7, the variation among the farmers' fertilizer application rate is very wide. This is due to, not only the above given reasons, but also lack of knowledge in the recommended rate.

The findings of the survey (Table 4) also indicate the responses on the KS gaps or confidence level of farmers on fertilizer application. Out of the total interviewees, 68% & 64% of trained farmers and 55% & 33% of untrained farmers, explained that they have some ideas in fertilizers rate of application for DAP and urea, respectively. Those farmers who indicated they have wide gap of KS in fertilizer rate of application accounts for 18% and 42% for DAP and 31% & 67% for urea, both for trained and untrained farmers, respectively. As to the method of fertilizer application, out of the total respondents, 73% and 64% of trained farmers and 64% & 37% of untrained farmers indicated they have some ideas and skills in fertilizer methods of application for DAP & urea, respectively. Those farmers who indicated they have wide gap of knowledge and skills in fertilizer rate and method of application accounts for 16% and 36% for DAP and 31% and 63% for urea, for trained and untrained farmers respectively. The remaining farmers are those that indicated they have no gaps in both aspects. In this case, the variations among trained and untrained farmers' responses are very significant, indicating differences have been created because of the training.

Even though, the recommendations given should not be applied uniformly everywhere, the deviations from the recommended rate have to be checked whether they are advantageous or not and how and why they have been decided in such a way. For example, the reason of farmers for the deviation of DAP application from the recommended rate of 100 kg/ha to below 50kg/ha is high price of fertilizer. Lodging of teff is the other reason given for the adjustments of urea application. Both cases should be checked from economics of fertilizer use, whether it is loss or not. The consequences of application rate below or above the recommended rate should be known. However, this concept is not well understood by farmers. In the study area they explained that the rate of production increase or decrease is directly related with the amount of fertilizer applied. This may not always be true. They don't understand, if fertilizer is increased above some point, burning will occur and if the amount of fertilizer is reduced below some point, the production stops reacting with small amount of fertilizer. Farmers are not too worried about quantities of fertilizers as long as some fertilizer is used. This is true for all farmers including those that indicated they have no problem in this aspect.

Thus, this gap of knowledge and skills in fertilizer application is presumed as one of the indicators of poorly organized content which is resulted from lack of proper need

identification and/or poor delivery of the trainings. Participatory on-farm demonstrations and/or on-farm trials, in which clients participate in all stages of activities, are effective and preferable for this purpose. However, they were not applied in the case of teff in the study area.

#### e. Weeding

These days, weeding of teff is done by application of herbicides. It is preferred to hand weeding, because it mainly saves time, is easily applicable and requires low labor. According to farmers, the costs of herbicides are less, when compared with the costs required for the '*Debo*' (local labor organization which is used to help each other). Thus, the area under teff cultivation is increasing from time to time, because of the use of herbicides as explained by farmers. The problem is unavailability of the herbicides and their high price. According to farmers, the types of chemicals used are 2, 4-D and/or U-46. The time, method and rate of application used by farmers vary in the kebeles under study. This is shown in Table 8.

Table 8: Time and rate of application of herbicides (HC)

No.	Kebeles	Time of application of HCs	Application rate of HCs( ml/ha)
1.	Andegna Ansha	20 days after sowing	60-70 ml HCs, with 60liter of water
2.	Andegna Tukka	30 days after sowing	40-80 ml HCs, with 80 liters of water
3.	Gerema	15 days after sowing	40-80 ml HCs, with 80 liters of water
4.	Tachignaw Arsho	40 days after sowing	60-80ml HCs, with 80 liters of water.

Source: participants of farmers' group discussion

The recommended rate of BoARD is one to two liters 2, 4 -D chemicals per hectare, depending on the infestations of weeds. Time of application of the chemicals depend on the emergence of the weeds. In general, weeding within 20-25 days after emergence of the crop is recommended. However, the variation from the recommended rate is very high. The causes can be seen from the explanations of farmers.

Farmers from *Andegna Ansha kebele* explained the situation as follows: "We apply the chemicals based on the population of the weed, approximately. We learn from each other

and, until now there is no instance observed where the plants are burnt because of the application rate. But, on the contrary, we observed, in some cases, where the amount of herbicide applied didn't eradicate the weeds."

Farmers in Gerema explained the situation like this: "No one knows whether the chemical is 2, 4 D or not, we buy it from private shops and farmers traders. The weeds are not eradicated easily and repetitive spray increases cost."

Most of the farmers agreed on their problem or lack of knowledge and skills in herbicide rate of application, mentioning that they didn't get sufficient training and/or information from concerned DAs and SMSs at all levels. The chemicals and their instructions that are sold in shops and local markets are not reliable. However, farmers use them because they don't have another reliable source, which supply the chemicals, even at the woreda level.

According to farmers, the unaffordable prices of the chemicals restricted the frequency of application of the chemicals to its minimum. Thus, they stay longer after sowing to apply the chemicals after weeds have increased to their highest population. The negative effects of the weeds caused in between two to three weeks time of crop emergence are irreversible, even if they are eradicated later. The weeds are allowed to compete with the crop during the early vital stage of growth. The findings of the survey showed that almost all farmers interviewed have gap of knowledge and skills in identification of the type of herbicides, their time, rate and methods of application and indicated they need more information, knowledge and skills on these issues. In cases of herbicide application, as shown in Table 4, according to farmers' perception, out of the total farmers interviewed, 43%, 46%, 52% & 57% of trained farmers and 50%, 50%, 56% & 54% of untrained farmers indicated they have wide gap and requires more information, knowledge and skills (IKSs) in identification of types of, method, time and rate of application of herbicides (HCs) respectively. While 52%, 50%, 46 % and 39% of trained farmers and 50%, 47 %, 33% & 46% of untrained farmers indicated they have some ideas and need more knowledge and skills, the remaining of them indicated they have no gap of knowledge and skills in identification of types, method, time and rate of application of herbicides (HCs), respectively. Similarly, as in most of the cases mentioned earlier, the frequencies of responses of farmers, among the trained and untrained ones are not significantly different, indicating that these issues were not included in the training. However, they are among the

major problems of the farmers of the area. This implies that farmers' performance problems were not thoroughly assessed, and gaps were not filled accordingly.

#### **g. Harvesting and Threshing**

The findings with regard to appropriate harvesting time and threshing methods showed that there are no major problems. Farmers indicated that they know the right harvesting time, i.e. when the crops get dried, from their experiences. Family labor, 'Debo' and/or hired labor are used as required, for this purpose. Almost all interviewees of the survey indicated that they have no problem in this regard (Table 4).

Oxen and donkeys were employed for threshing until recently. But, these days, the 'Wolayta' style, which is done by human labor using sticks, is becoming common practice. Farmers indicated that they are evaluating both of the methods. The latter is preferred for reduction of the 'losses of teff eaten by animals and shorter time required for threshing. Some farmers argue that the latter method is costly. When the cost of hired labor is compared with the teff loss eaten by animals, according to these farmers, the difference is insignificant. Rather, if the teff that is eaten by animals is not taken as a loss but considered as feed of animals, the former method is preferable. Some of the farmers' explanations are given as follows:

"No! We didn't compare the costs with the teff loss; we only considered the time. We have to reconsider it and work together by ourselves."

"Until now, just to learn the style, we have hired labor. I don't think we will continue like this in the future. We are trying to do it ourselves."

According to the results of the survey, 48 % of trained & 61 % of untrained farmers responded they have sufficient knowledge and skills of threshing methods. Farmers who indicated they have some ideas accounts for 41% of trained and 31% of untrained farmers. The remaining 11 % of trained & 8% of untrained farmers indicated that they have problems in this case. The differences between the two groups are insignificant (Table 4). This implies that the training did not consider this issue at all. This could be done through farmer-to-farmer experience sharing.

## **h. Storage**

Farmers explained that local stores are used for the storage and as compared to other crops teff has relatively fewer problems of storage pests. Of course, using cats and traps prevents rodents. All farmers in the study indicated that no chemicals are used and farmers want some more ideas and appropriate technologies in this regard. According to the results of the survey, 46%, 32% & 22% of trained & 50%, 33% & 17% of untrained farmers responded they have sufficient knowledge and skills, some ideas and wide gap or problems in the case of storage methods, respectively. The chi – square test result indicates that there was no significant difference between the categories, implying that this issue was not addressed in the trainings conducted (Table 4).

## **i. Cost Benefit Analysis and marketing of produces.**

Almost all farmers in the group discussions and all interviewed farmers explained that they lack sufficient knowledge and skills in analysis of the costs and benefits of production (Table 4).

Farmer explained that cost of labor and oxen/donkey, when used from their own, have not been considered in the cost items totally. Just after rough or simple calculation exercises done by group of farmers, through sharing of their experiences, they realized and concluded that they have not included profitability analysis at all. According to them, such knowledge and skills, if provided in strong way would help them to fix the prices of their produce and/or to evaluate the prices of the markets that are given to the produces that are arrived at through bargaining. The produce is sold starting from the farm gate and local markets on per head basis and transported by family members using donkey, carts or pick-ups. The highest distance is to kele market. Farmers explained that this issue has never been included in the teff trainings provided, thus their gap or problem is very wide.

## **j. Division of Labor**

According to group discussions, the division of labor among family members exists in teff production. Although it seems the responsibilities of male are more, women also participate in most activities, starting from land preparation up to harvesting of teff in

addition to their other responsibilities in the family. One of the women puts the condition as follows:

"I participate in most activities; while taking lunch to my husband in the farm, I assist him in plowing. We, women, also participate in some clearing activities, in secondary tillage or cultivation, transportation and preparation of places for threshing. Of course these are additional to other productive and maternal responsibilities of the family."

Moreover, it was indicated by participants that young children, both male and female also participate as required by the family in some cases, when labor shortage, unexpected rainfall and other natural conditions, illness of family members etc. occur. Even though, the male can share the knowledge and skills they obtained through trainings to their family members, it is more important if female farmers are included in the training activities through creation of suitable training time and places, as recommended by women farmers. According to them, if trainings are organized in their kebeles, it becomes more appropriate for mothers, because of their multiple responsibilities especially in family/child care.

#### **k. Extension activities and contents of teff farmers' trainings**

According to information from BoARD and OoARD of the region and the woreda, the extension package activity of teff production, that has been underway, includes:

- Provision of improved varieties of seeds, and
- Provision of trainings on: fertilizer application, both DAP and urea, herbicide application, agronomic practices, such as seeding, fertilization, weed control, harvesting, and storage.

However, according to the analysis of the teff trainings that were provided in the study areas, their contents are deficient in meeting the specific requirements of farmers. This was mainly caused by deficiencies in the steps of the training process that begins with needs identification. The following needs of the farmers that are developed through participatory process of the community, DAs, supervisors and SMSs of the woreda can be taken as evidence for this condition.



## **L. Identified Training Needs Of Teff Farmers**

In the situational, task and KS gap assessments, we have dealt with, the problems and their contexts, the extent of the gaps, the desired and the actual performances of each activity of teff farmers based on their experiences and perceptions, how much individuals differ from the desired performances, and whether these gaps were filled or not through the trainings, were analyzed in comparison with the trainings provided. Thus, based on the extents of the existing KS deficiencies that require training, farmers training needs were identified by the communities of the study area. It was conducted by the researcher with the groups of farmers, DAs and supervisors of each kebele and then summarized together. According to the results of these participatory need assessments undertaken in the study areas, the teff farmers training needs include:

- Land preparation and drainage methods in relation with soil and water conservation, and community watershed management. As one of the farmers explained: “nothing is important than land. Thus, the emphasis given to water harvesting activity should also be given to soil and water conservation activities.”
- Proper seeding rate based on the recommendations of research, but adjusted to the local areas based on participatory on- farm trials.
- Proper fertilizer rate and methods of application for both DAP and urea, similarly based on research recommendations and adjusted to the locality, based on participatory on farm trials and farmers' knowledge,
- Herbicide, type, time, rate and methods of application, the 'dos' and 'don'ts' related with herbicide, similar with that of fertilizer and seed application, based on participatory on farm-trials,
- Threshing methods - oxen/donkey Vs human labor
- Profitability/ Cost benefit/ and marketing analysis, price fixation etc
- Gender related issues: attitudinal changes towards women participation, provision of extension/trainings according to family division of labor
- Farmers' group formation (commodity based, area based and/or gender based such as women club, youth club etc.)
- Record keeping, participatory planning, monitoring and evaluation of extension/training activities.

Whether they were touched in brief through ineffective techniques and/or not included in the previous trainings at all, they show deficiencies that require training. They are used not only as evidence for weaknesses of the previous training performances but also as benchmarks for future actions.

The result of the focused group discussion and the survey findings show that training need identification, in which farmers participate, has not been performed yet in the study area for teff production (Table 9).

Table 9: TNA activities and relevance of teff trainings in the study areas

Was there any TNA exercise in which you or other farmers participated?						
Yes			No			Total
n	%		n	%		
-	-		80	100		80
<i>Were contents of the training relevant to your needs? (Degree of relevance)</i>						
Very relevant		Relevant		Some what relevant		Total
n	%	n	%	n	%	n
23	41	17	30	14	25	56

Source: Own survey data.

All the respondents indicated that there was no such systematic need identification in which farmers participate. As to the relevance of the training contents with the farmers' need, the survey result indicated that, out of the total teff farmers studied, 41%, 30%, 25% and 4 % of them indicated the trainings are very relevant, relevant, some what relevant and irrelevant (Table 9).

The change agents (DAs and SMSs,) confirm the existence of this fact at all levels. The effects of the deficiencies mentioned concerning TNA would be manifested in the other elements of the training process.

#### **4.1.2.1. Poultry Farmers Training need assessment (TNA)**

The traditional Ethiopian rural poultry production system is characterized by small flocks, low or minimal external inputs, low outputs, and periodic devastation of the flocks by

diseases. Birds are owned by individual households and are maintained under scavenging system, with little or no inputs for housing, feeding or health care (Alemu and Tadelles, 1995).

As in the other rural woredas of the region, the traditional poultry production system is dominant in Alaba woreda also. However, the efforts of introduction of exotic breed (*Rhode Island Red*) with improved housing, feeding and health care have been underway, through the extension system, since last five years. Moreover, trainings for farmers, DAs and SMSs on these issues have been provided at all levels.

In this part, the situational and task analysis of the poultry production of the area are described and discussed. This includes: the inventory of the existing practices, the problems and their contexts, the extent of the gaps, the desired and the actual performances of each activity (feeding, housing, reproduction and health care) of poultry farmers based on their experiences, responses of trained and untrained farmers, as perceived by themselves, on the level of knowledge and skill gaps of each task (confidence level of farmers, whether they can complete the task at all, partially complete, or cannot complete at all), and whether or not they get training.

The chi square test that is used to check whether there is difference between the responses of trained and untrained farmers on KS gaps of each job tasks is also included here. According to this, the similarities in the frequency of the responses of farmers in the different category of KS levels indicate that there is no difference between them. This means, the training brings no changes on each job task or the task is not treated by the training. Summary of the results of trained and untrained farmers' responses on the level of KSs of each job tasks of poultry production, with chi square test are given in Table 18. The detailed discussions on each of them are provided based on these results and the findings of the group discussions in the next section.

Table 10: Farmers' responses on the level of KSs of each job tasks of poultry production

No	Job tasks	Trained farmers (n=68)						Untrained farmers(n=30)						$X^2$ (P Value)
		No gap		No gap		Wide gap		No gap		Some ideas,		Wide gap		
		n	%	n	%	n	%	n	%	n	%	n	%	
1.	Feeding	17	25	41	60	10	15	3	10	13	43	14	47	12.064** (0.002)***
2.	Housing:	21	31	27	40	20	29	3	10	15	50	12	40	5.560 (0.062)*
3.	Health care	-	-	10	15	58	85	-	-	7	23	23	77	1.081 (0.299)
4.	Reproduc tion	44	65	22	32	2	3	5	17	17	58	8	25	24.183** (0.000)***

Source: Own survey

Note: \*, \*\*, \*\*\* show significance at  $P \leq 0.10$ , 0.05, and 0.001 respectively, non significant otherwise ( $X^2$  test).

#### a. General

Poultry production, in this area, is not considered as a major enterprise but as supplementary activity undertaken by women and/or children on a very small scale as a means of income and/or consumption. The flocks that are owned by the households are small in number and composed of local breeds with traditional system of production. The findings of the survey show that, the traditional poultry production is undertaken in almost all the households and the average number of birds per households is 4.5, the range being one to twenty. According to the survey result, majority (75%) of the farmers indicated that their attitudes towards the traditional system are not as such changed. Efforts have been underway to improve the condition, through introduction of improved breeds, and through provision of trainings on construction of housing, which aims at isolation of birds from human beings and better handling of poultry, that is, better feeding, regular watering, better protection and health care and step- by- step increase of size of production. According to information of farmers and change agents, even though, each activity has

different rates of performance and uptake, the demand of farmers for the improved breeds cannot be met, because of supply problem.

#### **b. Feeding**

In this system, the birds are responsible to feed themselves by scavenging or wandering /searching/ around the houses, front and backyards and they don't get water regularly. They are also responsible to protect themselves from predators. Of course, the families also supplement them with some grains, crop residues, water etc. when available, and prevent them from predators and theft. According to the survey result, 25 %, 60% & 15% of trained and 10%, 43% & 47% of untrained farmers indicated that they have no gap, some gap and very wide gap of knowledge and skills (KS) in the poultry feeding and regular watering, respectively (Table 18). In this case, the trained and untrained farmers' responses are significantly different from each other indicating that training is provided and brought variation in ideas.

