

**COMMUNICATION PATTERNS AMONG EXTENSION PERSONNEL AND
FARMERS: A CASE OF DIRE DAWA ADMINISTRATIVE COUNCIL,
ETHIOPIA.**

BY

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**A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE
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ABSTRACT

One of the most inhibiting forces to successful development is lack of effective communication within and between different actors. Likewise, communication in extension organizations takes place within the organization and outside the organization among different actors. Hence, the overall objective of the study was to assess the communication patterns among extension personnel and between farmers. The specific objectives were: to explore the relationship between personal and socio-psychological factors that affect effectiveness of communication among extension personnel and farmers; to investigate the institutional factors that affect effectiveness of communication among extension personnel and farmers; and to identify communication methods and media used by extension personnel. The research design was cross-sectional survey. The study used a multi-stage stratified sampling to select respondents. A total of 120 farmers, 30 VEWs, and 23 SMSs were selected for the study. Data were collected from both primary and secondary sources using self administered questionnaires, interview schedule, group discussion, semi-structured interview, informal discussions, and observations. Data were analyzed using simple descriptive statistics (percentage and frequency), chi-square, and correlation. The results of the study revealed that communication apprehension level had relation with some of personal factors of the extension personnel and weak communication existed between extension personnel and other organizations, and farmers' contact with the extension personnel was inadequate. The results further pointed out that transportation, lack of improved technologies and relevant information, and involvement of VEWs in non-extension activities were important problems that affect communication among extension personnel and with farmers.

Utilization of communication methods and media by the extension personnel was insignificant. Comprehensive training, establishing rural development task force, coordinated field visit program, and improve the work relationship to different organizations are among the recommendations drawn to improve effectiveness of communication patterns among extension personnel and farmers in the study area.

DECLARATION

I, SAMSON ESHETU LEMMA, do hereby declare to the Senate of Sokoine University of Agriculture that the work presented here is my own original work, and has not been submitted, nor concurrently being submitted for a degree award in any other University.

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Date

The above declaration is confirmed by;

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Date

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DEDICATION

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LIST OF ACRONYMS

ADDP	Ada Distrct Development Project
ADLI	Agricultural Development Led Industrialization
AESE	Agricultural Economics Society of Ethiopia
AISCO	Agricultural Inputs Supply Corporation
AKIS	Agricultural Knowledge and Information Systems
A & RDB	Agricultural and Rural Development Bureau
ARDU	Arsi Rural Development Unit
ATVET	Agricultural and Technical Vocational Education Training
CA	Communication Apprehension
CADU	Chillalo Agricultural Development Unit
CBO	Community Based Organization
CPP	Comprehensive Package Program
CSA	Central Statistics Authority
DDAC-ADO	Dire Dawa Administrative Council Agricultural Development Office
DDAC-WMEO	Dire Dawa Administration Council, Water, Mines and Energy Office
DDRD & AB	Dire Dawa Rural Development and Agricultural Bureau
EEA/EEPRI	Ethiopian Economic Association/Ethiopian Economic Policy Research Institute
EEC	Ethiopia-European Community
EMTP	Extension Management Training Plot
FDRE	Federal Democratic Republic of Ethiopia

EGS	Employment Generation System
FTC	Farmers Training Centre
GDP	Gross Domestic Product
GO	Government Organization
HCS	Hararghe Catholic Secretariat
HADP	Humera Agricultural Development Project
LCD	Liquid Crystal Display
MoA	Ministry of Agriculture
MoFED	Ministry of Finance and Economic Development
MoU	Memorandum of Understanding
MPP	Minimum Package Project
NGO	Non-Governmental Organization
OHP	Overhead Projector
PA	Peasant Association
PADETES	Participatory Demonstration and Training Extension Systems
PRCA	Personal Report of Communication Apprehension
SAFE	Sasakawa Africa Fund for Education/Extension
SIDA	Swedish International Development Authority
SMS	Subject Matter Specialists
SORADEP	Sothorn Region Agricultural Development Project
SPSS	Statistical Package for Social Sciences
TAHADP	Tach Adiabo and Hedekti Agricultural Development Unit
TV	Television
VEW	Village Extension Worker

WADU

Wolaita Agricultural Development Unit

CHAPTER ONE

INTRODUCTION

1.1 Background of Ethiopia

Ethiopia, a country found in East Africa, has a total land area of 1.12 million square kilometres divided into nine regional states, one city council and one city administration. The total population of the country is 67.2 million (CSA, 2003). The dominant economic feature of the country is agriculture; it plays a central role in the economic and social life of the population. The agricultural sector contributes more than 45% of the GDP, 85% of the employment, and generates 90% of the foreign exchange earnings (Worku, 2000; Belay, 2003).

Out of a total land area of 1.22 million square kilometres, 75% is estimated to be suitable for agriculture (Belete *et al.*, 1991). However, predominantly small-scale farming (subsistence-oriented), very low productivity, and highly fluctuating production due to fluctuation in the rains characterize Ethiopia's agriculture (Samuel, 2000; Belay and Abebaw, 2004). According to Westphal (1975) cited by Tesfaye (2003), the agricultural system of Ethiopia can be classified into four types: the seed-farming complex, the enset-planting complex, shifting cultivation, and the pastoral complex. However, productivity of small-scale farmers is very low due to low adoption of improved technology (Belay, 2003; Tesfaye, 2003).

The country exercised different development interventions in order to improve production and productivity of small holding farmers. However, the impacts of all

these development interventions have not been that much significant in terms of improving the lives of the rural population in general and the mode of farming and productivity in particular (Habtemariam, 1997).

Although farming methods in the country are still traditional, farmers in many areas do have the option of using new, higher yielding varieties and some modern inputs, primarily chemical fertilizers (Habtemariam, 1997; Belay, 2003; Tesfaye, 2003). To improve the productivity of the agriculture sector, the country designed the economic strategy called Agricultural Development Led Industrialization (ADLI), which has been seen as a long-term strategy to achieve faster growth and economic development by making use of technologies that are labour using, but land augmenting, such as fertilizer, improved seeds, and other cultural practices (FDRE-MoFED, 2002). The main objective of ADLI is to achieve more growth in the peasant agricultural sector productivity and thereby improving a living standard of the rural population (EEC, 2000). Moreover, Worku (2000), has reported that ADLI is largely based on expanding agricultural production to generate income for the people.

To compliment this strategy, since 1995 the government has adopted Participatory Demonstration and Training Extension System (PADETES) as the national agricultural extension system (Habetemariam, 1997; Mulat, 1999; Dejene, 2003; Tefaye, 2003). PADETES is aiming at contributing to the attainment of food-self sufficiency, which is determined by the National Extension Intervention Program (NEIP) (Worku, 2000). According to EEA/EEPRI (2006), as a result of

decentralization policy of the country, implementation of the program is mandated to the regional Bureau of Agriculture and Rural Development, whereas, policy related issues are handled by the Federal Ministry of Agriculture and Rural Development.

However, after all these development efforts, the country is unable to attain food self-sufficiency to date. Therefore, this study was focused to investigate the problems in the course of implementation of the strategy from communication point of view among different actors in general, and between extension personnel and farmers in particular, in the study area.

1.1.1 Agricultural extension in Ethiopia

According to the Task force on agricultural extension (1994), the establishment of “*Yersha Mesrabet (meaning agricultural main office in Amharic)*” in 1908 E.C. is marked as the beginning of major efforts by the state to modernize the agricultural sector in Ethiopia. However, with the creation of the Ministry of Agriculture (1943) the country witnessed the commencement of limited extension activities in different areas of the country (Belay, 2003). Furthermore, the latter elaborated that there was no separate division in the Ministry responsible for extension work, but the various divisions of the Ministry made different services to farmers.

A formal agricultural extension system in Ethiopia was started in 1953 with the establishment of the then Imperial Ethiopian College of Agriculture and Mechanical Arts (IECCAMA, now Haramaya University) with the Point Four agreement under the assistance of USA (Belay, 2003; Tesfaye, 2003; Habtemariam, 2004). The

college was modelled on the Land Grant College system of the United States with three interrelated responsibilities namely education, research, and extension. In order to accomplish the responsibility of extension service, the college in 1954 employed two Ethiopians who had graduated from the Ambo agricultural school as extension agents. They were stationed at Assela (the then Arsi province) and Fitcha (the then Shoa province) to establish demonstration trials with cooperative farmers (Belay, 2003). During the following years, the number of extension agents increased and they were stationed at posts all around the country. Moreover, extension agents were trained in different agricultural techniques, extension methodologies, and communication skills in order to make them capable of serving the clients. By the year 1963, 77 extension posts had been established with 132 nationals servicing the various areas (Belay, 2003). However, the major extension activities were concentrated in areas where the college had experimental stations. The extension methods used were demonstration around research sites and youth clubs were used as a major forum of technology popularization (Task Force on Agricultural Extension, 1994; Habtemariam, 2004).

In 1963, the college transferred the responsibility of the national extension service to the MoA. Since then MoA has been the sole responsible body for national extension activities in the country (Belay, 2003; Tesfaye, 2003; Habtemariam, 2004). Since then different extension approaches evolved in the country. MoA has created extension as one of the departments to undertake the extension program of the country. The ministry decentralized its department by establishing 13 provincial offices in the country followed by appointing extension provincial supervisors in all

offices in the provinces. Each supervisor was in charge of between six and eight extension agents who were located along the main roads in the country and covered an area up to 25 or 30 km from the head quarters (Task Force on Agricultural Extension, 1994; Belay, 2003). According to Stommes and Sisaye (1979) cited by Belay (2003), there was relatively little contact between extension agents and farmers because of small number of extension workers who were assigned along all major highways and difficulty to visit the peasants who reside at least a half-day's walk from all weather roads.

The country exercised the Comprehensive Package Program (CPP) that emerged during the Third Year Development plan (1968-1973) (Worku, 2000; Belay, 2003). The aim of the program was developing the small-scale agriculture through the diffusion of a package of appropriate techniques. As Belay (2002), clearly pointed out, the rationale for the CPP was that programs made in selected sites would have a multiplier effect on the surrounding areas by way of demonstrating and because of social interaction.

In 1967, the first Comprehensive Package Project, the Chillalo Agricultural Development Unit (CADU) was established with the financial support of the Swedish International Development Authority (SIDA) in the then Arsi province. Later CADU was upgraded to cover the whole Arsi province by changing its name to Arsi Rural Development Unit (ARDU) (Task Force on Agricultural Extension, 1994; Worku, 2000; Belay, 2003; Habetemariam, 2004). As clearly elucidated in Habetemariam (2004) and Task Force on Agricultural Extension (1994), the extension

methods used to reach farmers were individual and group methods in general, and demonstration and field days on the agents' demonstration plots and fields of model farmers in particular.

The second CPP, the Wolaita Agricultural Development Unit (WADU) was initiated in Wolaita province in 1970 (Task Force on Agricultural Extension, 1994). In the following years, based on the experience gained from CADU other autonomous comprehensive package projects with varying objectives and approaches were initiated with the financial assistance, mainly SIDA. These include the Ada District Development Project (ADDP), the Tach Adiabo and Hedeki Agricultural Development Unit (TAHADU) in the northwest of Tigray; the Southern Region Agricultural Development Project (SORADEP) near Awassa town; and the Humera Agricultural Development Project (HADP) (Belay, 2003).

The initial plan of CPP was to cover 90% of the farming population within 15 to 20 years through large-scale intensive package projects (Task Force on Agricultural Extension, 1994). However, because of its expensive nature of the projects in terms of financial and trained manpower requirement, it was difficult to replicate in other areas of the country. As a result, according to Belay (2003) and Habtemariam (2004), the government in cooperation with SIDA, designed an alternative strategy called Minimum Package Project (MPP) in 1971. MPP was initiated in Ethiopia with a claim to address the problems of CPPs and to reach the largest part of the farming population in the shortest possible time with relatively low cost. According to the Task Force on Agricultural Extension (1994) and Worku (2000), the MPP was

launched in two different phases. The first phase called MPP-I (1975-1978) and the second phase was MPP-II (1978-1980). However, MPP-II was delayed until 1981 due to the change in political system of the country. MPP-II was the continuation of MPP-I. However, as Belay, (2003) clearly pointed out, one of the major differences between the two projects was the extension channels employed in the transfer of technology. Under MPP-II, the peasant association and cooperatives were used as the focal points through which all extension services channelled to farmers.

According to MoA (1992, 1994) cited in the work of Habtemariam (2004), Training and Visit (T & V) system was initiated and adopted as a pilot project in 1983 with assistance of the World Bank in Tiyo and Hitosa weredas of Arsi and Ada and Lume weredas of Shoa. Moreover, in 1984, T & V system was adopted by MoA and was introduced to Arsi- Negele and Shashemene. Meanwhile, in 1985, the Peasant Agricultural Development Program (PADEP) was introduced as a follow-up of MPP-II (Task Force on Agricultural Extension, 1994; Worku, 2000; Belay, 2003; Tesfaye, 2003; Habtemariam, 2004). PADEP employed a modified T & V extension system up to the early 1990s.

Following the change in government in 1991, the modified T & V system was adopted as a national extension system until its replacement by the Participatory Demonstration and Training Extension Systems (PADETES) in 1995. PADETES adopted from Sasakawa Global 2000 (SG-2000), which was initiated in 1993 as an extension system in the country. Since 1995 to date, the rural centred agricultural development using PADETES and modified SG-2000 approach commonly called

Newly Extension Intervention Program (NEIP) has been adapted as the national agricultural extension system in the country (Tesfaye, 2003). NEIP considers the package approach to agricultural development. To this connection, Worku (2000), elucidated that the current national extension intervention program has evolved out of the community development approach used in the 1950s, and the focus on modernizing agriculture and increasing food production through a package approach. PADETES uses Extension Management Training Plots (EMTPs) and a technology transfer model, which in principle nurtures linkage between research, extension, input, and credit distribution (Habtemariam, 1997; Belay, 2003).

Currently there are also additional approaches introduced like family based extension packages and area based specialization approaches (Tesfaye, 2003). These approaches focused to help farmers to be market oriented in some parts of the country, but the approaches are not yet adopted as a national extension system in the country.

1.2 Problem statement

According to some empirical studies, the lack of development impact in the country is aggravated by many problems. These include inappropriate agricultural policies (Belete *et al.*, 1991; Demese, 2004); rapidly increasing population (AESE, 2003); poor communication linkage between different stakeholders, poor extension planning and monitoring system, number and quality of extension personnel, and unidirectional information flow between extension personnel and farmers (Habtemariam, 1997; Belay, 2003; Belay and Abebaw, 2004; Tesfaye, 2003).

Public extension systems in many developing countries have shortcomings with regard to coverage, effectiveness, efficiency, and accountability (Habtemariam, 2004). PADETES has been implemented in Dire Dawa Administrative Council since 1995 to improve the standards of living of the rural people through improving productivity of agriculture, empowering farmers actively to participate in development process, and increasing the level of food self-sufficiency by supplying modern and appropriate technologies. Moreover, different governments and non-government organization has been working in the rural areas. However, to date, adoption and diffusion of improved technologies in the study area is very low (DDAC-WMEO, 2004). The area is still facing a chronic shortage of food due to drought, and still has not been able to achieve food self-sufficiency to feed the ever-increasing population. Crop yields have remained low due to several problems that include the low level of technology utilization by the farmers because of poor extension support systems (DDAC-WMEO, 2004).

On the other hand, little is known about the nature of communication patterns among extension personnel and farmers in relation to the study area. Therefore, this study aims at empirically assessing the communication patterns among extension personnel and farmers in the study area for improving agricultural productivity and efficiency of the extension system.

1.3 Justification

The scope of this study only focuses on formal communication patterns among extension personnel and farmers as well as how they are communicating with

different actors because knowing the organizational communication needs of extension staff can be useful in enhancing an effective and dynamic organization. The result of this study will provide in-depth information to the Dire Dawa Agricultural and Rural Development Bureau about the factors that affect communication among extension personnel and farmers; the communication methods and channels utilization to communicate with farmers; and how to improve this communication for better achievement of organizational objectives and improve the life standard of the farmers. Moreover, the results of this study will provide information for development related organizations, policy makers, planners, and researchers for improving communication patterns among and between extension personnel and farmers in order to achieve organizational as well as farmers' objectives through: identifying communication constraints, opportunities, and design strategies for improvement in the country in general, and in the study area, in particular.

1.4 Objectives of the study

1.4.1 General objective

The overall objective of the study is to assess the communication patterns among extension personnel and farmers in Dire Dawa Administrative Council.

1.4.2 Specific objectives

The specific objectives of the proposed study are:

- i. To explore the relationship between personal and socio-psychological factors that affect effectiveness of communication among extension personnel and farmers in Dire Dawa Administrative Council.
- ii. To investigate institutional factors that affect effectiveness of communication among extension personnel and farmers in Dire Dawa Administrative Council.
- iii. To identify communication methods and media used by extension personnel during communication with farmers in relaying agricultural information and technologies in Dire Dawa Administrative Council.

1.5 Operational definitions

The following terms, which are used frequently in the text, are defined as follows to provide common basis of understandings.

- a) Extension personnel: all extension workers who have a direct contact and work relationship with farmers in the rural areas. These include team leaders, department heads, SMSs, and VEWs.
- b) Subject Matter Specialist (SMS): An extension worker who is specialized in one scientific discipline and working at regional post who is providing technical support to VEWs.
- c) Village Extension Worker (VEW): a generalist extension worker at the PA level, which include several villages, and responsible for the first contact of farmers with extension organization.
- d) Communication patterns: refers to the communication network among members of a given organization within and outside the system.

- e) Personal factors: include the variables related to personal traits and related to occupation (work) such as age, sex, educational status, marital status, service years, training, family size, land holding size, and income.
- f) Socio-psychological factors: include the social and psychological (mainly perception and attitude) dimensions of respondents (Extension personnel and farmers) such as, job satisfaction, communication apprehension, willingness to listen, individual innovativeness, attitude of extension personnel, and cosmopolitanism, media exposure, attitude, and extension participation of farmers, which have influence on communication.
- g) Institutional factors: are those variables associated with internal and external organizations such as contact between extension personnel with farmers, linkage with other organizations, supervision among extension personnel, feedback mechanisms, planning systems, and other problems (lack of technologies and information, transportation, VEWs involvement in non-extension activities, language barriers, etc.)

CHAPTER TWO

LITERATURE REVIEW

2.1 Theoretical concept of communication

One of the most inhibiting forces to successful development is lack of effective communication within and between different actors (Robbins, 1992; Van den Ban and Hawkins, 1996). Communication is the process by which information passes from a source to a receiver for effecting the desired results (Adams, 1982). According to Berlo (1996) cited by Rogers and Rogers (2004) and Van den Ban and Hawkins (1996), the four main components of any communication model are, source (who?), message (said what?), channel (in what channel?), and receiver (to whom?). Whereas, in Harold Laswell transmission models of communication, effect (with what effect?) added in the model beside the basic components. Communication is about the creation of meaning and understanding, not simply moving information around (Gray, 2005). Lewis (1980) and Van den Ban and Hawkins (1996), also supports the idea that communication is about sharing of messages, ideas, or attitude resulting in a degree of understanding between a sender and receiver. For any communication to take place, information should be available from a source perceived to be of use by the recipient (Van den Ban and Hawkins, 1996). Effective communication ought to ensure a two-way communication between sources and recipients and it is the process of creating common understanding (commonage) between source and receiver. Effective communication can build morale, reduce misunderstandings and conflicts, and help extension respond more quickly to public needs (Weigel and Nevada, 1994).

2.2 Organizational communication

According to Rogers (1983), an organization is a stable system of individuals who work together to achieve common goals through hierarchy of rank and division of labour. Open system is the degree to which the members of a system are linked and interact with other individuals who are outside from the system (Robbins, 1992; Rogers, 1983). From an open system perspective, an organization is an elaborate set of interconnected communication channels designed to import, sort, and analyze information from the environment and export processed messages back to the environment (Rogers and Rogers, 2004).

Communication is the very essence of any organization. Unlike interpersonal communication, which focuses on communication among a small number of groups, organizational communication entails broader patterns of communication among larger numbers of people and groups or organization (Griffin, 1984). It is the lifeblood of an organization and most communication is reciprocal and transactional, not a unidirectional flow (Robbins, 1992). Communication may be transmitting in a number of directions within an organization: down or upward the chain of organizations, horizontally to peers within or outside the organizational unit (Lewis, 1980).

Communication in extension organization takes place within the organization and outside the organization among different actors in order to achieve organizational goals. In general, communication in a reputable organization includes both formal and informal communication. Formal communication focuses on job related

communication, required by the organization, and follows the accepted patterns of hierarchical structure, while, informal communication focuses on satisfying group members' social needs (Rogers and Rogers, 2004).

