



Improving Productivity & Market Success of Ethiopian Farmers

Monitoring and Evaluation Report of Year 2 (2006/2007)



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Federal Democratic Republic of Ethiopia
MINISTRY OF AGRICULTURE AND
RURAL DEVELOPMENT

List of Abbreviations

ACSI	Amhara Credit and Saving Institute
AI	Artificial Insemination
ARARI	Amhara Agricultural Research Institute
ATARC	Adami Tulu Agricultural Research Center
ATVET	Agricultural Technical Vocational Education and Training College
BBM	Broad Bed Maker
BoARD	Bureau of Agriculture and Rural Development (at regional level)
CAHW	Community Animal Health Workers
CBO	Community-Based Organizations
CGIAR	Consultative Group on International Agricultural Research
CIAT	Centro Internacional de Agricultura Tropical
CIDA	Canadian International Development Agency
DA	Development Agent
DZARC	Debrezeit Agricultural Research Center
EIAR	Ethiopian Institute for Agricultural Research
ETFRUIT	Ethiopian Fruit & Vegetables Marketing Enterprise
FTC	Farmer Training Center
FTC	Farmers Training Center
HIV	Human Immune-Deficiency Virus
ILDP	Integrated Livestock Development Program
ILRI	International Livestock Research Institute
IPMS	Improving Productivity and Market Success
KM	Knowledge Management
M & E	Monitoring and Evaluation
MARC	Melkasa Agricultural Research Center
MFI	Microfinance Institute
MoA	Ministry of Agriculture
MoARD	Ministry of Agriculture and Rural Development (Ethiopia)
MUB	Molasses Urea Block
NALC	National Advisory and Learning Committee
NGO	Non-Governmental Organization
NGO	Non-governmental Organizations
NRM	Natural Resource Management
NRM	Natural Resource Management
OoARD	Office of Agricultural and Rural Development
OoPRD	Office of Pastoral and Rural Development
ORARI	Oromia Agricultural Research Institute
PI	Performance Indicators
PLW	Pilot Learning Woreda (Previously PLS)
PMF	Performance Measurement Framework
PMF	Performance Measurement Framework
PRA	Participatory Rural Appraisal
RALC	Regional Advisory and Learning Committees
RARI	Regional Agricultural Research Institute (Ethiopia)
RDOs	Research and Development Officers

SARI	South Agricultural Research Institute
SMS	Subject Matter Specialist
SMS	Subject Matter Specialist
SNNPR	Southern Nation Nationalities and People's Region
TARI	Tigray Agricultural Research Institute
TVET	Technical and Vocational Education and Training College
WALC	Woreda Advisory and Learning Committee
WARC	Werer Agricultural Research Center
WKC	Woreda Knowledge Centers
WYA	Woreda Youth Affair (Tigray)

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1 Introduction

IPMS project, within the framework of rural development and food security strategy of the Ethiopian government, aims at contributing to improved agricultural production and productivity through market oriented agricultural development, as a means for achieving improved and sustainable livelihood for the rural population. To attain this goal, the project has set the following four outcomes as markers of achievement:

1. Functional agricultural knowledge management system operationalized at Woreda & Federal levels, highlighting innovations and appropriate technologies
2. Strengthened innovation capacity of farmers, pastoralists, community-based and private sector organizations, and agriculture and natural resource management public organizations to support the development of small-holder, market-oriented agricultural production systems.
3. Appropriate technologies, innovative input supply – output marketing, and financial services adopted in order to improve agricultural productivity and market success in the PLWs.
4. Strategies, policy & technology options, and institutional innovations developed (from both research and lessons learned), documented and promoted in order to enhance market-oriented agricultural development.

The project has been implementing community-based market-oriented agricultural development programs in Tigray (Astbi and Alamata Woredas), Amhara (Fogera and Metema Woredas), Oromia (Ada and Meiso Woredas), and SNNPR (Alaba and Dale Woredas). For each of these PLWs, priority commodities were selected based on the development priorities of communities and the relevant government bodies. Following these, research and development programs were developed that involved different stakeholders.

In the past two years, the project, in collaboration with different stakeholders, has implemented various activities which have resulted the realization of outputs in the four pillars of the project. This report presents the findings of Year 2 project monitoring and evaluation, mainly focusing on the results achieved.

Following the introduction, section two presents methodologies used for data collection and analysis. Section three to nine present findings of output monitoring for each of the seven PLWs with respect to the four pillars of the project, including conclusions for each PLW. An overview of the findings and its implication on the project management is contained in the last section, with a list of participants, areas visited, and indicators used attached as annex.

2 Methodology

The Methodologies used for monitoring and evaluation of the project's outputs in year 2 followed the Project Measurement Framework (PMF), which provides the outputs to be monitored and the corresponding performance indicators. Following the sources indicated in the PMF, data was collected at Regional, Woreda, PA, and community levels.

At PA level group discussions with farmers were used as a primary means of data collection. Two PAs were selected purposely from IPMS intervention PAs based on the diversity of the priority commodity addressed, and another two were selected randomly from those PAs where there is no IPMS intervention. In intervention PAs, a group of 8-12 women and men farmers were randomly selected from a list of participants of different intervention areas of the project. A similar number of farmers who are considered representative were selected from non- intervention PAs. Finally group discussions were held with the selected farmers. Interviews with DAs and reviews of their log books were also used to gather information. Moreover, farmers' fields and animals and input suppliers, where relevant, were visited. List of PAs included is given below.

Region	PLW	Intervention PA	Non-intervention PA
Tigray	Alamata	Selam Bekalsi Temuga	Selaneweha Tao
	Astbi	Golgol Naele Hayelom	Kalish Adi Mesanu
Amhara	Fogera	Alember Worota Zuria	Rib Gibriel Diba
	Metema	Tumet Gubi Jejebit	Shasige Das
Oromia	Ada	Denkaka Godino	Hidi Bekojo
	Meiso	Huse Adami Hameyiti Deyima	Buryisa Tuka Agamsa Chaliya
SNNPR	Alaba	Waja Galeto	HulegebaKukie Gedeba

At Woreda level interviews and group discussions were conducted with WALC members and other SMSs working in the OoARDs. Members of the private sector organizations such as cooperatives/unions, input suppliers, and traders were also interviewed. Departmental plans of the OoARD and different outputs of project's report were also reviewed. In addition to these, the WKC's were inspected and their log books reviewed. At regional level interviews were conducted with RALC members, who were mainly comprised of officials from BoARD, RARIs, Cooperatives, and MFIs. The data collection procedures were sensitive to cross cutting themes of gender equality, HIV/AIDS, and environment.