#### **c. Housing**

The birds have no separate housing, but roost in the houses. They suffer from disturbances of human beings, predators and smoke of fire used by the family. The HHs also lack practical knowledge and skills of housing and handling the poultry production. According to the survey result (Table 18), 31% of trained and 10% of untrained farmers indicated that they have no much knowledge and skills in poultry housing, construction and management. Those farmers that indicated they have some gap and need more appropriate knowledge and skills in these aspects account for 40% of the trained and 50% of untrained farmers. The remaining 29 % of the trained farmers and 40% of untrained farmers indicated they have wide gap of knowledge and skills in construction and management of poultry housing. Their differences are not much, since they show significance at  $p \leq 0.10$ .

#### **d. Health care**

Indigenous treatments of sick birds include provision of table salts, medicinal herbs etc. As explained by farmers in the study, these are not very effective especially at the time of disease outbreaks. Uses of medicines and vaccines from drug stores and/or from OoARD

clinic are minimal. The prices of the medicines, as compared to the value of the chickens, are very expensive. Thus, the rates of survival of the birds are very low in general.

As can be seen from Table 18, out of the total farmers under study, 85% & 77% of trained and untrained farmers indicated they need more knowledge, skill and attitudinal changes concerning the health care of poultry. The remaining 15% & 23% indicated they have some ideas or experiences and some gaps to be filled with appropriate knowledge and skills in the health care aspect. This condition indicates that, trained farmers have no difference from untrained ones.

#### **e. Reproduction**

Local cockerels and pullets are used for reproduction purposes. Chicken are used for hatching eggs and mothering the chicks. Farmers have knowledge of selecting chickens to be used for this purpose. One of the problems of the local breeds is broodiness of birds. Farmers' comparisons of improved and/or exotic breeds of poultry with local ones are given as follows in Table 19.

Table 11: Farmers' comparison of exotic Vs local breeds of poultry

<i>No.</i>	<i>Breeds</i>	<i>Productivity</i>	<i>Self protection</i>	<i>Broodiness</i>	<i>Susceptibility to disease</i>
1.	Exotic	Continuous and higher production of large size eggs	No defense at all	No broodiness	High
2.	Local	Medium production of medium size eggs	Defensive	Highly broody	Low

Source: Farmers' group discussions

Even though, data on age and weight at first laying, length of laying period, egg production per hen per period and culling age are not kept by farmers and even by change agents at all levels, farmers explained that exotic breeds seem better in these aspects too. Evaluation of such indicators cannot be performed without accurate and timely data. This is one of the areas that were not emphasized by the training program.

Those local chickens that are able to break eggs are used for the reproduction activities, hatching or incubating the eggs of exotic breed. As explained by farmers, since the eggs of the exotic hens are large and hard, local hens cannot easily break them. According to farmers' explanations, chicks obtained through this way are better in protecting themselves from predators and adapting to the environment as compared to the exotic pullets bought from offices of agriculture. One of the problems of exotic breeds (*Rhode Island Red*) is that they do not run away from predators. Cross breeding of exotic cockerels with local pullets and/or local cockerels with exotic pullets are the other practices that have been exercised by farmers. Farmers explained that cross breeds are preferable because of the traits they obtained from both parents. The result of the chi square test shows high significance at  $P \leq 0.05$  and  $0.01$ . Therefore these indicate that the use of improved breed is covered by the trainings provided and differences have been created between trained and untrained farmers.

#### **f. Marketing of produces**

As explained by farmers, the productivity of birds is low because of the above mentioned management problems. The products, i.e. eggs and chickens/ cocks are sold starting from the farm gate and local markets on per head basis and transported by family members on foot and/or using carts or pick-ups. The highest distance is to kebele market. Prices are arrived at through bargaining.

#### **g. Division of labor**

More than other animal and crop production activities, women involvement is very high in poultry production. Mostly they have the right to use the income obtained from sales of eggs and chickens, and expend it on some basic necessities of the family such as table salt, clothes, etc.

While women undertake almost all activities of poultry production, trainings were given to male farmers. This is so, as told by farmers, the trainings provided at *woreda* town (Kulito) were too far for mothers to attend for five (5) consecutive days, because of their multiple responsibilities especially child care. "If it were nearer to our *kebeles*, it was the women who would be sent for such trainings," explained the farmers. But, this was not happened in the trainings provided within the *kebeles*.

#### **h. Extension activities and contents of poultry farmers' trainings**

According to information from BoARD/OoARD of the region/woreda, the extension package activity of poultry production, that has been underway, includes:

- Introduction of exotic breed: Rhode Island Red, in the form of one cockerel and five pullets at the beginning (but now, reduced to one cockerel and two pullets) and provision of day old chicks;
- Provision of trainings on the management aspects, such as:
  - Better feeding: locally prepared mixed ingredients and regular watering, improvements in housing: constructing affordable poultry house that is isolated from human beings, and
  - Health care: vaccines and medicines for outbreaks and regular/common, external and internal, parasite control, to farmers registered voluntarily through advanced payment and to those who obtained the exotic breeds.

Because of the supply problem, (the demand very much exceed the supply) and because of lack of proper planning, the time of delivery or distribution of the birds after advance payments are very long. There are also many instances where payments collected from farmers are given back to farmers after months:

#### **i. Identified Training Needs of Poultry Farmers**

In the situational, task and KS gap assessments we have dealt with the contexts and the extent of the problems, the desired and the actual performances of each activity of poultry farmers, which is based on their experiences and perceptions. Individuals' differences from the desired performances were analyzed in comparison with the trainings provided.

Thus, based on the extent of the existing KS deficiencies that require training, farmers training needs were identified by the communities of the study area. According to this participatory assessment that were undertaken with the community, the existing KSA gaps that require trainings are given as follows:

- Types of poultry keeping, change of attitudes towards traditional system, poultry as a business enterprise,



- Small management changes such as regular watering, night enclosure, discouraging hens from getting broody, vaccination for common diseases, small energy and/or protein supplement to local and introduced exotic birds.
- Introduction of exotic birds and cross breeding with locals,
- Profitability/ Cost benefit/ and marketing analysis, price fixation etc
- Gender related issues: attitudinal changes towards women participation, provision of extension/training s according to family division of labor
- Farmers' group formation (Commodity based, area based and/or gender based) such as women club, youth club etc.
- Record keeping, participatory planning, monitoring and evaluation of extension/training activities.

The results of the study showed that even though poultry farming is among the priority areas of farmers' needs in the study areas, identification of farmers specific problems have not been undertaken through their participation considering their circumstances and performance gaps. The survey results concerning TNA activities are given next in Table 20.

Table 12: TNA activities and relevance of teff trainings in the study areas

Was there any TNA exercise in which you or other farmers participate?							
Yes				No		Total	
n		%		n	%	n	
-		-		68	100	68	
Were contents of the training relevant to your needs? (Degree of relevance)							
Very relevant		Relevant		Somewhat relevant		Irrelevant	Total
n %		n %		n %		n %	n
23	34	33	48	12	18	- -	68

Source: Own survey data

The training contents and farmers needs coincide by chance, not based on thoroughly done systematic study. It was decided based on the assumptions of the change agents working at different levels. Even though, the experiences of change agents can contribute a lot, without the direct participation farmers, failure to accommodate their interests is inevitable.

The result of the survey findings show that training need identification, in which farmers participate, has not been performed yet in the study area, for poultry production. All the

respondents indicate that there was no such systematic need identification in which farmers participated. As to relevance of the training contents with the farmers' need, the survey result showed that, 34 %, 48%, and 18% of poultry farmers indicated the trainings were very relevant, relevant, and somewhat relevant. This result shows the training topics were generally relevant. However, according to the problems mentioned in the situation of each job task assessment contents were not specific, briefly touched and the problems are not prioritized according to the areas' condition. In the group discussions, farmers confirmed that most of the topics were shallow containing what they already know, and miss some simple but important points as in the case of naming the breed.

Lack of KS in participatory planning, that requires holistic or multi disciplinary approach, is one of the major problems that create such discrepancies. The change agents (DAs and SMSs,) confirm this fact at all levels. As we will see, the effects of the deficiencies mentioned concerning TNA would be manifested in the other components of the training process.

#### **4.1.1.2. Training plan/design**

In this part of the training process, the planning and record keeping activities, formulation of the learning objectives and organizing contents, selection of training methods and materials for both enterprises will be discussed.

##### **a. Record keeping and planning**

Results of the focused group discussion revealed that record keeping and planning activities of farmers' trainings at community level did not exist. As explained by farmers and DAs, since need identification activities are not done by the participation of the community and topic selections are given urgently from above through unplanned quotas, planning of the trainings were not practiced from bottom. No documentation and record keeping is practiced at kebele level. All information provision depends on the memories of farmers. Data on the number, sex, *etc* of training participants and other basic information of poultry production such as age and weight at first laying, length of laying period, egg production per hen per period and culling age are not kept by farmers and even by change agents. Thus, lack of reliable records /data is one of the major constraints for the effective

planning in most activities, including training. No efforts have been undertaken in improving and building the capacity of farmers in this aspect.

#### **b. Learning objectives**

According to the document review and results of group discussions with farmers and with change agents, it became clear that the objectives of trainings have not been prepared based on the expected improvements or the changes trainings bring in knowledge, skills, and attitudes, performance of farmers and outcomes and impacts. They are not prepared, in the way that describes what trainees will be able to do when they have mastered the skills. In most cases, they are confused with the trainers' duties and/or the learning process. The number and type of trainings to be provided, and the activity of the trainers, are given as the major indicators. Thus, it is difficult to get the general intended learning and outcomes of training programs. They lack the concept of objectively verifiable indicators, which are attainable within a given time. Leave alone formulation of specific, measurable, attainable, reliable and timely bound learning objectives ("SMART") in which performance, condition and standard of the required achievements are indicated, even the vague ones are not prepared and difficult to obtain in a written or organized form at this level.

Because training objectives were not developed out of gaps that are identified in the process of need assessment, lessons are not systematically designed to achieve particular outcomes. Since training objectives are the foundation of effective trainings, all the other elements of training design, implementation, monitoring and evaluation are affected similarly. It is obvious, that inadequacy in the formulation of objectives will highly contribute to the ineffectiveness of training programs.

The main cause mentioned for these weaknesses is lack of knowledge and skills in how to formulate learning objectives, not only individually but also in the system as a whole.

#### **C. Contents of Trainings**

The problems of lack of need identification and lack of knowledge in the preparation of learning objectives, contents do not address the necessary elements of learning

(knowledge skill and attitude) required to accomplish the needs in a balanced way. They become too theoretical lacking coherence.

The result of the qualitative study indicates that, defining the course contents or components and their sequences in which they are to be covered, is totally decided by trainers. In most cases the decisions are based on the procedures of the trainings provided from above and on the experiences of the workers. The problems of lack of need identification and lack of knowledge in the preparation of learning objectives make the definition of contents and their sequencing ineffective. As explained by the workers, “overfilling of the course, through inclusions of numerous and unnecessary sub contents in each title, are very common problems in many trainings”.

Contents do not address the necessary elements of learning (knowledge, skill and attitude) required, to accomplish the needs in a balanced way. The same is true for the ranges of facts, concepts and principles included in contents. That is why they become too theoretical with lack of coherence. That is why complaints or inconveniencies on the time that is allotted to the subjects/contents, at the time of trainings, are created among trainers.

As discussed in the findings of the situational analysis, the production and protection aspects of teff farmers’ problems that are included in the trainings are not thoroughly touched to the extent of the problems. Some aspects of the teff farming activities of the area, such as herbicide application, soil and water conservation activities, profitability and marketing analysis have not been included at all in the training contents. That is why the needs among trained and untrained farmers are almost similar. Results of the document review and group discussions with farmers and with change agents also indicate that training topics are wide and very general. Since objectives formulation is vague, because of poor need identification, mostly the extent of the content is decided by the aims and available time given to trainers. It is not the need of the participants that are concerned, but of the convenience of trainers. Thus, the process is trainer centered.

#### **D. Training methods and materials**

Once it has been determined that training is needed, learning objectives and contents have been written and developed, the next step is to determine on training mix, methods and materials. The results of the study on theses aspects are given in Table 10.

Table 13: Training mixes and methods

Mixes of trainings	More practical with little theory		Balanced		More theories with few practical		Total			
	n	%	n	%	n	%	n			
	3	5	6	11	47	84	56			
Training methods	Teaching/lecture		Group discussion	Demonstration	Visit	Practicum	Total			
	n	%	n	%	n	%	n			
	23	41	15	27	10	18	-	-	8	14

Source: Own survey data.

As can be seen from Table10, 84% of the respondents indicated the training mix is with few practical and more theories. Some (11%) of them indicated the mix as balanced and for few (5%) of them it was more of practical and less theoretical. Moreover, according to the farmers' group discussions the trainings provided were almost fully theoretical with large audience with limited participation.

Similar to the farmers who participated in the group discussions, out of the total teff farmers who participated in the survey, 41% of them agreed that the most commonly used method is classroom (under tree) teaching through lecture. All the respondents indicated the least or not used methods are visits and practicum. Group discussion and demonstration that are indicated respectively by 27 % and 18% of the respondents are in between the above extremes (Table 10). On the other hand, farmers' responses indicated that among methods used in teff trainings, the most liked ones are group discussion, demonstration, practicum, visit, field days and on farm trials respectively. The least liked method is unattractive lecture (talk). As indicated by the trained respondents, the uses of available materials, such as specimen of weeds, samples of fertilizers, and seeds have not been practiced, because the method used by most of the change agents is description without showing any thing. This shows that convenience and needs of farmers are not considered in this case too. Learning by doing is not emphasized.

Thus, when we judge the conditions shown in the study from experiential adult learning point of view, since remembering, understanding and practicing the learning obtained

through trainings are also related with the training methods and materials, it is obvious that, most of the contents are forgotten before implementation.’ We forget what we hear; we remember what we see, and we understand what we do’.

#### 4.1.1.3. Training Performance and Management

This part of result and discussion chapter includes, identification and preparation of training resources, scheduling, lesson plan preparation, presentation and facilitation skills and other management issues. Since training methods and materials are discussed in the preceding part, they are not included here. Selection of participants and notifications to training, group size and seating arrangements, venue of the training, logistic arrangements, duration and schedule of the trainings should be finalized before the training date. In these aspects, the results of the farmers’ group discussions and the survey are given for each of them.

##### a. Selection of participants, invitation to training and training venue

Results of the study that refer to selection of participants and invitation to training, organizers and places of trainings and convenience of training venues are given in Table 11

Table 14: Responses of farmers on some aspects of training management

Invitation time	Two weeks before		A week before		2-3days before		One day before	
	n	%	n	%	n	%	n	%
	-	-	8	14	31	55	17	31
Nominators	Development Agents				Kebele Administration			
	n		%		n		%	
	23		41		33		59	
Trainings organizers	Development Agents/ Supervisors				Woreda SMSs			
	n		%		n		%	
	52		93		4		7	
Places of trainings	With in kebele				With in Woreda Town			
	n		%		n		%	
	51		91		5		9	
Convenience of venue	Convenient		Some what good				Inconvenient	
	n	%	n		%		n	%
	49	87	-		-		7	13

Source: Own survey data. n= 56

The way participants' were selected and the lengths of time of invitation or announcements of the training indicated that there is problem in planning of training activities. According to the respondents in farmers' group discussions, the announcement is done through letters and messages by kebele administration, DAs and/or supervisors. The time of invitation to training is not more than three days before the training date. According to the results of the survey, 55%, 31% and 14% of the respondents were invited to trainings in less than two to three days, one day before and a week before the training date, respectively (Table 11). Thus, this condition makes the selection immediate or urgent and creates unfair nomination of participants. Since farmers have their own program, especially when it coincides with peak periods, getting voluntary farmers become difficult. Those who participate half-heartedly feel inconvenient, and if they are dissatisfied with the conditions of the training process, they discontinue the training by creating different reasons such as sickness as a means of cover. This case was explained by most of the development agents and group of farmers on the group discussions performed in the presence of farmers, DAs and supervisors.

Formal and informal criteria used for nomination of farmers to training include: being hard working farmer, social acceptance, willingness to participate and to share the learning obtained from trainings, political stand, blood relationship and/or friendship, and some combination of these. However, most of the time, the personal relationships (political outlook, blood relationship & friendship) matter and dominate over the other criteria. The selection is male biased. Female house hold heads are rarely included. In most of the cases, the nomination to training is performed by DAs and kebele administration through agreement. Trainees can be selected by DAs with approval of the kebele administration (41%) or vice versa (59%) or it can be performed together (Table 11). According to the group discussions of farmers and DAs, disagreements also occur because of unfairness in the selection due to the above mentioned reasons. Thus, because of the shortness of time of invitation to trainings and unfairness in selection procedures, farmers in the kebele administration, or who have good relationships with kebele administration and/or DAs, are selected repeatedly.

In addition to farmers' trainings that are organized and provided by DAs and supervisors (93%) within the kebele (91%), woreda SMSs (7%) also perform it mostly at kulito town (9%). Most farmers, especially women, indicated that they prefer practical trainings

performed in their area or nearer places. As indicated in Table 11, since most (91%) of the trainings are provided in their area, 87% of the respondents indicated the training venue is convenient. However, 13% of them (70% are female) said it was inconvenient.

According to the findings of the survey and in all the group discussions, farmers mentioned proximity to farmers' villages, conduciveness for practical learning, ability to accommodate all participants, etc as some of the reasons given for convenience of the training places. The reasons for inconvenience are just opposite to the above conditions: Distance from farmers' area, climatic conditions, disturbances (road side locations) etc.