2.3 Extension and Communication

According to Jones (1997) cited in Meera *et al.* (2004), agricultural extension in the current scenario of a rapidly changing world has been recognized as an essential mechanism for delivering knowledge (information) and advice as an input for modern farming. An efficient extension organization needs to develop the capability of responding to changes in relation to its environment (Vijayaragaran and Singh, 1996). According to Röling (1995) cited by Van den Ban and Hawkins (2004), extension is professional communication intervention deployed by institutions to induce change in a voluntary behaviour among farmers.

Communication is a vital and key function in agricultural extension. The dominant communication system is person-to-person message flow (Monge and Cotractor, 1999), followed by group methods and mass methods with the support of communication media, information dissemination by printed materials, Radio, TV programs etc (Adams, 1982).

2.4 Communication methods and media

Communication is a two-way dynamic process. Developments in information and communication techniques have opened up many new opportunities to obtain information (Van den Ban and Hawkins, 2004). Farmers obtain new information not

only from the government employed agricultural extension services, but also from a rapidly growing range of information (Riesenberg and Gor, 1998). Extension organizations should themselves use all available sources of information including the farmers' indigenous knowledge and practices (Adams, 1982; Bessette, 2004). Communication methods are often classified into three levels i.e. individual methods, group methods, and mass methods depending on the target audience (Adams, 1982). Very often, a combination of methods is simultaneously employed to improve communication.

Personal contact represents the most desirable method because of the face-to-face interchange of ideas (Lewis, 1980). Rogers (1983), elaborates the importance of interpersonal methods that it is more effective in persuading an individual to adopt a new idea. Whereas, mass methods are all the means of transmitting messages that involve a mass medium (radio, TV, newspaper, and so on), which enable a source of one or a few individuals to reach an audience of many.

Empirical studies in Ethiopia reveal that extension workers have utilized different communication methods and media to communicate with farmers. For instance, extension approaches in the 1950s, due to few number of extension workers, agents have been communicating with farmers through demonstration and youth clubs to provide extension services (Belay, 2003; Habtemariam, 2004). Whereas, during CPP, beside demonstration, farmers' field days and individual contact through model farmers were the dominant communication methods (Habtemariam, 2004). However, during MPPs, working with model farmers was replaced and producers' cooperatives

became the focal point for introducing innovations and advices to members (Belay, 2003; Habtemariam, 2004). Currently the extension methods that have been used in PADETES approach includes individual (farm and home visits), group (mainly demonstration and field days), and mass communication methods (radio, TV, posters, newspapers) (EEA/EEPRI, 2006).

2.5 The role of extension workers in rural development

The major role of extension workers in many countries in the past was seen to be transfer of new technologies from research centres to farmers (Van den Ban and Hawkins, 1996). However, the role of extension personnel is provision of relevant, current and sufficient information as well as linking farmers with different sources of information. Samuel (2000), also support this idea that the extension agent is responsible for providing knowledge and information that will help farmers to acquire new knowledge and skills encourage them to make decisions. For this, extension agent should have good professional and technical competencies, because it is the most important and crucial inputs for the extension system (Mattee and Mvena, 1988). Furthermore, Van den Ban and Hawkins (1996), explicitly pointed out that the role of agricultural extension agent is to help farmers form sound opinion and to make good decisions by communicating with them and providing with information they need. Rogers (1983), also has indicated that one of the main roles of a change agent is to facilitate the flow of information from a change agency to an audience of clients. However, revolutionary changes in communication technology have dramatically increased the speed and quality of information transfer and changed the role of extension personnel (Adams, 1982).

Empirical studies in Ethiopia reveal that extension workers in the country have been concentrating on transferring of technological innovations and inputs (mainly chemical fertilizers and improved seeds) to farmers rather than helping farmers to form sound decision through provision of appropriate information and combine with their indigenous technical knowledge (Worku, 2000; Belay, 2003; Tesfaye, 2003; and Habtemariam, 2004).

2.6 Information communication technologies in Ethiopia

Information is one of vital ingredients in making decisions and required for the improvement of agricultural production (Samuel, 2000). The flow of information is much limited by the existing Information Communication Technologies (ICTs). According to Van den Ban and Hawkins (1996), extension agents' ability to influence farmers increases partly because of development in ICTs. The application of ICTs in various sectors in Ethiopia to date has shown inadequate results due to lack of the necessary resources and tools, inadequate human resources and over dependence on donor funds (Lishan, 1999). This problem is even worse in rural areas because of high degree of illiteracy and insufficient mass media channels (Asres, 2005). Since agricultural extension is the transferring of information, ICTs significantly affect the dissemination of agricultural information and innovations to the final users. However, because of low availability and utilization of ICTs, agricultural extension in the country is suffering to provide the required information to final users (Yared, 2006).

2.7 Socio-psychological factors and communication

Socio-psychology is the branch of human psychology that deals with the behaviour of groups and the influence of social factors on the individual (The American Heritage Dictionary, 2004). According to Wrightsman (1977), social psychology is the field of study concerned with the effects of other people on an individual's attitude and behavior. It includes the study of interactions between individuals and groups as well as the effects of groups on the attitudes, opinions, and behaviours of individuals. Lewis (1980), states that almost all problems in organizations are people's problem, and communication has a very profound impact upon the behaviour of people. The behavioural processes that probably have the most important impact on communication are perception and attitude (Griffin, 1984). Because, different perceptions and attitudes influence people's communication behavior (Van den Ban and Hawkins, 1996).

2.7.1 Perception and attitude

According to Lewis (1980), perception is a process of observing, selecting, and organizing stimuli constantly being received and making interpretation. In terms of communication, perception plays a major role in receiving the message transmitted from the sender and in decoding it (Griffin, 1984). Furthermore, Lewis (1980), elaborates that perception can be both a barrier and a facilitator of communication.

Attitude is the most central interest to social psychology (Wrightsman, 1977). Van den Ban and Hawkins (1996), defined attitude as the more or less permanent feelings, thoughts and predispositions a person has about certain aspects of his

environment, and the components are knowledge, feelings, and inclinations to act. Similarly, according to Wrightsman (1977), the components of attitude are cognitive, affective, and conative. He further elaborates that the cognitive component includes the beliefs, the perception, and the information one has about the attitude object. It is fact-oriented, whereas the affective component refers to the emotional feelings (liking or disliking) of the attitude object, it is the most central aspects of an attitude. The conative component refers to one's policy orientation towards the attitude object, to one's stance. It emphasizes how the respondent would respond. Attitude interacts with perception within the communication process. It helps to determine what information people selectively perceive and how they organize (Griffin, 1984). Generally, the knowledge, attitude, communication skills, perception, and social status of extension agents will influence their effectiveness as communicators (Van den Ban and Hawkins, 1996).

2.7.2 Job satisfaction

Job satisfaction is a pleasurable or positive emotional states resulting from the appraisal of one's job or job experiences (Tibendelana, 2000). Job satisfaction results from an employee's perception of how well their job provides for those things that are perceived as important (Griffin, 1984). Similarly, Staw (1991) elucidates that the overall job satisfaction is determined by the difference between all the things a person feels he should receive from his job and all the things he actually does receive. Job satisfaction has relation on someone's daily communication on the job. A person, who is dissatisfied, lacks courage to do his job efficiently. In this connection, Belay and Abebaw (2004), indicate that the most extension personnel in

developing countries are working under difficult and disadvantageous condition that foster low morale because of low salaries, lack of recognition and appreciation. Generally, achievement, recognition, responsibility, advancement, and the work itself all determines job satisfaction. On the other hand, organizational policy, supervision, salary, and working condition can cause job dissatisfaction (Van den Ban and Hawkins, 1996). Hence, the consequence of job satisfaction is absenteeism and turnover, which have a direct influence on organizational effectiveness (Staw, 1991). According to Luthans (1995) cited by Tibendelana (2000), there are a number of ways of measuring job satisfaction. The most common ones include, rating scales, critical incidents, interviews, and action tendencies. Out of these, the rating scale is the most commonly used.

2.7.3 Communication apprehension

According to McCroskey (1977) cited by Holdbrook (1987), Communication Apprehension (CA) is an individual level of fear or anxiety associated with either real or anticipated communication with another person or persons. The prime factors affecting CA are hereditary and the existing circumstances of the person, that means either we can be born with certain innate characteristics or we can acquire them through learning (Allen and Bourhis, 1995; Runney, 2001). Furthermore, Holdbrook (1987), elucidates that much research has dealt with CA in terms of a personality traits, but more recently the ideal CA has expanded to include both trait and situation view. According to Berger *et al.* (1984), causes of CA may (1) stem from our basic personality (2) be a function of the person or persons with whom we are communicating or (3) be unique to the specific circumstances of the interaction.

Furthermore, he elaborates that from whatever source it arises, it does cause discomfort, may result in avoiding communication, and is likely to result in ineffective communication. High CA is seen as a potential inhibitor of the development of both communication competence and communication skills, whereas, low CA is seen as a facilitator (McCroskey, 1984). According to Allen and Bourhis (1995), a person who experience apprehension about communication is less likely to communicate skillfully. Thomas *et al.* (2007), has stated that approximately 60% of public speakers experience some anxiety on the day of a speaking engagement. According to McCroskey and Beatty (1986), there are three solutions (treatments) for high CA. These are systematic desensitization, which is conditioning relaxation responses to stimuli; cognitive restructuring (modification), which is thinking about oneself positively; and skills training.

2.7.4 Listening skills

Listening is one of the skills, which potential employers indicate as being critical to effective communication (Richmond and Hickson, 2001). For many people, it is not lack of skills that makes them a poor listener, but their orientation towards listening. Similarly, extension workers must have good listening skills while communicating with farmers in order to address their problem. Robbins (1992), states that listening demands intellectual effort, because unlike hearing listening demands total concentration.

2.7.5 Individual innovativeness

An innovation is an idea, practice, or object that is perceived as new by an individual or other unit of adoption (Rogers, 1983). Innovativeness has to do with how early in the process of adoption of new ideas, practices, etc that the individual or organization is likely to accept a change (Hurt *et al.*, 1977). According to Berger *et al.* (1984), individual innovativeness is the personality characteristic that refer to a person's willingness to change or accept change in the society around them. The study results by Dahui *et al.* (2006), reveal that individual innovativeness is a direct determinant of the innovation characteristics. Individual innovativeness of extension personnel has relation with effectiveness of communication with farmers. This is because as clearly pointed out by Staw (1991), individual creativity is able to produce great ideas quickly and generate unusual ideas that facilitate effectiveness of communication. Berger *et al.* (1984), also stressed the importance of individual innovativeness that people who are willing to introduce a change must be willing to accept challenges about the usefulness of the change.

2.8 Problems in communication

Agricultural institutions of developing countries are faced by many constraints. These include inadequate institutional supports to promote agricultural development in terms of providing modern inputs and research and extension services (Dejene, 2003), weak communication linkage between Research-Extension-Farmers (Adams, 1982; Franzel and Howten, 1992; Van den Ban and Hawkins, 1996; Ponce, 2002). Beside linkage problem among these actors, many problems in extension organization affect effectiveness of communication among extension personnel and

farmers: Principally, appropriate technologies and information to be extended to farmers are not adequately available (Belay, 2002; Van den Ban and Hawkins 2004). Moreover, there is shortage of extension personnel to reach large number of farmers in wide geographical areas and lack of transport facilities to reach farmers effectively (Belay, 2003; Habtemariam, 2004). Finally yet importantly, extension personnel lack adequate practical training in communication methods and communication skills (Adams, 1982; Belay, 2003; Van den Ban and Hawkins, 2004). Moreover, poor extension planning and monitoring system, inadequate participation of farmers in the process of agricultural development, focusing mainly on technology transfer and less on problem solving skills, and poor understanding of farming systems and farmers real needs have constrained the extension system in the country (Belay, 2002; Habtemariam, 2004).

In addition, extension workers frequently find it difficult to communicate with poor, illiterate farmers and tend to find prosperous and model farmers to work with, because these farmers usually have a more favorable attitude to change and may seek out the extension workers (Adams, 1982; Van den Ban and Hawkins, 1996; Belay, 2003). Sometimes, extension personnel are involved in non-extension activities that make communication among extension personnel and farmers very difficult (Van den Ban and Hawkins, 1996; Belay, 2003). Furthermore, inadequate pay and reward systems, weak financial and administration capacity in agricultural extension systems are important constraints that affect the development activities in Ethiopia (Belay, 2003; Habtemariam, 2004).

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter deals with the methodological process, which generated the data for the study and outlines the statistical procedures, which were used in analyzing the data. The chapter in brief outlines the description of the study area, research design, study population, sampling procedure and sample size, instrumentation, pre-testing, data collection methods, data analysis methods and limitations of the study methodology.

3.1 Description of the study area

The study was conducted in Dire Dawa Administrative Council (DDAC) in Ethiopia. DDAC is located in the Eastern part of Ethiopia between 9°27' N and 9°49'N Latitude and 41°38' E and 42°19'E Longitude. It is bounded by Somali National Regional State to the North West and East and by Oromiya National Regional State to the South. The total land area of DDAC is estimated to be 128 800 ha. Out of this total area, 125 872 is rural area and the rest 2928 ha is urban area. The capital city Dire Dawa town is 515 km away to the East from Addis Ababa and 311 km from Djibouti (DDAC-ADO, 1988).

According to the 1994 population and housing census of Ethiopia, the total population of DDAC is estimated to be 251 864 out of which the urban population is 173 188 and that of the rural population as 78 676. The overall population density of DDAC is 196/km². However, based on the population census of 1994 projection, the

population of DDAC for the year 2006 was 397 749. Out of this total population, 295 925 (74.4%) is urban population and 101 824 (25.6%) is rural population (DDAC-WMEO, 2004). There are 12 249 households with an average household size of 4.9 persons per household. The average household size in the urban area was 4.7 persons per household and six persons per household in the rural area. Currently the region is structured into 25 Peasant Associations (PAs) (the lowest administrative structure in rural areas) and 9 Kebeles (the lowest administrative structure in urban areas).

Altitude ranges from 950 - 2260 meter above sea level. and the council enjoys a bi-modal type pf rainfall with April as a peak for small rains and July for the long rains. The rainfall pattern is characterized by small rains in spring and big rains in summer. The rainy season is from February to May and from July to September and the dry season is from October to January. The mean annual rainfall in the study area varies from 550 mm to 850 mm.

There are different ethnic groups in DDAC, which constitutes 81.48% Oromo, 16.13% Somali, 1.24% Amhara, and 0.15% composition of a variety of ethnic groups. The study area is dominated by two religious groups, which the majority of them are Muslim (98.01%) and Christian (1.99%) of the total population. Oromo and Somali ethnic groups dominantly inhabit the rural area of the council. The dominant means of livelihood of these two ethnic groups is agriculture, which involves mixed farming and pastoralism. Somali's are pastoralist, who depends on livestock rearing.

Camels, sheep, goats, and cattle are the main types of herds kept by them (DDAC-WMEO, 2004).

Agriculture plays a key role in the economy of the Administrative Council. The farming system of the DDAC is divided into two major groups- smallholder farmers and pastoralists. The major crops grown include cereals, pulses, fruits and vegetable crops, while sorghum is the dominant and staple food in the study area. According to recent study data, it is estimated that 17 356 ha of land is arable. Out of this total area only 8062.3 ha of land is under cultivation. The average land holding size of the area is less than 0.5 ha per household. The total livestock population of the DDAC constitutes 153 778 sheep and goats, 37 129 cattle, 10 779 equines, 7513 camels, 25 301 poultry (DDAC-ADO, 1988)

The Administrative Council Rural Development Coordination Office was re-structured into three desks (departments) in 2004. These are: the Agricultural Development Office, (Livestock Development section, Extension Communication and Crop Production section, Natural Resource section, and one Veterinary Diagnosis and Investigation Laboratory), the Disaster Prevention and Preparedness Office (Food Security section and Disaster Prevention and Preparedness section) Water, Mine and Energy Office (Drinking Water and Conservation team, Irrigation section, and Mines and Energy section). There are 25 Peasant Associations in the council, which have two to three VEWs (Village Extension Workers) in each PA to provide extension service to their respective farmers supported by SMSs (Subject

Matter Specialists) at regional level and Development Supervisors in between VEWs and SMSs.

3.2 Research design

The research design used in this particular research was cross-sectional survey method, which allows collecting data at a single point in time from selected sample of respondents. The design is most appropriate for descriptive interpretation as well as determination of relationships between and within variables (Mendenhall, 1989).

3.3 The study population and sampling frame

The population of the study consists of all heads of households in the rural areas and all extension personnel of the Agricultural and Rural Development (A & RD) coordination office in DDAC. The sampling frame from which the farmers were selected was obtained from each PA and for extension personnel it was obtained from the list of all extension workers available at the Council's A & RD office administration pool (coordination centre).

3.4 Sampling procedure and sample size

A three-stage stratified sampling procedure was used for farmers' selection, because these techniques are administratively more efficient to sample by sub-population and desirable to have separate estimates for each sub-population (O'Learly, 2004; Singleton *et al.*, 1988).

There are 25 PAs in the rural area of DDAC. In the first stage, the total PAs were stratified in to two categories based on the physical distance of PAs from the A & RD office in to “Near by” and “Far” PAs, because distance is one of the factors that affect communication among extension personnel and between farmers. From the total 25 PAs, 12 of them fell in to “Near by” and 13 of them fell in to “Far”. The cut off physical distance point was 30 km. Two PAs, one from each category namely Adada PA (19 km) from “Near by” and Jeldessa PA (42 Km) from “Far” were selected randomly for the study. Selection of PAs was done with the assistance of a field assistant (expert) assigned from the office.

In the second stage, each selected PA was again categorized in to two village categories that mean those villages near and far from VEWs office/residence. There were 15 villages in Adada PA, out of this eight of them were near by villages and seven of them far villages. Two villages (one from each village categories) were drawn randomly for the study. Similarly, in Jeldessa PA there were a total of six villages, out of which three of them were from nearby villages and the rest from far villages. In the same way, two villages (one from each village categories) were drawn randomly for the study. Finally, after getting list of households for the selected four villages (Jeldessa 02, Kulayu, Haferetu, and Kebelle), 30 households from each village were selected randomly to make 120 total households for the study.

Similarly, for selection of extension personnel stratified random sampling technique was employed. Five and six VEWs were selected randomly from “Nearby” and “Far” PAs, respectively for the study. For selection of SMSs, team/section was taken

as a strata and proportional probability to size was employed. In total, 30 VEWs and 23 SMSs were selected for the study. The units of analysis were the individual farmers and extension personnel.

3.5 Instrumentation

Primary data were collected using interview schedule for farmers and self-administered questionnaire for extension personnel backed up by personal observation, group discussion, informal discussion, and semi-structured interview with respondents and different groups. The interview schedule was constructed using close and open-ended questions. However, the self-administered questionnaire used for extension personnel was totally close-ended dominated by standardized perception and attitude Likert-type scales. The instrument used for measuring communication apprehension was adapted from McCroskey (1982); individual innovativeness was adapted from Hurt, Joseph, and Cook (1997); willingness to listen measure was adapted from Richmond and Hickson (2001); and job satisfaction was adapted from Spector (1992).

3.6 Pre-testing the instrument

The research instruments both the interview schedule used for farmer's data collection and self-administered questionnaires (for both VEWs and SMSs with some variations) were prepared after reviewing literature and related empirical studies done elsewhere in the world. Later, after incorporating comments obtained from my supervisor, the final draft of the questionnaires were taken to the study area for pre-testing before using for actual data collection.

The interview schedule was pre-tested on ten farmers who were selected from one PA. The self-administered questionnaires were also pre-tested on six VEWs selected from two PAs and six SMSs selected from six teams/sections. The overall validity and reliability of both the interview and self-administered questionnaires were evaluated. The initial drafts of both the interview schedule and self-administered questionnaires were revised and some minor changes incorporated after pre-testing. In fact, not to lose the intended meaning of the standardized statements because of translating the instrument, the self-administered questionnaires were in the English language. Therefore, in order to solve language problem in understanding some difficult words, it was found necessary to attach dictionary meaning of some technical words during pre-testing time and attach to each questionnaire. The extension personnel reported as they found it helpful during returning the questionnaire.