3 Metema

3.1 Knowledge Management

The expected outputs of the project knowledge management component in year two are increased understanding and awareness of the knowledge requirement for managing the new commodities, increased availability of knowledge in various forms and enhanced knowledge sharing systems. These outputs together with other outputs expected to be achieved in year three and four will contribute to the expected outcome of knowledge management, which is to have functional and gender sensitive agricultural knowledge management system, interconnected and utilized at all levels, highlighting innovations and appropriate technologies. This section gives highlights of the status of the three outputs that contribute to the knowledge management component.

Knowledge Gap Identified

The project has undertaken various diagnosis surveys and community consultation sessions aimed at characterization and analysis of the system were conducted, which helped to understand the knowledge requirement of the priority commodities. These exercises helped both the project staff and staff of the public organizations (mainly SMSs and DAs) to identify the existing knowledge gap. Accordingly it was learned that knowledge is required in areas of conservation tillage, black soil management, alternative traction, cotton pest, *Striga*, cattle fattening, and irrigation. Information collected from group discussion with farmers indicated that they were asking the project staff and DAs more information about the priority commodities. Review of the DAs log book indicated that there were about 34 farmers who registered for the next season's fattening.

Availability of Knowledge Assets and Knowledge Sharing Mechanism

After identifying the knowledge gap the project got involved in providing knowledge assets to staff of OoARD, the private sector, and farmers. In this regard knowledge was provided using different knowledge sharing mechanisms such as trainings, publications,

demonstrations, and exchange visits. This section presents availability of knowledge assets and the different knowledge sharing mechanisms used.

The WKC is established within OoARD premises. About 56 books, leaflets and training manuals were made available in different subject areas. The three computers in the WKC are also used to browse CDs, but so far only four CDs are available. Electronic information was also made available through the new internet connection.

The project also tried to document knowledge gained from implementing project activities, and innovation history of banana, cotton, and fattening were prepared. Manuals on sesame production and conservation tillage was prepared and distributed for OoARD experts. Posters were also used to create awareness about BBM, banana production, donkey traction and the use of Round-Up chemical

The project introduced the concept of market-oriented agricultural development using the quarterly magazine published by the Woreda Information Office. So far three volumes of the magazine have been published and distributed to the 21 PAs in Metema Woreda. Videos which highlight innovative production technologies and natural resource management practices were used to impart knowledge to farmers. So far the project, together with the Woreda Information Office, has recorded 6 cassettes of the project activity to be used for teaching other farmers.

The project also used drama to raise awareness of farmers about new production technologies through an even organized by IPMS and OoARD together with the Woreda Information Office using volunteers to raise farmers' awareness about horticultural crop production. Within PA and outside PA farmers' exchange visits were organized for farmers and DAs to provide them with knowledge about fruit and vegetable production, a field visit was organized to horticultural growing PAs for OoARD staff, WALC members, BoARD staff and farmers.

Remark

The project has identified knowledge gaps and made available knowledge assets in various forms at Woreda level. However, DAs who actively work with farmers and farmers themselves didn't get access to written materials. Farmers and DAs used their own note which they took during the practical training. Even though DAs were told that they can use the WKC at Shedi, they are not using it due to long distance. It would be good if farmers and DAs received copies of training materials or other guidelines on the different priority commodities. The different knowledge sharing mechanisms are not present in non-intervention PAs.

Initiated by the opening of WKC, staff members of the OoARD have strengthened the habit of knowledge sharing by putting copies of training materials they had from school and previous trainings.

The WKC has not yet linked to important knowledge sources like research and higher learning institutes. For example Gonder research center sends its publication to ARARI Head office and not to the newly established WKC in Metema. Similarly there is no institution, national or international, which sends its publication to the WKC. In order to boost the relevance of the WKC, it needs to be linked with different institutions which can continuously supply printed and electronic materials.

3.2 Capacity Building

Outcome of the project's Capacity Development component is 'Strengthened innovation capacity of farmers /pastoralists, CBOs and private sector organizations and agriculture and natural resources management public organizations to support the development of small holder, market oriented agricultural production systems'. This section presents the status of outputs that are expected to contribute to the achievement of the capacity building outcome

The capacity building activity of the project has also been productive in terms of increased awareness, understanding, and skills of farmers, DAs , SMSs, and the private

sector. This section discusses the results achieved in terms of change in knowledge and skill of staff of public institutions, farmers, and private sector organizations.

Farmers' Capacity Building

Farmers' understanding and skill about the newly introduced production technologies has increased. This improved level of understanding and skill is reflected on their day-to-day engagement in their farm activities. For example fattening groups indicated that they can now choose breed for fattening, know what, how and when to feed animals, and when and how to sell their animals. Similarly farmers trained in horticultural crops now have the basic knowledge about managing their new commodities. All these changes in awareness, knowledge, and skill were brought about by a series of trainings and exchange visits arranged by the project. The project's capacity building activities focused on the following areas: urea treatment, donkey traction, cotton seed treatments and use of improve seeds, Water Pump handling and maintenance, Cattle fattening, and banana production and management.

Focus areas of farmers' capacity building

- Post harvest handling, quality control and seed cleaning techniques of Sorghum.
- Banana disease control methods
- Botanical pesticide preparation and spray techniques

However, not all of the trainings resulted in the same level of increase in knowledge and skills in all farmers. For example, a group of farmers who were trained in horticultural crops (fruits and vegetables) in Tumet PA did not have the basic knowledge and skills for managing the newly introduced commodities. This group of farmers who produce onion and tomato for the first time did not know the different agronomic practices including the maturity date. This problem was due to the type of training farmers received. After securing the necessary inputs using farmers' own funds, the project in collaboration with OoARD staff gave practical trainings on farmers' fields. But the training was short, covered only basic agronomic practices and didn't entertain issues like pest and disease problems which might occur during the course of production. While looking after the

new commodities, an unknown disease occurred in their tomato farms. But since the training didn't cover this aspect, both farmers and DAs were not aware about it and didn't have the necessary information to manage it. As a result the disease wiped the entire harvest before the problem could be reported to the project or the OoARD. Similar problems but to a lesser extent were observed on Mango (due to problem in transporting), and Banana farms (a problem with sun scorching and ripening).

Public Sector Capacity Building

When it comes to capacity building of staff of the public sector, DAs and SMSs have benefited from the knowledge they got on the priority commodities. They participated in hands-on practical training on the following areas.

- Urea treatment
- Donkey traction ,
- Cotton seed treatments and use of improve seeds
- Cattle fattening
- Sorghum seed production and quality control
- Banana production Management.

In addition to this the project is helping the public sector capacity building through its long term program. To this end, five OoARD staff are doing their MA and BA level studies.