## **b. Duration and length of trainings**

As agricultural activities of each local environment are based on the climatic conditions and the farming systems of the area, the peak and slack periods of each enterprise and the whole farm vary accordingly. Thus length and duration of trainings should be convenient to the farmers based on the objectives of the learning. Even though the slack periods are chosen in many cases, on the job trainings can be delivered at peak time, if arranged with out affecting the farming activities. The responses of farmers on these issues are given as follows.

Table 15: Duration e and length of trainings

Length of trainings	Very Short		Reasonable		Very long	
	n	%	n	%	n	%
	15	27	15	27	26	46
	One day	2-3 days	5-9 days	10-15 days	>15 days	
Duration of trainings	n	%	n	%	n	%
	50	89	6	11	-	-
	Slack period	In between	Peak time			
	n	%	n	%	n	%
	11	20	21	37	24	43

Source: Own survey data. n= 56

According to the survey findings, all of the respondents indicated that length of the trainings range from one day (89%) to three days (11%). The length of the training was



considered as very short, reasonable, and very long by 27%, 13% and 46% of the farmers, respectively (Table 12). The reason for the latter is that it was provided at peak period, i.e., at the time of sowing. For those who said it is very short, the reason given was insufficiency of the length of training to provide the KSs required by them. Thus, from these ideas, one can conclude that provision of sufficient KSs and conveniences of the duration of trainings that are required by the trainees are among the determinants of the length of trainings. As we can see from Table 12, while 43% and 20% of the farmers indicated that the training was provided during peak time and slack time respectively, 37% of them indicated it was some what in-between. Unreliability of the rainfall is given as the major reason for the variations among farmers' responses, in the farmers' group discussions. Weak need identification, planning and preparation of trainings are the major reasons for these problems.

### c. Group size and farmers' participation

Creation of suitable leaning environment and high interaction among participants increase the involvement, interest and motivation to learning. Since the most effective adult learning is from shared experiences, learners' participation, reflection and feed back should also be facilitated at the time of training. Results of the study that is related with the group size, seating arrangements and the degree of involvement of farmers are shown in this part (Table 13).

Table 16: Group size and farmers' participation

Group size	large		Medium		Small	
	n	%	n	%	n	%
	40	71	14	25	2	4
Participation	Passive participation		Medium		Active participation	
	n	%	n	%	n	%
	23	41	20	36	13	23

Source: Own survey data. n= 56

According to the survey findings, majority (71%) of the respondents indicated that the group size is large and the degree of involvement of farmers in the training is restricted to few farmers. According to 71%, 25% and 4%, of the respondents, the group size of the

trainings was too large, medium and small respectively. Most (41 %) of the respondents indicated the participation level is passive, some (36%) respondents vote for average, while few (23 %) indicated high or active participation (Table 13).

According to the results of the survey and farmers' group discussions, the reasons for high or low level of participation, given by farmers include: relevance of training topics to the needs of farmers, group size, training mix and methods, presentation skills of facilitators and participant experiences. Most of the farmers indicated some mix of the above.

In general, farmers indicated things most satisfactory within the training process in the following Table (14).

Table 17: Satisfaction of farmers' on elements of the training process

<i>No.</i>	<i>Elements of the training process</i>	<i>n</i> <i>(n = 56)</i>	<i>%</i>
1.	Topic of the training	15	27
2.	Methods of learning	1	2
3.	Payments & other facilities	2	3
4.	Sharing of experiences with farmers	25	45
5.	Some combination of the above	13	23

Source: Own survey data

As can be seen from the above Table (14), most of the farmers indicated that topic of the trainings, and sharing experiences with farmers are among things trainees are most satisfied with. Methods of learning and payments and other facilities are with the least rate of satisfaction in the training process. Those farmers who indicated some mix of the above elements of training process accounts for 23 %.

#### **4.1.1.4. Monitoring and Evaluation**

According to the group discussions, farmers indicated that follow-up activities with the trained farmers do not exist at all. The survey findings also indicated that no expectations and opinions of farmers were asked and considered in the training process before, during

and/or after trainings. Farmers also explained that no feedback was asked on the varieties, fertilizers, herbicides and agronomic practices similar to what is done in this study. They explained that such participatory evaluation techniques are very important from adult learning point of view.

Results of the group discussions with farmers, SMSs, supervisors and DAs, revealed that number of trainees and training events that are considered as usual measurements for achievements of the training activity and follow-up activities to training, are rarely and spontaneously undertaken. Organized and reliable data, disaggregated on *kebele* and training type, are difficult to obtain on these aspects. No indicators are prepared for the changes in learning and the outcomes expected from the trainings and no monitoring and evaluation activities has been planned and performed concerning training activities. The changes in job performance, productivity and long-term effects, such as soil and water conservation, that should be given more emphasis, were not considered. Lack of effective follow-up activities is manifested in all the problems mentioned in the situational analysis discussed earlier. Issues related with the seeding rate, improved variety, fertilizer and herbicide methods, rates and time of application, the different threshing methods and the concept of cost benefit analysis can be taken as evidence.

In general, there is no systematic traditional and/ or participatory monitoring and evaluation of trainings. So, one can ask that with out any follow-up activity, how one can measure the successes, problems and/or failures faced? How actions are taken to improve the conditions? Therefore, this condition makes clear that any decision that has been taken to organize and conduct training is not based on systematic study or evidence.

## **A<sub>2</sub>. Analysis of the results and the outcomes of training**

### **4.1.1.5. Changes in KSs attributed to the teff training**

According to situational, gap and task analysis, the existing gaps of each task, as perceived by farmers themselves, are very wide. However, the study revealed that there are changes pertaining to KSs to some extent. The results of the comparison of the responses of farmers on KSs or confidence levels of each task, before and after the training and among

trained and untrained farmers, which were tested through chi square analysis are provided in Table 15 .

Table 18: Comparisons of responses of trained & untrained teff farmers on KS gaps/confidence level of each task before & after training

No.	Job tasks	Trained farmers (n = 56)						Untrained farmers(n=36)			X <sup>2</sup>  (P value)
		No		Some		Wide		No	Some	Wide	
		gap,		gap,		gap;		gap,	gap,	gap;	
		Bef	Aft	Bef	Aft	Bef	Aft				
1.	Appropriate seed rating	6	22	45	31	5	8	3	25	8	12.602 (0.002)***
2.	Using improved variety	17	36	30	18	9	5	13	18	5	13.509 (0.001)***
3.	DAP rate of application	4	8	31	38	21	15	1	20	15	5.947 (0.051)*
4.	DAP methods of application	4	6	31	41	21	13	-	23	13	20.354 (0.000)***
5.	Urea rate of application	3	3	21	36	32	24	-	12	24	20.354 (0.000)***
6.	Urea methods of application	3	3	24	36	29	23	-	13	23	5.5 (0.063)*

Source: Own survey data.

Note: Bef. =before training; Aft. = after training; \*, \*\*, \*\*\* show significance at  $p \leq 0.10$ , 0.05, and 0.01 respectively, non significant otherwise(X<sup>2</sup> test).The degree of freedom for each job task of both categories is 2.

As can be seen from Table 15, the responses of farmers show significant differences between the KS level of trained farmers before and after trainings and with untrained farmers, in activities that are included in the trainings. These include: appropriate seed

rating, use of improved variety, DAP rate and method of application, urea rate and method of application. The variation in the confidence level of farmers by itself can be considered as positive effect of the trainings. Since learning is accumulated through experience, the positive and/or the negative results can be taken as lessons. As we have seen in the results of situational analysis, discussed in the need assessment part of this study, the changes obtained are not promising in the case of fertilizer application. The rate of DAP and urea method of application among the categories of farmers show significance at  $p \leq 0.10$ . Even though, DAP methods and urea rate of application show highest significance level, this does not mean the changes in KSs are as required. The basic principles that refer to the consequences of application of fertilizers below and/or above the recommended rate are not well understood by both categories of farmers. They are not too worried about quantities of fertilizers as long as some fertilizer is used. Thus continuous follow-up and practical learning which is based on actual performance gaps are still necessary. That is why they also identified these problems among the existing needs of farmers. Opposite to this, the experiences or the lessons the trained farmers obtained using improved variety show high differences from the untrained farmers. The main idea of the study is not to prove that all the past attempts of the training activities were useless, but to demonstrate that the efforts could be more fruitful if farmers were involved genuinely and if trainings were designed and implemented according to, their needs and convenience with supportive and corrective follow up activities.

#### **4.1.1.6. Application of Lessons Learned from the Training**

It is important to note that all learning obtained from the training doesn't necessarily translate into application on job. Therefore, the lessons learned during the trainings could be implemented fully, or applied with modifications or not applied at all due to different reasons (Table 16). In teff trainings, even though, some of the production and the protection aspects were included, many of the problems that were discussed in the situational and the training process analysis indicated that the performances of farmers have not been changed as such. This is so because, most of the problems were not addressed as required, and also many of the lessons learned from the trainings were not applied fully. Majority of the farmers applied the learning by modifying according to their situation and/or totally rejected it based on the problems they faced (Table 16).

Table 19: Application of lessons learned from the training

No.	Lessons learned	Fully applied		Modified		Not applied totally	
		n	%	n	%	n	%
1.	Appropriate seeding rate	16	29	31	55	9	16
2.	Use of improved variety	56	100	-	-	-	-
3.	DAP rate of application	5	9	29	52	22	39
4.	DAP methods of application	9	16	22	39	25	45
5.	Urea rate of application	5	9	13	23	38	68

Source: Own survey data

For instance, as farmers indicated in the group discussion, they reduced DAP fertilizer from the recommended 100 kg/ha to 50 kg/ha or not applied at all, because of its high cost. Application of urea is also reduced by more than half from the recommended rate because of lodging of teff. While the first case is related with resource limitations, the latter case refers to adjustment of the learning to the local conditions. In such a case, the training can be said fruitful in introducing the KS at the beginning. If, such changes are not identified through continuous follow-up activities and if the required corrective measures or adjustments, i.e. accepting or readjusting the modifications of farmers, are not based on further study of the local conditions, their effects can not be judged effectively. Thus, in the case of performing continuous follow-up and taking corrective measures, the process of training was generally defective. Some of the reasons given by the teff farmers for the adjustments or the rejection of the learning include:

- Lodging of teff because of urea application
- High costs of fertilizer and herbicides,
- Soil condition, difficulty to plough horizontally at the beginning,
- Losses during threshing for different methods,
- Climatic conditions (rain fall)
- Lack of credit, (resource limitation) and
- Lack of confidence because of insufficiency of knowledge and skills of the new learning they obtained from the trainings (requires follow-up activities and further need assessments).

The important point here is that making adjustments or partial application by itself is a positive sign of efforts of trainees. Adjustment of the rate of urea according to their soil fertility status can be considered as an innovative practice of farmers. The reason given for their ineffective tillage practice and comparison of the losses during threshing for the different methods requires further study. Thus the changes they bring in the outcomes of the training have to be checked from their usefulness or contribution point of view. It is known that, on-job application of the learning, according to the context of the trainees' circumstance, determines the expected changes of the outcome. In our case, the contributions of the modified actions of farmers, in increasing the productivity, seems not promising. We have also seen that some of the activities of farmers are ineffective from soil and water conservation point of view. However, since all of the ideas require further investigation, it is difficult to promote or to discourage them as useful or harmful. Corrective and /or supportive actions are not taken because of lack of joint follow-up and feed back activities. Therefore, some of the solutions that require research investigations and policy issues could not be reflected to the concerned bodies. In this case, different solutions need to be sought for the problems mentioned by the farmers from research institutions, input suppliers, microfinance organizations, NGOs and decision/policy makers. Hence, this condition show that effective efforts of technology development and dissemination requires full participation of all concerned stake holders, specially of farmers, in all stages of the activities.

#### **4.1.1.6. Outcomes of the trainings**

Measurements of outcomes and impacts of trainings refer to evaluation of effectiveness of the program in terms of achievements. At this level, we look at aspects such as increase in productivity, income, and effective conservation of soil and water.

Measurements of the outcomes and impacts of the learning obtained from the trainings are difficult because they are the results of different factors. Even though, it is improbable that we can show direct linkage, it is worthwhile making the attempt even if the linkage at this level is indirect. It also requires base line data and different indicators agreed up on at the planning stage. As we have discussed earlier, since there is no organized and complete data at all levels with this regard, the quantitative indicators, which show the changes in outcomes, before and after the training, are obtained through community group discussion

and through survey results. The average yield of trained teff farmers before and after trainings is given in Table 17.

Table 20: Expectations and Average yield of trained teff farmers before and after trainings

No.	Expectations of farmers	n	%	Yield (Qt/ha)	
				2002-04	2005
1.	Above expectation	8	15	4	9
2.	As expected	22	39	3.5	7
3.	Below expectation	26	46	4.5	5.5
Total		56	100	4.03	6.6

Source: Own survey data

Most of the teff farmers interviewed and/or those who participated in the group discussions indicated that there is improvement in productivity of teff, mainly because of the use of improved variety. These are given as follows:

- According to the focused group discussion of the communities, especially farmers in Gerema and Tachignaw-Arsho the productivity of teff is increased from five and half to eight (5.5 - 8) quintals per hectare and from three to six and half ( 3.2 – 6.5) quintals per hectare, respectively.
- The results of the survey included the expectations of the farmers, whether they get what they expected or not or above or below their expectations. Farmers' expectations were based on what they were told during the trainings and the experiences they had from other package activities. Among the total teff farmers interviewed, 15 % 39 % and 46% of them indicated that the results they get are above, similar with and not according to their expectations, respectively (Table 17).
- The average yield increase for the 15% of the farmers, who obtained above their expectations, is from four quintal (2002-2004 average) to nine quintals (2005 average) per hectare (Table 17).
- The average yield increase for the 39% of the farmers, who explained their results as similar with their expectations, is from 3.5 quintal (2002-2004 average) to seven quintals (2005 average) per hectare (Table 17).



- The average yield increase for the 46% of the farmers, who obtained not according to their expectations, is from 4.5 quintals (2002-2004 average) to 5.5 quintals (2005 average) per hectare (Table 17).
- In general, the average yield increase for trained farmers is from 4.03 quintal/ha (2002-2004 average) to 6.6 quintals/ha (2005 average), which is also significantly higher than the average yield of untrained farmers.
- As can be seen from Table 17, there is change in productivity of the trained farmers. Comparison of the average yield of previous three years and the average yields after training (2005) show 65% increase. Since the rate of the productivity change to be attained is not given in the training objectives, evaluation of the achievement becomes difficult and can be determined by the judgment of the evaluators. It can be seen from different point of views, such as clients' satisfaction, results of other farmers of different areas, results of on-farm trials and/or research findings.
- The other important achievement is that the farmers get encouraged to test the ideas and other farmers have used those farmers who are involved in the previous activities as sources of information. Exchange of ideas among farmers is already initiated. Strengthening follow-up activities can encourage farmers more. Farmer-to-farmer experience sharing can be exercised as the best method of training through participatory on-farm demonstrations, on-farm trials and group discussions. But, the system of training lacks such continuity that builds on past experiences.

It must be noted that, these outcomes were resulted from defective training process. They were obtained from limited KS changes and partial or selective application of learning, the usefulness or harmfulness of which requires further investigation.

In summary, the results of the study showed that:

- The training was not responsive to farmers' needs /circumstances; many of their problems were not treated in the training,
- All the elements of the training process or cycle are deficient and defective,
- Even though, farmers obtained significant KS differences in some activities , on-the-job performance changes those are expected from the learning/ the training/ are limited to some tasks. Most of them were modified due to high costs

of inputs and insufficiency of knowledge and skills of farmers and their usefulness require further evaluation from technical and economic point of view.

- The change in the productivity is significant (but, requires cost-benefit/ analysis); According to farmers' evaluation, they show preference towards improved variety.
- The training did not at all considered Soil and water conservation activity, which is one of the limiting problems of the area.

Thus, as far as majority of the above-mentioned conditions shows deficiencies, it can be concluded that the teff training is not as effective as required or as it should be.

#### **4.1.2.2. Training plan/design**

In this part, the planning and record keeping activities, formulation of the learning objectives and organizing contents, selection of training methods and materials, will be discussed.

##### **b. Learning objectives**

Similar to the teff training, the results of the group discussions with farmers, DAs and SMSs revealed that the changes brought about in knowledge and skill performances and outcomes of farmers are not indicated in the preparation of trainings. Even though the number and type of trainings provided, and the activity of the trainers, are available in some instances they are not obtained in a written or organized form, but only through queries. Training objectives, the vague ones or those indicate the performances, condition and standard of the required achievements, are not formulated in general. This was found to be true in the case of poultry trainings of the woreda. The objectives found through query refer to improvement of productivity in general.

##### **c. Organizing Contents**

As discussed in the analysis of the production and health care aspects of poultry farming, farmers' problems were not thoroughly touched by the trainings provided to farmers. Some aspects of the poultry farming constraints of the area that can bring about significant improvements in the productivity of local birds have not been included. These include: encouragement of farmers to change their attitude towards poultry keeping and to the

traditional system, introduction of small management changes, for example, regular watering, night enclosures, discouraging hens from getting broody, vaccination for common diseases and small energy and/or protein supplement and working with women groups. However, they are highly relevant and needed by farmers. Introduction of exotic breeds in different forms with the necessary management and inputs have not been dealt with sufficiently. Since objectives formulation is vague, because of poor need identification, training topics were wide and very general. It is not the need of the participants, but the aims and available time given to trainers decides the topics. As to their degree of relevance with the needs of the farmers, though it varies with each topic, they were indicated as very relevant in general.