3.7 Data collection methods

The primary data were collected from respondents by the researcher assisted by two enumerators and one field assistant. The enumerators were trained before pre-testing of the research instruments. Both enumerators had rich experience in data collection under the “Socio-economic and livelihood project” run by Haramaya University in Ethiopia. There was close follow-up, inspection, and evaluation of enumerators during data collection time by the researcher. For extension personnel there was frequent follow-up through telephone. Moreover, primary data were collected from ten and eight women farmers of Jeldessa and Adada PAs respectively through group

discussion with the help of a field assistant (translator). Formal and informal discussions using semi-structured questionnaire were conducted with VEWs, SMSs, Team leaders, and Heads of the departments. On top of this, to get the work relationship with other organizations, semi-structured interview was conducted. DDAC Cooperative Office, DDAC Omo-Micro Finance Institution, and Urban Agriculture section of DDAC Small Scale Enterprise Agency were among Governmental Organizations; and Hararghe Catholic Secretariat (HCS) and Jerusalem Integrated Community Development Project were from NGOs. Secondary data were collected from DDAC A & RD office annual reports, the office's five year strategic plan document, and different literature.

3.8 Data analysis methods

The researcher himself verified data on daily basis in order to make sure that the interview schedule had been filled up accurately and completely, after being completed by the enumerators. The data from the interview schedule and self-administered questionnaires were coded, entered, and analyzed using Statistical Package for Social Sciences (SPSS) 11.5 version and Micro Soft office Excel 2003. Descriptive statistics such as frequencies and percentage were used to obtain variability among different variables. Chi-square test was performed to investigate whether there are significant differences between farmers in the selected two PAs, four villages and between the two categories of extension personnel (VEWs and SMSs). Because, chi square can be used in a wide variety of research contexts and most frequently to test the statistical significance of results reported in bivariate tables (Connor-Linton, 2006). Moreover, correlation analysis used to test the

association between different variables. The results of data analysis were categorized, summarized, discussed and presented in relevant formats (Tables and Flow diagram).

3.9 Limitations of the study methodology

This research had some limitations. These include:

- In some cases, few respondents (VEWs) were unwilling to cooperate unless they were paid some cash because of the previous experience from other researchers and NGOs.
- Similarly, some farmers were unwilling to cooperate for interview unless they were paid some cash, especially farmers in Jeldessa PA.
- Some of extension personnel have returned the questionnaire without filling them, despite frequent follow-up by the researcher.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.0 Introduction

This chapter presents and discusses the findings of the study under five sections. Section one briefly presents personal characteristics of respondents (extension personnel and farmers), while section two discusses the socio-psychological factors of the respondents (extension personnel and farmers). Section three briefly discusses the relationship between personal and socio-psychological factors of extension personnel, whereas, section four presents the institutional factors that affect communication between extension personnel and farmers. Lastly, section five presents communication media and methods utilization by extension personnel and farmers.

4.1 Personal characteristics of respondents

4.1.1 Personal characteristics of extension personnel

This section presents the results of personal characteristics namely: sex, educational status, age, service years, and marital status of the extension personnel. The results reveal that the proportion of male extension personnel is greater than that of female extension personnel and most of them have diploma and above. The result of the age categories shows that most of Village Extension Workers (VEWs) are younger than Subject Matter Specialists (SMSs). Like age, service years of extension personnel also vary greatly between VEWs and SMSs. Most of VEWs had served few years

than SMSs. Most of VEWs are single whereas majority of SMSs are married. The results are summarized in Table 1.

Table 1: Distribution of extension personnel by social status and job category (N=53)

No	Variables	Frequency and percentage of social status by job category		X ²	P-value
		VEWs (N=30)	SMSs (N=23)		
1	Sex of respondents:			0.702	0.402
	-Male	25 (83.3)	17(73.9)		
	-Female	5 (16.7)	6 (26.1)		
2	Educational status:			24.921	0.000***
	-Certificate	5 (16.7)	2 (8.7)		
	-Diploma	25 (83.3)	7 (30.4)		
	-First degree	0 (0.0)	12(52.2)		
	-Masters	0 (0.0)	2 (8.7)		
3	Age:- Less than 25 years	13 (43.3)	3 (13.0)	18.249	0.001***
	- 26 to 30 years	6 (20.0)	1 (4.3)		
	- 31 to 35 years	4 (13.3)	1 (4.3)		
	- 36 to 40 years	5 (16.7)	6 (26.1)		
	- Greater than 40 years	2 (6.7)	12 (52.2)		
6	Marital status:			9.158	0.010***
	-Single	20 (66.7)	6 (26.1)		
	-Married	10 (33.3)	16 (69.6)		
	-Divorced	0 (0.0)	1 (4.3)		
4	Service years:			20.469	0.000***
	- Less than 10 years	22 (73.3)	6 (26.1)		
	-11 to 20 years	8 (26.7)	10 (43.5)		
	- Greater than 20 years	0 (0.0)	7 (30.4)		

Note: *, **, *** significant at 10%, 5%, and 1% probability level,

Value in brackets refers percentage

a) Sex

According to Van den Ban and Hawkins (1996), in many countries only a small proportion of the agricultural extension agents are women. Similarly, males dominate extension personnel in the study area (which accounts for 83.3% and 73.0% of

VEWs and SMSs respectively). The proportion of female extension personnel are more at regional level than at PA level, which stands 26.1% and 16.7% respectively. Rotachokoziwa (1993), also found that the biggest percent of qualified female extension workers in Tanzania are found in urban areas. The empirical study done by Belay and Abebaw (2004), also reveals that agricultural extension services in the country are male-dominated from the national to the local level. This has implication to address the needs and problems of women farmers, because front-line, male extension workers tend to work with male farmers and sometimes with female household heads. Similar study by Rotachokoziwa (1993) indicated that women farmers in Tanzania are constrained by inadequate extension contacts because of less number of female extension workers.

b) Educational status

The results in Table 1 reveal that majority of VEWs (83.3%) are diploma holders, whereas only 16.7% of them are certificate holders. Among these certificate holders, most of them are veterinarians. At regional level, majority of the respondents are first-degree holders (52.2%), followed by Diploma (30.4), Master's degree (8.7%), and certificate holders (8.7%). Similar study by Tibendelana (2000) in Dodoma region in Tanzania found nearly similar results that shows 62.17% of extension workers were diploma holders. As the chi-square results revealed educational status relation is significantly different at 1% between VEWs and SMSs. This result indicates the strength of the organization in terms of human resource development than previous time.

According to Yonas (2006), currently the Agricultural and Technical Vocational Education Training (ATVET) program being undertaken in the country is one of the extension interventions, which aimed at producing skilled, competent, and motivated labour force to the agricultural sector. Currently there are 25 technical colleges to undertake this program in the country, which established in different region (Yonas, 2006). Previously most VEWs in the country were certificate holders with very limited technical and communication skills (Belay, 2002). Because of this program, most of certificate holders VEWs have been upgraded to diploma level in the study area.

c) Age

Most of the VEWs fall under 30 years category (53.3%) and only 23.4% of them fall in the category of above 36 years. This shows that most VEWs are younger. However, the opposite is observed in the case of SMSs. 78.3% of SMSs are aged above 36 years and only 17.3% of them are under the category of 30 years. This is because most VEWs in the study area are graduates of the newly ATVET program. Similar study by Belay and Abebaw (2004) in Jimma zone, Ethiopia found that 80% of extension agents were less than 30 years old. However, the result of study conducted by Tibendelana (2000) shows only 5.4% of extension workers fall under the age group of less than 30 years. The chi-square results also support this significant difference of age between VEWs and SMSs at 1% level of significant. From this result, it is possible to draw that there is a potential to exploit the younger VEWs and energetic group at PA level to bring a desired development impact among farmers.

d) Marital status

Most of the VEWs are single (66.7%) and 33.3% of them are married. However, the opposite was observed in the case of SMSs and that accounts for 69.6% and 26.1% of married and single staffs respectively. The chi-square results also revealed that there is a significant marital status difference between VEWs and SMSs.

e) Service years

Of the total VEWs, 73.3% served less than 10 years and the rest 26.7% served 11 to 20 years. The study result by Belay and Abebaw (2004) revealed that 74% of extension agents served for more than 5 years. However, 26.0% of the SMSs served less than ten years and 73.9% served greater than 11 years. The chi-square result also supports that service year difference existed between VEWs and SMSs (Table 1). The results of service year has positive correlation with age of respondents ($r=0.892$, $P<0.001$) which implies that an extension personnel who has more age also has more service years and vice versa.

f) Training

Training is very important to build the capacity of the extension personnel in order to make them capable of solving rural challenges and be exposed to up-to-date agricultural information and technologies. The results show that most of the extension personnel did not take the most relevant types of training, which includes communication methods and media, non-formal and adult education, and gender issues. The types of training received by extension personnel are summarized in Table 2.

Table 2: Training received by extension personnel (N=53)

No	Types of training	Yes		No	
		Frequency	%	Frequency	%
1	Communication methods and media	9	17.0	44	83
2	Non-formal and adult education	11	20.8	42	79.2
3	Extension program planning, monitoring and evaluation	29	54.7	24	45.3
4	Training methodology	24	45.3	29	54.7
5	Participatory Rural Appraisal (PRA)	22	41.5	31	58.5
6	Gender issues	19	35.8	34	64.2

The results revealed that 83% of the extension personnel reported, as they did not take training on communication methods and media. For extension personnel in general and VEWs in particular, training on communication methods and media is important to communicate with farmers in an effective and efficient way to overcome the complex rural development challenges. With the exception of 54.7% of the extension personnel who took training on “extension program planning, monitoring and evaluation”, in all other indicated types of training 83%, 79.2%, 54.7%, 58.5%, 64.2% of the extension personnel on average reported that they did not receive training on communication methods and media, non-formal and adult education, training methodology, PRA, and gender issues respectively. However, these were the basic areas of training supposed to be taken by extension personnel as far as extension profession is concerned.

4.1.2 Socio-economic distribution of farmers

Socio-economic characteristics of farmers, which include sex, educational status, age, marital status, family size, annual income, and land holding size were investigated. Respondents who were selected from the two PAs namely Jeldessa and Adada were categorized into four villages (Jeldessa 02 and Kulau) and (Haferetu and Kebbele) respectively. The data were analyzed to look at the distribution and differences among respondents at village level. The results show that majority of the farmers are male and illiterate whereas, most of the farmers fall under the age categories of 31 to 45 years and majority of respondents have 5 to 7 person family size. The economic status of most respondents show that they have annual income of less than 1000 birr (Ethiopian currency) and hold less than 1 ha of land on average. The results are summarized in Table 3.

Table 3: Socio-economic data of farmers by village (N=120)

No	Variables	Frequency and percentage of respondents by villages				X ²	P-value
		Jeldesa 02	Kulayu	Haferetu	Kebbele		
1	Sex:- Male	18 (60.0)	23 (76.7)	26 (86.7)	25 (83.3)	7.081	0.069*
	-Female	12 (40.0)	7 (23.3)	4 (13.3)	5 (16.7)		
2	Educational status:					28.608	0.005***
	-Can not read and write	27 (90.0)	28 (93.3)	20 (66.7)	27 (90.0)		
	-Read only	0 (0.0)	0 (0.0)	4 (13.3)	0 (0.0)		
	-Read & write, no formal education	2 (6.7)	0 (0.0)	1 (3.3)	1 (3.3)		
	-Primary education	1 (3.3)	0 (0.0)	5 (16.7)	2 (6.7)		
	-Secondary education	0 (0.0)	2 (6.7)	0 (0.0)	0 (0.0)		
3	Age:- Less than 30 years	1 (3.3)	11 (36.7)	5 (16.7)	8 (26.7)	14.581	0.024**
	-31 to 45 years	16 (53.3)	12 (40.0)	19 (63.3)	16 (53.3)		
	-Greater than 46 years	13 (43.3)	7 (23.3)	6 (20.0)	6 (20.0)		
4	Marital status:					14.374	0.026**
	-Single	0 (0.0)	2 (6.7)	0 (0.0)	0 (0.0)		
	-Married	21 (70.0)	25 (83.3)	28 (93.3)	27 (90.0)		
	-Widowed	9 (30.0)	3 (10.0)	2 (6.7)	3 (10.0)		
5	Family size:					9.508	0.392
	-Less than 4 persons	7 (23.3)	10 (33.3)	8 (26.7)	6 (20.0)		
	-5 to 7 persons	16 (53.3)	15 (50.0)	12 (40.0)	15 (50.0)		
	-8 to 10 persons	7 (23.3)	5 (16.7)	10 (33.3)	7 (23.3)		
	->10 person	0 (0.0)	0 (0.0)	0 (0.0)	2 (6.7)		
6	Annual income:				14 (46.7)	12.524	0.051*
	-Less than 1000 birr	23 (76.7)	15 (50.0)	20 (66.7)	16 (53.3)		
	-1001 to 2000 birr	5 (16.7)	12 (40.0)	9 (30.0)	0 (0.0)		
	- 2001 to 3000 birr	2 (6.7)	3 (10.0)	1 (3.3)			
7	Average land holding size (ha):					22.825	0.007***
	-< 0.5	12 (40.0)	12 (40.0)	8 (26.7)	22 (73.3)		
	-0.5 to 1	12 (40.0)	15 (50.0)	18 (60.0)	7 (23.3)		
	-1 to 1.5	2 (6.7)	3 (10.0)	3 (10.0)	1 (3.3)		
	-No land	4 (13.3)	0 (0.0)	1 (3.3)	0 (0.0)		

Note: *, **, *** significant at 10%, 5%, and 1% probability level

a) Sex

There is a significant difference among the four villages in sex proportion as revealed by the chi-square results (Table 3). The proportion of male farmers is higher in all villages; this accounted for 60.0%, 76.7%, 86.7%, and 83.3% in Jeldessa 02, Kulayu, Haferetu, and Kebelle villages respectively. Similar distribution patterns found in the study result by Yisehak (2002) showed that 80% of farmers were male and only 20% female farmers in Bolosso Sore district in Ethiopia. However, the proportion of females (40.0%) is high in Jeldessa 02 village than the rest of the villages. This is because Jeldessa PA in general and Jeldessa 02 village in particular, are pastoralists, so that male farmers used to migrate to look for water and feed for their cattle. As a result, women farmers were most likely to stay at home. Moreover, male farmers have been travelling to neighbouring country, Djibouti to look for jobs. Because of this, women took household responsibility and act as household heads. This has implication to VEWs how to approach and target these women farmers in terms of extension service provision with few female extension workers.

b) Educational status

Literacy among farmers has effect on improvement of farmers' productivity. This is because educated farmers may take the initiative in the adoption of innovations (Weir and Knight, 2000). Moreover, education facilitates easy communication and following instruction during interaction of farmers in interpersonal, meetings, and trainings (Djalou, 2005). Majority of the respondents (90.0%, 93.3%, 66.7%, and 90.0% of Jeldessa 02, Kulayu, Haferetu, and Kebelle villages respectively) can not read and write. Only in Haferetu village, a relatively low percentage of illiterate

(66.7%) observed. However, in the rest of the three villages the percentage of illiterates is more than 90% (Table 3). Higher percentage of primary educational level farmers was observed in Haferetu and Kebbele villages, which accounts for 16.7% and 6.7% respectively. This is due to the fact that the two villages belong to the Adada PA, which is nearer to Dire Dawa town (19 km) where more schools are available as compared to Jeldessa PA, which is 42 km far away from Dire Dawa town. Generally, the chi-square results indicated that there is a significant difference (at 1%) in educational status of respondents among the selected four villages.

c) Age

As the chi-square results show (Table 3) there was a significant age difference in the four selected villages. Majority of farmers fall in the age category of '31 to 45 years', which accounts for 53.3%, 40.0%, 63.3%, and 53.3% in Jeldessa 02, Kulayu, Haferetu, and Kebelle villages respectively. Similar study result by Sebsibe (1999) in Awassa district in Ethiopia showed that 65.0% of farmers were in the age group '32 to 45 years' and 19.2% were in the age group '18 to 31 years'. However, as compared to the other villages, in Jeldessa 02 village, there are many old aged farmers whose age group was above 46 years (that accounted for 43.3%); that implies an older population, while 53.3% of farmers fall in the age group of "31 to 45 years". This has influence on the adoption of new technologies as indicated by Rogers (2003). Younger farmers are more likely to adopt new technologies than old age farmers because of good contact with extension workers, educational status, and information seeking behaviour.

d) Marital status

The result in Table 3 shows that from the total respondents, 70.0%, 83.3%, 93.3%, and 90.0% of Jeldessa 02, Kulayu, Haferetu, and Kebbele villages are married. This has implication for married women farmers. Most married women get agricultural information through their husbands because of cultural problem by extension workers to contact women farmers in general, and married women in particular (Rutachokozibwa, 1993). Large number of widows were observed in Jeldessa 02 village, which accounts for 30.0%. This might be because most male farmers have been travelling to the neighbouring Djibouti to look for jobs and did not return. The chi-square results also reveal that there is a significant difference at 5% level in marital status among the selected villages.

e) Family size

The results in Table 3 show that the average family size in all villages ranges from 5 to 7 persons in a household, which accounts for 53.3%, 50.0%, 40.0%, and 50.0% in Jeldessa 02, Kulayu, Haferetu, and Kebbele villages respectively. According to the 1994 census result in the study area, the average family size in rural areas was 6 persons (DDAC-WMEO, 2004). With the exception of Kebbele village, a family size of greater than ten persons (6.7%) was observed. The study result by Yisehak (2002) shows that 56.6% of farmers had family size of 4 to 6 persons per household in Bolosso Sore district in Ethiopia. As indicated in the chi-square results, there is no significant variation in family size among the selected four villages.

f) Annual income

Income has direct correlation with adoption of technologies. Farmers who are well off can afford the price of new improved technologies than low-income farmers (Rogers, 2003). One of the constraints in getting data on income from farmers is that farmers are not willing to reveal openly their annual income. This is because of their perception that there is connection with government tax. Farmers were encouraged to give the exact annual income, but it is doubtful whether the figures are given exactly or not. With this limitation, farmers are categorised into three categories among the four (see Table 3). No one reported having income greater than 3000 birr. It is possible to look at from Table 3 that most of respondents fall in the income category of less than 1000 birr as their annual income; this accounts for 76.7%, 50.0%, 66.7%, and 46.7% of Jeldessa 02, Kulayu, Haferetu, and Kebbele villages respectively. Yisehak (2002) also found that 81.7% of Bolosso sore farmers in Ethiopia have been earning annual income of less than 1000 birr. The results of chi-square results also revealed that there was a significant average annual income difference at 10% level of significance among respondents in the four selected villages.

g) Land holding size

Empirical studies show that land is one of the factors that affect adoption of improved technologies among farmers. Those farmers who have land are most likely adopting new improved technologies than the landless farmers. Similarly, like income, farmers were not open and willing to tell their exact land holding size in connection with the aforementioned reasons. From the results in Table 3, it is

possible to state that majority of respondents, which accounts for 80.0%, 90.0%, 86.7%, and 96.6% of Jeldessa 02, Kulayu, Haferetu, and Kebbele villages respectively owned on average less than one hectare of land. Moreover, 13.3% and 3.3% of Jeldessa 02 and Haferetu village farmers respectively reported as having ‘no land’. The average land holding size in the study area is less than 0.5 ha (DDAC-ADO, 2006). From the chi-square results it is possible to conclude that there is a highly significant difference in average land holding size among respondents in the four villages (Table 3). Relatively, land is scarce in Adada PA than Jeldessa because of high population density.

4.2 Socio-psychological factors of respondents

According to the American Heritage dictionary (2004), socio-psychological or social psychology is the branch of psychology that studies persons and their relationships with others, groups, and society as a whole. It is concerned with the personality, attitudes, motivation, and behaviour of the individual or group in the context of social interaction. Extension communication is one of the social interactions that could be affected by socio-psychological factors of both extension personnel and farmers. Hence, from communication point of view to examine these factors fairly, the result is presented separately for both extension personnel and farmers.

4.2.1 Extension personnel

From the collected data, this research analyzed some of the socio-psychological factors of extension personnel namely: communication apprehension level, willingness to listening, individual innovativeness, job satisfaction, and attitude

towards farmers. The results show that communication apprehension level of extension personnel fall under the two categories namely: 'low' and 'average' level and majority of them are low, whereas, majority of extension personnel are high in level of willingness to listen. However, most of the extension personnel are moderate in individual innovativeness. The result of job satisfaction shows that most of the extension personnel are dissatisfied about their work. However, most VEWs have positive attitude towards farmers. The results are summarized in Table 4.

a) Communication apprehension

Communication apprehension is an individual's level of fear or anxiety associated with either real or anticipated communication with another person or person's (Berger *et al.*, 1984). The Personal Report of Communication Apprehension (PRCA-24) is the instrument, which is most widely used to measure communication apprehension (McCroskey, 1982). The study result by Runey (2001) revealed that 20% of people face some type of communication anxiety and it is common. As clearly indicated in Table 4, the levels of communication apprehension fall only in the two categories namely "low" and "average" level of communication apprehension. According to the analysed data, opposite results observed between VEWs and SMSs. Holbrook (1987) stated that the degree of shyness or range of situation varies greatly from individual to individual. Of the total respondents, 33.3% and 66.7% of VEWs reported to have low and average level of CA. However, 60.9% and 39.1% of SMSs reported to have low and average level of CA. people with high anxiety are less likely to be skilled communicators (Allen and Bourhis, 1995). Runey (2001) also supports the idea that people with high communication apprehension

tend to avoid communication where possible as a result of fear or anxiety. The chi-square results reveal a significant difference between VEWs and SMSs level of CA at 5%. This might be because of service year's difference between VEWs and SMSs that is an increase in service years has given an opportunity to interact with many people so that the level of fear, anxiety, and shyness will be reduced. This result is further supported by correlation analysis between CA and service years ($r = -0.433$, at 1%).

b) Willingness to listen

Listening is one of the skills, which is critical to effective communication. For many people, however, it is not lack of skill that makes them a poor listener; it is their orientation toward listening. Some are just not willing to listening. They frequently claim that they do not listen because of the poor communication skills of the speaker (Richmond and Hickson, 2001).