Interviewed SMSs and DAs said the trainings have brought a change in their knowledge and skills at a different level. However, most of staff members complained about the lack of width and depth of the trainings. According to focus group discussants of SMSs, most of the trainings are given by the RDO and graduate students who are sponsored by the project. These people are said to have tight time schedule and do not have the required technical competence to train all of the subject matters covered. Even though DAs and SMSs appreciated the fact that the trainings are given on farmers' fields, they feel that it is inadequate in its coverage and is given for a short period of time. Due to this they feel that the training is inadequate to increase their knowledge to the level required to

properly scale out and give adequate technical backstopping to the increasing number of farmers who want to adopt the new technologies introduced by the project.

Collaborative network arrangements developed

Since its establishment in April 2005, the project has prepared its work plan and activity by aligning them with the development plan of the Woreda. According to head of OoARD the objective of the project and that of his office is the same, but the difference lies in the way they try to achieve their objective.

A committee that facilitates collaboration among farmers, CBOs , and public & private sector organizations was formed enable them to better their response to market demands through the use of demand-driven agricultural technologies and services. Accordingly, WALC was established at Woreda level. Its members are farmers and heads of different sector organizations including the Woreda administrator. However, despite its existence the functionality of this arrangement was seriously curtailed by the lack of effective communication among members until recently. Excessive workload due to frequent meetings and campaign works from OoARD staff side, and inadequate incentive mechanism from IPMS' side, were also considered as weaknesses of the committee . As a result there was a problem of ownership of the project by the previous WALC. The committee has conducted about eight meetings but most of the meetings were called just to nominate and choose students to be sponsored by the project. However, after the reorganization of WALC in March 2007, some progress has been observed. Now better integration is seen in joint planning, implementing, and monitoring of activities.

In order to strengthen the capacities of farmers, the project has created linkages among different actors engaged in production, extension and marketing. The project now works in a closer and coordinated manner with a wider range of actors and acts as a facilitator in the overall market-oriented agricultural development. These linkages enabled actors to engage in dialogue aimed at solving problems around production technologies, input supply , credit, and marketing issues. In this regard linkages were created among the different stakeholders mentioned below.

Governmental, NGOs and Private Companies with which Linkage is created/promoted

- Ethiopian Seed Enterprise
- Regional Seed Laboratory
- Seed Unit , Marketing Department of BoARD
- Macubu PLC (which imports Round Up chemical and gave training on conservation tillage)
- Senjeta PLC (chemical importers for cotton seed treatment and who gave training)
- ILDP- Gonder (working with the project as WALC member)
- DAS ginnery
- ETRUT
- Cattle traders, Fruit shops and other traders who involved in farm input supply

Even though representatives from research institutes participated in WALC meetings, their linkage is still weak.

The project considered forming a cotton platform through dialogue between the different actors. The dialogue was holistic which brought the ideas and problems of farmers, traders, and extension agents as a way of addressing the different dimensions of cotton production and marketing. Even though all parties participated in the discussion, it was conducted mostly by the project staff through the telephone. By doing so the project could be able to use the existing partners whose diverse talents, capacities and energies in addressing problems of farmers. The diverse membership of the platforms offers specific strength that is used to develop a particular commodity. In the different platforms research institute often offered the scientific knowledge, the SMS and the DAs used to select and organize farmers groups, credit institutions like ACSI used their organizational capacity to discharge the money obtained from the IPMS project. However not all platforms in all cases were successful in addressing farmers problems. But the different platform members agree that such collaborative arrangement helped for ensuring ownership, sustainability and effectiveness.

Remark

The emphasis of the capacity building effort was on production technologies of priority commodities. It didn't focus on critical issues for successful market-oriented agricultural development such as innovative extension method, group formation and environment. However, in areas of the trainings, farmers and DAs in intervention PAs have better knowledge than in non-intervention PAs. The capacity building effort didn't benefit the private sector such as cooperatives. The capacity building effort was done in collaboration with different stakeholders. Even though the role of the private sector as trainers was good, the participation of other important stakeholders such as research is low.

Linkage was created and strengthened among different stakeholders. However, the link with regional or national research system was weak until recently. But now the project has signed a memorandum of understanding with the regional research institute for collaborative research.

3.3 Commodity Development

The commodity development component of the project focused on introducing new technological and institutional innovations by integrating aspects of knowledge management which involve the process of problem identification and provision of knowledge assets, and capacity building, which involves capacitating different actors by facilitating training, exchange tours, and providing demonstration materials. In this line the project has introduced various technologies, processes, and institutional innovations for the priority commodities. This section presents the number of production technologies, input supply mechanisms, marketing arrangements and credit facilities identified and promoted by the project.

Production Technologies and Process

After a brief promotion about the possibilities of market-oriented fattening program, trainings were given for interested farmers who wanted to engage in fattening. The

training created awareness about the possibility of fattening in Metema, which was a myth before, and enabled them to get specific knowledge about fattening such as selecting good breed, feeding, and watering. Farmers selected cattle they wanted to fatten and started stall feeding with supplementary feed. Apart from this, farmers were advised on where to get input and how and when to sell their output. The project together with OoARD facilitated an arrangement so that farmers could get veterinary service and are linked to a cattle exporter who exports fattened cattle to Sudan. In this process, the Woreda administration, cattle traders, and input suppliers were involved apart from IPMS and OoARD. After few months of fattening, farmers could sell the fattened animals to a cattle exporter who came to buy their cattle. After looking at the result of the first batch, a lot of farmers are now asking to get extension services for fattening. DAs have registered 34 farmers for the second round of market-oriented fattening, in which they are planning to include in the program scientific ways of improving nutritional value of feed by using urea treatment. Even though the first round was successful, there are challenges which make achieving the same result difficult in the second round. For instance, there is no veterinary service in the PAs and in the first round they used a Veterinarian who came from the Woreda.

Banana (Cavendish) brought from Arbaminch was demonstrated both on farmers' fields and the OoARD nursery. Farmers were given training and continuous technical backstopping both by project staff and DAs trained by the project. Currently farmers in different PAs have started producing and the bananas started bearing fruits. The product is being sold in the Woreda. As a result of the emerging local supply, the price of banana has decreased from seven birr to four birr per kilo.

The project supplied start up material for Solo Papaya and conducted demonstrations at farmers' field. Now the fruit tree is available farmers have started harvesting. The product is currently consumed locally and it is also reported that it is being exported in small quantities to Sudan.

Leafy vegetables like tomato and onion are also introduced. Some of the farmers are facing disease problems in their farms. But it is performing well in most farms.

Fruits such Apple, Mango, Orange, and Water melon were also promoted. But it will be a few years before any result is seen.

Cotton production was seriously affected in Metema by flea beetle which lowered productivity to 5-8 qt/ha. To solve this problem, the project facilitated the provision of delineated and chemically treated improved seed with which farmers got as high as 33 qt/ha. So far only few farmers have benefited from this technology mainly due to high price of this kind of seed compared to the normal one.