#### **d. Training methods and materials**

The results of the study that refer to training mix, methods and materials are given in Table 21.

Table 21: Training mixes and methods

Mixes of trainings	More practical with little theory		Balanced		More theories with few practical				Total		
	n	%	n	%	n	%	n	%	n		
	3	5	8	11	57	84			68		
Training methods:	Teaching/ lecture		Group discussion		Demons tration		Visit		Practicum		Total
	n	%	n	%	n	%	n	%	n	%	n
Used in the trainings	41	60	20	30	7	10	-	-	-	-	68
preferred by farmers	2	3	44	65	12	17	6	9	4	6	68

Source: Own survey data

According to 84% of the respondents, the training mix is with little practical and more theories. Some (11%) of them indicated the mix as balanced and for few (5%) of them it was more of practical and less theoretical. Moreover, according to the farmers' group discussions the trainings provided were almost fully theoretical with large audience, and very limited participation. Majority (60%) of the farmers who were participated in the survey indicated that the most commonly used method was teaching through lecture. Group discussion and demonstration were indicated, respectively by 30 % and 10% of the

respondents. Any respondents did not indicate visits and practicum. On the other side, farmers' responses indicated that group discussion, demonstration, practicum/on-farm trials/ and visit/field days/ are preferred by 65%, 17%, 9% and 6% of them respectively. In addition, the least liked method is non-interactive lecture. Farmers also explained that, the uses of available materials, such as samples of feeds, models of poultry houses and eggs of different birds, have not been included in the trainings. farmers clearly explained this problem that they lack sufficient KSs in poultry housing construction and management. Similar to the teff trainings the most commonly used method, by most of the change agents, is description without showing and exercising any thing.

#### 4.1.2.3. Training performance and management

This part include the training performance and management aspects such as identification and preparation of training resources, scheduling, lesson plan preparation, presentation and facilitation skills and other management issues.

##### a. Selection of participants and invitation to training

According to the farmers' group discussions, farmers indicated that there are problems in the selection of participants and the lengths of time of invitation or announcements of the trainings. Farmers' responses on these issues are given in Table 22.

Table 22: Time of invitation, nominators and organizers of trainings

Organizers	Development Agents		Kebele administration		Total
	n	%	n	%	n
	57	84	11	16	68
Nominators	Development Agents		Kebele Administration		Total
	n	%	n	%	n
	30	44	38	56	68
Time of invitation:	Two weeks before		A week before	2-3 days before	Total
	n	%	n	%	n
	6	9	41	60	21
				31	68

Source: Own survey data

According to the survey result, most (84%) of the farmers' trainings were organized and provided by DAs and supervisors with in the kebele. Some (16%) farmers also indicated that they participated in the trainings performed at kulito town by the woreda SMSs. As to the nominations to training, 44% and 56 % of the farmers indicated they were nominated by the DAs and kebele administration respectively (Table 22).

Urgency of invitation to trainings was indicated as one of the major problems that causes unfairness in the selection of participants of trainings on the farmers' group discussions performed in the presence of DAs, supervisors and the woreda SMSs, . The results of the survey indicated that 31%, 60% and 9% of the respondents were invited to trainings in less than two to three days, a week before and two weeks before the training date, respectively (Table 22). According to the explanations of DAs, since farmers have their own program, especially when it coincides with peak working periods, getting voluntary farmers become difficult. Those who participated half-heartedly felt inconvenient, get dissatisfied with the conditions of the training process and discontinued the training by creating different reasons such as sickness as a means of cover.

As farmers explained in the group discussions, different formal and informal criteria are used for nomination of farmers to training. The formal ones include: being hard working farmer, social acceptance, and willingness to participate and to share the learning obtained from trainings. Political stand, blood relationship and/or friendship are among the ones used informally. They explained that some combinations of these criteria are used in various ways. Due to the shortness of time of invitation to training and unfairness in recruitment procedures, farmers' in the kebele administration or who have good relationships with them and/or with DAs, are selected repeatedly to trainings. However, since poultry farmers were selected based on their willingness through advance payments for the improved breeds in the form of first-comes first-served, unfairness in this case were not reported as in the case of teff.

#### **b. Venue ,duration and length of trainings**

The responses of poultry farmers on the venue, duration and length of trainings are given in the following Table (23).

Table 23: Duration and length of trainings

venue	Convenient		Some what good		Inconvenient		Total
	n	%	n	%	n	%	n
Length of trainings	53	78	7	10	8	12	68
	Very Short		Reasonable		Very long		Total
	n	%	n	%	n	%	n
	35	51	23	34	10	15	68
Duration o f trainings	One day		2-3 days		5-9 days		Total
	n	%	n	%	n	%	n
	58	85	10	15	-	-	68
	Slack time		Some what good		Peak time		Total
	n	%	n	%	n	%	n
	13	19	45	66	10	15	68

Source: Own survey data.

Farmers' response on conveniences of venues indicated that they prefer those trainings that are undertaken in their area. As can be seen from Table 23, 78 % of the respondents indicated the training place/venue is convenient. However, 10% of them took average position while some (12%) said it was inconvenient. Farmers mentioned nearness to farmers' villages, conduciveness for practical learning, ability to accommodate all participants, etc are among some of the reasons given for convenience of the training places. The reasons for inconveniences are just opposite to the above conditions, climatic conditions, and disturbances due to inconvenient locations (road side, etc.). According to personal interview and group discussions, majority of the female respondents indicated the inconveniences of the trainings provided out of their area.

All of the survey respondents indicated that length of trainings was less than three days. Out of these 85% of them indicated it is one day. Those respondents who considered this length as very short, reasonable and very long accounts for 51% ,34% and 15% respectively (Table 23). Those who said the length of trainings is very short and even all the other farmers also agreed on that the length is not enough from the point of view of their requirements, but the reasons for those who indicated very long are the inconvenience of the places, the methods and duration of trainings. Thus since variation of the responses in this case are based on different perspectives of farmers, one can conclude

that it is not only the contents and the techniques of trainings that matters in the determination of length of trainings, but also convenience of places and duration of trainings.

Out of the total trained participants, 19%, and 15% of the farmers indicated training was provided at slack and peak periods respectively. However majority (66%) of them agreed on that it was performed at reasonable time (Table 23).

#### **b. Group size and farmers' participation.**

Effective trainings are participative and experiential. Thus interactions among participants and facilitators increase learning. Participants should have an opportunity to raise their doubts and misunderstandings. Hence the group size should allow such conditions. The higher the group size the lower is the participation. Results of the study on the size of the group and farmers' involvement in the training activities are provided in the following Table (24). As to the size of the trainings, 71%, 25% and 44%, of the respondents indicated the group was very large, medium and small, respectively. Moreover, 48%, 34% and 18% of the farmers indicated the participation level is low/passive, average and active respectively (Table 24).

**Table 24: Group size and farmers' participation**

Group size	Very large		Medium		Small	
	N	%	n	%	n	%
	48	71	17	25	3	4
Participation	High/active		Average		Least/passive	
	N	%	n	%	n	%
	12	18	23	34	33	48

Source: Own survey data

As to the size of the trainings, 71%, 25% and 44%, of the respondents indicated the group was very large, medium and small, respectively. Moreover, 48%, 34% and 18% of the farmers indicated the participation level is low/passive, average and active respectively (Table 24). The reasons given by farmers for high or low level of participation include: relevancy of training topics with the needs of farmers, group size, training mixes and methods, presentation skills and participant experiences. Most of the farmers indicated some mix of the above. On the other side, farmers also rated things they are satisfied with, in the training process as given in Table 25.

Table 25: Farmers' response on things they are satisfied with, in the training process

No.	<i>Elements of the training process</i>	<i>Poultry farmers' rate of satisfaction</i>	
		n	%
1.	Topic of the training	23	34
2.	Methods of learning	2	3
3.	Payments and other facilities	3	5
4.	Sharing of experiences with farmers	20	29
5.	Some combination of the above	20	29
	Total	68	100

Source: Own survey data.

As can be seen from Table 25, most of the farmers, i.e., 34% and 29% of them indicated the topic of the trainings and sharing experiences with farmers are among the things trainees are most satisfied with, in the training process respectively. Some (3% and 5%) of the respondents indicated the methods of learning and payments and other facilities used are with the least rates, respectively. The remaining (29%) of them indicated some combinations of the above.

#### **4.1.2.4. Monitoring and Evaluation**

According to the group discussions of farmers and change agents, DAs and supervisors performed follow-up activities to the trained farmers rarely. kebele executives and some model farmers provided some feed back that are used as required. The survey findings indicated that the training process did not assess or considered expectations of farmers.



The monthly reports of development centers did not indicated detailed progresses of the farmers. Nevertheless, only the number of farmers trained, number of package participants, and number of livestock distributed. Thus, because of lack of continuous follow-up activities, supportive and/or corrective actions that resolve farmers' problems can not be sought timely. Many of the problems mentioned in the situational assessments of this study indicated this situation very clearly. Moreover, lack of indicators that show the expected learning and the out comes of the trainings make the monitoring and evaluation difficult. In general, activities that assess the problems faced and that measure the failures and/or the successes of the training process were not performed totally.

This part include changes in KSA attributed to the poultry training , application of lessons learned from the training and out comes of the trainings.

#### **4.1.2.5. Changes in KS attributed to the poultry training**

Results of the study that refer to the KSs changes attributed to the poultry training are given in this section. It includes comparisons of the responses of farmers, on KS or confidence levels of each task, before, after training, and among trained and untrained farmers, undertaken through chi square test. Table 26 gives their summary and then followed by detail discussion of each.

## B<sub>2</sub>. Analysis of the results and the outcomes of training

Table 26: Comparisons of responses (%) of poultry farmers, trained & untrained, on KS /confidence level of each tasks before & after training.

No.	Job tasks	Trained farmers						Untrained farmer			$\chi^2$ ( <i>p</i> value)
		No gap,		Some gap,		Wide gap;		No gap	Some gap,	Wide gap;	
		Bef	Aft	Bef	Aft	Bef	Aft				
1.	Feeding	5	17	48	41	15	10	3	13	14	8.096 (0.017)**
2.	Housing	19	21	33	27	16	20	3	15	12	1.144 (0.564)
3.	Health care	-	-	10	10	58	58	-	7	23	0.000 (1.000)
4.	Reproduction	22	44	29	22	17	2	5	17	8	20.136 (0.000)***

Source: Own survey data .

Note: Bef=before training; Aft=after training and \*\*, \*\*\* show significance at  $P \leq 0.01$ , 0.05, and 0.001 respectively, non-significant otherwise. The degree of freedom for each job task of both categories is 2.

As can be seen from Table 26, there are changes in KSs after training in feeding and reproduction activities. Farmers explained different KSs concerning the new breed characteristics and the way they multiply them. Farmers preferred cross breeds f because of their combined traits of disease resistance and better production, as compared with the exotics and the locals. They started multiplying and selling them to other farmers. In the group discussions, trained farmers explained that at least two to three farmers had taken or bought the eggs of improved breeds or chicken for reproduction purpose. They also explained that the breeds give better production if they are provided additional feed and regular watering. As to the housing of the poultry, they indicated that they lack enough skills and still require more ideas to unlearn their previous practices.

#### 4.1.2.6. Application of lessons learned from the poultry trainings

Learning obtained from the training doesn't necessarily translate into application on job. Therefore, the lessons learned during the trainings could be implemented fully, or applied with modifications or not applied at all, due to different reasons. The result of the study that shows the conditions of application of lessons learned from the training is given in Table 27.

Table 27: Application of lessons learned from the training

No.	Lessons learned	Fully applied		Modified		Not applied	
		n	%	n	%	n	%
1.	Feeding	9	13	29	43	30	44
2.	Housing	6	9	11	16	51	75
3.	Health care	2	3	5	7	61	90
4.	Reproduction	17	25	33	48	18	27

Source: Own survey data

Even though, performed in a deficient way, some of the production and the health care aspects were included and provided to farmers in poultry trainings. Many of the problems that are discussed in the situational and the training process analysis indicated that most of the performances of farmers have not been changed as such. As indicated in Table 27, the reproduction aspect is better. Since the modifications are very slight in this case, about 73 % (25+48) of the respondents can be taken as those who apply this practice. Concerning the feeding aspect the farmers indicated that 13%, 43% and 44% of them applied the practice fully, in modification and not totally applied respectively. It is only 9% of the trained farmers who applied the separate poultry housing activity.

Majority of the farmers did not apply and/or modify the learning based on the problems they faced. The different reasons for the partial application or modifications and/or rejection of the learning given by the poultry farmers include: -

- Use of locally available feed and high costs of feed,
- High costs & unavailability of vaccines and medicines in their and nearby areas,

- Fear of theft and predators,
- Insufficiency of KSAs provided,
- Lack of confidence in the supply of exotic breeds and
- Lack of credit.

The ‘adjustments’ done by farmers have to be investigated from their effectiveness point of view, for any further improvement measures. However, this is not done usually due to lack of effective follow-up and evaluation activities.

Farmers explained that, even though most of them get convinced with the contents of the learning to some extent, their application is delayed just to experiment and to develop confidence on the ideas on small scale. Thus, based on their experiences they get after trainings, farmers are becoming eager to get more improved birds, to construct the poultry housing separating from their own, to prepare feeding and fulfill the health care aspects. The demands for the exotic breed are already created and even exceeded the supply. This condition shows farmers’ circumstances and the availability of resources have not been assessed and thereby the training objectives and contents are not formulated and not organized accordingly. It indicates lack of genuine participation of all concerned stakeholders, especially of that of farmers in problem identification, planning, implementation, monitoring and evaluation activities in general and in training activities in particular. The efforts require more steps-by- step provision of basket of choices that fits to the various conditions of the farmers. These include:

- Encouragement of farmers to change their attitude towards poultry keeping and to the traditional system (Yami and Taddele, 1997),
- Introduction of small management changes, for example, regular watering, night enclosures, discouraging hens from getting broody, vaccination for common diseases and small energy and/or protein supplement that can bring about significant improvements in the productivity of local birds (Taddelle and Ogle, 1996 through Yami and Taddele, 1997),
- Introduction of exotic breeds with the necessary management and inputs, in different forms, through efficient utilization of the existing BoARD poultry farms, encouraging the NGOs and private investments towards this aspect,
- Promotion of cross breeding exercises of farmers by encouraging them not to sell the eggs of the improved breeds for home consumption,

- Formulation of different packages or menus of choices that include the local, exotic and/or cross breeds, in collaboration with different research institutions universities, NGOs, input suppliers, micro-finance organizations, *etc.*
- Working with farmers' groups or coops, especially with women groups etc

These are especially true, where the existing supply of exotic breeds in the region is much lesser than the demands of farmers and where much emphasis is also given to the introduction of exotic breeds, almost ignoring the other options.

#### **4.1.2.7. Outcomes of the trainings**

It is improbable that we can show direct linkage between the learning and the changes in the outcomes obtained from the trainings. The linkage at this level is indirect. Measurements are difficult because they are the results of different factors. It also requires base line data and different indicators agreed up on at the planning stage. As we have discussed earlier, since there is no organized and completed data at all levels with this regard, the quantitative indicators could not be given in the survey. However, attempt was made to get estimates which show the changes in outcomes, before and after the training, through community group discussion.

According to these, majority of the farmers indicated that, there is change in egg production because of better productivity of exotic breed (*Rhode Island Red*), which gives continuous and big size egg production without broodiness, and thereby in income, food habit (nutrition) and investment.

In general, the productivity for the local, cross and *Rhode Island Red* breeds was given to be 60-80 eggs /hen/year, 120-130 eggs /hen/year and 190-210 eggs /hen/year, respectively. More over, in the focused group discussions:

- Four farmers showed that they bought one sheep each that costs, birr 55, 95, 100 and 120, from the income of eggs sold. This is in addition to that of the eggs used for consumption and sold to buy housing chores such as table salt, edible oil, etc.
- Three farmers also informed that they bought one goat each that cost 60-70 birr in addition to the eggs used for their own consumption and eggs used to buy some household chores such as table salt, edible oil, etc

- The other two women farmers informed that they brought clothes and household chores from sale of eggs.

However, the results of the survey includes the expectations of the farmers, whether they get what they expected or not or above or below their expectation. Among the total poultry farmers interviewed, 25 % and 54 % of them indicated that the results they get is above and similar with their expectations respectively. The remaining 21% explained there is no any difference and below their expectations, respectively. Since the rate of the productivity change to be attained is not given in the training objectives, evaluation of the achievement becomes difficult and can be determined by the judgment of the evaluators. It can be seen from different point of views, such as clients' satisfaction, results of other farmers of different areas, results of on-farm trials and/or research findings.

The other important achievement is that the farmers get encouraged to test the ideas and those farmers who are involved in the previous activities can be used as sources of information. Farmer-to-farmer experience sharing in this case is very promising. The copying rate is fast, but because of the supply problems they try to get eggs or chickens of improved birds from the trained ones. As indicated in the group discussions, at least two to three untrained farmers tried to copy from each trained farmers. If genuine participation of farmers is exercised through participatory on-farm demonstrations, on-farm trials and group discussions they will become more effective.

It must be noted that these outcomes are obtained from limited KS changes and partial or selective application of learning that were resulted from defective training process.

In summary, the results of the study showed that:

- ⇒ Even though the training can be said responsive to farmers' needs in general, farmers need identification process showed that they are not touched as per the requirement and circumstances of farmers,
- ⇒ All elements of the training process or cycle are deficient and defective,
- ⇒ Changes have been brought in KS levels of some activities of farmers,

- ⇒ On-the-job performance changes that are expected from the learning/ the training are not much because applied activities are very few(only reproduction aspect) in most of the job tasks, and
- ⇒ The changes in the productivity and income of farmers are brought only because of the breed difference, but could be better if the other management activities were applied.