The results in Table 4 show that nearly similar level of willingness to listen is existed between VEWs and SMSs. Both VEWs and SMSs have high level of willingness to listen (93.3% and 91.3% respectively). Only 6.7% and 8.7% of VEWs and SMSs respectively are reported to be moderate in level of willingness to listen respectively. The chi-square results show that there is no significant difference in level of willingness to listen between VEWs and SMSs. This has good implication for extension intervention in the study area in order to address farmers' problems by giving due attention to their felt needs during individual visit, group discussion, and

public meeting at large in planning, implementation and evaluation of development programs, since listening becomes a critical skill (Lewis, 1980).

c) Individual innovativeness

According to Hurt *et al.* (1977), innovation is an idea, practice, or object that is perceived as new by an individual or other unit of adoption (like an organization). People and organizations vary a great deal in their “innovativeness.” Innovativeness has to do with how early in the process of adoption of new ideas, practices, etc. that the individual or organization is likely to accept a change.

The results indicated that 33.3%, 40.0%, and 26.7% of VEWs reported themselves as low, moderate and high in innovativeness respectively. However, 8.7%, 56.5%, and 34.8% of SMSs reported themselves as low, moderate and high in innovativeness. As chi-square analysis results indicate in Table 4, there is no significant difference in degrees of perceived individual innovativeness between VEWs and SMSs. However, in general extension personnel fell in categories of moderate and high in individual innovativeness. Therefore, this can be a good potential and opportunity to solve farmers’ problems in a creative and innovative way if at all it is able to exploit in a desired manner.

Table 4: Socio-psychological factors of extension personnel (N=53)

Variables	Frequency and percentage of social status by job category		X ²	P-value
	VEWs (N=30)	SMSs (N=23)		
1 Communication apprehension level:-Low	10 (33.3)	14 (60.9)	3.984	0.046**
-Average	20 (66.7)	9 (39.1)		
2 Level willingness to listen:-Low	0 (0.0)	0 (0.0)	0.077	0.782
-Moderate	2 (6.7)	2 (8.7)		
-High	28 (93.3)	21 (91.3)		
3 Degrees of perceived individual innovativeness:-Low	10 (33.3)	2 (8.7)	4.528	0.104
-Moderate	12 (40.0)	13 (56.5)		
-High	8 (26.7)	8 (34.8)		

Note: *, **, *** significant at 10%, 5%, and 1% probability level

d) Job satisfaction

Job Satisfaction is the level of someone's perceived happiness and satisfaction on his/her job. In order to measure the job satisfaction level of extension personnel, a measurement scale developed by Spector (1992) was adopted. The instrument is composed of twelve statements, which is broadly categorized into three themes, namely pay and rewards, supervision, and recognition. The results show that most of the extension personnel are dissatisfied about their work. The results are summarized in table 5.

Table 5: Percentage of job satisfaction of extension personnel (N=51)

Statements	Frequency and percentage of extension personnel		
	Agree	Neutral	Disagree
- I feel I am being paid a fair amount for the work I Do	41.5 (22)	3.8 (5)	45.3 (24)
- Raises (salary) are too few and far between them	60.4 (32)	18.9 (10)	17.0 (9)
- There are few rewards for those who work here	32.1 (17)	17 (9)	47 (25)
- I feel satisfied with my chances for salary increase	22.6 (12)	18.9 (10)	54.7 (29)
- My supervisor is quite competent in doing his or her job	32.1 (17)	20.8 (11)	43.4 (23)
- My supervisor is unfair to me	52.8 (28)	20.8 (11)	22.6(12)
- My supervisor shows too little interest in the feelings of subordinates	47.2 (25)	20.8 (11)	28.3 (15)
- I like my supervisor	17.0 (9)	34.0 (18)	45.3 (24)
- When I do a good job, I receive the recognition I should receive	37.7 (20)	9.4 (5)	49.1 (26)
- I do not feel that the work I do is appreciated	49.1 (26)	9.4 (5)	37.7 (20)
- I feel unappreciated by the organization when I think about what they pay me	43.4 (23)	20.8 (11)	32.1 (17)
- I do not feel my efforts are rewarded the way they should be	50.9 (27)	15.1 (8)	30.2 (16)

There were two missing values and only 51 cases were used for this analysis. Among the statements the first four statements measure the ‘pay and rewards’, other items assess satisfaction related to supervision and recognition, and finally a general assessment of job satisfaction. Among the total respondents 54.7%, 45.3%, and 49.1% of them reported to “Dis-agree” for the statements “*I feel satisfied with my chances for salary increase*” , “*I like my supervisor*”, and “*When I do a good job, I receive the recognition I should receive*” respectively. Similar study by Tibendelana (2000) in Dodoma region, Tanzania showed that 94% of extension workers were dissatisfied with the way salaries and promotions were offered. From the results, it is possible to conclude that extension personnel are not generally satisfied with the job because of low pay and rewards system, being not recognized and unappreciated by their supervisors. Staw (1991) also supported the idea that pay satisfaction,

satisfaction with the work itself, and satisfaction with supervision seem to have particularly strong influence on overall satisfaction for most people. Van den Ban and Hawkins (1996), also contemplate the issue of job satisfaction in relation to organizational success that extension organization success depends firstly on the relationship between the agents and farmers. Hence, it is important to reward extension agents' good work both by showing appreciation and by increasing their salary.

e) Attitude of village extension workers towards farmers

According to Van den Ban and Hawkins (1996), attitude is an evaluative disposition towards some objects or subjects, which have consequences for how a person will act vis-à-vis the attitude object or subject. VEWs who have close contact with farmers were asked about their attitude towards farmers because this has relation with their daily communication with their clients at large. Six statements were itemized in a Likert-type scale to measure the same. VEWs asked to rate their degrees of agreement for each statements by indicating Agree, Undecided, and Disagree. The results in general show that VEWs have positive attitude towards farmers. The results are summarized in Table 6.

Table 6: Attitude of VEWs towards farmers (N=30)

Statements	Degree of agreement among VEWs in percentage		
	Agree	Undecided	Disagree
They are reluctant to listen my advice	40.0 (12)	3.3 (1)	56.7 (12)
They need always to be forced	26.7 (8)	6.7 (2)	66.7 (20)
They are ready to accept new knowledge, technologies, and practices	66.7 (20)	10.0 (3)	23.3 (7)
They do not trust me	16.7 (5)	16.7 (5)	66.7 (20)
They can identify their own problems and needs	83.3 (25)	-	16.7 (5)
Impossible to change their life standard	30.0	-	70.0 (21)

The results show that 56.7%, 66.7%, 66.7%, and 70.0% of VEWs reported to “Disagree” for the statements “They are reluctant to listen my advice”, “They need always to be forced”, “They do not trust me”, and “Impossible to change their life standard” respectively. Moreover, 66.7% and 83.3% of respondents reported to “agree” for the statements “They are ready to accept new knowledge, technologies, and practices” and “They can identify their own problems and needs” respectively. In general, it is possible to conclude that VEWs have a positive attitude towards their client. This is a good opportunity to bring a desired development change through active interaction with them as far as effective communication is concerned. Client oriented change agents are more likely to be feed back minded (Rogers, 1983).

4.2.2 Farmers

This research also investigated the different socio-psychological factors of farmers namely, extension participation, attitude towards extension personnel, cosmopolitanism, and media exposure of farmers. The results show that farmers’ participation in extension is very high in general, and their participation in the

PADETES program was remarkable in particular. The majority of farmers reported that VEWs and Neighbouring farmers were the main sources of information about the program. Most farmers did not take training on agriculture. As to the communication methods, particularly group meetings, majority of farmers reported they did not attend group meetings organized by VEWs for the past one year. The result of farmers' attitude towards VEWs indicates that farmers show positive attitude towards VEWs. The results of farmer cosmopolitans and media exposure show that farmers are more cosmopolite but had less exposure to mass media, specifically radio.

a) Extension participation

According to Oakley and Garforth (1985) cited by Samuel (2000), extension is a process of working with the rural people in order to improve their livelihoods, which includes helping farmers to improve the productivity of their agriculture and developing their abilities to direct their own future development. Different extension activities have been done by extension personnel with farmers, which include participation of farmers in extension package programs, training, and meeting. The results shown in Table 7 explicitly indicates farmers' participation in the current extension program (PADETES) or not, whether farmers received any training on agriculture or not, and farmers who attended meetings organized by extension personnel. As the results reveal, majority of farmers participated in the extension program that accounts for 83.3%, 100%, 96.7%, and 93.3% of Jeldessa 02, Kulayu, Haferetu, and Kebbele villages respectively. Only in Jeldessa 02, Haferetu, and Kebbele villages 16.7%, 3.3%, and 6.7% of the respondents respectively reported as

not participating in the programs. To look at whether there is a difference in farmers' participation in the program among the four villages, chi-square analysis was performed. The chi-square results show there is a significant difference in farmers participation among the selected four villages at 10% level of significance.

Farmers were asked from where they heard about the program. Majority of the respondents reported that they heard about the program from VEWs followed by their neighbour farmers. Yisehak (2002), also found that 75% of the respondents came to know about the transferred technologies from VEWs and 18.3% from the neighbour farmers. Similarly, the evaluation study result of PADETES by EEA/EEPRI (2006), in Ethiopia also revealed that 54.7% of farmers reported that they heard about the program from VEWs. Only one respondent in Kulayu Village of Jeldesa PA reported that he heard about it from radio. This result indicates that since the program has been launched and run by the government, the most responsible actor for initiating and providing information about the program has been the respective VEWs. Those respondents who reported that they heard about the program from their neighbour farmers beside VEWs accounted for 65.5% and 57.1% of respondents in Haferetu and Kebbele villages, respectively. This shows how farmers contributed for the expansion of the program by giving information to their neighbours, which implies farmer-to-farmer extension.

Training is essential to impart knowledge and skills. Furthermore, farmers were asked whether they received any training about agriculture by any organization or not. The results showed that 33.3%, 10.0%, 36.7%, and 23.3% of Jeldessa 02,

Kulayu, Haferetu, and Kebbele villages respectively reported that they took agricultural training. Similar study by Asres (2005) in the study area reveals that 66.9% of women farmers did not receive any training within three years time. The major areas of training received by farmers were credit, followed by crop production and livestock. The organizations offering the training were the agricultural office, women affairs office, and Hararghe Catholic Secretariats (HCS).

One of the communication methods, which is pre-dominantly utilized by VEWs is group meetings. When meeting is planned properly, it is useful in spreading information quickly to many people and enhances interaction between source and receivers (Rutachokozibwa, 1995). Farmers were asked whether they attended any meetings organized by VEWs or not. The results in Table 7 revealed that 60.0%, 43.3%, 26.7%, and 33.3% of Jeldessa 02, Kulayu, Haferetu, and Kebbele villages respectively reported to be attending meetings organized by VEWs. The proportion of farmers attending and not attending the meetings were different among the selected four villages as shown in the results of chi-square (Table 7).

Furthermore, those who attended the meetings were asked about the average number of meetings they attended for the past one year. Majority of respondents reported to have attended only one meeting, which accounts for 27.8%, 69.2%, 50.0%, and 60.0% of Jeldessa 02, Kulayu, Haferetu, and Kebbele villages, respectively. Among the four villages, only in Haferetu farmers attended three times (25.0%) and more than three times (12.5%) within a year. This is because this village is located at only 10 minutes walk from extension workers office and residence. The results of chi-

square analysis show that, there is a high significant difference in the number of meetings attended by farmers among the selected four villages at 1% level of significance. One possible factor that brings this difference among the selected villages can be physical distance of villages from VEW's office/residence. Kulayu village from Jeldessa Peasant Association (PA) and Kebbele village from Adada PA are located eight and seven kilometres from VEW's office and residence. However, Jeldessa 02 village from Jeldessa PA and Haferetu village from Adada PA located within walking distance from VEW's office and residence. Similar study done in the country by Belay (2003), supports this finding that most extension workers targeted farmers who are on the roadside and easily accessible by transport.

Table 7: Extension activities performed by extension personnel with farmers in PAs (N= 120)

No	Extension variables	Frequency and percentage of farmers respond by village				X ²	P-value
		Jeldesa 02	Kulayu	Haferetu	Kebelle		
1	Participated in extension package program:-Yes	25 (83.3)	30 (100)	29 (96.7)	28 (93.3)	7.500	0.058*
	- No	5 (16.7)	0 (0.0)	1 (3.3)	2 (6.7)		
2	Source of information about the program:- Neighbour Farmers	7 (28.0)	15 (50.0)	19 (65.5)	16 (57.1)	7.830	0.050**
	- VEW	25 (100)	29 (96.7)	28 (96.6)	28 (100)		
	- Radio	0 (0.0)	1 (3.3)	0 (0.0)	0 (0.0)		
3	Training received on agriculture:- Yes	10 (33.3)	3 (10.0)	11 (36.7)	7 (23.3)	6.742	0.081*
	- No	20 (66.7)	27 (90.0)	19 (63.3)	23 (76.7)		
4	Attendance in meetings organized by VEW for the past one year:- Yes	18 (60.0)	13 (43.3)	8 (26.7)	10 (33.3)	23.860	0.005***
	- No	12 (40.0)	17 (56.7)	22 (73.3)	20 (66.7)		
5	Number of meetings attended by for the past one year:-						
	- Once	5 (27.8)	9 (69.2)	4 (50.0)	6 (60.0)		
	- Twice	13 (72.2)	4 (30.8)	1 (12.5)	4 (40.0)		
	- Three times	0 (0.0)	0 (0.0)	2 (25.0)	0 (0.0)		
	- More than three times	0 (0.0)	0 (0.0)	1 (12.5)	0 (0.0)		

Note: *, **, *** significant at 10%, 5%, and 1% probability level

b) Attitude of farmers towards VEWs

VEWs work more closely with farmers compared to SMSs, (which will be discussed later under supervision section). With this understanding, farmers were asked sixteen different statements in order to measure their attitude towards VEWs in different aspects. Since attitude influences the behaviour of farmers during communication with VEWs. As Van den Ban and Hawkins (1996), indicated that attitudes influence behaviour and also behaviour influences attitude.

Table 8: Percentage of farmers' attitude towards VEWs distribution by PA (N=120)

Items/Variables	Percentage of attitude scale (Jeldessa, N=60)			Percentage of attitude scale (Adada, N=60)			X ²	P-value
	Agree	Undec- ided	Dis- Agree	Agree	Undec- ided	Dis- Agree		
I benefited much from advice provided by VEW	53 (88.3)	5 (8.3)	2 (3.3)	49 (81.7)	1 (1.7)	10 (16.7)	8.157	0.017**
VEW is of much help to farmers	51 (85.0)	5 (8.3)	4 (6.7)	45 (75.0)	3 (5.0)	12 (20.0)	4.875	0.087*
Agricultural production can increase without advice from VEW	11 (18.3)	17 (28.3)	32 (53.3)	34 (56.7)	1 (1.7)	25 (41.7)	26.837	0.000***
I have confidence with VEW	44 (73.3)	9 (15.0)	7 (11.7)	32 (53.3)	5 (8.3)	23 (38.3)	11.571	0.003***
I feel satisfied with the work of VEW	43 (71.7)	12 (20.0)	5 (8.3)	33 (55.0)	4 (6.7)	23 (38.3)	16.887	0.000***
VEW lacks competence in teaching new practice	8 (13.3)	14 (23.3)	38 (63.3)	19 (31.7)	2 (3.3)	39 (65.0)	13.494	0.001***
My VEW pays attention to farmer's problems and tries to help in finding solutions	46 (78.0)	8 (13.6)	5 (8.5)	38 (63.3)	6 (10.0)	16 (26.7)	6.802	0.033**
VEW visits only rich farmers	5 (8.3)	11 (18.3)	44 (73.3)	20 (33.3)	6 (10.0)	34 (56.7)	11.753	0.003***
VEW is ready to assisting me in resolving problems outside office hours	28 (46.7)	8 (13.3)	24 (40.0)	25 (41.7)	1 (1.7)	34 (56.7)	7.338	0.025**
VEW has ability to communicate with farmers	52 (86.7)	6 (10.0)	2 (3.3)	42 (70.0)	4 (6.7)	14 (23.3)	10.464	0.005***

Note: - *, **, *** significant at 10%, 5%, and 1% probability level,

From the results (Table 8), it is possible to conclude that farmers in general have positive attitudes towards VEWs. The chi-square results revealed that there was a significant difference between the two PAs regarding all the statements mentioned. It is possible to say that farmers in Jeldessa PA have a more positive attitude towards VEWs compared to Adada PA farmers. One possible reason might be physical distance of the PA from town. This is to say that majority of VEWs of nearby PAs used to spend their weekends in Dire Dawa town unlike that of the far located PAs. As a result, VEWs serve farmers during their weekend as well. For instance, for the statement, “*VEW is ready to assisting me in resolving problems outside office hours*”, 46.7% and 41.7% of Jeldessa and Adada respondents reported, “Agree”. The chi-square test results elucidated that there is a significant difference between farmers of the two PAs.

c) **Cosmopolitanism and media exposure of farmers**

Cosmopolitanism is the degree to which an individual is oriented outside the social system and media exposure is someone’s experience to all those means of transmitting messages that involve a mass media such as radio, television, newspaper, and so on (Rogers, 1983). Those who have good exposure on urban/town are in a better condition to interact with others than those who have not. Similarly, those who have good exposure to mass media in general, and radio in particular, have better outlook and positive mindset about development. In this regard, farmers were asked about their frequency of travelling to the town of Dire Dawa and the results are presented in Table 9.

Table 9: Cosmopolitanism and media exposure of farmers' distribution by villages (N= 120)

No	Frequency travelling to Dire Dawa town	Frequency and percentage of supervision by village				X ²	P-value
		Jeldesa 02	Kulayu	Haferetu	Kebelle		
1	Are you travelling to Dire Dawa town frequently?					2.034	0.565
	- Yes	30 (100)	30 (100)	29 (96.7)	29 (96.7)		
	- No	0 (0.0)	0 (0.0)	1 (3.3)	1 (3.3)		
2	Frequency of travelling to Dire Dawa town:					45.400	0.000***
	- Weekly	0 (0.0)	4 (13.3)	1 (3.3)	1 (3.3)		
	- Monthly	5 (16.7)	7 (23.3)	13 (43.3)	14 (48.3)		
	- Bi-monthly	1 (3.3)	3 (10.0)	6 (20.0)	3 (10.3)		
	- Quarterly	4 (13.3)	8 (26.7)	8 (26.7)	7 (24.1)		
	- Bi-annually	8 (26.7)	5 (16.7)	1 (3.3)	4 (13.8)		
	- Annually	12 (40.0)	3 (10.0)	1 (3.3)	0 (0.0)		
						2.553	0.466
3	Do you have Radio:						
	- Yes	23 (76.7)	21 (70.0)	24 (80)	26 (86.7)		
	- No	7 (23.3)	9 (30.0)	6 (20)	4 (13.3)		
4	Listening to agricultural program:					6.394	0.094*
	- Yes	4 (13.3)	6 (20.0)	12 (40.0)	9 (30.0)		
	- No	26 (86.7)	24 (80.0)	18 (60.0)	21 (70.0)		

Note: - *, **, *** significant at 10%, 5%, and 1% probability level,

As indicated in the results presented in Table 9, from the total respondents of Haferetu and Kebbele villages, 43.3% and 48.3% respectively reported that they have been travelling to Dire Dawa town monthly for different purposes mainly for selling and buying, followed by visiting relatives. Similarly, 40.0% of Jeldessa 02 farmers and 26.7% of Kulayu farmers reported that they have been travelling to Dire Dawa town annually and quarterly respectively. The chi-square results clearly reveals that there is a significant difference in farmers travelling to Dire Dawa town among the selected four villages at 1% level of significance. The results showed that, Adada PA farmers were more cosmopolite than Jeldessa PA farmers were. One possible reason for this difference might be the physical distance of PAs from Dire Dawa town, which are 19 km and 42 km for Adada and Jeldessa PAs respectively.