Round-Up chemical was introduced to curb the problem of grass type weed common to Sesame farms. This chemical is preferred by many farmers and about 88 individuals registered to use this chemical during the next planting season in one PA only.

Input Supply

The establishment and licensing of private input shop was facilitated. The shop supplies vegetable seeds, agro chemicals, and other farm implements such as sprayers.

Farmers-to-Farmers seedling supply system was facilitated for the supply of banana sucker. The first batch of farmers have already started selling banana suckers to their neighbors for 7-10 birr per sucker.

A private fruit nursery was established. But this has not started selling seedlings yet.

Arrangement was facilitated among farmers, Ethiopian Seed Enterprise, and private company for the supply of Gedera (improved cotton Variety) and Cruiser (seed treatment chemical). Similar arrangements were also made for the supply of Round up chemical for sesame farms.

Marketing

Expecting a huge supply of banana in near future, which might go beyond the absorbing capacity of the local market, the project tried to promote farmers banana to the national fruit trade agency, ETRUIT, in Gonder and a supermarket in Chilga.

Traders in Shasige were advised to take advantage of the emerging fruit supply in the Woreda by adding value to the product. Following this advice one fruit shop was opened which sell fruits and fruit juice.

Remark

The project facilitated the introduction of production technologies and institutional arrangements for input supply and marketing arrangements. Observation in non-intervention PAs showed that most of the production technologies are non existent and there are no deliberate arrangements for staff of OoARD facilitating different mechanisms for input supply and product marketing.

The commodity development effort showed good result in fruits and fattening interventions, which are new to the Woreda. Fruit shop which provides fruits and fruit juice is opened for the first time. Scaling out these technologies has started by OoARD staff. Currently farmers who have fruit orchards reached from 11 to 35. About 500 banana suckers are now ready to be re-planted. The initial result of the banana intervention led other farmers to ask more planting materials. Farmers who used to produce maize and sorghum are now shifting their attention to fruit and vegetable farming , which they believe have high market demand and fetch better prices. The PA administrator witnessed this with the greater demand for irrigation land. More and more land is becoming prepared for fruit and vegetable irrigation. However, farmers are facing some problems with regard to ripening of banana and unknown diseases of vegetables like onion and tomato.

From the sides of DAs and SMSs, they have doubts about the continuity of this result. According to them even though they have learned about the different technological and institutional innovations, the continuous use of this approach depends on the broader

policy framework of the government and also adequacy of resources which are required for capacity building and creating linkage. The participation of research institutes in capacity building and follow up of the performance of the new crop varieties is very low.

3.4 Research

Focused studies on production and marketing of priority commodities were done by project staff and other research partners. Moreover, graduate students are doing research in various topics related to the priority commodities. But the number of research output other than student thesis work is low. This is mainly due to weak linkage with regional research centers. However, after a discussion with ARARI, three research proposals were approved to be done by Gonder research center. Studies conducted on different aspects of the priority commodities include:

- Analysis of the Ethio-Sudan cross-border cattle trade
- Sesame market chain, supply and market integration analysis
- Gender and socio-economic analysis of priority marketable commodities

Crosscutting Issues

A consultant completed gender and HIV /AIDS studies and an action plan which help to integrate gender and HIV/AIDS was prepared. However, this action plan is not being implemented. Women were not part of much of the commodity development effort mainly due to their lack of resources. But a female farmer engaged in fattening is a good example how appropriate financial arrangement helps to increase women participation. In addition to the action plan valuable information was imparted to the Woreda HIV/AIDS office.

With regard to environment, one SMS who works on natural resource management got training about environmental impact assessment. Farmers were advised to mitigate the problem of soil erosion by planting forage crops along the irrigation canals. Farmers who have riverside farms also have planted different trees to stabilize the river bank. Apart from this the level of awareness of DAs and farmers in IPMS intervention PAs was found to be not different from non- intervention PAs.

4 Fogera

4.1 Knowledge Management

The expected outputs of the project knowledge management component in year two are increased understanding and awareness of the knowledge requirement for managing the new commodities, increased availability of knowledge in various forms and enhanced knowledge sharing systems. These outputs together with other outputs expected to be achieved in year three and four will contribute to the expected outcome of knowledge management, which is to have functional and gender sensitive agricultural knowledge management system, interconnected and utilized at all levels, highlighting innovations and appropriate technologies. This section gives highlights of the status of the three outputs that contribute to the knowledge management component.

Increased Understanding and awareness of the knowledge requirement for managing new commodities

Various participatory diagnostic studies aimed at characterization and analysis of technologies and institutions were conducted. The different participatory diagnosis surveys conducted helped DAs and Woreda level organizations understand and become aware of what the knowledge gaps are for the different priority commodities. In this regard staff of OoARD said that as a result of the various gap analyses conducted helped them to know the problems related to input supply, production, and marketing of the priority commodities. Understanding these knowledge gaps led the project to engage in further capacity building activities and/or providing knowledge assets which could help farmers, DAs, and experts address the problems. Group discussion with farmers and interview with DAs revealed that the number of inquiries about the new commodities has increased which, to a certain extent, can be interpreted as an indication of the farmers' and DAs' realization of related areas where they are lacking information. Moreover, the frequency of interaction between different stakeholders has increased due to the knowledge gap identification process and its subsequent effort made to fill the knowledge gap. In this regard, these different stakeholders met in different occasions:

4 times in farmers field days

7 times in WALC meetings

4 times in RALC meetings

The number of exhibitions, workshops, community platforms have also increased the frequency of interface among actors.

Increased availability of knowledge in various forms

Knowledge in various forms was made available to Woreda-level organizations and farmers in various forms and through different mechanisms. This has increased the number of knowledge assets that is available to men and women farmers. Group discussion with farmers revealed that farmers got a number of knowledge assets about best practices, improved varieties and institutional innovations. The number of best practices, improved varieties and institutional innovations promoted are discussed in part 3 of this report. The different platforms which have been providing information about input supply, production, marketing and credit have increased farmers knowledge assets. The trainings that were given about the different priority commodities brought expertise and traditional knowledge from the private, public and CBOs to farmers, DAs and experts. The availability of knowledge in written form has also increased. Most of this kind knowledge asset are provided to OoARD staff at Woreda Knowledge Center. The WKC has 123 books, documents, and manuals on credit, production, input supply, and marketing of the various priority commodities.. Technological knowledge assets are provided through the 20 CDs, which provide access to electronic knowledge at Woreda level. Internet connection which is available at the project office also made available other electronic knowledge from the world wide web.