Thus, it can be concluded that the training is not as effective as required, as far as all the above-mentioned conditions calls for improvement.

## **4.2. Analysis of Change agents' Trainings**

Evaluation of the Change agents' (Development agents & SMSs) trainings are included in this study, because they are one of the major partners that determines the effectiveness of the farmers' training program. However, they were touched only from their process point of view. Assessments of the changes in KSA and on-the-job performances require detailed investigation, which is beyond the scope of this study. Thus, the findings of the study which are obtained from the focused group discussions, document review, direct observation and personal interviews of DAs (12) and supervisors (four), woreda and regional SMSs and team / desk leaders are presented in this part. All of them have been considered as trainers and/or trainees, because trainings are provided by SMSs of the region to the SMSs of the woreda, and then to DAs and then to the community.

Since their role varies as participants and as trainers of trainings prepared at various levels, the data on the elements of training process were collected , analyzed and presented accordingly, including some general aspects of agricultural extension.

### **4.2.1. Training needs assessment (TNA) and planning**

In this part, the TNA, documentation of data and planning activities of the change agents' trainings are included in general.

The change agents included in the study explained that trainings are useful when there are new ideas and address the problems of the participants. According to them, the trainings provided were not based on the work performance gaps or they were not started from their weaknesses identified practically in the field or working areas. Thus, they are not specific

and practical. As explained by the specialists: "We don't think training activities are planned, they are not based on the needs of learners. Rather, availability of budgets determines provision of the trainings. It is very common to have much training at the end of the fiscal year".

Moreover, they explained that, these conditions are not only for the SMSs trainings provided from regional or woreda level, but also true for DA's and farmers' trainings that are provided by the woreda SMSs. Community level situational, job and task analysis for farmers DAs and SMSs, have not been exercised. Learners do not participate in the need identification and in the decisions to run any course, but determined by organizers and/or trainers. That is why trainings are prepared and undertaken spontaneously any time without plan and convenience of trainees.

They also explained that, because they don't have sufficient skills in doing TNA activities and no one is evaluated from this aspect, they prepare trainings based on their experience and assumptions. Repeated trainings with the same or similar, slightly and briefly touched topics and/or contents are common". One of the crop protection specialists put the condition as follows: "We have still learning about 2-4 D, starting from college of agriculture and teaching our subordinates the same ". He has greater than 20 years work experience in the Ministry.

Since trainings are required to introduce new findings and to fill gaps, identification of participants should also be based on fair evaluation of performances and the problems they faced in the working conditions. However, as explained by the participants, the trainings they have been provided did not fulfill this condition. If performed in this way", as told by workers, "it helps not only to reduce complaints but also increases motivation of workers."

As to the trainings that are provided to farmers, DAs explained that, need identification activities are not performed, because topic selection is from above. They said," We strive to fulfill the quotas given to us, rather than targeting to the needs of the farmers. Of course, by chance they can coincide with the farmers' needs and that is why we try to get farmers who accept us to implement the program. Unnecessary and/or faulty information can also be provided sometimes, just to fulfill the quota". According to them, farmers get bored and openly reject their teaching by saying "this is not different from what we



know"; and start leaving by giving various reasons, such as, feeling sick, to give answer to call of nature, *etc.*

According to the change agents, the following weaknesses have been observed in almost all the trainings (more than 90% of the events of trainings) performed at all levels: Teaching, what trainees already know, unnecessary time on teaching difficult but not important topics, leaving easy but very important issues and overfilling the curriculum or inclusion of numerous topics and contents briefly and slightly touched, *etc.*

The reasons for not applying the systematic TNA are also given as follows:

- Lack of KSA in need assessment in general and in training methodology in particular,
- Top -down extension approach and extension planning which is based on quota system,
- Low emphasis given to training activities in the performance evaluation, and
- Weaknesses in the management of extension activities in general and trainings in particular.

The availability and type of information documented concerning training activities were checked through review of documents such as planning formats, reports after trainings, quarterly and annual report formats, and field activity reports. However, organized and up-to-date data cannot be found at this level. The record keeping at development centers level is very weak in all activities. Since it is not given much emphasis as an activity to be planned, monitored and evaluated at all levels, the accuracy, timeliness, and reliability of data are very low. It is only the types of trainings and number of participants that are obtained in the development agents' hand. Since the data required to be filled in the planning, and quarterly reports are only these aspects, indicators that show the results of trainings are not kept at all. Data on the type of trainings and number of participants of different package of each kebele are difficult to obtain, even for the present and recent years. Those available are unorganized, not compiled, and unreliable. The other point to be seen here is the weakness of the mechanisms of record keeping at development centers level, which is not related with the fast turn over rate of DAs. When DAs are transferred to other posts and/or places, they are expected to leave all the necessary resources including all sorts of reports and data of the center. But, since they are not asked about data or basic records or archives at the time of clearance, they do not give emphasis to this activity. This implies that data are not considered as resources and no responsibility is attached to them.

Some of the reasons given for not keeping accurate, timely and unreliable data in general and to training activities in particular are:

- a) Lack of performance evaluation that considers accuracy, timeliness and reliability of data, at all levels.
- b) Lack of motivation of workers because the system doesn't give the necessary emphasis to keep records in general, particularly in training.
- c) Lack of knowledge, skills and attitudes, in record keeping.
- d) Lack of sufficient office materials, such as stationery items.

The extension approach and planning is based on the assumption that transfer of technology will bring development, and performed based on quota system from top. Thus, training, being one of the functions of the development strategies, follows the same route. In most cases trainings are initiated and run from above without understanding of the needs of the learners. The learners are told what to do, not ask what they need.

As obtained from the workers, who participated in the study, the type of trainings and the number of participants that are given as indicative plan by DAs, without participation of the farmers, are modified, approved and passed to the next levels starting from the supervisors, based on the influences and ambitions of the same. Thus, the initial plan, even which doesn't start from the real condition, is exaggerated to many folds (some times up to 10 times) and sent down to development agents for implementation. The plan becomes unrealistic and unachievable at grass root level. Duplication of efforts and wastage, which are observed because of weaknesses in the linkage, not only with NGOs but also among the teams, desks etc of the office itself make the condition very difficult for change agents. Moreover, because of lack of participation of the learners, there is no room for inclusion of indigenous knowledge's (IKS) in the training program.

The same is true also at regional level. Weaknesses in the linkage, duplication of efforts and wastages are observed with in the organization among the teams, desks etc and with NGOs. Thus, because of all these conditions, the training need analysis have not been undertaken systematically and those that have been attempted based on assumptions, became faulty, leading to incompatible training objective formulation.

#### 4.2.2.3. Training Methods and Materials

As explained by the DAs and the supervisors, continuous or long lectures with very restricted participation of trainees and very little use of supporting materials are one of the very common methods used in most of the trainings. According to them, while group discussion and demonstration are used in some training, visits and practicum are included in a very few events. The commonly used training materials include: chalkboard, flip chart, and handouts. No use of local materials and /or specimens of weeds, insects, diseases and forages etc. Thus, the SMSs and DAs concluded that, in most of these trainings, the mix of theory Vs practical is given to be 85% to 15%, and 90% to 10%, respectively. "In 50% of the trainings", as said by workers, "not carefully prepared handouts (mostly copied from previous handouts or books) are prepared with poor quality". As explained by the respondents, in the trainings they provided to change agents and farmers, lecture, group discussion, visits, demonstration and practicum are the methods of training used, in their order of application. The conditions are explained by the following Figures:

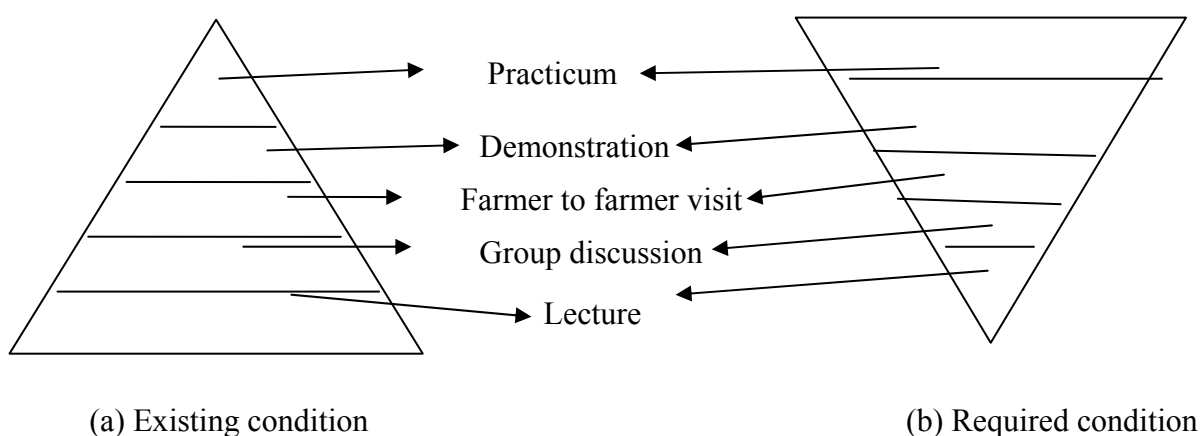


Figure 13: Training methods used in change agents' and farmers' trainings: Existing (a) vs. required (b) conditions.

The results of, the subject matter specialists, ranking exercise of the training methods that is based on their use in the training events, are given in Table 28.

Table 28: Ranking of the training methods used

<i>No.</i>	<i>Training Methods</i>	<i>Events of training</i>	<i>Rank</i>
1.	Lecture	In almost all the trainings	1st
2.	Group discussion	In some of the trainings	2nd
3.	Demonstration	In few of the trainings	3rd
4.	Visit	In very few of the trainings	4th
5.	Practicum	In almost none of the trainings	5th

Source: Interview with 14 SMSs of Alaba woreda

The main reason given for this problem is lack of knowledge, skills and attitudes in training methods not only by workers but also in the system of the training as a whole. Moving from the existing to the required conditions not necessarily has implications on resources. It can be applied with the available resources allocated for trainings with technical improvements. Reducing the amount of lecture and increasing group discussions, using locally available materials and demonstrations in farmer's fields, farmer-to-farmer visits within or near by kebeles can be performed instead of teaching through non interactive long lectures without any additional resource requirements. Of course, visits out side their area and some on farm trial activities may need some additional resources. As to the researcher, even if there are some implications on resources rather than having much ineffective training, it is better to reduce and perform them in a better or effective ways.

### **4.2.3. Implementation and Management of Trainings**

#### **4.2.3.1. Preparation for the training**

The training to be implemented requires preparation. Intended participants and trainees, venue of the training, logistic arrangements, duration and schedule of the trainings should be finalized before the training date. In these aspects, the results of the group discussions

of DAs, supervisors and groups of expertise and direct observation of some training activities (by the researcher) are given for each of them, next.

#### **4.2.3.2. Selection of participants to trainings:**

The selection of DAs to training is done at woreda level through their supervisors in most cases, but without them in some instances. The woreda office of agriculture and rural development (divisions, desks and or teams) selects supervisors. The criteria for selection include, lack of trainings, better performance in their job, relationship with supervisor and/or woreda office, etc. According to the consensus reached with the study group of DAs and supervisors, unfairness in the selection of participants to training at this level is rated to be occurred in up to 30% of the training events.

Of course, no one argued against the need for consideration of the workers' performance and commitment to their job, to be one of the major criteria for the selection to training. But, if trainings are always aimed at best performances and, considered as an incentive, its gap filling purpose can be affected. Thus, according to the participants, both ideas can be used based on the objectives of the trainings. Otherwise, the unfairness in the selection to training in turn affects commitment to work, motivation and effectiveness of workers.

The DAs also explained that the ways they select participants, mainly, depends on farmers' willingness and it has to be done through kebele leaders. According to them, when unfairness in the selection of farmers happens by kebele administrators, they try to negotiate, but in some cases, if the problem is not resolved through negotiation, it becomes one of the causes of conflict between them. In most of such cases, they face difficulty to improve the condition because of fear of different imposition that can happen to them. Unfairness in the selection of farmers are also performed by DAs and/or supervisors due to different reasons, such as gender, level of education, 'model farmers' 'voluntary farmers' *etc* biases. As explained by them this is done to fulfill the quota given to them urgently, due to lack of supportive follow up activities and weaknesses in work commitment.

#### 4.2.3.3. Notification /announcements to trainings

Notifications to training are done through different means. If performed effectively, it creates conducive condition for the participants, making them well prepared. The results of change agents study concerning this issue are given in Table 29.

Table 29: Time of notification of trainings

No.	<i>Time of notification of Trainings</i>	<i>Events of training messages</i>
1.	Received one month a head of training time	No message
2.	Received two weeks a head of training time	No message
3.	Received one week ahead of training time	70% of the messages
4.	Received 1-3 day ahead of training time	30% of the messages
5.	Not received	Very rarely

Source: workers of the woreda (15)

Notifications to the trainings for the DAs are done through supervisors' messages and letters. Most of the messages (75%) are received three days ahead of training dates. No message is received ahead of a week, and some (25%) of them are received one to two days ahead of training dates. The reasons given are lack of transport for some far kebeles, and 'urgency' of trainings. This indicates lack of planning and preparation of trainings. On the other side, the ways of notification that are used by DAs, to the farmers' trainings are various: house and farm visits, wedding and mourning ceremonies, markets, local institution meetings such as, *Edir*, *Ekub*, *Debo* and *Yelimatsira*. Most of the time they are informed up to three days ahead of trainings time.

The SMSs and team leaders of the woreda also indicated that, the woreda is asked to send trainees as timely as possible to the training places selected by the region. It is not the participants' convenience, but of the organizers that determines the place and time of trainings. According to them, at this level and above, the means of notifications used in greater than 90% of the events of trainings are through letters. Telephone (radio) calls are used in less than 10% of training events and sometime through both means. In rare cases, when both means's are lack, due to 'Shortage' of time, trainings can be lost. In most of the

cases, the notifications are received very closer to the date of trainings, not more than a week ahead of training time (Table 29).

The notification messages include the venue and duration of trainings, logistic (per diem) arrangements, and the topic and intended participants. In some cases, changes in venue and duration of trainings occur without informing the participants on time. Thus problems are created on participants not only morally but also financially. Such incidences are among the main indicators of lack of planning and preparation of training activities.

#### **4.2.3.4. Delivery and Presentation**

The findings show that, the number of trainings received by DAs and supervisors, though vary from each other, do not exceed two events in average per year. But, the number of meetings was estimated to be at least once in a month. In most cases, the size of the audience is medium to large, the average estimated to be 40 (forty) persons. The venue, the seating arrangements and the presentation techniques make the condition more inconvenient. Long and continuous lectures, with very restricted participation, in classroom arrangement or style, and the high temperature of Alaba, make the boredom level very high. According to the results of the group discussions, the seating arrangements used in trainings are "class-room" style in greater than 95% of the events of trainings.

Some of the indicators of weak presentations as explained by DAs supervisors and SMSs are given as follows:

- Poor time management; contents are uncovered fully. One of the female DAs explained the condition in this way: "Most presenters finish their lecture by saying "the remaining part will be covered by the next presenter", and it is repeated turn by turn by most of them, and finally the issue remains uncovered."
- Presentation through reading,
- Not allowing participants to ask, and
- Getting angry or ignoring the audience when asked etc.

The workers explained that the delivery and presentation skills of trainers are very poor. All of the participants completely agreed on idea that explains anybody who has

knowledge in his field of study cannot give trainings effectively, because of lack of KSAs in presentation techniques. The following indicators of the weak delivery and presentations, those are practiced and observed by participants, as trainees and as trainers of trainings, are given as follows:

- Lack of good learning objectives,
- Poorly organized/unnecessarily included topics,
- Sticking to lecture and poorly prepared handouts that are simple to do. (Lack of method and material selection and not using in combinations).
- Presentation just by reading,
- Lack of good treatments of participants, not allowing questions, giving irrelevant reply, and acting as if they know more,
- Poorly organized presentation: not well identified and/or unbalanced, Introduction body and summary,
- Lack of preparation of lesson plan,
- Poor time management; (It is very common to hear: 'I am in short of time'), *etc.*

Thus, they said, feelings of the participants at the time of trainings are manifested through:

- Inactiveness/Sleeping
- Lack of interest,
- Passiveness in asking and answering questions.
- Just thinking the time of ending the session, the days and even the event of training. Among the explanations given; about such trainings:

"If it were voluntarily, we would leave earlier, but we stay not to lose the per diem".

"No one worries about any condition after training because, no one is asked about it and its implementation"

Lack of KSA in lesson plan (LP) and other presentation techniques are given as the major causes of the problems.

As obtained from the interviewees, out of the existing 15-20 workers (SMSs, team and desk leaders) of the three desks found in the agricultural development division, it is only one SMS that obtained short term (6 days) training in training methodology.



So, it is not very difficult to see the ineffectiveness of the process that starts from the need identification, planning objective formulation, content organization, methods and materials selection and implementation of training activities.

#### **.2.4. Monitoring and Evaluation**

Monitoring and evaluation activities of the trainings, starting from its appraisal, planning, implementation, and after training, at work places and assessments of impacts are not performed systematically. Some of the explanations of the workers show the condition very clearly:

"At the time of trainings, after sessions, and at the end of the days, comments are asked to be given verbally. But because we fear, we do not react, thus better if it were done on paper, to be safe."

"Follow-up action concerning on-the-job-application is not there, we are not been evaluated on this aspect, thus we also emphasize on the other activities such as fulfillment of quotas."