Radio broadcasts have the potential of reaching a much wider audience including illiterates (Rutachokozibwa, 1993). Thus, it is very useful medium in disseminating agricultural information to farmers. This research also looked at the number of respondents that have a radio. The results revealed that an average of nearly 75% of farmers owned a radio and 25% of them did not own a radio. Furthermore, for those who have a radio, the research further explored to know whether they are listening to agricultural radio program or not. Among those who have radios 86.7%, 80.0%, 60.0%, and 70.0% of Jeldessa 02, Kulayu, Haferetu, and Kebbele respondents reported that they do not listen to agricultural radio programs. As farmers reported during group discussion time, one of the reasons for not listening to radio program is inappropriate time of broadcasting time. The program is broadcast early in the morning. Yared (2006), also found that 47.6% of eastern Hararghe farmers in

Ethiopia reported that time of broadcasting is not appropriate. As indicated in the chi-square results, there is a significant difference in listening to agricultural radio programs among the selected four villages. In general, Adada PA farmers have more exposure to radio programs than Jeldessa PA farmers do.

4.3 The relationship between personal and socio-psychological factors

One of the peculiar characteristics of communication research is its multicollinearity nature. In order to test this fact, association and correlation analysis test was further conducted from some selected variables and summarized in Tables 10 and 11 respectively. The key variable in this study is communication. Hence, communication apprehension level of extension personnel further analysed its association with some selected personal characteristics of extension personnel including sex, educational status, marital status, and service years. The results show that there is no relationship between level of communication apprehension and respondents' sex and educational status. However, there is relationship between level of communication apprehension and marital status, social background, and service years of respondents. The results are summarized in Table 10.

Table 10: The relationship between communication apprehensions' of the extension personnel against some selected personal variables (N=53)

No	Variables	Frequency of perceived communication apprehension level		X ²	P-value
		Low level	Medium level		
1	Sex: Male	18 (42.9)	24 (57.1)	0.481	0.488
	Female	6 (54.5)	5 (45.5)		
2	Educational status:			5.866	0.118
	-Certificate	2 (28.6)	5 (71.4)		
	-Diploma	12 (37.5)	20 (62.4)		
	-First degree	9 (75.0)	3 (25.0)		
	-Masters degree	1 (50.0)	1 (50.0)		
3	Marital status:			7.518	0.023**
	-Single	7 (26.9)	19 (73.1)		
	-Married	16 (61.5)	10 (38.5)		
	-Divorced	1 (100.0)	0 (0.0)		
4	Social background:			5.115	0.078*
	-Both childhood and school age in rural area	1 (33.3)	2 (66.7)		
	-Childhood in rural and school age in urban area	14 (63.6)	8 (36.4)		
	-Both childhood and school age in urban area	9 (32.1)	19 (67.9)		
5	Service years:			22.869	0.000***
	-Less than 10 years	7 (25.0)	21 (75.0)		
	-11 to 20 years	14 (77.8)	4 (22.2)		
	-Greater than 20 years	3 (42.9)	4 (57.1)		

Note: *, **, *** significant at 10%, 5%, and 1% probability level

a) Sex and communication apprehension

The results in Table 10 revealed that 42.9% and 54.5% of male and female extension personnel respectively are low in communication apprehension level, whereas, 57% and 46% of male and female extension personnel respectively are 'medium', in communication apprehension level. The chi-square result revealed that

communication apprehension level has no association between sex and educational status. This is due to the fact that being male and female has no effect in someone's level of fear, shyness, and anxiety while communicating during public speaking.

b) Education and communication apprehension

The results in Table 10 show that 28.6%, 37.5%, 75%, and 50% of certificate, diploma, first degree, and master's degree holder extension respondents are low in communication apprehension level. The chi-square result revealed that there is no relationship between educational status and level of communication apprehension. This means that level of fear, shyness, and anxiety cannot be determined by one's educational status.

c) Marital status and communication apprehension

The results in Table 10 show that 61.5% and 38.5% of married extension personnel reported as low and average level of communication apprehension respectively. From this result, it is possible to point out that married persons are less likely to fear, be shy, and anxious as compared to single persons. McCroskey (1984), tries to articulate CA with marital status in relation to helplessness that some people who are divorced after many years of marriage find themselves helpless in communication in the 'simple scene'. Hence, such spontaneous helplessness generates strong anxiety feelings. As the chi-square results reveal, there is significant difference in level of CA of extension personnel among the single, married, and divorced (Table 10).

d) Social backgrounds and communication apprehension

The results in Table 10 indicate that among the three categories of extension personnel's social background in their childhood and school age, 63.6% and 36.4% of them who grew during their childhood in rural and school age in urban reported to have low and average level of communication apprehension, respectively. This means social backgrounds of respondents affect his/her level of fear, shyness, and anxiety. This might be because exposure for both situations (urban and rural areas) have given them an opportunity to interact with different people's behaviour during their childhood and school age time. Wrightsman (1977), supports this idea that experience during childhood are considered to be strong determinants of adults' social behaviour. As a result, the level of fear, shyness, and anxiety is less compared to the other two categories. Because, reinforcement patterns in a person's environment, particularly during childhood, constitute the dominant causal factors of communication apprehension (McCroskey and Beatty, 1986). The chi-square result showed there is a significant difference among the three social backgrounds of extension personnel.

e) Service years and communication apprehension

The result in Table 10 reveals that 77.8% and 22.2% of extension personnel who have served '11 to 20 years' reported to have low and average communication apprehension level respectively. As the chi-square results revealed, there is significant difference in communication apprehension and job experience of extension personnel.

Furthermore, to test the direction and strength of association among variables, bi-variant correlation analysis, which is a statistical examination of the relationship between two variables (O'Leary, 2004) was conducted and the results are summarized in Table 11.

Table 11: Correlation coefficient of selected variables of the extension personnel (N=53)

Variable name	AGEEXTPE	SERVYEAR	COMMAPP	INDINNO
AGEEXTPE	1	0.892*** (0.000)	-0.354*** 0.009	0.312** 0.023
SERVYEAR		1	-0.433*** 0.001	0.276** 0.045
COMMAPP			1	-0.602*** 0.000
INDINNO				1

Note: *, **, *** significant at 10%, 5%, and 1% probability level

From the results of correlation analysis shown in Table 11 it is possible to draw out that CA has strong negative correlation with age, service years, and individual innovativeness of extension personnel. This means, an increase in age, service years, and individual innovativeness decreases someone's level of fear, shyness, and anxiety. This is due to the fact that, if one gets more experience, the level of fear, shyness and anxiety will be reduced. Similarly, an increase in service years of extension personnel gives an opportunity to interact with different people including farmers; as a result, the level of fear, shyness, and anxiety in public speaking will be reduced. According to Kelly (1984) cited by Allen and Bourhis (1995), individuals who experience communication apprehension do fear, are anxious, and shy because they lack the skills to communicate competently. The argument runs that a person should be anxious about an important event for which he/she lacks the necessary

skills to perform competently. The result (Table 11) shows that there is strong negative relationship between individual innovativeness and communication apprehension. This shows that an increase in individual innovativeness also helps an individual to interact with people in an assorted and innovative way, so that the level of fear and anxiety will be reduced. Similar study by Berger, *et. al.* (1984), also indicates that there is strong negative relationship between an individual's innovativeness and their level of communication apprehension.

4.4 Institutional factors that affect communication between extension personnel and farmers

4.4.1 Linkage to other organizations

There are different governmental and non-governmental organizations working on rural development activities in the study area. Beside the internal communication among extension personnel themselves, the nature and degree of external communication affect organizational performance. Hence, extension personnel were asked about their work relationship with different organizations that have direct relation to their work and the degree of work relationship among the mentioned organizations. The results show that extension personnel have had moderate to weak work relationship among different organizations including credit institutions, input suppliers, NGOs, and research organizations. Relatively, VEWs have had strong work relationship with the cooperatives office and community based organizations than the SMSs do. The results are summarized in Table 12.

Table 12: Work relationship of extension personnel with other organizations as reported by respondents (N=53)

N o	Organizations	Frequency and percentage of work relationship of VEWs (N=30)				Frequency and percentage of work relationship of SMSs (N=23)				X ²	P-value
		Strong	Moderate	Weak	No at all	Strong	Moderate	Weak	No at all		
1	Cooperatives office	4 (13.3)	7 (23.3)	3 (10.0)	16 (53.3)	4 (17.4)	3 (13.0)	1 (4.3)	15 (65.2)	1.738	0.629
2	Credit institution	5 (16.7)	9 (30.0)	11 (36.7)	5 (16.7)	2 (8.7)	5 (21.7)	1 (4.3)	15 (65.2)	15.101	0.002***
3	Input suppliers	8 (26.7)	6 (20.0)	8 (26.7)	8 (26.7)	2 (8.7)	3 (13.0)	1 (4.3)	17 (73.9)	12.579	0.006***
4	NGOs	0 (0.0)	2 (6.7)	6 (20.0)	22 (73.3)	3 (13.0)	6 (26.1)	6 (26.1)	8 (34.8)	10.797	0.013**
5	CBOs	9 (30.0)	5 (16.7)	5 (16.7)	11 (36.7)	1 (4.3)	3 (13.0)	4 (17.4)	15 (65.2)	6.821	0.078*
6	Haramaya University	0 (0.0)	0 (0.0)	2 (6.7)	28 (93.3)	0 (0.0)	4 (17.4)	7 (30.4)	12 (52.2)	12.471	0.002***

Note: *, **, *** significant at 10%, 5%, and 1% probability level

-Values in bracket refers percentage

The work relationship of VEWs and SMSs with the cooperatives office is almost similar as indicated in the chi-square results; there is no difference between the two categories. However, work relationship of SMSs with NGOs and Haramaya University are better as compared to VEWs. The chi-square results also reveal that there is a significant difference in the work relationship of VEWs and SMSs with NGOs and Haramaya University. One amazing results observed as far as work relationship is concerned was that 53%, 73.3%, and 93.3% of VEWs and SMSs reported that there was no any communication with the Cooperatives, NGOs, and Haramaya University respectively. Similarly, except for the NGOs (34.8%), on average greater than 50% of SMSs reported that there was no communication at all with the Cooperatives office, Credit Institutions, Input suppliers, CBOs, and Haramaya University. This result indicates that in the study area there is weak linkage, work relationship, and weak communication among different actors. This has negative implication on the development activities in such a way that through inefficient use of scarce resources (human, financial, and technological), lack of coordination, and duplication of efforts.

Similarly, farmers ranked the organizations in terms of closeness and importance to them. The result shows Agricultural and Rural Development Bureau (A & RDB) was ranked first by farmers in terms of closeness and importance. The results are summarized in Table 13.

Table 13: Rank of organizations in terms of closeness and importance to farmers (N= 120)

Organizations	Frequency and percentage of rank			Cumulative rank
	First	Second	Third	
A & RDB	103 (85.8)	8 (6.7)	2 (6.7)	First
NGOs	10 (8.3)	43 (35.8)	21 (17.5)	Second
Research organizations	-	-	-	Sixth
Farmers cooperatives	15 (12.5)	29 (24.2)	28 (23.3)	Third
Credit institutions	11 (9.2)	28 (23.3)	24 (20.0)	Fourth
Input suppliers	4 (3.3)	28 (23.3)	42 (35.0)	Fifth

The result in Table 13 shows that 85.8% of farmers have ranked A&RDB first in terms of closeness and importance. The result of the overall rank shows that among the aforementioned organizations, A & RDB ranked first followed by NGOs, Farmers Cooperatives, Credit Institutions, Input Suppliers, and Haramaya University. The study results by Wegayehu (2006) also reveal that NGOs ranked second by farmers in terms of agricultural extension service in the study area. Haramaya University is the research centre found near by the study area. The communication between the University and farmers has not been direct (Mr. Mogos, Haramaya University FSR & Extension coordinator, Personal communication, 2006) rather the relation is indirect through NGOs and A & RDB. Many activities have been done through HCS and A & RDB in the distribution of improved seeds (potato, common beans, and maize) in the study area. Moreover, a Memorandum of Understanding (MoU) was signed between Haramaya University, A & RDB and HCS to overcome the rural development challenges through successful demonstration, multiplication, and delivery of improved technologies for improving market orientation and food security (Memorandum of Understanding, 2005).

Moreover, farmers were asked about their source of information for different agricultural activities including crop production, livestock production, inputs and credit, marketing, and natural resource conservation. The results contended that farmers reported A & RDB was the main source of information for their agricultural activities. This shows A & RDB has close to farmers in the study area in terms of providing relevant and current information, but there are also many constraints in terms of their frequency of providing the same. The results are summarized and presented in Table 14.

Table 14: Source of information for farmers' agricultural activities (N= 120)

Agricultural activities	Frequency and percentage of sources	
	Agricultural office	Neighbour farmers
Crop production	110 (91.7)	4 (3.3)
Livestock production	116 (96.7)	3 (2.5)
Inputs and credit	81 (67.5)	15 (12.5)
Marketing	40 (33.3)	62 (51.7)
Natural resource conservation	98 (81.7)	7 (5.8)
Animal diseases	110 (91.7)	4 (3.3)

The results in Table 14 reveal that majority (91.7%, 96.7%, 91.7%) of respondents reported that their source of information for crop production, livestock production, and animal diseases was agricultural office. Wegayehu (2006) also found that agricultural office was the first and frequently reported source of information for farmers' agricultural activities in the study area. One interesting result reported by farmers regarding information source of marketing was that the majority (51.7%) of respondents reported their neighbour farmers are the main source of information. This might be true due to the fact that farmers in the study area are cosmopolitan

who are frequently travelling to Dire Dawa town mainly for marketing. As a result, farmers are in a good position to know the market information than VEWs.

4.4.2 Farmers' contact with extension personnel

Frequency of farmers' contact with extension personnel has effect to bring a desired change in development through giving technical advice, distribution of improved technologies, and in general to solve farmers' problems. According to Mulat (1999), VEWs are the dominant public employees deployed very close to farmers who become indispensable in executing extension policies. Farmers were asked about the frequency of visits made by VEWs for the past twelve-month and the results show that majority of farmers have been visited by VEWs only 1 to 4 times per year and also some farmers reported that they have not been visited at all. Moreover, majority of farmers have not been visited by SMSs for the past one year time. The results are summarized in Table 15.

Table 15: Farmers' contact with extension personnel by PA (N=120)

Variables	Frequency and percentage of respondents in Pas		X ²	P-value
	Jeldesa	Adada		
Farmers visit by VEW			17.318	0.004***
- 1 to 4 times per year	29 (48.3)	36 (60.0)		
- 5 to 8 times per year	8 (13.3)	4 (6.7)		
- 9 to 12 times per year	18 (30.0)	6 (10.0)		
- More than 2 times per month	3 (5.0)	3 (5.0)		
- Not visited at all	2 (3.3)	11 (18.3)		
Visit by extension personnel other than VEW from region:			3.871	0.049**
- Yes	9 (15.0)	18 (30.0)		
- No	51 (85.0)	42 (70.0)		

Note: - *, **, *** significant at 10%, 5%, and 1% probability level

The results in Table 15 reveal that 48.3% and 60.0% of Jeldesa and Adada farmers respectively were visited once to four times and 3.3% and 18.3% of Jeldesa and Adada farmers respectively reported that not being visited at all. The study result by Yisehak (2002) revealed that 54.2% of farmers in Bolosso Sore district in Ethiopia reported that they were visited once in three months time. This situation is even worse for women farmers. During group discussion session, the majority of women farmers stressed that they had no contact with VEWs. The study result in the study area by Asres (2005), also indicates 48.1% of women farmers reported that they had no contact with VEWs. The chi-square analysis further reveals that there is a significant difference in frequency of contact by VEWs in the two PAs.

Furthermore, farmers were asked about the number of contacts done by extension personnel other than VEWs. The results indicated in Table 15 show that 85% and 70% of Jeldessa and Adada farmers respectively reported that they were not visited by extension personnel other than VEWs for the past twelve-months and only 15% and 30% of Jeldessa and Adada farmers respectively report that they were visited. The chi-square results revealed that there is a significant difference in contact of farmers by extension personnel other than VEW in the two PAs (Table 15). One of the reasons for the difference in contact of farmers with extension personnel other than VEW might be physical distance of PAs from Head office in Dire Dawa. It is possible that there has been a tendency of nearby PAs to be visited frequently as compared to PAs located far. This is because there is a problem of transportation and budget constraints for field visit as clearly stated by extension personnel during formal and informal discussions. Rogers (1983), contended that change agents

success is positively related to the extent of change agents' effort in contacting clients.

4.4.3 Supervision among extension personnel

In analyzing organizational communication patterns, the basic phenomenon that always occurs in the organization is frequent interaction and internal communication among individual members. Van den Ban and Hawkins (1996), support this idea that an extension organization that helps farmers through communication requires efficient internal communication. One of the internal communication methods is supervision. It is a periodic or regular technical support by senior staff members of the organization to junior staff members. Similarly, SMSs who have better technical knowledge supervise the VEWs to provide technical support. This gives an opportunity to discuss problems faced by VEWs at field level and seek solutions. Based on this, this research has investigated the work relationship among extension personnel in terms of supervision for the past six-months time. The result shows that the majority of VEWs have not been visited by SMSs and team/department leaders for the past six months. The results are summarized in Table 16.

Table 16: Number of VEWs supervision by SMSs/supervisors for the past six months (N= 30)

No	Supervision	Percentage of supervision			
		Once	2 to 3 Times	3 to 4 times	Not visited at all
1	Supervised by SMSs/experts	0.0	16.7	20.0	63.3
2	Supervised by team/department leaders	10.0	13.3	13.3	63.3

The results indicated in Table 16 show that the majority of VEWs (63.3%) reported that they are not visited at all by SMSs and team leaders; whereas 16.7% and 23.3% of VEWs reported that, they are visited less than three times by SMSs (experts) and team/department leaders respectively. This is also because of constraints of logistics (transportation and budget). This has implication on the efficiency of extension work in the study area because of poor technical support for grass-root level extension workers. Mattee (1994), also found in his study that in Tanzania senior extension personnel have faced problem in supervising the grass root level extension staff as a result of lack of transport and very poor communication structure. VEWs have to get current and up-to-date information from senior staff in order to provide scientific and concrete solution for farmers' problems. This is because, most senior staff extension personnel (SMSs and team leaders) are better than VEWs in their technical knowledge because of work experience, educational status, and exposure as discussed earlier under characteristics of extension personnel section.

The hypothetical communication patterns among extension personnel and between farmers are depicted in the flow diagram (Fig. 1). The figure generally shows that the communication between extension personnel and farmers is moderate. However, relatively the communication between VEWs and farmers is stronger than SMSs. Moreover, communication between SMSs and VEWs also moderate. The results reveal that farmers contact with extension personnel has been inadequate to bring a desired change among farmers.