Enhanced Knowledge sharing system established

While increasing the understanding of the knowledge requirement and improving the availability of knowledge at PLW, the project also promoted various knowledge sharing techniques. In order to share different forms of knowledge, the project promoted various enhanced knowledge sharing mechanisms. In this regard practical oriented trainings, exchange visits, commodity platforms, pamphlets, demonstrations, seminars/workshops were promoted as a means of enhanced knowledge sharing system.

Even though the project by itself has not yet organized any exhibition, it has participated in two exhibitions conducted at Zone and Woreda levels which helped in experience sharing. As a result of these enhanced knowledge sharing mechanisms, the frequency of knowledge sharing through events like meetings, farmers' day, and exhibitions has also increased during the last two years, which has greatly helped different stakeholders including the private sector to meet and share knowledge.

Knowledge Center is promoted to allow stakeholders share the knowledge and information that they have. The Woreda Knowledge Center (WKC), which is located inside the OoARD compound, serves as a ready access point for information source about different aspects of the priority commodities. The WKC has books, manuals and other publications. Even though, most of these publications are from international agricultural research institutes such as ILRI, there are also documents prepared by the project (training manuals, pamphlets, posters, innovation history, reports of diagnosis surveys). In addition to this, the WKC has 20 CDs and three computers which are used to browse electronic information.

Remark on Knowledge Management Component

In pursuit of effective knowledge management practice at PLW, the different activities related to assessing knowledge requirement resulted to greater understanding of knowledge requirement for managing the priority commodities. Based on the gaps identified the project made increased availability of various forms of knowledge assets together with enhanced mechanisms for sharing these knowledge. The idea of understanding the existing knowledge gap, searching this knowledge from different source and providing it to specific targets using different innovative knowledge sharing mechanism is done with adequate participation of OoARD staff and with some experts of BoARD. The following are some observation about the knowledge management component:

- The increased availability of written materials at WKC doesn't satisfactorily reflect the gaps identified around the priority commodities. Most of WKC collections came from few international research institutes. The different research and educational institutions are not systematically linked to WKC. The potential of national and regional research institutes in terms of providing the available published and unpublished materials to the WKC should be used.
- DAs and SMS agree that the WKC is potentially an excellent means of information source, but its current use is minimal. Only 3 or 4 individuals use it rarely and most of the time it is closed. Even though the OoARD assigned one person to look after the WKC, she doesn't start work.
- The availability of knowledge in written form at PA level is very limited. Farmers and DAs get knowledge through a number of trainings and participated in exchange visits. Apart from some farmers and DAs who got pamphlets, most of them didn't get written materials. Especially the DAs, who are trained to give technical, backstopping to farmers, do not have written materials that they can refer to. This lack of written materials at DAs office together with the existing high staff rotation and staff turnover, seriously affected the new DAs to continue technical supports which their predecessors started.

4.2 Capacity Development

Outcome of the project's Capacity Development component is 'Strengthened innovation capacity of farmers /pastoralists, CBOs and private sector organizations and agriculture and natural resources management public organizations to support the development of small holder, market oriented agricultural production systems'. This section presents the status of outputs that are expected to contribute to the achievement of the capacity building outcome

Increased knowledge, awareness, understanding and skill of staff in public organizations, in research and educational institutions to enhance their capacity to better respond to the needs of farmers.

The various capacity development activities have resulted varying level of increase in knowledge, awareness, understanding of staff of public institutions about different technical aspects of the priority commodities. These changes are observed in SMS and DAs who got the chance to participate in training of onion seed production, dairy, fattening and fishery. Some key staff members who are working in natural resource and gender department also said the workshops organized in these areas helped them to have deeper understanding of gender and HIV/AIDS issues. SMS who have participated in environmental assessment reported that they have improved their capacity in environmental impact assessment.

In addition to these technical issues, OoARD staff said their knowledge and understanding about market oriented commodity development, participatory planning and innovative extension approach have improved as the result of their active participation in the project's work.. Some of interviewed training participants said the trainings were effective in improving their capacity as the approaches and methods build on their experience and knowledge through practical involvement.

The project is also contributing to the increased human resource capacity of OoARD staff by providing long term training opportunity at B.Sc and MSc level. In this regard, five staff members of OoARD are studying at B.Sc. level and one staff at MA level in different fields of study..

Areas of focus of capacity building:

- Urea treatment of crop residues for animal feed
- Trypanosomiasis control (exposure visit to Dale)
- Onion seed production (visit to Zeway)
- Ground water utilization
- Pasture improvement
- Wax production,

Increased knowledge, awareness, understanding and skill of farmers to enhance their capacity to better respond to the needs of farmers.

To comply with the need to effectively manage the new priority commodities various trainings and exchange visits were conducted which capacitated farmers in different aspects of the priority commodities. The gradually growing result of the capacity building effort can be seen by the way farmers started using different technological, input supply, credit and marketing innovations. Some examples of these changes are:

- Farmers who trained in onion seed production have started using the knowledge they got from the training.
- Farmers who took training in Trypanosomiasis disease prevention and control revealed that their awareness about the cause, prevention and control of the diseases have improved. They have started using new skills such as setting traps for disease causing flies and applying Pour-On chemical
- Farmers engaged in fattening and dairy also reported they have shifted to improved management practice in terms of housing, feeding etc

However it is difficult to say that all the trainings and exchange visits have brought the intended changes of improving awareness and skills of farmers and private sector organizations. For example, despite the training given to members of a dairy cooperative, they didn't get adequate knowledge and skill to manage the cooperative and maintain its property

Focus areas of capacity building for farmers:

- Trypanosomiasis control
- Onion seed production
- Dairy production
- Fattening

Collaborative network arrangements between farmers, CBOs, public and private sector organizations developed

In order to promote collaboration the project developed different institutional arrangements that aimed to create strong linkage among stakeholders. In this regard Regional Advisory and Learning Committee (RALC), and Woreda Advisory and Learning Committee (WALC) and different commodity platforms are used to promote the culture of collaboration and joint learning.

RALC and WALC are multi-institutional learning and advisory committees established since the start of the project at Regional and Woreda level respectively. RALC consists of regional bodies such as BoARD, ACSI, Cooperative and OoARD. The role of RALC in facilitating learning and dissemination of experiences to districts outside the intervention PAs was low. So far RALC members participated in few joint WALC/RALC meetings and field visits. Apart from this, for most of the time in the past two years, RALC failed to conduct its regular meeting. Interviewed members of the committee gave different reasons for this: lack of clear terms of reference for the role and responsibility of RALC, members high authority status and business; which made arranging meeting difficult and long distance of the project implementation site. Moreover, lack of mechanism which obliged PLWs to get RALC approval before submitting their bi-annual activity reports to IPMS Head Quarter made RALC a nominal figure in the overall structure of the project.