‘Our opinions that are forwarded for improvement the conditions are rejected, because they are considered as a cover for laziness, lack of interest and unfulfilling the quota;’

As the DAs and supervisors indicated in focused group discussions, the follow up activities of trainings are not done systematically ,not only because of shortage of time caused by their numerous responsibilities, but also they are not given much emphasis in the planning and evaluation of performances in the organization as a whole. These are ideas also shared by SMSs, team leaders and heads of the organization at all levels. This can be seen from the rates of the follow-up/monitoring and feed back activities of trainings that are shown in Table 30.

Table 30: Follow up and evaluation activities of trainings

<i>No.</i>	<i>M &amp; E activities</i>	<i>Performances/training events</i>
1.	After sessions	In a very few trainings
2.	Daily	In a few trainings
3.	At the end of trainings	In some trainings
4.	After trainings, applications at work place	In a none of the trainings
5.	Impact assessment	In none of the trainings

Source: Woreda SMSs, team and desk leaders.

The system of reporting and feedback after participating in trainings as a means of experience sharing and arrangements for possible applications are not exercised, at all levels. The finding indicated that weaknesses in the planning activity, such as lack of objectively verifiable indicators, make the follow-up and monitoring activity very subjective and vague and not even planned as an activity to be performed in systematic way. Even though, this condition is also manifested in many activities, it becomes worse in trainings.

In summary, the main reason for the poor performances of the trainings, as given by the SMSs, is lack of sufficient KSA in training methodology. Misunderstanding of the role of trainings in agricultural extension is one of the problems mentioned in this aspect. Even though, trainings have been considered as one of the major functions of the strategies of the different agricultural extension and rural development approaches (T&V, PADETES, FTCs'), practically they have not understood and performed as they had assumed to be especially at lower levels. Most of the DAs, supervisors, SMSs and decision makers lack knowledge of the extension system and the training methodology. The low management capacity of decision makers and their fast turn over after getting some experiences, and the appraisal, performance and evaluation system that does not fairly consider the training activities are given as the major challenges.

#### 4.2.5. Contribution and on- the-job-application of Trainings.

Most of the participants of the study indicated, the contribution of trainings to their job is not as such satisfactory, because they are not based on the needs of the society. “We apply few of the learning obtained through trainings”, explained the workers. However, according to the opinions of the workers, lack of on-the-job application of the learning is not due to this reason only, but also from lack of systematic, participatory monitoring and evaluation, lack of motivation and work commitments on such activities, which are not fairly considered in performance evaluation and lack of means and materials that are intended to be fulfilled after trainings, such as, timely distribution of improved seeds, shortage of poultry etc. In general, the DAs and the supervisors rating exercises on, on-the-job applicability and contribution of the trainings they received based on the frequencies of the training events are shown in Table 31..

**Table 31: Rating of on-the-job applicability and Contribution of DAs trainings**

No	Contribution & application	Training events				
		<i>Almost</i>	<i>Most</i>	<i>Some</i>	<i>Few</i>	<i>Very few</i>
	<i>Training were:</i>	<i>all(&gt;90%)</i>	<i>(60-90%)</i>	<i>(40-59%)</i>	<i>(10-39%)</i>	<i>(&lt; 10%)</i>
1	Important and applicable	-	-	4	5	-
2	Means of motivation	2	1	5	1	-
3	Means of experience sharing and getting together	1	1	3	2	2
4	Not as such Important	1	3	1	4	-
5	Waste of resources	-	2	-	6	1

Source: 9 DAs and supervisors

As can be seen from the Table 31:

- Four out of nine ( $\approx 44\%$ ) of the DAs agree on that some of the trainings were applicable and important, while the rest (56%) says few trainings,
- About half (56%) of the DAs agreed it is only some of the trainings that contributed as a means of motivation, while 23% of them say little training.

- As to the contribution of trainings as the means of experience sharing and getting together, 33% of them says some trainings, and 46% of them voted for few and very few trainings.
- Among the participants of this exercise 44% of them indicated trainings which are not important are little (44%) and 33% of them said they are some more.

Finally, 78% of them agreed with all its defects, trainings can not be considered as waste of resources, while the rest (22%) says most of the trainings were more of waste of resources

Some functions of change agents that are incompatible with effective extension works are also given as some of the unfavorable conditions to training activities too. These are: Provision of inputs to farmers, collection of statistical data, to enforce and/or control certain government regulations and Political propaganda.

In general, with all the weaknesses and strengths, mentioned in each part of the study, the contribution of trainings as summarized by groups of participants of the woreda workers, are given as follows:

- Most training (75-95% of the total events of trainings) have been utilized in their work because they are requirements by their organization to be taken for application in their job.
- Most of these trainings also contributed as a means of refreshment, incentive, experience sharing, getting together and motivation to work; some opinions of the workers (20%) indicate trainings have not brought any difference in their work, rather than wastage of resources.

## **5. SUMMARY AND CONCLUSION**

In this chapter, summary of the problem and objectives, the research methodology and the major findings of the study, the conclusions drawn and the recommendations are given.

### **5.1. Summary**

Training, being one of the major functions of the agricultural and rural development strategies, have been provided to farmers, Development Agents, and SMSs at various levels, concerning technical aspects of agricultural and natural resource development activities of the SNNP region. However, evaluation of the effectiveness of the various aspects of trainings, from their viewpoint of contribution or achievements, has not been performed, yet. Thus, the weaknesses, and the strengths of the farmers' trainings program needs to be studied.

The general objective of the study is to examine the overall program of teff and livestock farmer's trainings. Specifically, it aims to assess the effectiveness of teff and poultry farmers training process and outcome in Alaba woreda in SNNPR. Moreover, the DAs and SMSs training process effectiveness are also assessed, because they are the organizers of the trainings, at all levels.

The study was conducted in four major teff and poultry producing kebeles, through qualitative and quantitative methodologies. Data related to the training, context, process, i.e., planning, implementation, monitoring and evaluation, changes in performances, and outcomes were collected, at community, organizational and individual levels with groups of farmers, supervisors, woreda and regional SMSs and team leaders. The survey was undertaken on 92 teff farmers (56 trained and 36 untrained) and 98 poultry farmers (68 trained and 30 untrained) selected randomly proportionally from their HH size. In addition to survey, the qualitative methods used includes: document study, focus/group discussion, personal interviews, and direct observation through different tools such as, SWOT/force-field analysis, ranking, scoring, and rating. Data that were analyzed qualitatively and

through descriptive analytical statistics such as percentage, average and the chi-square tests have been presented through description, tables, figures and diagrams, separately for farmers and change agents' (DAs and SMSs) trainings.

The results of the study revealed that many of the teff and poultry farming problems were not touched thoroughly by the trainings provided. In the case of teff trainings, farmers identified the following needs: Land preparation and drainage methods in relation with soil and water conservation, and community water shade management; Proper seeding rate based on the recommendations of research but adjusted to the local areas, , Proper fertilizer rate and methods of application for both DAP and urea, similarly based on research recommendations and adjusted to the locality; herbicide, type, time, rate and methods of application, the 'dos' and 'don'ts' related with herbicide, similar with that of fertilizer and seed application; threshing methods - oxen/donkey vs human labor; Profitability/ Cost benefit/ analysis, etc; Gender related issues: attitudinal changes towards women participation, provision of extension/trainings according to family division of labor; farmers' group formation (Commodity based, area based and/or gender based such as women club youth club etc; Record keeping,

In the case of poultry farmers trainings, farmers identified the following needs: Types of poultry keeping, change of attitudes towards traditional system, poultry as a business enterprise; small management changes such as regular watering, night enclosure, discouraging hens from getting broody, vaccination for common diseases, small energy and/or protein supplement to local and introduced exotic birds; introduction of exotic birds and cross breeding, profitability/ cost benefit analysis, etc; gender related issues: attitudinal changes towards women participation, provision of extension/trainings according to family division of labor; farmers' group formation (commodity based, area based and/or gender based such as women club, youth club etc; record keeping,

The gap between the contents of the trainings and the identified needs of farmers is very wide because of the ineffective training process, especially because of lack of participatory need assessment. The analysis of the training process, which is based on the findings of

the situation and task analysis and the survey show that no TNA exercise has been undertaken; no participation of all concerned stake holders especially farmers.

Training plan is based on quota given from above. The objectives of trainings are vague and incompatible, in which expected changes in performances are not indicated. No standards and conditions are given, so that their measurements are difficult. Topics are selected by trainers, thus they are very general and shallow, not thoroughly touched according to the prior needs of the farmers. Mostly the training mix is more of theory and few practical, lecture (talk) being one of the most commonly used method. Visit and/or practical are not used at all, while demonstration and group discussions are used in rare cases. The time of invitation to training is not more than three days before the training date, which makes the selection of participants "urgent" and creates unfair nomination. Personal relationships (blood, friend ship) and political out looks are informal criteria used for nomination though hard working, social acceptance willingness to participate and to share the learning are expected to be used for nomination of farmers' trainees.

Time and places of trainings are not chosen based on the convenience of farmers, but organized by the trainers' interests. Thus it can be under taken at peak periods. It is known that farmers require practical trainings. However, the lengths of trainings are very short (mostly 2-3 days) and not decided based on the required training mix and contents. The group size is too large in which participation of farmers is restricted to few.

Monitoring and evaluation of trainings did not exist and measurements of participant's reactions, learning, changes in on-the-job performances and outcomes of trainings have not been undertaken systematically. Thus, any change that has been taken so far concerning training is not based on effective follow-up and evaluation activities.

Differences in KS of few job tasks have been created among trained and untrained farmers because of the different learning. Such as: seed rating, use of improved variety, fertilizer application ,in the case of teff and feeding, housing and reproductive activities in the case of poultry production.

In both cases, majority of the farmers applied the learning by modifying according to their situation. Lodging of teff because of urea application, high costs of fertilizers and herbicides, difficulty to plow the soil horizontally to the slope, losses during threshing, climatic conditions, lack of credit and lack of confidence because of insufficiency of knowledge and skills of the new learning are among the major reasons of teff farmers for the modification and/or rejection of learning. The reasons of poultry farmers for the modification and/or rejection of learning includes: uses of locally available feed, unavailability and high costs of feed and medicines, fear of theft and predators, insufficiency of KSs provided and low supply of exotic breeds.

Although it is difficult to give the actual changes brought by trainings, almost all farmers indicated there is change in productivity of teff and poultry, because of the improved variety and exotic breeds, respectively.

The study also revealed that, similar with that of the farmer's trainings, DAs' and SMSs' trainings process are defective in planning, implementation, monitoring and evaluation aspects. In summary, the reasons for the poor performances of the trainings, as given by the change agents are: lack of sufficient KS in training methodology, misunderstandings of the role of trainings in agricultural extension, the low management capacity of decision makers and their fast turn over after getting some experiences, and the appraisal, performance and evaluation system that does not properly consider all the training activities.

## **5.2. Conclusion**

In summary, the results of the study showed that the trainings were not responsive to farmers' needs and all elements of the training process or cycle are deficient and defective.

In both cases, many of the farmers' problems were not treated in the trainings. The gap between the contents of the trainings and the identified needs of farmers is very wide because of lack of participatory need assessment. No TNA exercise has been undertaken with participation of all concerned stake holders especially farmers. Thus, the client system problems and potentials were not assessed thoroughly and prioritized according to



the local conditions. The trainings were aimed to increase productivity only. But soil and water conservation, change of attitudes towards traditional poultry and developing the system to a business enterprise through small management changes etc. were neglected. In general understanding of the farming systems and the interaction between agriculture and the physical and socio-economic environment were not considered. Since the plan is based on urgent quota given from above, it lacks adjustments according to the highly diversified local conditions. Menu of choices are limited.

The objectives of trainings are not performance based. Topics are very general and shallow, not thoroughly touch the prior needs of the farmers. The training mix is more of theory and few practical. Urgency of the training, gender, 'model farmer' and distance biases make selection of participants "urgent" and unfair. Time and places of trainings are not chosen based on the convenience of farmers. Thus, it can be under taken at peak periods. The group size is large in which participation of farmers is restricted to few.

Much emphasis was not given on the uses of variety of methods, locally available materials and aids that facilitate effective maximum learning through observations, interactions and practice. However, the modular trainings that will be provided in FTCs, based on the household and minimum package activities, are expected to be participative and experiential.

Because of lack of effective joint follow-up and evaluation activities, through participation of all concerned stakeholders, measurements of participant's reactions, learning, changes in on-the-job performances and outcomes of trainings have not been undertaken systematically. Thus, trainings were not based on supportive and/or corrective feed backs, in which learners take time and reflect back upon the experiences gained and draw conclusions.

Even though, significant KS differences in some activities of farmers are obtained, on-the-job performance changes those are expected from the learning/ the trainings/ are limited to some tasks. Most of the learning was modified and/or not applied due to high costs of inputs (in the case of teff) and insufficiency of knowledge and skills of farmers (in both cases) and shortage of improved breed (in the case of poultry).

The changes in the productivity and income of farmers are brought only because of the variety and breed differences, but expected to be better if the other management activities were applied.

Thus, it can be concluded that the trainings are not as effective as required, as far as all the above-mentioned conditions calls for improvement.

The main reason for this condition is lack of capacity of the stakeholders in participatory planning, implementation, monitoring and evaluation activities of the rural development and extension activities as a whole and not applying participatory training methodology (PTM) in particular. It is the result of not moving towards more participatory approaches of technology development and disseminations in which all concerned stake holders, especially of farmers, participate in problem identification and prioritization, seeking solutions to the problems, implementation, and monitoring and evaluation activities.

### **5.3. Recommendations**

The following recommendations and training development process are suggested as the way outs or suggestions for improvements of the effectiveness of the training program.

#### **5.3. 1. Joint bottom-up planning**

Based on the client system problems and potentials, change agents' competency, commitment, engagement, role and tasks and work organization's mission, vision, objectives and resources, the needs should be identified and prioritized for further improvements through joint or participatory (bottom-up) planning at all levels(Figure13 ).

At farmers and/or Farmers' training centers (FTCs) level, need identification and prioritization must be undertaken through participations of farmers from different categories (wealth, gender, farming systems etc) with all DAs, and supervisors assigned for each kebele. The woreda SMS team can provide any possible and necessary support as required. Such joint participatory appraisals by all the stake holders, helps not only to prepare the plan that meets the immediate needs of the farmers, but also increase motivation, sense of ownership and shared responsibility among them. It also facilitates inclusion of indigenous experiences with the existing scientific knowledge, and strengthens the learning process. Thus, based on the training needs identified, farmers'

trainings can be arranged according to the capacities of the change agents, i.e. farmers' trainings that can be handled by DAs and/or supervisors (even by some innovative farmers) with the KSA level they have, or with additional training from woreda and above (regional SMSs, researchers etc) and/or farmers' trainings that will be handled by the same.

This process also helps to arrange trainings not only for DAs and/or supervisors, but also for the SMS, team leaders and decision makers at woreda and even at regional levels. It helps to develop the training requirements for each of these partners that should be geared towards the improvement of the capacity of the clients, i.e., the farmers and front line change agents. Undertaking joint review at woreda level, at the initial stage, through participation of farmers' representatives, DAs, supervisors, SMSs, NGOs and decision makers creates favorable condition for smooth finalization of the training plan. It creates common understanding and awareness, commitment and responsibility for effective application. The support from the regional level can also be integrated based on such plans of the woredas. Unachievable or underestimated targets are avoided only through genuine participation and negotiation of the concerned partners.

The way we diagnose the problems of our clients determines the relevance or importance of our services or functions. Since trainings are meant to fill the KSA gaps of the learners based on their willingness, no need of imposing or forcing them through quotas, or no need of deciding for them, but facilitate identification and prioritization of their felt needs, to choose among the alternative solutions by themselves.

Development and dissemination of different information and 'menus' or basket of choices of (packages) of technologies, that are appropriate to the different conditions of farmers, require involvement and decision of both male and female farmers. Since application of the blue print model is ineffective in such highly diversified farmers' conditions, giving free choices for the adjustments of the "menu" and to plan according to the local conditions must be performed starting from the FTC level.

The objectives should be widen from a narrow focus on such as increasing productivity of certain crops or livestock enterprise to improving livelihoods. Thus the training content itself should be based the need assessment process and should move away from taking a very reductionst view of the specific crop or livestock species to considering the entire

farming system. Not just to increase teff productivity only, but including the natural resource management such as soil and water conservation too. Sustainable agriculture and a move to farmer led approaches require having a deep understanding of farming systems and the interaction between agriculture and the physical and socio-economic environment.

It is clear that unless farming as a business is based on profitability analysis, which targets markets, its sustainability will be affected. Therefore, in the need assessments not only the production aspects, but also the economic and social aspects of the farming system should be considered as a whole.

### **5.3. 2. Effective implementation**

To effectively implement participatory performance-based trainings, that are related with the actual work situations of the clients and that are aimed at achievable learning objectives, the mixes of the topics, the right time, place and length of trainings, selection of relevant participants and working with different farmers groups (women, youth etc.) should be arranged based on convenience of the participants. Therefore, they have to be involved in the decisions given on these and other related matters.

The uses of variety of methods and aids that facilitate effective maximum learning through observations, interactions and practice should be arranged. These include cultural methods (songs, story telling etc), farmer-to-farmer experiences sharing, participatory on farm trials and participatory on farm demonstrations. In addition, uses of locally available materials, such as specimen of weeds, plant diseases, samples of fertilizers, model houses of birds different poultry breeds and their eggs etc. should be arranged and encouraged based on the learning objectives, their availability, conditions of the audiences and skills of users. The training should be participative and experiential in which learners actively learn from each other building new knowledge and skills based on their experiences. This idea is very important as far as FTCs are concerned with modular trainings, and trainings related with household package and minimum package activities. Thus, building the capacity of the change agents in these aspects is very crucial to strengthen the FTCs.