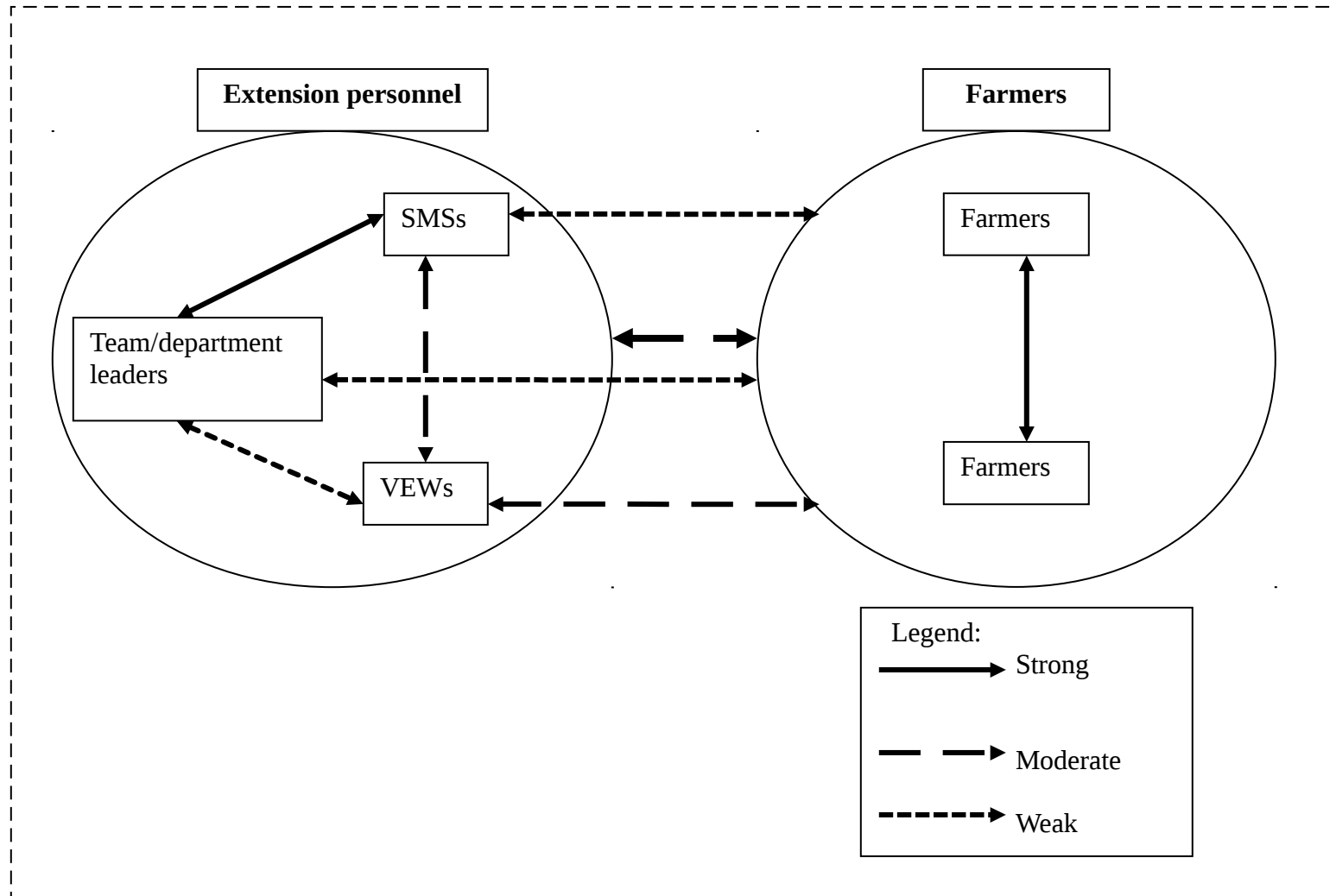


Figure 1: Communication patters among extension personnel and farmers in Dire Dawa Administrative Council

4.4.4 Feedback mechanisms

VEWs were also asked about the feedback mechanisms in the organization, whether they have been passing series of levels to get feedback for the problems sent to their supervisors/bosses or not. The results indicate that majority of VEWs reported that they have been passed series of levels and took long time to get feedback from the supervisors. The results are summarized in Table 17.

Table 17: Feed back mechanisms reported by ‘Distant’ and ‘nearby’ PAs (N=30)

Variables	Frequency and percentage by distance of PAs	
	Distant PAs	Nearby PAs
Mechanisms of feedback (passes series of levels):		
- Yes	19 (90.5)	7 (77.8)
- No	2 (9.5)	2 (22.2)
Duration of time to get feedback for problems sent to supervisors/bosses are taking:-		
- Long time	17 (81.0)	5 (55.6)
- Short time	4 (19.0)	4 (44.4)

-Value in bracket refers to percentage

Surprisingly, the results in Table 17 reveal that 90.5% and 77.8% of distant and nearby PAs respectively reported they are passing series of levels to get feedback. Moreover, duration of time to get feedback was also investigated, and 81.0% and 55.6% of distant and nearby PAs respectively reported that the feedback mechanisms take long time. From this result, it is possible to say the communication structure is not flexible and has long chain of communication. This has effect on VEWs’ daily and routine interaction with farmers in order to overcome farmers’ problem on timely basis.

4.4.5 Planning systems

Ethiopia's agricultural extension systems have been criticized for being not participatory in its nature. One of the reasons for saying so is that farmers and front-line extension workers have not been participating in the planning and design of extension programs. Currently, PADETES approach also claims to be participatory in its nature; however, it has not been participatory in a real sense as far as planning of extension program is concerned. Belay (2002) contemplated that the different extension approaches implemented over the past five decades revealed that they have been planned and implemented without the participation of the farmers. The results show that most VEWs reported planning has been done in collaboration with farmers at PA level. However, SMSs reported that planning has been done at regional level and passed on to PAs for implementation. This research has investigated the planning systems of the organization and the results are summarized in Tables 18 and 19.

Table 18: Planning system at PA level as reported by VEWs (N= 30)

Planning system	Frequency	%
- Plan is done by regional experts and sent to village level extension worker	6	20.0

- Plan is done in collaboration with regional experts and village level extension worker at PA level	1	3.3
- Plan is done in collaboration with regional experts, village level extension workers and farmers at PA level	3	10.0
- Plan is done in collaboration with village level Extension worker and Farmers, and send to region for approval	20	66.7

The results in Table 18 reveal that the majority (66.7%) of VEWs reported plan is done “*in collaboration with village level extension workers and farmers, and send to region for approval*” followed by “*plan is done by regional experts and sent to village level extension workers*”, the latter accounts for 20%. However, the result of SMSs response in Table 19 indicates 60.9% of respondents reported that plan is done “*at regional level and passed on to PAs*”, followed by “*prepared by VEWs then modified and approved at regional level*” the latter accounts for 26.1%. One possible reason for this difference in planning systems in the same organization might be different sections and departments have been doing their plan in different ways.

From this result, it is possible to say that VEWs and farmers have good contribution in the planning systems of development activities in the study area, even if the nature of participation has remained questionable. Unlike other regions, Dire Dawa Administrative council development activities are highly characterized by food aid implemented through Safety net and Employment Generation Systems (EGS). The starting points of planning activities for these programs are the grass root levels. However, the result indicates still there is a traditional top-down approach of planning system in the study area, which has to be considered in the future to ensure

the active participation of the key actors (farmers and VEWs) in rural development activities.

Table 19: Planning system at regional level as reported by SMSs (N= 23)

Planning System	Frequency	%
Prepare at regional level and passed on to PAs	14	60.9
Prepare in collaboration with village level extension workers and farmers, then modified and approved at regional level	3	13.0
Prepare by village level extension workers then modified and approved at regional level	6	26.1

4.4.6 Other problems that affect communications between extension personnel and farmers

SMSs and VEWs further mentioned other problems that affect their communication with farmers and among themselves. These include transportation problem, lack of relevant information, lack of improved technologies, involvement of VEWs in non-extension activities, and language barriers. The result summarized in Table 20 shows that transport problem was the serious problem mentioned by extension personnel followed by lack of relevant information, and lack of improved technologies.

No	Problems	Percentage of respondents			
		SMSs		VEWs	
		Yes	No	Yes	No
1	Transportation	78.3	21.7	86.7	13.3
2	Lack of relevant information	56.5	43.5	70.0	30.0
3	Lack of improved technologies	39.1	60.9	73.3	26.7
4	Involvement of VEWs in non-extension activities	34.8	65.2	60.0	40.0
5	Language barrier	39.1	60.9	10.0	90.0

Table 20: Problems that affect communication between extension personnel and farmers (N=53)

a) Transportation

Availability of good transport and efficient use and management of the existing transport facilities are important for successful implementation of rural extension programs and projects (Samuel, 2000). The result in Table 20 shows that 78.3% and 86.7% of SMSs and VEWs reported that transportation is a serious problem that affects their communication with farmers and among themselves. Out of the total 11 PAs, which are selected for VEWs study, six PAs had motorbikes and five of them had no motorbike. The proportions of distant PAs who have no motorbikes are larger than nearby PAs. The other problem was that those who reported having a motorbike, they complained that it is difficult to get sufficient fuel and money for motorbike maintenance. As a result, even though there are motorbikes at PA level, because of the aforementioned problems, the motorbikes remain useless. The researcher observed those motorbikes at PA level while visiting PAs. As a result, VEWs have been facing problems in visiting farmers. However, as far as transportation facilities are concerned, the situation in the study area is relatively better than other regions in the country. The study result by Belay and Abebaw (2004) in Jimma zone in Ethiopia pointed out that about 36%, 12%, and 1% of extension workers travelled on horse/mule back, bicycles, and motorbike respectively.

b) Lack of relevant information

Information is power. Among different roles of extension personnel, provision of relevant, current, and sufficient information to farmers as well as linking them with different sources of information is the major one. In order to communicate information with farmers, there must be various sources. According to Samuel (2000), there are three major institutions, which generate agricultural information in Ethiopia. These are government agricultural institutions at both federal and regional levels, Central Statistics Authority (CSA), and research institutions. The result in Table 20 reveals that 56.5% and 70% of SMSs and VEWs, respectively reported that lack of information is one of the problem that affect their communication with farmers. This has negative implication on the work of extension personnel in general and VEWs in particular to provide relevant, accurate, and scientific solutions for farmers' problems.

c) Availability of technologies

One of the constraints that affect communication of extension personnel is lack or absence of appropriate technologies that could be distributed to farmers. Extension personnel in general and VEWs in particular, should get appropriate technology to improve farmers' production and productivity of both crop and livestock. However, technologies are either absent or scarce from the source, which is from research centres. Extension personnel were asked about the availability and supply of

appropriate technologies for their communication with clients. The results in Table 20 reveal that 39.1% and 73.3% of SMSs and VEWs respectively indicated that lack of improved technologies is one of the problems that affect their communication with farmers. Similar study result by Belay (2002) pointed out that 93.2% of extension workers who were selected from different regions of the country that insufficiency of relevant technologies has been reported as one of the constraints to agricultural work.

The organization has been trying to get improved seeds, fertilizer, and other technologies from research centres (Haramaya University and Melkassa research centre), seed enterprise, and Agricultural Inputs Supply Corporation (AISCO). However, still there is a gap between farmers' demand and the supply. Because of this, farmers rely on their local seeds. Especially, women farmers reported during group discussion session that there has been shortage of improved seeds particularly vegetable seeds and improved poultry breeds.

d) Involvements of VEWs in non-extension activities

The whole extension success is dependent upon the extension agents who live and work closely with farmers at village level. S/he is responsible for providing knowledge and information that will help farmers to acquire new knowledge and skills and encourage them to make sound decisions (Samuel, 2000). Similarly, Rogers (1983) elucidates that one of the main roles of a change agent is to facilitate the flow of innovations from a change agency to clients. However, in the study area

VEWs have been doing non-extension activities such as distribution of food aids, collection of loan repayments, distribution of inputs and credits, etc. The results in Table 20 clearly pointed out that 34.8% and 60% of SMSs and VEWs respectively reported that involvement of VEWs in non-extension activities is one of the problems that affect their communication with farmers and among themselves. Specially, distribution of food aids in the study area seems to be the major duty of VEWs. One VEW during group discussion said, “...*distribution of food aids is our major and dominant duty that our superiors consider to evaluate us...*” which is quiet contrary to extension profession. In general, and VEWs workload and their involvement in non-extension activities have influence on the effectiveness of the extension system (Mattee and Mvena, 1988).

d) Language barrier

The two dominant languages spoken in the study area are Oromifa and Somali. The researcher has no sufficient information about how many extension personnel speak these two languages. However, the result in Table 20 shows that 39.1% and 10% of SMSs and VEWs reported language problem is one of the problems that affect the communication with farmers. Belay (2002) also found that 32% of extension workers who were selected from different regions of Ethiopia reported that language barrier is one of the constraints in agricultural work. This can create message distortion while transmitting agricultural information to the intended clients

Beside the problems indicated in Table 20, VEWs and SMSs mentioned different problems that affect communication among themselves and with farmers during group discussion and informal discussion time. These include farmers' dependency on food aids program, lack of immediate response from the region, lack of competency among supervisors, lack of capacity building program (refresher courses and in-service training), low salary, lack of coordination among different teams and departments, financial problems for supervision, and lack of incentive to VEWs.

4.5 Communication channels and methods utilization by extension personnel and farmers

4.5.1 Communication channels utilization

Communication will be more effective when there are more channels used between the source and receiver. In the same fashion, for extension personnel to make their communication effective and efficient utilization of communication channels/media are important. The research has investigated the communication channel/media utilization of extension personnel. The results show that majority of extension personnel have not utilized handouts/manuals, posters, and leaflets. However, extension personnel have utilized demonstration, models, and specimens (commonly seeds) during communication with farmers and among themselves. The results summarized in Table 21 reveal that there is difference in utilization of communication media between SMSs and VEWs.

Table 21: Communication media used by extension personnel to communicate among themselves and with farmers (N=53)

No.	Audio-visuals used	Media utilization		X ²	P-value
		VEWs (N=30)	SMSs (N=23)		
1	Handouts/Manuals:			3.551	0.059*
	- Yes	3 (10.0)	7 (30.4)		
	- No	27 (90.0)	16 (69.6)		
2	Posters: - Yes	11 (36.7)	2 (8.7)	5.502	0.019**
	- No	19 (63.3)	21 (91.3)		
3	Leaflets:- Yes	4 (13.3)	4 (17.4)	0.167	0.683 ^{ns}
	- No	26 (86.7)	19 (82.6)		
4	Demonstrations:			38.327	0.000***
	- Yes	27 (90.0)	1 (4.3)		
	- No	3 (10.0)	22 (95.7)		
5	Models:- Yes	26 (86.7)	3 (13.0)	28.480	0.000***
	- No	4 (13.3)	20 (87.0)		
6	Specimens:-Yes	26 (86.7)	6 (26.1)	19.971	0.000***
	- No	4 (13.3)	17 (73.9)		

Note: *, **, *** significant at 10%, 5%, and 1% probability level

As indicated in Table 21, the majority, which accounts for 90%, 86.7%, and 86.7% of VEWs and 4.3%, 13%, and 26.1% of SMSs have utilized demonstrations, models, and specimens respectively during communication with farmers. The chi-square results reveal that, with the exception of handouts/manuals and leaflets, other media (posters, demonstration, models, and specimens) have been significantly utilized by VEWs as compared to SMSs. This is because of the nature of work between these two categories of extension personnel that is VEWs is interact with clients frequently than SMSs do.

Beside channels utilized by extension personnel to communicate with farmers, SMSs have utilized some communication media during training sessions. These include chalkboard, OHP, LCD, and flipcharts. However, percentages of media utilization by SMSs during training sessions were very low (Table 22).

Table 22: Training media/aids utilized by SMSs during training sessions (N=23)

No.	Training media/aids used	Yes		No	
		Frequency	%	Frequency	%
1	Chalk board	6	26.1	17	73.9
2	OHP	2	8.7	21	91.3
3	LCD	1	4.3	22	95.7
4	Flipcharts	7	30.4	16	69.6

The results in Table 22 reveal that among those who provide training, only 26.1% and 30.4% of respondents reported that they have utilized chalkboard and flipcharts respectively. Similarly, only 8.7% and 4.3% of respondents had exposure in utilization of OHP and LCD respectively. This has implications to the quality of training offered by SMSs in transmitting the desired knowledge and skills as well as appropriately transmission of the intended message to the trainee.

4.5.2 Extension/communication methods utilization

According to Van den Ban and Hawkins (1996), there are three methods in communication. These include mass methods (mass media), which help extension agents to reach large number of farmers with little opportunity to interact among them; group methods, which help to reach fewer farmers but offer opportunities for interaction and feedback; and individual methods, which consist mainly of a

dialogue between extension agents and farmers. This research has investigated the trends of communication methods utilization by extension personnel and farmers. The results are discussed below separately.

a) Extension personnel

There are many extension methods utilized by SMSs during training sessions and VEWs during communication with farmers. The results show that SMSs have utilized different training methods including lecturing, group discussion, role-playing, practical exercise, demonstration, and case studies. However, except lecturing and group discussion methods, utilization of other methods was very low. Similarly, VEWs have employed individual, group, and mass methods while communicating with farmers. The most commonly used methods of communication was individual (face-to-face) followed by group and mass methods. The results are summarized in Tables 23 and 24.

Table 23: Training/communication methods utilized by SMSs during training sessions (N=23)

No.	Training methods used	Yes		No	
		Frequency	%	Frequency	%
1	Lecturing	10	43.5	13	56.5
2	Group discussion	12	52.2	11	47.8
3	Practical exercise	5	21.7	18	78.3
4	Case study	4	17.4	19	82.6
5	Role playing	2	8.7	21	91.3
6	Demonstration	1	4.3	22	95.7

The results in Table 23 reveal that 43.5% and 52.2% of respondents utilized the commonly used training method of lecturing and group discussion respectively,

followed by practical exercise, case study, role-playing, and demonstration, which account for 21.7%, 17.4%, 8.7%, and 4.3% respectively. From the results it is possible to draw that the nature of training was theoretical based than practical oriented. This might be because of low number of SMSs who took training on 'training methodology' and 'communication methods and media' that discussed under personal characteristics section.

Table 24: Rank of extension/communication methods utilized by VEWs to communicate with farmers (N=30)

No.	Extension methods used	Percentage of utilization		
		Mostly used	Moderately used	Least used
1	Individual methods	46.7	33.3	20.0
2	Group methods	33.3	60.0	6.7
3	Mass methods	20.0	3.3	76.7

The results in Table 24 show that VEWs have utilized mostly individual methods followed by group methods and mass methods; they account for 46.7%, 33.3%, and 20.0% respectively. Similar study conducted by Belay and Abebaw (2004) reveals that extension agents in Jimma zone in Ethiopia used both group and individual methods in communicating new technologies, practices, and ideas to farmers.

b) Farmers

Farmers were also asked about their exposure to some of extension methods organized by extension personnel, which includes farmers visit elsewhere, group discussion, demonstration, field day. The results summarized in Table 24 show that relatively group discussions were the most commonly used communication methods in which farmers involved.

Table 25: Farmers participation in extension methods organized by extension personnel for the past one year time (N= 120)

Extension methods participated by farmers	Frequency of responses	
	Yes	No
- Farmers visit elsewhere organized out side PA	1 (0.8)	119 (99.2)
- Group discussion conducted in the PA	37 (30.8)	83 (69.2)
- Demonstration organized in the PA	2 (1.7)	118 (98.3)
- Field day organized in the PA	0 (0.0)	120 (100)

-Values in bracket refers percentage

The results shown in Table 24 reveal that 99.2% and 98.3% of respondents reported that they did not participate in the farm visits elsewhere and demonstration respectively organized by VEWs. One of interesting finding was that none of the respondents have participated in field day organized in the PAs by VEWs. This is because no single field day was organized in the PA for the past one year time. The only extension method that farmers have been involved remarkably was group discussion methods.

Even if there are many constraints in the study area, the research results revealed that there are many development opportunities that need to be exploited for desired development impact. These include the existence of four different VEWs in each PA, the availability of telephone in all PAs, most of the PAs have access to all weathered roads, majority of VEWs are diploma holders except few certificate holders, farmers' positive attitude towards extension personnel, and short (flat) communication structure unlike the practice in other regional states in the country.

In general, the results of this study show that various personal, socio-psychological, and institutional factors affect the communication patterns among extension personnel and farmers in the study area. Socio- psychological factors such as

communication apprehension, willingness to listen, job satisfaction, attitude and individual innovativeness of extension personnel as well as cosmopolitanism, media exposure, attitude, and extension participation of farmers are important variables that affect effectiveness of communication among extension personnel and farmers. The results further indicated that extension personnel lack training in extension methods and communication skills as well as lack essential audio-visual aids, demonstration materials, and communication equipments. The dominant extension method used by the grassroots' level extension workers is individual methods. As a result, contacts between VEWs and farmers have been inadequate. Moreover, the results reveal that weak communication observed among extension personnel to different organizations working in the study area. This problems further aggravated by different institutional factors such as lack of adequate transport facility, lack of relevant information, lack of improved technologies, involvement of VEWs in non-extension activities, etc. Hence, overcoming these problems enhance the effectiveness of communication among extension personnel and farmers in the study area.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

The overall objective of the study was to assess the communication patterns among and between extension personnel and farmers in Dire Dawa administrative council, Ethiopia. The study has investigated and explored personal, socio-psychological, and institutional factors that affect effectiveness of communication among extension personnel and farmers in the study area. Furthermore, this study has identified the communication channels/media and methods used by extension personnel in relaying agricultural information and technologies to farmers in the study area. Therefore, this chapter provides the conclusions and recommendations drawn from the findings of the study.

5.1 Conclusions

Based on the study findings the following conclusions are drawn;

- i. The results show that there is a difference in CA level of VEWs and SMSs. Out of the total, 66.7% of VEWs and 60.9% of SMSs show high and low level of CA respectively. It was found that CA level had no relation with sex and educational status of extension personnel. However, the results revealed that CA level has some relationship with marital status, social backgrounds, and service years of extension personnel.
- ii. The findings show that both VEWs and SMSs have high level of willingness to listen. This has good implication for execution of extension programs, because listening is one of a critical skills required by extension personnel. Majority of extension personnel's level of individual innovativeness are

medium and high. However, the results of job satisfaction analysis showed that most of the extension personnel are dissatisfied about their work especially because of the pay and reward system as well as lack of recognition from the organizations.