Members of WALC are Head of OoARD and heads of its different departments and other Woreda level offices (Small Scale Trade and Industry , AISCO, ACSI HIV/AIDS and Gender offices, Since the beginning of 2007, some Zonal offices such as Zonal ACSI, and agricultural research centers like Adet, Andesa, and Bahirdar Fishery were also included as WALC members. Unlike RALC, WALC members believe that the committee has served as a good inter-institutions mechanism for knowledge sharing . WALC members said that they have learned a lot from joint planning sessions, other meetings of the project and, monitoring field visits.

Individual and institutional linkages of the staff of OoARD have also improved. In this regard the individual staff members said they are now better linked to national research

centers (e.g Adet, Bahirdar Fishery) and international research centers (e.g. World Fish and ILRI), other private sector organizations (e.g. Garage which make fishing boat, Big Hotels in Bahirdar, private companies which exports sunflower) and NGOs (e.g. ILDP).

The commodity platforms were also used to partnership around a certain commodity. for example, . a platform created for onion seed production, and fattening helped IPMS/OoARD and other relevant stakeholders to work in much closer and, more coordinated way among each other. These platforms provided a forum where problems on onion seed production and fattening are addressed through a series of dialogues between different actors. The dialogues were holistic combining different levels of organizations at PA (farmers and DAs), Woreda (SMS, IPMS, Woreda Administration) and regional (BoARD, ACSI, Adet Research Center) level as a way of addressing the different dimensions of commodity development (input supply, production, credit and marketing). The various on farm research and demonstration activities have also improved the involvement and linkages of partner organizations with the OoARD. For example the upland rice demonstration and the process used to certify onion seed producers have improved the linkages between the OoARD, Adet Research Center and BoARD.

In order to improve the capacity of the OoARD demonstration materials also provided. In this regard two honey pressers were provided to OoARD as demonstration material for wax production

Remark on Capacity Building

As described above the different capacity building efforts has brought change in skills and understanding of farmers and staff of public institutions, which is different from non-intervention PAs. However some of the capacity building efforts given to staff of OoARD won't be in use as there is high staff turnover in the OoARD. Moreover, the effect of high staff turnover is worsened by the fact that lack of accompanying reading materials which can be left to the next DA or SMS. Even though the platforms and WALC are well-functioning, facilitating communication and linkage among RALC is

needed. Especially SMSs and other actors who participated in the different platforms view the platforms as a strong instrument for enhancing knowledge sharing, local ownership, strengthening partnership and co-ordination of external and domestic resources. Moreover, both WALC and RALC should be linked with RELC, a committee facilitated by research institutes with the objective of strengthening linkage among research, farmers and extension.

4.3 Commodity Development

Analysis and diagnosis of annual work plan for the PLW is completed. The diagnosis identified major bottlenecks and potential of the Woreda for market oriented agricultural development. The annual work plans of the project were developed together with OoARD staff and was well integrated with the priorities of the Woreda and regional development plans. There is coherence between the project aim and the government objective in the agricultural development sector. The selected priority commodities are based on the priority of the community and reflects the development plan of the OoARD plan.

Appropriate technologies, processes and institutional innovations identified & promoted

A number of appropriate technologies process and institutional innovations identified and prompted. In these regard improved planting materials/breeds, farm equipment, implements and drugs are introduced and promoted. Apart from these technology innovations, institutional arrangements such as linking producer groups to market, grouping farmers , linking producers groups to market and promoting farmer based input supply system were promoted. These technologies, processes and institutional innovations helped farmers to have access to improved market information and be productive, improve product quality, storage and processing ,

Number of appropriate technologies and processes identified & promoted.

- Onion seed production technique was introduced for a group of farmers. These farmers have started using scientific methods, which they learned during training. Currently onion seed is produced in the Woreda.
- One prevalent disease in the target area is Trypanosomaosis, and the project, in cooperation with ILRI, OoARD, the Regional Veterinary Laboratory, BoARD, and the cooperatives, developed strategies for community-based Trypanosomaosis prevention and in two PAs, which capacitated farmers and cooperative members in dealing with the disease. The strategy supports a two-faceted approach, which not only focused on treating sick animals, but also in disease prevention. Pour-on medication (to kill the flies and prevent transmission) and anti-helmentic drug , as well as setting up fly traps which are new technologies were introduced.
- Dairy cooperative in two PAs was capacitated to engage in market oriented dairy development. Before the project interventions the cooperatives existed, albeit in name only. These cooperatives were not functional at all until after the project was well under way. The project facilitated the cooperative to rent a house and get milk processing machineries from ILDP project. In addition to these two Forage species (Sespania and elephant grass), which can easily be propagated by cutting and replanting were promoted.
- Fattening as a business is also introduced. The fattening program involves stall feeding, with hay, rice straw and rice bran, leguminous straw, and *noug* cake being their main diet. De-worming tablets are also introduced to keep the cattle healthy.
- Fishers groups were established. Farmers are trained and given credit for the purchase of fishing boats and other fishing materials through ACSI.
- Other technologies introduced include:
 - Round up Chemical for controlling grass type weed was demonstrated
 - Transitional and modern beehives were promoted.

- The introduction Washera sheep, sheep breed in West Gojam known for its high growth performance and large frame, was facilitated. This breed kept in 5 individuals helped to improve local breeds. At the time of data collection more than 30 hybrid offspring were born from this breed
- A trial which tested the performance of four upland varieties of rice were conducted together with Adet Research Center

Input Supply

- A new system of requirement assessment for drug and other input needed to prevent and control Trypanosomaosis was designed with the full participation of DAs, SMSs and cooperatives. This new supply system proposes that a trained group of two to four farmers do demand assessment in their respective *gote* (villages) and report their findings to the cooperative through OoARD. The cooperative then sums up the total requirement, buys and stores the drugs, nets and other materials needed. The farmers in turn buy what they need from the cooperative and put to use what they can or provide the drugs for veterinarians to administer.
- Washera breed introduced in two PAs are giving bull service to the community. The first four sheep now impregnate more than 30 sheep which latter gave birth to new hybrid sheep.
- Private bull station was established in two places. The bull doesn't start giving service
- To eliminate onion seed production Farmer to farmer onion seed supply system established. These producers got technical support from the BoARD seed unit to produced certified seed. Out of the initial 26 farmers who are trained on onion seed production, 20 of them passed the certification process, which makes them the first legally approved onion seed producers in the Region
- Farmer to farmer rice seed supply system (through on farm seed multiplication) promoted.