According to the policy of the region speaking local language is must to be recruited or assigned as the DAs or supervisors. Obviously, learning to speak farmers' own language, in culturally appropriate way, is very useful in effective communication. Thus, change

agents, those who are unable to use the language, can be encouraged through different extension communication trainings. It is not only what we speak or impart that matters, but also how to speak or impart.

The other deficiencies that are related with preparation and management of trainings, such as the group size, seating and logistic arrangements etc, that creates physically uncomfortable condition, need to be considered, since they affect the communication and learning effectiveness. Building the capacity of the trainers through training is one of the remedies.

Provision of trainings to the relevant farmers, especially women farmers (not only refers to female headed HH), must be facilitated through creation of awareness and conducive learning environment that considers their multiple responsibilities. This is especially very true in livestock activities. Therefore, gender aggregated data should be collected and organized at all levels, for better implementation.

If trainings become participatory, it is geared towards building groups. Thus, formations and working through different farmers groups becomes necessary for effective planning implementation, monitoring and evaluation of training activities. So the capacity to build and to work through groups, considering gender issues, should be created and/or promoted.

### **5.3. 3. Effective follow-up and evaluation**

Trainings that are provided with supportive and/or corrective feed back, in which learners take time and reflect back upon the experiences gained and draw conclusions ,not only maximize the learning occurred, but also derive principles for application to future similar experiences. Therefore, developing joint follow-up and evaluation activity or procedure at all levels, through participation of all concerned stakeholders, especially farmers, DAs, supervisors' and. SMSs is very necessary for effectiveness of the farmers training program. The following activities are drawn from the group discussions of participants of the study:

- At FTCs level, farmers and/or DAs can do the monitoring as per the requirement of each activity. However, better if performed jointly per two weeks or monthly by

farmers (trained and untrained farmers) DAs, supervisors. SMSs multidisciplinary teams of the woreda can join as required.

- At woreda level, in addition to the follow up activity undertaken as per the requirements of each subject/activity, joint monitoring can be performed per month /two months/ through participation of DAs, supervisors, SMSs and/or decision makers. Farmers' representatives can join, if there are no resource shortages.
- At zone/regional level, in addition to the follow up activity undertaken as per the requirements of each subject/activity, joint multi-disciplinary field work assessment have to be arranged by teams composed of SMSs, researchers, input providers, coop organizers etc on quarterly basis, if not twice per year, at least.
- Annual evaluation through participation of all concerned stake holders must be done at all levels, but in depth at FTC/development centers and woreda levels.

To do so, developing different reporting formats of training activities, such as : TNA report and planning format, training performance reporting format, including evaluation forms of participants, follow-up or field activity report and annual evaluation report and improving the record keeping conditions, should be emphasized .

Inclusion of training activities properly, in the performance appraisal and evaluation system of the organization, with relevant performance measurement indicators that include not only the number and type of trainings and participants but also changes in KSAs, performances and, impacts, is one of the best solutions to be implemented genuinely.

**5.3.4. Building capacity of the stakeholders** in participatory planning, implementation monitoring and evaluation activities of the rural development and extension activities as a whole and application of participatory training methodology (PTM) in particular.

In addition to effective training, improvement of the working conditions is one that helps in bringing better HRD. Thus, some of the additional activities given to change agents' such as provision of inputs to farmers, to enforce and/or control certain government regulations and political propaganda should be avoided.

**5.3.5. Gradual expansion of the FTCs:** Even though, 1500 FTCs have been established, in different woredas of the region, since the past three years, farmers trainings have not been started not only because of lack of training equipment and materials, but also from

lack of clear idea on how to proceed the trainings. Different training equipments have been recruited by the RBoARD and distributed to the woredas, in addition to the efforts of the woredas. Different workshops were undertaken on development of the procedure and training manuals and materials of different disciplines. Rather than doing all these things after construction of many centers at a time, and wasting all these years without any function, the idea could be tried on some models as a trial and practical exercises. As usual every thing is expected from top and this time orientation on issues pertinent to FTCs is provided to the woredas through workshops to start the trainings in 200 FTCs. Thus not to repeat all the deficiencies mentioned in this study, FTCs activities should be geared towards participatory extension in which the above recommended ideas can be applied. The opportunities of the decentralization and participation of peoples in development, strategic plan management and performance appraisals can be integrated towards these ideas through genuine implementation.

**5.3.6. Moving towards more participatory approaches of extension:** Effective technology development and dissemination requires full participation of all concerned stake holders, especially of farmers, in problem identification and prioritization, seeking solutions to the problems, implementation, and monitoring and evaluation activities. It requires integrated multi disciplinary efforts of research institutions, universities, input suppliers, microfinance organizations, NGOs and decision/policy makers etc.

5.3.7. In general, the following **training development process** is recommended (Figure 7).

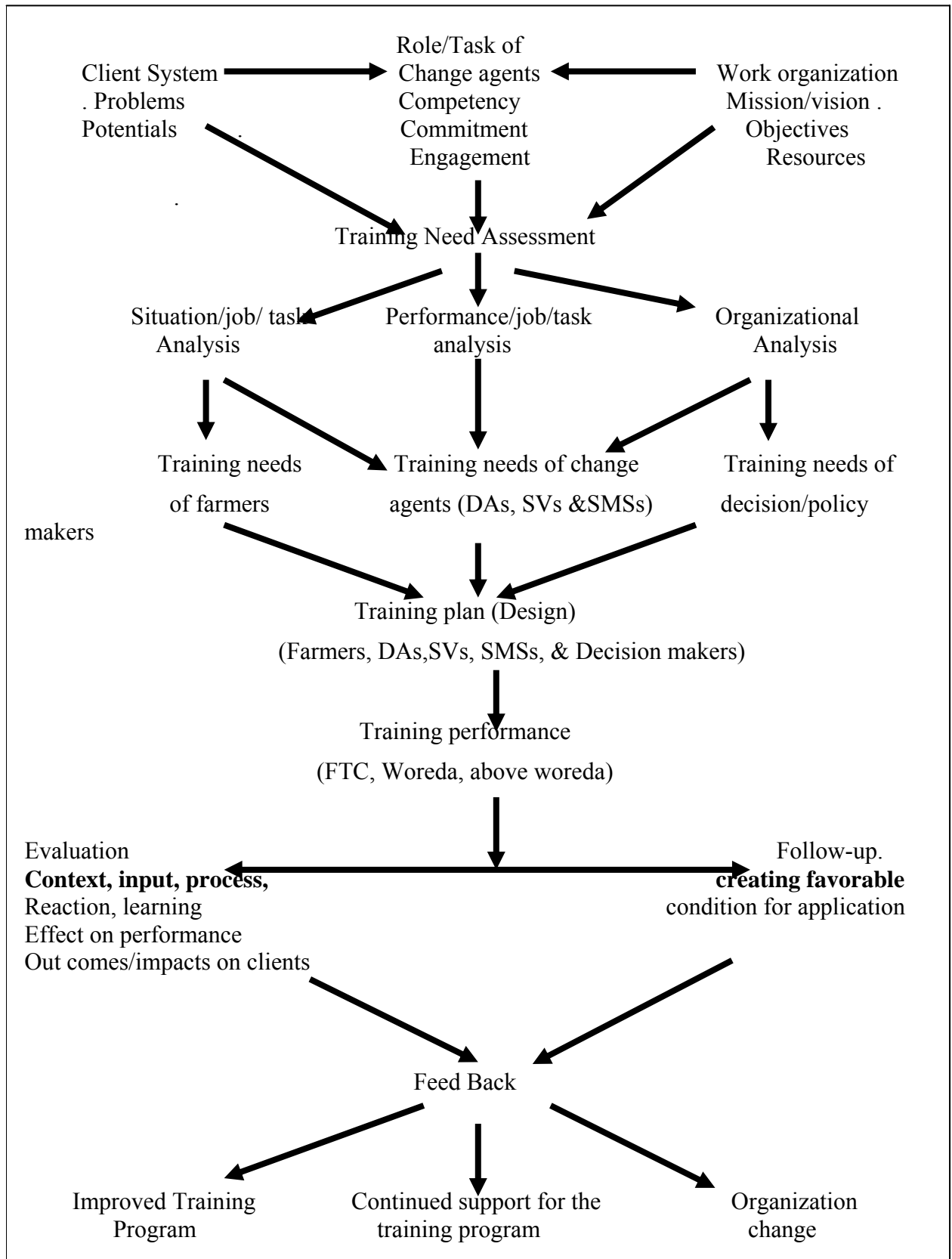


Figure 14: The Training Development Process, (adapted from IIRR training material).



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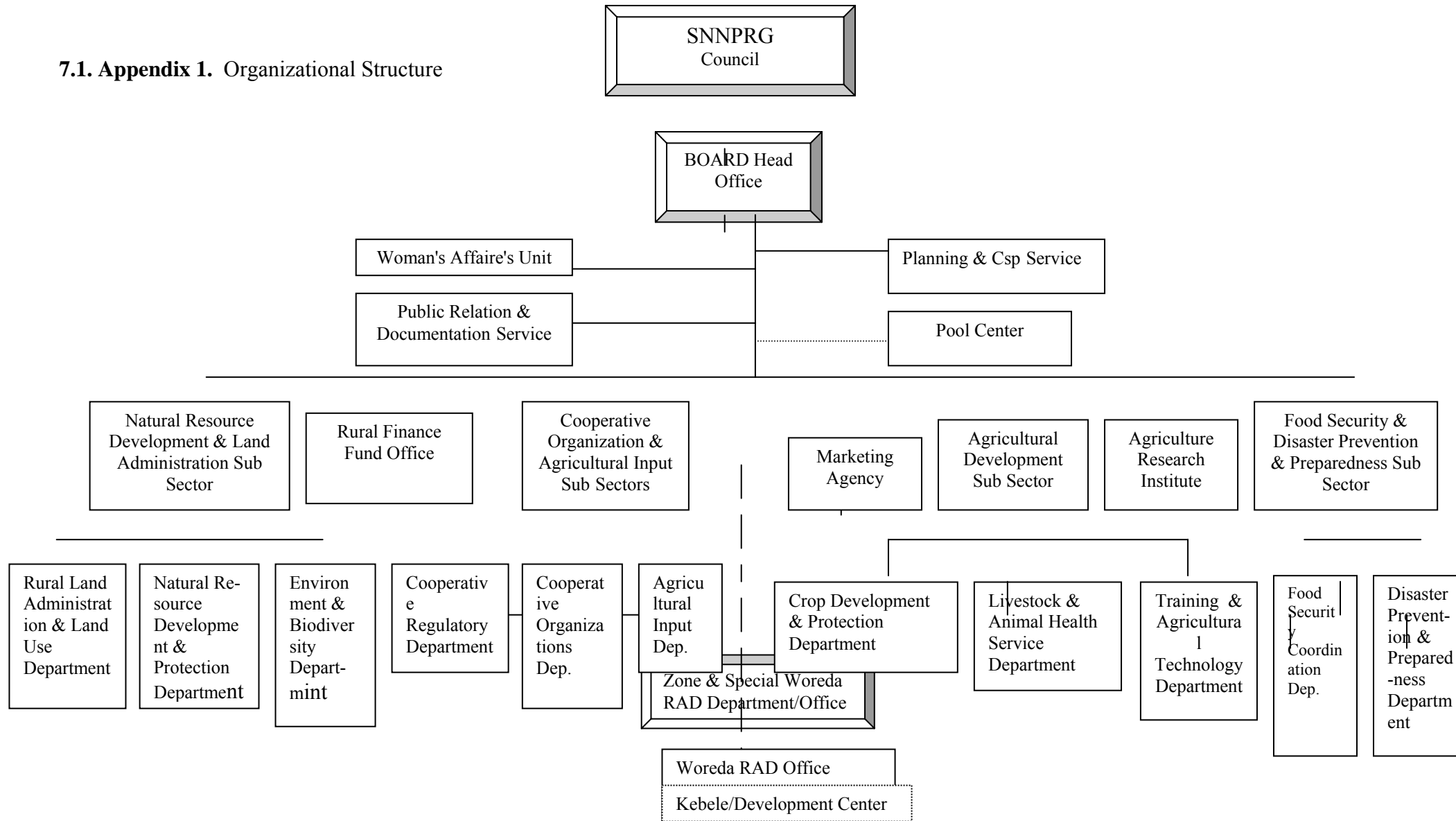
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## **7. APPNDICES**

## 7.1. Appendix 1. Organizational Structure



Appendix figure 1: Organizational Structure of Board, SNNPR

**7.2. Appendix II:** Total HHs, number of participants of different packages.

Appendix Table 1: Numbers of total HHs, package participants of teff and live stock packages (2005), number of DAs & FTCs ,and distance from kulito for the forty kebeles.

No	kebele name	Total HHs	No. of package participant						No. of DAs.		No. of FTCs	Distance from Kulito	Zone
			Teff	Poultry	Dairy	Sheep	Goat	Fating cattle	Male	Female			
1	Ashokka	1051	47	N.A					2	1		10	Sheketae-Mekkala
2	Mejja	606	47	N.A	10			67	3	-		10	
3	Huleteгна Mekkala	895	47	N.A					1	1		15	
4	Andegna Mekela	449	40	N.A					2	-	1	7	
5	Shekette	435	40	N.A		100			-	2		7	
6	Wanja/Weldeya	266	40	N.A					-	2		7	
7	Gubba Sherero	558	40	N.A	(25		100		2	-		17	Gubba
8	Fellka	354	54	N.A					-	2		20	
9	Debesso	374	40	N.A					2	-		10	
10	Gurura Buchoo	591	47	N.A					2	-	1	20	
11	Kunchee Yeyee	484	47	N.A					2	-		20	
12	Gofessa	511	60	N.A					2	-		25	

Appendix Table 1.continued

No.	kebele name	Total HHs	No. of package participants						No. of DAs.		No. of FT Cs	Distance from Kulito	Zone
			Teff	Poultry	Dairy	Sheep	Goat	Fattening	Male	Female			
13	Andgegna Taka	394	40	N.A	(25)				1	1	1	20	Ansha-Tukka
14	Huleteгна Tukka	355	40	N.A	10				2	-		30	
15	Andgengna Anssha	347	47	N.A					1	2	1	15	
16	Huleteгна Anssha	536	47	N.A					2	-		17	
17	Yambbo	341	47	N.A					2	-		20	
18	Lagyigaw Lenda	523	40	N.A					3	-		10	
19	Alem Tenna	491	54	N.A	(25)		100		3	1	1	7	
20	Andegena Chorekko	527	54	N.A	10				1	2		7	
21	Geddaba	581	40	N.A	(15)				1	2		8	
22	Tachingaw Lenda	431	47	N.A					1	1	1	6	
23	Hammata	399	47	N.A					1	1		10	
24	Galleto	405	40	N.A					-	3		7	
25	Haymele	521	40	N.A					2	-		12	
26	Kuffe	717	54	N.A					1	2		12	
27	Gerema	414	80	N.A	10			68	-	2	1	12	Ar

Appendix Table 1.continued

No.	kebele name	Total HHs	No. of package participants						No. of DAs.		No. of HHs	Distance from Kulito	Zone
			Teff	Poultry	Dairy	Sheep	Goat	Fating	Male	Female			
28	Mesrak Gortancho	573	47	N.A					2	-		10	
29	Merab Gortancho	629	67	N.A					1	1	1	12	
30	Wisahamo	490	67	N.A					2	-		20	rs A
31	Tachingaw Arsho	764	67	N.A					1	1		15	
32	Hololokka (Muda)	436	47	N.A				67	2	-		12	ud M
33	Chambulla	531	40	N.A	10				1	2	-	7	
34	Lageiyganw Arsho	780	54	N.A					2	1		12	
35	Layganw Bedenne	525	40	N.A					2	-		8	
36	Holegebba Kuke	582	47	N.A		100		68	1	2		7	
37	Mudda Meyafa	513	40	N.A					-	2		10	
38	Mudda Dinokossa	488	40	N.A					1	2		10	
39	Habbibo Furena	484	47	N.A	10			67	1	1	-	10	
40	Tachingaw Bedenne	487	67	N.A	10			68	2	-	1	7	

N.A. --- Not available, 745 chickens per kebele (If this is divided by 5, average HHs per kebele becomes 149.)



Appendix Table 2: Number of total HHs, package participants, sampled trained and untrained teff farmers of study kebeles.