- iii. The results pointed out that farmers had good participation in the current extension program (PADETES) and the majority of farmers have heard about the program from VEWs and neighbour farmers. However, very few farmers have received training on agriculture. The major areas of training were on credit followed by crop and livestock production. The organizations who offered training were agricultural office, women affairs office, and HCS.
- iv. The results of attitude of farmers towards VEWs show that farmers have positive attitude towards VEWs in general, and VEWs of Jeldessa PA, in particular. The results of the study revealed that farmers in both PAs are more cosmopolite but less exposure to media, particularly in terms of listening agricultural radio programs, which have implication to facilitate communication with VEWs, because farmers who are cosmopolite and have good media exposure have positive mindset towards development.
- v. Extension personnel have different work relationship with different organizations (GOs and NGOs). However, the results of the study showed that weak communication existed between extension personnel and the organizations (Cooperative office, credit institutions, input suppliers, NGOs, CBOs, and Haramaya University). Similarly, farmers have ranked different organizations in terms of closeness and importance to them. The results

showed that A & RDB is ranked first by farmers followed by NGOs, cooperative office, credit institutions, input suppliers, and Haramaya University. Moreover, farmers pointed out that agricultural office and neighbour farmers were the two dominant sources of agricultural information.

- vi. The majority of farmers had between one to four times contacts with VEWs for the past one year time. However, 85% and 70% of Jeldessa and Adada farmers respectively reported that they were not visited at all by extension personnel other than VEWs for the past one year time. This shows that farmers' contact with extension personnel in general was not adequate. Similarly, the majority (63.3%) of VEWs have reported that they have not been visited at all by SMSs and team/department leaders for the past six-month's time. This result shows that supervision of VEWs by senior staff have been inadequate.
- vii. The extension personnel have indicated many other problems that affect communication among themselves and with farmers. These include transportation, lack of relevant information, lack of improved technologies, involvement of VEWs in non-extension activities, language barrier, farmers' dependency on food aids program, lack of competency among supervisors, lack of capacity building programs, lack of coordination among different teams/departments, and financial problems.
- viii. There is significant difference between VEWs and SMSs in utilization of communication media. SMSs have utilized some advanced communication

media including OHP, LCD, and flipcharts during training sessions. However, in general utilization of communication media was very low. VEWs mostly used individual communication methods, followed by group discussions and mass methods while communicating with farmers. The majority of farmers reported that they have not been participating in farmers' visit elsewhere, demonstrations, and field days organized by VEWs.

5.2 Recommendations

- i. Training need assessment should be conducted to identify the training needs of the extension personnel, and then provide basic and comprehensive training and refresher courses like communication skills and competence, preparation and utilization of communication media and methods, etc in collaboration with GOs and NGOs.
- ii. Most of the extension personnel are dissatisfied about their work because of poor pay and reward systems and lack of recognition and appreciation from supervisors. Therefore, efforts have to be sought to improve the staff satisfaction and motivation through improving the reward system by provision of incentives (financial, material, as well as training) for those hard working staffs, and give them recognition and appreciation (oral and appreciation letter). Moreover, periodic needs assessment to determine the level of job satisfaction of personnel and identify methods for improving satisfaction.

- iii. The work relationship among different organizations that are engaged in rural development activities in the study area has been weak. Synergy is important in the era of Agricultural Knowledge and Information Systems (AKIS) to create strong collaboration among different actors and share experiences. Therefore, to improve this weak work relationship, A & RDB has to take initiative to coordinate different GOs and NGOs to overcome the rural development challenges through establishing rural development task force.
- iv. The nearest research centre in the study area is Haramaya University. However, even though there are some efforts between them including signing Memorandum of Understanding (MoU), still the work relationship is very weak. Therefore, both actors have to be committed to implement those activities indicated in the MoU. Especially, A & RDB has to take initiative to exploit the potential of the University in terms of staff training, research and extension out reach programs like the neighbouring Somali region.
- v. To improve internal communication among extension personnel in terms of supervision, coordination and collaboration among SMSs in different teams/departments is mandatory to utilize the scarce resources (financial, transport, and human). Therefore, instead of individual field visit program by SMSs, coordinated and collaborated field visit program at a certain interval should be considered to improve supervision as well as utilize the scarce resource efficiently.
- vi. Involvement of VEWs in non-extension activities in general, and in food aids program, in particular, is one of the problems mentioned by the extension

personnel that affect communication with farmers. Therefore, extension personnel in general and VEWs in particular should not be directly involved in distribution of food aids to farmers, which affect their relationship negatively. VEWs should concentrate in facilitating and giving technical advice to PA leaders and committee members rather than involve directly.

- vii. The tendency of VEWs to visit farmers in the nearby villages is observed that manifested by inadequate contact of farmers with VEWs. Therefore, VEWs have to visit farmers who are residing at distant villages at a fixed schedule within a month. Hence, the organization has to improve the transportation system through repair the existing motorbikes, provide enough fuel, and make available motorbikes for those who do not have, especially for distant PAs.
- viii. The current extension system (PADETES) has to be evaluated by each region in terms of its strength and weaknesses and come up with means of improving the weaknesses, which can suit according to the context of their region instead of opt for new and uniform extension system to the country by Federal Ministry of Agriculture and Rural Development.

REFERENCES

- Abebe, H. (2003). Challenges of achieving agricultural development in Ethiopia: A macro-policy perspective. In: *Proceedings of The Sixth Annual Conference of Agricultural Economics Society of Ethiopia*. (Edited by Workineh, N. *et al.*), 30 - 31 August 2002, Addis Ababa, Ethiopia. 11 - 24pp.
- Adams, M. E. (1982). *Agricultural Extension in Developing Countries*. Longman Group, UK. 108pp.
- Allen, M. and Bourhis, J. (1995). The relationship of communication apprehension to communication behaviour: A Meta-analysis. [<http://www.eric.ed.gov/ERICWebPortal/custom/portlets/recordDetails/detailmini>.] site visited on 21/5/2007.
- Asres, E. (2005). Access and utilization of development communication by rural women in Dire Dawa Administrative Council, Eastern Ethiopia. Thesis for Award of MSc Degree at Alemaya Univesrity, Alemaya, Ethiopia, 94pp.
- Beckham, K. and King, J. (2004). Communication in coalition. [www.ohioline.og.ohio-state.edu] site visited on 15/12/2005.

Belay, K. (2002). Constraints to agricultural extension work in Ethiopia: The insiders view. *South African Journal of Agricultural Extension* 31: 63 - 79.

Belay, K. (2003). Agricultural extension in Ethiopia: The case of Participatory Demonstration and Training Extension System (PADETES). *Journal of Social Development in Africa* 18(1): 49 - 83.

Belay, K. and Abebaw, D. (2004). Challenges facing agricultural extension agents: A case study from South-Western Ethiopia. *Journal of African Development Review* 16(1): 139 - 168.

Belete, A., Dillon, J. L. and Anderson, F. M. (1991). Development of agriculture in Ethiopia since the 1975 land reform. *Journal of Agricultural Economics* 6: 159 - 175.

Berger, B. A., McCroskey, J. C. and Richmond, V. P. (1984). Communication apprehension and shyness.

[http://www.jamescmccroskey.com/publications/bookchapters/002_1984_C11.pdf] site visited on 21/5/2007.

Bessette, G. (2004). *Involving the Community: A Guide to Participatory Development Communication*. International Development Research Centre, Malaysia. 154pp.

Connor-Linton, J. (2006). Chi-square tutorial. Georgetown University.
 [http://www.georgetwon.edu/faculty/balle/webtools/web_chi_tut.html] site
 visited on 2/12/2006.

CSA (2003). *Ethiopian Agricultural Sample Enumeration Report, 2001/02. Part I*,
 Government printers, Addis Ababa, Ethiopia. 340pp.

Dahui, L., Glenn, J. B. and Patrick, Y. K. (2006). An empirical investigation of web
 site use using a commitment-based model. *Decision Science Journal* 37(3):
 427 - 444.

DDAC-ADO (1998). Agricultural Development Office Five-Years Strategic Plan
 (2006 - 2010). Dire Dawa, Ethiopia. 30pp.

DDAC-WMEO (2004). Dire Dawa Administrative Council Integrated Resource
 Development Master Plan Study Project. Dire Dawa, Ethiopia. 350pp.

Dejene, A. (2003). Agricultural extension strategy in Ethiopia. In: *Proceedings of
 The Sixth Annual Conference of Agricultural Economics Society of Ethiopia*.
 (Edited by Workineh, N. *et al.*), 30 - 31 August 2002, Addis Ababa, Ethiopia.
 87 - 94pp.

Demese, C. (2004). Agricultural policy and strategy in Ethiopia: Times gone and the way ahead. *Paper presented for The Agricultural Policy and Strategy Panel Discussion during the Commemoration of the Alemaya University 50th year Anniversary*. 30 - 31 October, Alemaya, Ethiopia. 28pp.

Djalou, F. (2005). The contribution of farmer's training for improvement of household income: A case study of UMADEP in Mgeta Division, Morogoro, Tanzania. Dissertation for Award of MSc Degree at Sokoine University of Agriculture, Morogoro, Tanzania, 69pp.

EEA/EEPRI (2006). *Evaluation of the Ethiopian Agricultural Extension with Particular Emphasis on the Participatory Demonstration and Training Extension Systems (PADETES) Report*. Rehobot printers, Addis Ababa, Ethiopia. 270pp.

EEC (2000). Country strategy paper and indicative programme for the period 2002 - 2007. [<http://www.Programming\Ethiopia\PostEthiopiaMaintext17.Dec.doc>] site visited on 14/03/2006.

FDRE-MoFED (2002). *Ethiopia: Sustainable Development and Poverty Reduction Program Annual Report*. Ministry of Finance, Addis Ababa, Ethiopia. 135pp.

Franzel, S. and Van Houten, H. (1992). *Research with Farmers: Lesson from Ethiopia*. IAR and C.A.B. International, UK. 126pp.

Gray, R. and Robertson, L. (2005). Effective internal communication starts at the top help executives understand the need for clear and concise communication. [www.iabc.com/cw.] site visited on 23/10/2006.

Griffin, R.W. (1984). *Management*. Houghton Mifflin, USA. 754pp.

Habtemariam, A. (1997). *Targeting Extension Service and the Extension Package Approach in Ethiopia*. Commercial printers, Addis Ababa, Ethiopia. 30pp.

Habtemariam, K. (2004). Historical developments and current challenges of agricultural extension with particular emphasis on Ethiopia. Ethiopian Economic Policy Research Institute (EEPRI), Addis Ababa, Ethiopia. 58pp.

Hagmann, J., Chuma, E. and Murwira, K. (1996). Improving the out put of agricultural extension and research through participatory innovation development and extension: Experiences from Zimbabwe. *Journal of Education and Extension* 2(4): 15 - 24.

Holbrook, H. T. (1987). Communication apprehension: The quiet students in your classroom. [<http://www.ericdigests.org/pre-926/quiet.htm>] site visited on 10/7/2006.

Hurt, H. T., Joseph, K. and Cook, C. D. (1977). Scales for the measurement of innovativeness. *Human Communication Research Journal* 4: 58 - 65.

Kelsey, K. D. and Mariger, S. C. (2004). A comparison of farmers who do and do not use cooperative extension services. *Journal of Extension* 42(2): 1 - 13

Lewis, P. V. (1980). *Organizational Communication: The Essence of Effective Management*. Grid-Columbus, Ohio. 359pp.

Lishan, A. (1999). Information and communication technologies in Ethiopia: Past, present, and future potential for social and economic development. [http://www.uneca.org/aisi/NICI/Country_profiles/ethiopia7.htm.] site visited on 23/10/2006.

Mattee, A. Z. (1994). Reforming Tanzania's agricultural extension system: The challenges ahead. *African Study Monographs* 15(4): 177 - 188.

Mattee, A. Z. and Mvena, Z. S. K. (1988). Extension job performance in Tanzania.
 In: *Proceeding of A National Workshop on Training for Effective Agricultural
 Extension in Tanzania*. (Edited by Mattee, A. Z. *et al.*), 1 - 2 December 1987,
 Mbeya, Tanzania. 1 - 10pp.

McCroskey, J. C. (1982). *An Introduction to Rhetorical Communication*. Englewood
 Cliffs, Prentice-Hall, USA. 50pp.

McCroskey, J. C. (1984). The communication apprehension perspective.
[\[http://www.jamescmccroskey.com/publications/bookchapters/003_1984_C\]](http://www.jamescmccroskey.com/publications/bookchapters/003_1984_C)
 site visited on 21/4/2007.

McCroskey, J. C. and Beatty, M. (1986). Oral communication.
[\[http://www.jamescmccroskey.com/publications/bookchapters/007_1986_C21.pdf\]](http://www.jamescmccroskey.com/publications/bookchapters/007_1986_C21.pdf)
 site visited on 21/4/2007.

Meera, S. N., Jhamtani, A. and Rao, D. M. (2004). Information and communication
 technology in agricultural development: A comparative analysis of three
 projects in India. AGREN Network Paper, Issue No.135, UK. p. 15.

Memorandum of Understanding (2005). Memorandum of understanding between Alemaya University, Eastern Hararghe Agricultural and Rural Development Office, Dire Dawa Provisional Administrative Council Agricultural Office, and Ethiopian Catholic Church, Social and Development Coordinating Office of Harar. Alemaya, Ethiopia. 8pp.

Mendenhall, W. (1989). *Statistics for Management and Economics*. PWS-Kent, USA. 1108pp.

Misera, D. C. (1996). Monitoring extension programmes and resources. In: *Improving Agricultural Extension, A Reference Manual*. (Edited by: Swanson, B. E. et al.), FAO, Rome, Italy. pp. 115 - 126.

Monge, P. R. and Cotractor, N. S. (1999). Emergence of communication networks. [<http://www.tec.spcomm.uiuc.edu/nosh/HOCNets.html>] site visited on 12/12/2005.

Mulat, D., (June 1999). Agricultural technology, economic viability and poverty alleviation in Ethiopia. [http://www.aec.msu.edu/fs2/ag_transformation/atw_demeke.PDF] site visited on 23/10/2006.

O'Leary, Z. (2004). *The Essential Guide to Doing Research*. Cromewell press, Wiltshire, UK. 226pp.

Ponce, E. R. (2002). Agriculture and fishery research and extension systems: Organizational linkages. [http://www.apotokyo.org/00ebooks/11.AgriResearchExt/03.Ponce.AgResExt.pdf] site visited on 23/10/2006.

Rachel, P. (2000). Capacity building for gender-sensitive agricultural extension planning in Ethiopia. *Journal of Agricultural Education and Extension* 7(1): 21 - 30.

Richmond, V. P. and Hickson, M. (2001). *Going Public: A Practical Guide to Public Talk*. Allyn & Bacon, Boston. 46pp.

Riesenberg, L. E. and Gor, C. O. (1998). Farmers' preferences for methods of receiving information on new or innovative farming practices. [http://pubs.aged.tamu.edu/jae/pdf/Vol30/30-03-07.pdf] site visited on 15/12/2005.

Robbins, S. P. (1992). *Essentials of Organizational Behavior*. Prentice-Hall Inc., USA. 310pp.

Rogers, E. M. (1983). *Diffusion of Innovations*. Macmillan, New York. 453pp.

Rogers, E. M. (2003). *Diffusion of Innovations*. Free press, New York. 519pp.

Rogers, E. M. and Rogers, R. A. (2004). Sample text for communication in organization. [<http://www.loc.gov/catdir/samples/simon052/75032368.html>] site visited on 12/12/2005.

Runey, A. (2001). *Theories and Facts About Communication Apprehension*. University of Southern Maine, Portland. 127pp.

Rutachokoziwa, V. (1993). *Dissemination and utilization of agricultural information to rural women in Tanzania Report*. Organization for Social Science Research in Eastern Africa (OSSREA), Addis Ababa, Ethiopia. 49pp.

Samuel, G. (2000). The development of integrated management information systems for agricultural extension institutions of developing countries: The case of Oromia Agricultural Bureau of Ethiopia. Dissertation for Award of PhD Degree at Shaker Verlag, Germany, 165pp.

Scott, D. (1993). Assessing the effects of organizational commitment and job satisfaction on turnover: An event history approach. *Prison Journal* 74(3): 279 - 305.

Sebsibe, T. E. (1999). Factors influencing adoption of improved maize production technologies and practices in the National Extension Intervention Program (NEIP) in Awassa District, Ethiopia. Dissertation for Award of MSc Degree at Sokoine University of Agriculture, Morogoro, Tanzania, 133pp.

Sington, R. A., Straits, B. C. and Straits, M. M. (1988). *Approaches to Social Science Research*. Oxford University press, New York. 572pp.

Spector, P. (1992). *Summated Rating Scale Construction: An Introduction*. SAGE University, Newbury Park. 73pp.

Staw, B. M. (1991). *Psychological Dimensions of Organizational Behaviour*. Macmillan, New York. 676pp.

Swanson, B. E. (1996). Strengthening research-extension-farmer linkages. In: *Improving Agricultural Extension, A Reference Manual*. (Edited by Swanson, B. E. et al.), FAO, Rome, Italy. pp. 171 - 178.

Task Force on Agricultural Extension (1994). *A Study Report on The Ethiopian Agricultural Extension Systems*. Government printers, Addis Ababa, Ethiopia. 77pp.

Tesfaye, B. (2003). Understanding farmers: Explaining soil and water conservation in Konso, Wolita and Wello, Ethiopia. Thesis for Award of PhD at Wageningen University and Research Center, Netherlands, 245pp.

The American Heritage dictionary (2004). Dictionary definition of social psychology. [[http://en.wikipedia.org/wiki/Social_psychology_\(psychology\)](http://en.wikipedia.org/wiki/Social_psychology_(psychology))] site visited on 11/02/2007.

Thomas, G. F., Tymon, W. G. and Thomas, K. W. (2007). Communication apprehension: Interpretive styles, preparation, and performance in oral briefing. [<http://www.questia.com>] site visited on 11/02/2007.

Tibendelana, M. E. (2000). The influence of organizational culture on job satisfaction on agricultural extension staff in Dodoma Region, Tanzania. Dissertation for Award of MSc Degree at Sokoine University of Agriculture, Morogoro, Tanzania, 104pp.

Van den Ban, A. W. and Hawkins, H. S. (1996). *Agricultural Extension*. Longman, Harlow. 294pp.

Vijayaragavan, K. and Singh, W. (1996). Managing human resources within extension. In: *Improving Agricultural Extension, A Reference Manual*. (Edited by Swanson, B. E. et al.), FAO, Rome, Italy. pp. 127 - 134.

- Waldron, M.W., Vsanthakumar, J. and Arularaj, S. (1996). Improving the organization and management of extension. In: *Improving Agricultural Extension, A Reference Manual*. (Edited by Swanson, B. E. et al.), FAO, Rome, Italy. pp. 115 - 126.
- Wegayehu, G. (2006). Determinants of farmers' decision on soil and water conservation practices in Dire Dawa Administrative council, Ethiopia. Thesis for Award of MSc Degree at Alemaya Univesrity, Alemaya, Ethiopia, 135pp.
- Weigel, D. J. and Nevada, R. (1994). Communication needs in extension. *Journal of Extension* 32(4): 1 - 2
- Weir, S. and Knight, J. (2000). Adoption and diffusion of agricultural innovations in Ethiopia: The role of education. [<http://www.esae.ox.ac.uk>] site visited on 12/12/2005.
- Worku, T. (2000). Stakeholders' participation in policy processes in Ethiopia. *Managing Africa's soils Journal* 17: 5 - 8.
- Wrightsmann, L. S. (1977). *Social Psychology*. Wadsworth, USA. 767pp.

Yared, M. (2006). Dissemination of agricultural research results to users: The case of Sorghum research of Alemaya University. Thesis for Award of MSc Degree at Alemaya Univesrity, Alemaya, Ethiopia, 91pp.

Yisehak, B. B. (2002). Factors influencing transfer and utilization of selected agricultural technologies in Ethiopia: A case study of Bolosso Sore District. Dissertation for Award of MSc Degree at Sokoine Univesrity of Agriculture, Morogoro, Tanzania, 120pp.

Yonas, M. (2006). An overview of the Extension programs in Ethiopia: Past and present experience, challenges and constraints. MoA & RD, Addis Ababa, Ethiopia. 15pp.