Marketing

- Method for post harvest handling of onion was introduced. Even though farmers found this method effective, they couldn't use it as a result of large amount of onion production.
- Onion market information was gathered and disseminated to farmers, brokers and traders. Onion producers were also linked with brokers and traders in Fogera, Desei, Mekele and Addis Ababa. Farmers and brokers got telephone number of traders, which helped them to know up to date market price.
- Two cooperatives which were established years ago, but remained inoperative, were strengthened to engage market oriented dairy development. The cooperatives were helped to establish dairy shops. Market linkage was also formed which led to signing of a contract with one of the biggest hotels in Bahardar, Dib Anbessa, to ensure that reliable market at a reasonable price.
- As the local people had a problem considering the processed milk as substandard, the project, run few promotions in local cafés so that people can taste skimmed milk and find out for themselves that it was not different from what they are used to drinking, which was for the most part successful in increasing demand
- Fishers groups are linked with Ethiopian Fish Enterprise. Preliminary agreement is reached between fishing groups and the Cooperation for the latter to buy fish if the groups produced 300 kg of fish per day.
- Other marketing intervention include promotion of tomato juice, which is done in Bahirdar to create more demand for tomato producers by creating more demand through multiple use of tomato.
- Even though fattening group members feel that there is an already established market and demand for fatted animals, IPMS together with OoARD has put members in contact with meat exporters and processors in Gonder.

Credit

Credit fund is made available for fattening and apiculture groups for the purchase of oxen and fishing materials including fishing boat, respectively.

Remark on commodity development

The project grouped individual farmers, introduced value adding system and provided access to market information. It also assisted farmers in improving product quality, storing and processing. It linked producer groups to wholesalers and agro processing and export marketing parties through various forums. As all these activities are done together with OoARD staff whose sense of ownership is good. But there are issues that will grow into bigger problems unless promptly resolved.

Even though farmers and DAs were trained on different priority commodities which has raised their awareness considerably, retention of knowledge is a problem and some of the techniques (e.g post harvest handling of onion, alcohol test etc) are hardly practiced. Moreover, there is a high level of staff turnover (especially DAs), so people who are trained and experienced are not always there to guide the farmers whenever necessary. It might help if a manual is available on site so that the new DAs refer to it to update themselves from time to time.

Strengthening the Dairy cooperative has become a success to some extent. effort was made to curb the problem of animal feed by introducing forage species. However, farmers are still using wheat bran which is sold for ETB160 a quintal in Bahar Dar and not at all affordable by the majority. The forage species were distributed at Woreta Zuria PA which is relatively dominated by urban dwellers, but they couldn't make effective use of them because of shortage of space to plant them. This problem becomes less of a concern for the second cooperative members who are located farther into the rural parts as there is a relatively more land available to plant the forage species, but it was very difficult to ingrain the idea of planting only to harvest for cattle feed into the members' frame of mind, however practical and convincing the reason may be. Finally the involvement of women in most of the intervention is insignificant.

4.4 Research

The project generated knowledge on innovations mainly based on lessons learned in the PLS. other researches were also done by attachment students and graduate students sponsored by the project staff, as well as staff from national and international partner

research institutions. The number of studies conducted and their title are presented below.

- Constraints of animal production with reference to meat and milk production-
- Dairy marketing in Fogera (Student)
- Market chain analysis of vegetable (Student)
- Characterization of poultry production in Fogera (Student)
- Major economic importance of livestock diseases in Fogera (attachment student)
- Rapid assessment of the situation and the control mechanism of Trpanosomosis (ILRI)
- Rapid assessment fish marketing (World Fish and ARARI)
- Innovation history of private onion seed supply development
- Gender and socio-economic analysis of priority marketable commodities
- HIV risk and AIDS vulnerability impact assessment studies

Crosscutting Issues

Training on common understanding of national, regional and Woreda level of gender and HIV/AIDS issues was held including women affairs, religious institute leaders, HIV/AIDS secretariat, Woreda Health Office head, HIV/AIDS clubs, community consultations facilitators, Woreda female association leaders, Woreda ATEVET and gender representative of public institutions. Finally planning of gender and HIV/AIDS annual plan were proposed with mainstreaming to each commodity development activities of PLWs. A summary report and gender fact sheets for priority commodities were also prepared In the workshop information about national and regional situation is shared. Printed material which are believed to raise awareness about HIV/AIDS are included at WKC

In commodity development and capacity development front also the weakness observed. As the activities of the capacity development component focused on males, female did not benefit from these activities. Females could benefit from the introduced technologies and institutional innovations in the future through the scaling out activities. But the existing reality revealed that, during the past two years , the project failed to directly benefit women. This failure was brought mainly by the project' selection criteria to be included in group of farmers who participate in the project. The project select 'model'

farmers who usually happened to be relatively rich and educated farmers. This criteria exclude women (and also other resource poor and or illiterate farmers) from participating in the activity. The other problem is with the choice of the priority commodities. Most of the priority commodities require some sort of asset to start and women do not have these assets. Moreover, the DAs failed to select female farmers saying they are not willing to participate in the activities. However, field visits made to intervention and non-intervention PAs revealed that females if given the opportunity are willing and able to participate both in capacity building or commodity development activities. But the conventional capacity development activities may not be suitable with the reality at the ground. For example, instead of arranging the trainings far from the villages, introducing technologies in which females have strong motivation, providing credit for female participation etc may help boost the weak female participation in the project.

Even though the project has a strategy that aimed at mainstreaming gender and environmental concern the results obtained in this regard are not much. Brochures are prepared together with HIV office and distributed at schools

Is the capacity building result gender balanced

Considering the problem of grazing land incursion by *Hygroophila Auriculata* (Amecila), a thorny weed, the project organized consultative meeting between the OoARD staff members. Based on the agreement reached in the consultative meeting a campaign was organized for eradication of an invasive thorny weed (Amicila) through mass mobilization in six highly invaded peasant associations. A Leaflets were distributed to farmers and discussion forum was organized and the process is documented. In this campaign work a 7, 298 male and female participants cleared about 270 ha of grazing land. Rehabilitation of degraded land is also being done together with OoARD.

5 Alamata

5.1 Knowledge Management

Increased understanding and awareness of the knowledge requirement for managing new commodities (knowledge gap identification)

The initial diagnosis survey helped to become aware about the knowledge gaps of each priority commodity and what is required to address it. An inquiry by the community, DA's and frequency of interface between the different stakeholders shows the increase in understanding and awareness about the knowledge requirements for managing the new commodities. There are some cases in which farmers requested OoARD/ IPMS about specific knowledge in particular subjects. A good example could be knowledge on how to solve onion disease problem. This understanding of the gaps will help the project to be engaged in further capacity building by giving training. This is also reflected by the DA's and experts to address the problems.