No	Name of kebeles	Total HHs			Total package Participants			Sampled trained farmers			Sampled untrained farmers		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
1	Andegna Ansha	351	55	406	46	1	47	10	1	11	4	3	7
2	Andegna Tukka	364	125	489	33	7	40	8	2	10	4	5	9
3	Gerema	376	130	506	74	6	80	16	3	19	4	4	8
4	Tachignaw Arsho	550	230	780	54	13	67	13	3	16	6	6	12
	S.total	1641	540	2181	207	27	234	47	9	56	18	18	36

Appendix Table 3: Number of total HHs, package participants, sampled trained and untrained poultry farmers of study kebeles

No	Name of kebeles	Total HHs			Total package Participants			Sampled trained farmers			Sampled untrained farmers		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
1	Andegna Ansha	351	55	406	37	4	41	8	2	10	3	4	7
2	Andegna Tukka	364	125	489	42	7	49	10	2	12	4	2	6
3	Gerema	376	130	506	40	4	44	9	2	11	4	4	8
4	Tachignaw Arsho	550	230	780	115	30	145	28	7	35	5	4	9
	S.total	1641	540	2181	134	45	279	55	13	68	16	14	30

Appendix Table 4: Participants of Both Teff and Poultry Farmers

No	Name of kebeles	Total HHs			Total package Participants			Sampled trained farmers			Sampled untrained farmers			Total		
		M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total
1	<i>Andegna Ansha</i>	351	55	406	83	5	88	18	3	21	7	7	14	25	10	35
2	<i>Andegna Tukka</i>	364	125	489	75	14	89	18	4	22	8	7	15	26	11	37
3	<i>Gerema</i>	376	130	506	114	10	124	25	5	30	8	8	16	33	13	46
4	<i>Tachignaw Arsho</i>	550	230	780	169	43	212	41	10	51	11	10	21	52	20	72
	<i>S.total</i>	1641	540	2181	441	72	513	102	22	124	34	32	66	136	54	190

### 7.3. Appendix III: Check list s

To be used for qualitative study, this mainly refers to the analysis of the training process aspect (objective 1) and general issues of the training outcomes and achievements of trainees (objectives2).

#### I. General

2. The type of information/data documented and available, concerning training activities; (Plan, reports after training, quarterly reports etc), at planning and programming unit level or at department & team level.

-What are problems related with documentation of the data?

1. Types of trainings under taken?

2. No. of events of each training,

3. Duration and places of training,

4. Participants' profile: (No. sex, profession, education status, service year)

5. Trainers' profile: (No. sex, profession, education status, service year, etc),

6. Plan Vs achievements (for each type of training):

-No. of trainings undertaken?

-No. of trainees participated,

-No. Of monitoring and evaluation

#### II. Overall concepts related with training

1. What training is? Need for training

2. Its role in extension,

3. Why do we train SMs, DAs?

4. Are there farmers' trainings?

5. What about FTCs role/purpose and methods of providing trainings?

6. Can any person who has knowledge in his subject matter give training? If not, why? If yes, it means no need of training in training methodology?

7. Was there any training methodology course provided to SMS and/or DAs?

8. What (do you think) happens if trainings without knowledge and skill of training are provided?

9. As a trainee what were your

Extents of the weakness \* 1 2 3 4

➤ Training can be performed excellently with out TNA, solving the problem of the participants 1234

➤ Training can be performed excellently without TNA, but without solving the problem 1 2

3 4

➤ Training can't be performed excellently and can't solve the problems that brought the need for training without TNA Unnecessary time on teaching difficult, yet relatively unimportant materials

observation of the trainings you as a trainer what were your participated in?

10. Difficulties in the delivery of the trainings 11. After how many years of experiences you have got training son training methodology

12. After this training (training methodology) how did you evaluate the previous trainings you participated in or you provided to others?

### **III. The process**

#### **A. Training need assessment**

1. How were trainings initiated? How many training events?
2. How decisions are reached to run each course?
3. Was there any need identification mechanism which is related to job performance gaps of learners? Do learners participate? How KSA gaps are assessed at community and at organization levels? Who determine training is a solution?
4. If there is no systematic TNA, why not? Is it because of the extension approach or planning?
5. Is it because of lack KSA, motivational or some other organizational problems?
  - the management style? How?
  - performance appraisal/evaluation? How?
  - incentive reward system? How?
6. Problems/weakness observed related with lack of systematic TNA,
  - \* The extents of the weaknesses are estimate occurrence in the training activities:
    - 1 = in most training (>75%)
    - 2= Half (50%) of the training
    - 3= (25-50%) of the trainings
    - 4= in few (<55%) of the trainings
7. Are the problem understood if yes what were the efforts to improve the condition?
8. What are the problems not to implement (institutionalize) participatory approaches of planning monitoring and

evaluating in the extension activities in general and training programs in particular?

#### **1. Training design/plan**

1. Is there training plan at different levels? (Sect oral) regional zonal (woreda level?
2. How prepared? Who participated in the preparation?
3. for whom? Prioritization of subjects and participants what are the criteria's of selection
4. Is there a joint planning process among departments/teams etc region, zone/woreda and development centre levels?
5. What determines the decision' on the logistic plan? Availability or necessity/ requirement for training or both?

#### **2.1. Training objectives**

6. Do objectives have been developed for training?
7. How? (QQT, SMART, Performance-oriented)
  - Over all objectives
  - objectives for each session

6. Do the outcomes related with performance improvement, i.e., with what the trainees will be able to do after training (behavioral changes)?

9. What about indicators? Is it prepared for each objective? Do participants agree on it?

#### **2.2: Training contents**

10. Do contents are linked with the objectives?

11. What are the sequencing and organizing principles?  
 -must know, should know, could know  
 -does adult learning principles considered?

12. Problems of overfilling of the syllabus, including many issues (topics) together; unnecessarily) or over emphasizing on very limited issues beyond necessity, (Treating related issue separately)?

13. Contents Vs time → who determines? Time determine content or vice versa?

### 2.3. Training methods/techniques

14. The general training approach  
 -centralization / decentralization (Top-down/bottom)  
 -Class room/practical - experiential learning by doing

15. Commonly used methods (ranked)  
 lecture, group discussion, demonstration, Practicum, etc

16. Why? What are the factors used to determine methods selection?  
 -Objectives  
 -practical requirement  
 -Contents -time  
 Trainers' ability -Material  
 -Trainees -cost  
 -consideration of adult learning principles

### 2.4. Training materials

17. What type of materials are used commonly?

18. What are problems related to materials?

-Availability - printed and AV materials?  
 -Lack of knowledge and skill to develop them,

-Lack of knowledge and skill to use them, -Limited exposure of trainees, especially farmers, to pictures?  
 -Inefficient utilization /misuse of available AV materials?  
 -What about uses of specimen and other local materials?

## 3. Implementation and management of training

### 3.1. Preparation for training

1. Announcements of trainings  
 -Information to be included (time, place etc of training),  
 -Measures used (letter, telephone, fax, radio etc),  
 -Enough time before training or not?

2. Training materials (handouts, visual aids, transport means, budget, supplies etc) prepared earlier or not? Why?  
 -Scheduling and assigning roles and responsibilities,

### 3.2. presentation/delivery

1. Lesson plan (LP): Is there a culture of developing LP? If not, why?  
 -Lack of KSAs to do so?  
 -No motivation because the system does not require,

4. Problems observed, because of lack of use of LPs,  
 -Time management -missing important parts -etc

5. Can we say the main reasoning of ignoring this issue is, giving emphasis for what we want to communicate, but not to how to communicate?

6. Presentation (delivery skill of different methods and materials in combination,  
 -Lecturing, OHP, demonstration, visuals, workshops, group discussion,- Practical, visits etc

7. Frequency of using them(in most training, in some trainings or in few trainings)

8. Problems observed; Lack of KSs?, unavailability of materials, or trainees' condition, etc

9. Participation of trainees and treatments of participant's questions and reactions

#### **4. Monitoring and evaluation**

1. Means of getting feed backs on how participants think or feel about the training activity (after sessions, daily, at the end)

2. Ways of measuring actual learning, (After sessions, daily, at the end)

3. Joint M & E of training activities by training staff during and after trainings

4. Are there follow up activities; supervision of:

-implementations at work places

- Problems related with implementation

- Changes in performances

- Provision of feedback and adjustment measures at all levels

-Additional training needs and

-improvements in the training program,

5. If yes how implemented? by whom?  
If not, why?

#### **IV.Outcomes of trainings and achievements of trainees**

1. Actual teachings /KSA gaps filled by trainings: Practices Before trainings  
After training

2. Application of learning in to practices Applied fully, Applied in modification, Totally not Applied

3. Reasons for modifications and/or rejection of learning?

4. Achievements of those who applied the learning's as compared to those who do not apply and untrained

#### **V) Summary and Suggestion for Improvement**

-In general what are the strength, weaknesses, opportunities and threats related with trainings process out comes and impacts?(SWOT analysis)  
-what are the way outs to be recommended? (Force field analysis)

## 7.4. Appendix IV: Structured Interview

### (A) For trained farmers

- Interview number \_\_\_\_\_
- Date of questioning \_\_\_\_\_
- Kebele \_\_\_\_\_
- Village \_\_\_\_\_
- Farmer's name \_\_\_\_\_
- 1. General conditions of the household
  - A. Demographic information
    - 1. Age----- V1
    - 2. Sex----- V2
      - 1) Male                      2) Female
    - 3. Marital status V3
      - 1) Married                  2) Single
      - 3) Divorced                4) Widower
    - 4. Wealth status V4
      - 1) Better ("rich") 2) Average 3) Poor
    - 5. Educational level V5
      - 1) Primary education (1st -6th grade)
      - 2) Secondary education (7-12th grade)
      - 3) Basic education (including religious)
      - 4) Illiterate (can not read and write)
  - 6. Family size by age and sex

Members by age category	Male	Female
Children (<15 years)	V6	V7
Adult (15-65years)	V8	V9
Dependent (>65 years)	V10	V11

### B. Farming systems V12

- 1) Agro-ecology
  - 1)Dega 2)Woina Dega 3)Kolla
- 2) Type of farming V13
  - 1) Rain fed 2).Irrigated 3).Both
  - 3) Land holding Rain-fed , V14
    - 1) < 0.5ha 2) 0.5 to 1 ha
    - 3)1 to 1.5 ha 4) > 1.5 ha
  - 4. Irrigated V15
    - 1) < 0.5ha 2) 0.5 to 1 ha
    - 3)1 to 1.5 ha 4) > 1.5 ha

### 5. Land use and crop types

Land use type	Area in sq.m
Annual crop	
Maize	V16
Teff	V17
Haricot bean	V18
Pepper	V19
Others	V20
Perennial crops	
Enset	V21
Coffee	V22
Others	V23
Grazing land	V24
Other uses	V25

### 6. Livestock holding by type

Types of live stock	Number of animals
Oxen	V26
Cow	V27
Sheep	V28
Goats	V29
poultry	V30
Bee	V31

### 7. Major problems related with lack of knowledge in poultry production ,

No.	Problems/ needs of a farmer	No gap	Som e ideas	Wide gap
1	Feeding			
1.1	Type/ ratio	V32		
1.2	methods	V33		
2	Housing			
2.1	Isolation from human	V34		
2.2	construction	V35		
2.3	handling	V36		
3	Exotic breed			
3.1	benefits	V37		
3.2	handling	V38		
4	Breeding	V39		
5	Marketing	V40		



## 2. Training process

1. Do you obtain extension advice / services/ training?  
V41

1) Yes                      2) No

2. If, No why?

- 1) No development agents
- 2) Beyond DAs capacity /inability or inefficiency of DAs
- 3) Unfair nomination
- 4) I don't want to participate
- 5) Other (specify).

3. If one of your reasons is unfairness in nomination procedure, what do you mean?  
V 43

4. What are your reasons not to participate in extension activities, such as trainings?  
V44

- 1) Because they are not important? help full?
- 2) Because they are against your culture religion?
- 3) You think you have enough knowledge and skills?
- 4) Because you don't have any problem, that call for help
- 5) Other, (specify)

5. You know any other farmarticipatedin trainings in your area and/ or out of your area?  
V45

1) Yes                      2) No

6. If yes, have you any exchange of ideas with him/ her about the practices he obtained?  
V46 /

1) Yes                      2) No

7. What were the methods you used to gather information from trained farmers?  
V47

- 1.Home/farm/visit
- 2.Discussion/query
- 3.other (specify).

8. If yes, what were your opinions? V48

- 1) Good ideas (specify)
- 2) Unimportant idea,
- 3) No difference
- 4) others (specify)

9. What about the opinions of the trained farmer with whom you have discussed and/or visited?  
V49

1) Very good experiences

2) Bad experiences that lessons are Unimportant

3) Mixed ideas,

4.) Other, specify

10. How do you compare your both V42opinions V50

- 1) views on similar direction
- 2) Views on different direction?
- 3) Others, specify

11. Do you think the training provided to other farmers is important? V51

1. Yes                      2.No

12. If, yes how?  
V52

13. If no why?  
V53

14. If, according to your evaluation, you think it is advantageous, have you tried to learn from them? V54

1) Yes                      2) No

15. If yes, what were the experiences you get and try to apply?  
V55

16. Have you got any different result from the learning's applied, as you have told from farmers?  
V56

1. No, less than expected
2. No difference
3. Yes, as expected
- 4.morethan expected

17. What about changes/ results obtained from modified learning?

1. Less than expected
- 2.No difference
3. as expected
4. More than expected

18. What are the reasons for modifications?

19. Do you want to get trainings from DAS/SMSs?

20. Do you want to get more training 58

1) Yes                      2) No

21. If, Yes, why?

22. on which aspects?

## **(B) For untrained farmers**

1. Similar with (A).

### **2. Training process**

1. Have you obtain extension advice /services/ training? V41

1) Yes 2) No

2. If, No why? V42

- 1) No development agents
- 2) Beyond DAs capacity /inability or inefficiency of DAs
- 3) Unfair nomination
- 4) I don't want to participate
- 5) Other (specify).

3. If one of your reasons is unfairness in nomination procedure, what do you mean? V43

4. What are your reasons not to participate in extension activities, such as trainings? V44

- 1) Because they are not important? /help full?
- 2) Because they are against your culture religion?
- 3) You think you have enough knowledge and skills?

4) Because you don't have any problem, that call for help

5. You know any other farmer participated in trainings in your area and/ or out of your area? V45

1) Yes 2) No

6. If yes, have you any exchange of ideas with him/ her about the practices he obtained V46

1) Yes 2) No

7. What were the methods you used to gather information from trained farmers?

1. Home/farm visit
2. Discussion /query
3. Other (specify).

8. If yes, what were your opinions? V48

- 1) Good ideas (specify)
- 2) Unimportant idea
- 3) No difference
- 4) Others (specify)

9. What about the opinions of the trained farmer with whom you have discussed and/ or visited? V49

- 1) Very good experiences
- 2) Bad experiences that lessons are unimportant
- 3) Mixed ideas 4.) Other, specify

10. How do you compare both opinions? V50

- 1) views on similar direction
- 2) Views on different direction?
- 3) Others, specify

11. Do you think the training provided to other farmers is important? V51

1. Yes 2.No

12. If, yes how? V52

13. If no why? V53

14. If, according to your evaluation, you think it is advantageous, have you tried to learn from them? V54

1) Yes 2) No

15. If yes, what were the experiences you get and try to apply? V55

16. Have you got any different result from the learning's applied, as you have told from farmers? V56

1.No, less than expected

2.no difference

3. Yes, as expected

4.morethan expected

17. What about changes/ results obtained from learning applied in modification?

1. Less than expected

2.No difference

3. as expected

4. More than expected

18. What are the reasons for modifications?

19. Do you want to get trainings from DAS/SMSs?

20. Do you want to get more training? V58

1) Yes 2) No

21. If, Yes, why?

22. on which aspects?

**7.5. Appendix V.** Appendix Table 5: Participants of the study (DAs, Supervisors, SMSs)

<b>I</b>	<b>Development Agents DA</b>		
No.	Name	Sex	Work place
1	Ashebiri Kedir,	Male	Andegna ansha
2	Etsegent Teshome	Female	Gerema
3	Kassech Bekele	Female	Tachignaw-Arsho
4	Kemeria Salia	Female	Andegna-Ansha,
5	Meseret Gelan,	Female	Andegna-Ansha
6	Meseret Misganu	Female	Gerema
7	Misbah Hussien	Male	Tachignaw-Arsho,
8	Yalemfire Getachew	Male	Andegna-Tuka
9	Zerihun Awoke	Male	AndegnaAnsha
<b>II</b>	<b>Supervisor</b>		
1	Abdellah Aman	Male	Gerema
2	Abdul-Munim Shifa	Male	Tachignaw Arsho
3	Derebe Deboch	Male	Andegna, ansha,
4	Kedir Tumebo	Male	Andegna-Tuka
5	Teketel Tumebo	Male	Andegna-Tuka
<b>III</b>	<b>Alaba woreda SMSs</b>		
No.	Name	Sex	Responsibility
1	Adamseged Nigussie	male	Crop protectionist
2	Birhane G/Mariam	male	Natural resource management specialist
3	Desta Tesfaye	female	Crop protectionist
4	Getachew Eshete	male	Irrigation agronomist
5	Gidey	female	Rural women affairs specialist
6	Jemmal Mohammed	male	Animal husbandry specialist
7	Mesfin Taddele	male	Crop production & protection Desk leader
8	Miftah Hassen	male	Livestock & animal Health Desk Leader
9	Mohamednur Mohammed	male	Agricultural development division, head
10	Mulat Bishaw	male	Animal husbandry specialist
11	Murida Yassin	female	Crop protectionist
12	Rahmeto Negash	male	Training & techno.velopment Dek leader
13	Selamu Chaniso	male	Forage development specialist
14	Tofik Aman	male	Training Specialist

Male

Male

Appendix (V) Table 5 Continued: Participants of the study

<b>IV</b>	<b>Regional SMSs</b>		
No.	Name	Sex	Responsibility
1	Belaynesh Gelaye	Female	Rural women affairs team leader
2	Ewnet Aragae	male	Civil service officer
3	Frehiwot Tefera	Female	Training specialist
4	Gizachew Amha	Male	Animal production specialist
5	Goa Mamo	Male	Livestock & animal Health Dept.head
6	Nadew Feleke	Male	Agronomist
7	Simayehu Taffesse	Male	Crop production & protection dept.head
8	Sinidu Abebe	Female	Capital budget section head
9	Tsigae Aklilu	Female	Budget accountant