APPENDICES

Appendix 1: Farmers questionnaire

General information

Communication patterns among Extension personnel and farmers in Dire Dawa
Administration Council, Ethiopia,

Research registered at Sokoine University of Agriculture (SUA)
Department of Agricultural Education and Extension
Morogoro, Tanzania

Interview schedule for data collection

Instruction to enumerators

1. Make brief introduction to each farmer before starting any question, get introduced to the farmers (greet them in the local way), get his/her name, tell them yours, the institutions you are working for, and make clear the purpose and objective of your questions.
2. Please ask each question so clearly and patiently until the farmer understands (gets your point).
3. Please fill up the questionnaire according to the farmers reply (do not put own opinion).
4. Please do not try to use technical terms while discussing with farmers and do not forget local unit.

Serial Number _____

Interviewer's Name _____

Date of Interview _____

1. Name of peasant association _____

2. Name of village _____

3. Age of respondents

- (1) Less than 30 years (2) 31-45 years (3) 36-40 years

4. Sex (1) Male (2) Female

5. Educational status

- (1) Can not read and write (2) Read only
- (3) Can read and write, but no formal education
- (4) Primary school education
- (5) Secondary education (6) Beyond secondary school education

6. Marital status

- (1) Single (2) Married (3) Divorced (4) Widowed

7. Family size

- (1) Less than 4 (2) 5-7 persons (3) 8-10 persons (4) greater than 10

8. Land holding size (in ha)

- (1) Less than 0.5 ha (2) 0.5-1 ha (3) 1-1.5 ha (5) greater than 1.5 ha

9. What is your average annual income in birr?

- (1) Less than 1000 birr (2) 1001-2000 birr
- (3) 2001-3000 birr (4) Greater than 3000 birr

10. How often does VEW visit you?_____times per year

11. Have you been visited by extension workers other than village extension workers?

- (1) Yes (2) No

12. How far is your residence from extension workers'

office/residence_____minutes

13. How far is your residence from the main market? _____minutes

14. How far is your residence from the main road (bus stand)? _____minutes

15. Are you traveling to Dire Dawa town frequently? (1) Yes (2) No

16. If yes, how often are you traveling?

- (1) Weekly (2) Monthly (3) Bi-monthly
(4) Quarterly (5) Bi-annually (6) Annually

17. Do you have a Radio? (1) Yes (2) No

18. If yes, are you often listening to agriculture program?

- (1) Yes (2) No

19. Have you taken any training about agriculture? (1) Yes (2) No

20. If yes, what are the areas of training?

Trainings	Yes	No	Who conducted?
Crop production			
Livestock production			
Natural resource management			
Soil and water conservation and irrigation			
Credit			
Gender			

21. Have you attended any meeting organized by village extension workers in the past one year? (1) Yes (2) No

22. If yes, how many times?

- (1) Once (2) Twice
(3) Three times (4) More than three times

23. Have you participated in the current extension package program?

- (1) Yes (2) No

24. If you did not use the technologies in your farm, what are the reasons? _____

25. From where did you hear about the program?

- (1) Neighbors farmers (2) Village extension agents (3) Radio

26. Did you work with Alemaya University in any research in your farm?

- (1) Yes (2) No

27. Did you attend the following extension methods organized by agricultural office for the past one year?

Extension methods	Yes	No
Farmers visits elsewhere		
Group discussion		
Demonstration		
Field days		

28. Which are the main sources of information for the following agricultural activities?

Activities	Agri. Office	NGOs	Research center	Neighbor farmers
Crop production				
Livestock production				
Inputs and credit				
Marketing				

Natural resource conservation				
Animal disease				

29. Prioritize organizations in terms of closeness and importance to you

Institution	Agri. office	NGOs	Research	Farmer s coops	Credit providers	Input Suppliers	Score	Rank
A & RDB								
NGOs								
Research								
Farmers coops								
Credit inst.								
Input suppliers								

30. Farmers attitude towards village extension workers

No	Statements	Agree	Unde- cided	Dis- agree
	I benefit much from advises provided by VEW			
	VEW is of much help to farmers			
	VEW provides specific information and advises on agriculture			
	It is very risky to follow advise given by VEW			
	Agricultural production can increase without advice from VEW			
	I have confidence in the VEW			
	The VEW has nothing new to tell me			
	I feel satisfied with the work of VEW			
	VEW lacks competence in teaching new practice			
	My VEW pays attention to farmer's problems and tries to help in finding solutions			

	VEW cooperates with village members			
	VEW regards himself/herself superior than the rest of the villagers			
	VEW is accepted and respected by village leaders			
	VEW visits only rich farmers			
	VEW is ready to assist my problems outside office hours			
	VEW has ability to communicate with farmers			

- Key: 1 Agree
 2. Undecided
 3 Disagree

Appendix 2: Check list for farmers group discussion

1. What is the trend of communication in the area?
2. What are the available communication networks and information sources for
3. Technology, market, price, input, weather, etc (formal and informal)?
4. Who are the most important sources of information and advice in the community for the farmers?
5. What are the problems that affect communication with extension personnel and other organizations?
6. What is the availability and effectiveness of communication channels?
7. What is the degree of farmers' participation in extension?
8. What are the factors affect their participation?

9. What is the extent of farmers' participation in planning?
10. What is the perception and attitude towards extension personnel in terms of solving their problems?
11. How extension personnel address women farmers?

Appendix 3: SMSs questionnaire

Title: Communication patterns among Extension personnel and farmers in Dire
Dawa Administration Council, Ethiopia

Research registered at Sokoine University of Agriculture (SUA)

Department of Agricultural Education and Extension

Morogoro, Tanzania

General Instruction

1. Please answer all the questions
2. Your answer will be kept confidential

3. When ever you feel to refer the meaning of some difficult technical terms,
please refer the attached dictionary meaning of terms
4. If necessary, please feel free to use Amharic language

Thank you for your cooperation and take your time to fill this questionnaire!

I. General Information

1. Name of section/department_____
2. Current position_____
3. Sex (1) Male (2) Female

4. In which category do fall your age?
 - (1) Less than 25 years (2) 26-30 years (3) 31-35 years
 - (4) 36-40 (5) Greater than 40 years

5. What is your highest level of education?
 - (1) Certificate (2) Diploma (3) Advanced Diploma
 - (4) First Degree (5) Masters Degree (6) Philosophy of Doctor

6. Marital status? (1) Single (2) Married
 - (3) Divorced (4) Widowed

7. In your childhood and school age, where did you live?
 - (1) Both child and school age in rural area
 - (2) Childhood in rural and school age in town/urban
 - (3) Both childhood and school age urban

(4) Childhood in town and school age in rural

8. How long have you worked totally in the organization?_____years

(1) Less than 10 years (2) 11-20 years (3) Greater than 20 years

9. Did you take the following on-the job training? (Put √ Mark)

Types of training	Yes	No
Communication methods and media		
Non-formal and adult education		
Extension program planning, monitoring & evaluation		
Training methodologies		
Participatory Rural Appraisal (PRA)		
Gender issues		
Administration and Management		

10. If you want any information from other sections/departments, how do you get?

- (1) Just ask the respective expert directly
 (2) Ask the respective team leader/department head first, then to the expert
 (3) The two section leaders will communicate, and then I get through my boss

11. How do you evaluate information communication between parallel sections/departments?

- (1) Weak (2) Strong (3) Very strong

12. How many PAs did you supervise for the past 12 months?

- (1) Less than 3 (2) 3-6 (3) 7-9
 (4) 10-12 (5) Greater than 12

13. How many farmers field/individual farm did you supervise for the past 12 months?

- | | | |
|------------------|---------------------|-----------|
| (1) Less than 20 | (2) 21-30 | (3) 31-40 |
| (4) 41-50 | (5) Greater than 50 | |

14. What is the trend of planning process in your section/department?

- (1) Prepare at regional level and passed on to PAs
- (2) Prepare in collaboration with village level extension workers and approved at regional level
- (3) Prepare by village level extension workers then modified and approved at regional level
- (4) Prepare in collaboration with village level extension workers and farmers, then modified and approved at regional level
- (5) If others, please specify_____

15. Did you provide any training to DAs and farmers in the past 12 months?

(1) Yes (2) No

16. Have you used the following training methodologies during training for the past 12 months? (Put √ Mark)

Training methods	Yes	No
Lecturing		
Group discussion		
Role playing		
Practical exercise		
Demonstration		
Case studies		

17. Which communication media (audio-visual aids) utilized during training for the past 12 months? (Put √ Mark)

Communication media (audio-visual aids)	Yes	No
Chalk board		
Overhead projectors		
Liquid Crystal Display (LCD)		
Leaflets		
Handout (Manual)		
Posters		
Flipcharts		
Models		
Specimens/real objects like seeds, etc		

18. What is your work relationship among the following organizations?

Organizations/institutions	Degree of relationship			
	Strong	Moderate	Weak	No at all
Cooperative office				
Credit institutions				
Input suppliers				
NGOs				
Community Based Organizations(Iddir, Debbo, etc)				
Research centre/Haramaya University				

19. What are the constraints that affect your communication with village level extension personnel and farmers?

No	Problems	Yes	No
1	Transportation		
2	Lack of relevant information		
3	Lack of improved technologies		
4	Involvement of VEWs in non-extension activities		
5	Language problems		
	If others, please specify		
6			
7			
8			
9			
10			

Appendix 4: VEWs questionnaire

Title: Communication patterns among Extension personnel and farmers in Dire

Dawa Administration Council, Ethiopia

Research registered at Sokoine University of Agriculture (SUA)

Department of Agricultural Education and Extension

Morogoro, Tanzania

General Instruction

1. Please answer all the questions
2. Your answer will be kept confidential
3. When ever you feel to refer the meaning of some difficult technical terms,
please refer the attached dictionary meaning of terms
- 4 If necessary, please feel free to use Amharic language

Thank you for your cooperation and taking your time to fill this questionnaire!

I. General Information

1. Name of Peasant Association (PA) _____
2. Number of Villages in PA _____
3. Number of households in PA _____
4. Distance from Head quarter (Dire Dawa Office) _____ Km
5. What is your job position?

(1) Crop science worker	(2) Animal science worker
(3) Veterinary worker	(4) Natural science worker
6. In which age categories do you fall?

(1) Less than 25 years	(2) 26-30 years	(3) 31-35 years
------------------------	-----------------	-----------------

- (4) 36-40 years (5) Greater than 40 years

7. What is your highest level of education?

- (1) Certificate (2) Diploma (3) Advanced Diploma (4) First Degree

8. What is your marital status?

- (1) Single (2) Married (3) Divorced (4) Widowed

9. In your childhood and school age, where did you live?

- (1) Both childhood and School age in rural area
 (2) Childhood in rural area and school age in town/urban
 (3) Both childhood and school age in urban
 (4) Childhood in town and school age in rural area

10. How long have you served as a village level extension workers? _____ years

- (1) Less than 10 years (2) 11-20years (4) 16-20 years

11. Did you take the following on-the job training? (Put √ Mark)

Types of training	Yes	No
Communication methods and media		
Non-formal and adult education		
Extension program planning, monitoring & evaluation		
Training methodologies (Lecturing, Group discussion, etc)		
Participatory Rural Appraisal (PRA)		
Gender issues		

12. How many farmers do you visit on average per week?

- (1) Less than 10 farmers (2) 11-20
 (3) 21-30 (4) Greater than 30 farmers

13. Have you been supervised by SMS (experts) for the last six months?

- (1) Yes (2) No

14. If yes, how many times on average for the last six months?

- (1) Once (2) Two times
(3) Three times (4) More than three times

15. Have you been supervised by team/department leaders for the past six months?

- (1) Yes (2) No

16. If yes, how many times on average?

- (1) Once (2) Twice
(3) Three times (4) More than three times

17. Did you organize meetings, field day, farm visit, and demonstration for the past six months? (1) Yes (2) No

18. If yes for question number 17, please complete the table below

Events	How many?	Approximate number of participants
Meetings		
Field day		
Farm visits		
Demonstrations		
Total		

19. Do you have transport facility?

- (1) Yes (2) No

20. If yes for question number 19, which type?

- (1) Bicycle (2) Motor bike (3) Mule/Horse

21. What is your work relationship among the following organizations? (Put √ mark)

Organizations/institutions	Degree of relationship
-----------------------------------	-------------------------------

	Strong	Moderate	Weak	No at all
Cooperative office				
Credit institutions				
Input suppliers				
NGOs				
Community Based Organizations(Iddir, Debbo, etc)				
Research centre/Haramaya University				

22. What is the planning system in your organization?

- (1) Plan is done by regional experts and sent to village level extension worker
- (2) Plan is done in collaboration with regional experts and village level extension worker at PA level
- (3) Plan is done in collaboration between regional experts, village level Extension worker and farmers at PA level
- (4) Plan is done in collaboration with village level Extension worker and Farmers, and send to region for approval

23. Did you need to pass through a series of steps/channels before your problems reach to the superiors/supervisors? (1) Yes (2) No

24. How long does it take to get feed back from your superiors/supervisors regarding issues sent to them for solution?

- (1) Long time
- (2) Short time
- (3) Immediately

25. How do you rank the following extension methods as used to communicate with farmers? (Rank 1= mostly used; 2= moderately used; and 3= least used)

- (1) Individual method _____
- (2) Group method _____
- (3) Mass method _____

26. What is your opinion towards the farmers with whom you are working? (Put ✓ mark)

Statements	Agree	Disagree	Undecided
They are reluctant to listen my advice			
They need always to be forced			
They are ready to accept new knowledge, technologies, and practices			
They do not trust me			
They can identify their own problems and needs			
Impossible to change their life standard			

27. Which communication media utilize to communicate with farmers? (Put ✓ mark)

Communication media	Yes	No
Handouts/manuals		
Posters		
Leaflets		
Demonstration		
Models		
Specimens/real objects like seeds etc		

28. What are the Constraints that affect your communication with farmers?

No	Problems	Yes	No
1	Transportation		
2	Lack of relevant information		
3	Lack of improved technologies		
4	Involvement of VEWs in non-extension activities		
5	Language problems		

	If others, please specify		
6			
7			
8			
9			
10			

Appendix 5: Common questionnaire for both VEWs and SMSs

1. Communication apprehension level measurement

Instruction: Please indicate the degree to which each statement applies to you by marking whether you: **Strongly Disagree = 1; Disagree = 2; Neutral = 3;**

Agree = 4; Strongly Agree = 5

- _____1. I dislike participating in group discussions.
- _____2. Generally, I am comfortable while participating in group discussions.
- _____3. I am tense and nervous while participating in group discussions.
- _____4. I like to get involved in group discussions.
- _____5. Engaging in a group discussion with new people makes me tense and nervous.
- _____6. I am calm and relaxed while participating in group discussions.
- _____7. Generally, I am nervous when I have to participate in a meeting.
- _____8. Usually, I am comfortable when I have to participate in a meeting.
- _____9. I am very calm and relaxed when I am called upon to express an opinion at a meeting.
- _____10. I am afraid to express myself at meetings.
- _____11. Communicating at meetings usually makes me uncomfortable.
- _____12. I am very relaxed when answering questions at a meeting.
- _____13. While participating in a conversation with a new acquaintance, I feel very nervous.
- _____14. I have no fear of speaking up in conversations.
- _____15. Ordinarily I am very tense and nervous in conversations.

- _____16. Ordinarily I am very calm and relaxed in conversations.
- _____17. While conversing with a new acquaintance, I feel very relaxed.
- _____18. I am afraid to speak up in conversations.
- _____19. I have no fear of giving a speech.
- _____20. Certain parts of my body feel very tense and rigid while giving a speech.
- _____21. I feel relaxed while giving a speech.
- _____22. My thoughts become confused and jumbled when I am giving a speech.
- _____23. I face the prospect of giving a speech with confidence.
- _____24. While giving a speech, I get so nervous I forget facts I really know.

2. Individual innovativeness measurement

Directions: People respond to their environment in different ways. The statements below refer to some of the ways people can respond. Please indicate the degree to which each statement applies to you by marking whether you:

Strongly Disagree = 1; Disagree = 2; Neutral = 3; Agree = 4;
Strongly Agree = 5

- _____1. My peers often ask me for advice or information.
- _____2. I enjoy trying new ideas.
- _____3. I seek out new ways to do things.
- _____4. I am generally cautious about accepting new ideas.
- _____5. I frequently improvise methods for solving a problem when an answer is not apparent.
- _____6. I am suspicious of new inventions and new ways of thinking.

- _____ 7. I rarely trust new ideas until I can see whether the vast majority of people around me accept them.
- _____ 8. I feel that I am an influential member of my peer group.
- _____ 9. I consider myself to be creative and original in my thinking and behavior.
- _____ 10. I am aware that I am usually one of the last people in my group to accept something new.
- _____ 11. I am an inventive kind of person.
- _____ 12. I enjoy taking part in the leadership responsibilities of the group I belong to.
- _____ 13. I am reluctant about adopting new ways of doing things until I see them working for people around me.
- _____ 14. I find it stimulating to be original in my thinking and behavior.
- _____ 15. I tend to feel that the old way of living and doing things is the best way.
- _____ 16. I am challenged by ambiguities and unsolved problems.
- _____ 17. I must see other people using new innovations before I will consider them.
- _____ 18. I am receptive to new ideas.
- _____ 19. I am challenged by unanswered questions.
- _____ 20. I often find myself skeptical of new ideas.

3. Job satisfaction measurement

Instruction: Please indicate the degree to which each statement applies to you by marking whether you: Strongly Disagree = 1; Disagree = 2;

Neutral = 3; Agree = 4; Strongly Agree = 5

- _____ 1. I feel I am being paid a fair amount for the work I do.
- _____ 2. My supervisor is quiet competent in doing his or her job.
- _____ 3. When I do a good job, I receive the recognition I should receive.
- _____ 4. Raises are too few and far between them.
- _____ 5. My supervisor is unfair to me.
- _____ 6. I do not feel that the work I do is appreciated.
- _____ 7. I feel unappreciated by the organization when I think about what they pay me.
- _____ 8. My supervisor shows too little interest in the feelings of subordinates
- _____ 9. There are few rewards for those who work here.
- _____ 10. I feel satisfied with my chances for salary increase.
- _____ 11. I like my supervisor
- _____ 12. I do not feel my efforts are rewarded the way they should be.

4. Willingness to listen measurement

Instructions: The following twenty-four statements refer to listening. Please indicate the degree to which each statement applies to you by marking whether you:

Strongly Disagree = 1; Disagree = 2; Neutral = 3; Agree = 4; Strongly Agree = 5

- _____ 1. I dislike listening to boring speakers.
- _____ 2. Generally, I can listen to a boring speaker
- _____ 3. I am bored and tired while listening to a boring speaker.
- _____ 4. I will listen when the content of a speech is boring.
- _____ 5. Listening to boring speakers about boring content makes me tired, sleepy, and bored.
- _____ 6. I am willing to listen to boring speakers about boring content.
- _____ 7. Generally, I am unwilling to listen when there is noise during a speaker's presentation.
- _____ 8. Usually, I am willing to listen when there is noise during a speaker's presentation.
- _____ 9. I am accepting and willing to listen to speakers who do not adapt to me.
- _____ 10. I am unwilling to listen to speakers who do not do some adaptation to me.
- _____ 11. Being preoccupied with other things makes me less willing to listen to a speaker.
- _____ 12. I am willing to listen to a speaker even if I have other things on my mind.

- _____13. While being occupied with other things on my mind, I am unwilling to listen to a speaker.
- _____14. I have a willingness to listen to a speaker, even if other important things are on my mind.
- _____15. Generally, I will not listen to a speaker who is disorganized.
- _____16. Generally, I will try to listen to a speaker who is disorganized.
- _____17. While listening to a non-immediate, non-responsive speaker, I feel relaxed with the speaker.
- _____18. While listening to a non-immediate, non-responsive speaker, I feel distant and cold toward that speaker.
- _____19. I can listen to a non-immediate, non-responsive speaker.
- _____20. I am unwilling to listen to a non-immediate, non-responsive speaker.
- _____21. I am willing to listen to a speaker with views different from mine.
- _____22. I am unwilling to listen to a speaker with views different from mine.
- _____23. I am willing to listen to a speaker who is not clear about what he or she wants to say.
- _____24. I am unwilling to listen to a speaker who is not clear, not credible, and abstract.

Appendix 6: List of study PAs

List of selected PAs for VEWs study with their physical distance from regional office

Nearby PAs	Distance in km	Distant PAs	Distance in km
Legedon Legehar	5	Wahil	31
Legenaneni	15	Awale	32
Adada	19*	Kurtu kalecha	35
Biyo Bishan	28	Legoda Gununfeta	38
Halo Dujuma	28	Bekealo	42
		Jeledes	42*

* PAs selected for farmers study