Increased availability of knowledge in various forms

Knowledge is made available in various forms to the community, DA's and OoARD through different mechanisms. Knowledge asset on diary, forage, paravet, fruit and vegetable is given in the form of formal training participation. And also written form training materials for capacity development activities. This include manual to experts on vegetable and fruit production, forage and feed management, and computer software's. In addition, the Woreda Knowledge Center was organized around the time of WALC-RALC meeting on February 2007 as a ready access point to get information. At first the computers were distributed among three heads. Now they all are in the same room though they are not working. The knowledge center has got around 36 books.

Enhanced knowledge sharing system established

Various knowledge sharing mechanisms were conducted in the region and at PLW. Mainly these include Agricultural Technology Exhibition, Woreda Knowledge Centers, Study tour, Field days, Demonstration, Platforms, Facilitation of FTCs as knowledge centers and Facilitation of Community of Practice (CoP) groups. These are used to help the stakeholders in disseminating the available knowledge.

The agricultural technology exhibition was triggered by IPMS and conducted in collaboration with the regional BoARD in the year 2006. However, the second regional agricultural technology exhibition was conducted in Mekelle with full responsibility of the region in year 2007. Following the regional agricultural technology exhibition as a means of knowledge sharing many Woredas conducted similar exhibition which include Alamata PLW. Farmers and experts from Alamata woreda, who participated in the exhibition have shared their experience and gained knowledge. Farmer to farmer discussion, observation and witness of the technologies enhanced very good knowledge sharing among farmers. Following the regional agricultural technology exhibition Alamata PLW has conducted agricultural technology exhibition at woreda level and are planning to expand it at PA level.

Computers, printer and around 36 books (mostly from some international sources like ILRI, World Bank and other CG centers) were given to the woreda OoARD for the Woreda Knowledge Center. Computer training to 6 experts of the office was provided at Sheba College, Alamata campus. Discussion was held with the woreda OoARD to allocate separate office, assign responsible staff and furnish with shelves and tables for better management of the knowledge center. However, the Woreda Knowledge Center was organized around the time of WALC-RALC meeting as a ready access point to get information. At first the computers were distributed among three heads but now they all are in the same room though they are out of use.

A field visit to Debrezeit was undertaken on January 2006. It consists of 31 farmers selected from members of milk producer cooperatives, 6 woreda experts and 1 from Alamata Agricultural Research Center. The team during its two days tour in Debrezeit has visited Jerusalem kindergarten and social development enterprise, Genesis farm plc,

“Ada” Dairy Cooperatives and exemplary model farmers who have brought change in their daily farm activities.

The IPMS-Alamata in collaboration with the Rural Agricultural Development of the *Tahtay Maychew* woreda, Central Zone of Tigray organized a field visit of farmers in the woreda. Accordingly, the field visit was conducted on May 2006. The team consists of 18 farmers selected from the 8 PAs, one woreda irrigation expert and one woreda extension team leader. Farmers fields visited include Farmer Malede Abraha, W.mariam W.Wahid, W/ro Haworya and Kalamino Dairy Farm.

As a continuation of the training to experts in the woreda on fruit production, IPMS-Alamata in collaboration with OoARD have identified PAs which have better source of water and listed farmers willing to establish fruit in their plots. Accordingly, a total of 32 farmers (6 of them Women) have visited farmers’ holdings and OoARD fruit nursery site at Mersa (Habru woreda of Amhara region) to encourage farmers in fruit production.

The other mechanism which helps to enhance knowledge sharing is establishment of platforms. One was done with Aberegele for fattening. They took 112 farmers to make a visit in the company as demonstration from the 3 PA’s of Tao, Dayu and Gelile. It was done with the participation of 7 stakeholders as members. The plan is to get feed for fattening from the company so that in the future they will be able to get fattened animals in the market. This is to help them increase the size and be able to open Slater house. The second platform has been established with Land O’lakes. The company will be interested to buy milk supplied by the cooperatives if they will be able to provide in volume.

IPMS Alamata in collaboration with the OoARD has progressed well in introducing technologies and undertakes demonstrations at the FTCs. Two of the FTCs (those in Gerjele and Selam Bekalesi PA’s) have well developed forage, lowland oil crops and fruit plantation as demonstration. Farmers trained on cattle fattening and fruits plantation have observed and made discussion at the FTCs and convinced to apply their training.

IPMS Alamata assisted in establishing the Dairy Cooperative in Alamata woreda as being one facilitation of community of practice groups. About 40 farmers and experts had study tour to Debre Zeit and visited Ada'a Dairy Cooperative. Farmers gained very good experience from the exposure and shared it with their fellow farmers in Alamata woreda. Members of the Cooperative increased from about 20 in June 2005 to around 150 in April 2007.

In addition, meetings and discussion were conducted with woreda experts and DAs during the training of priority commodities. At the end of the training, there is a discussion or dialog about sharing knowledge on the specific commodities. WALC and RALC meetings were also associated with knowledge sharing experiences during the general discussion at the end of the meeting. The RALC/WALC meeting was also associated with field visit to share experience and knowledge in the spot.

Remark on knowledge management

In the PLW the activities which have been implemented during the last two years has been acknowledged by OoARD, BoARD and other stakeholders to result the expected improvements in understanding and awareness of the knowledge requirement for managing new commodities, increase in availability of knowledge in various forms and enhanced knowledge sharing system established.

However, to strengthen these positive indications, it is good if the Woreda give attention to the established Woreda Knowledge Center to be used for the intended purpose. Staff members also suggested the need to use different techniques which promote the knowledge center. One major reason given by the woreda staff for not using the knowledge center was the time that they spend in the field work. Moreover, less participation is observed from the research side in provision of written materials.

Finally, to develop the knowledge sharing mechanism in the form of platforms, follow ups should be done to strengthen the projects coordination with private sectors or NGO's

like REST and other stakeholder. This will help to establish conducive institutional environment for commodity development.

5.2 Capacity Building

To strengthen innovation capacity of farmers, pastoralists, community based organizations, private and public sector organizations, various activities on capacity building and development of collaborative network arrangements have been done.

Increased knowledge, awareness, understanding and skill of staff in public organizations

The different capacity development activities listed below have resulted in an increase in knowledge, awareness and understanding of public institutions. This increase is observed in some SMS and DA's who got the chance to participate in the study tour, field visit and trainings. The short term trainings on capacity building activities were on Dairy Management and Crop Residue Utilization, Paravet training of farmers on animal health management, Improved Vegetable production under drip and sprinkler irrigation, Improved Sesame Production, Begait Breeds Management for Dairy Purpose and Crop Residue Utilization, Seedling Management and Techniques of Propagation in Fruit production.

Moreover, public staff were involved in awareness training on main project concepts, Skill development Woreda experts on computer training, Sesame and groundnut production and pest control, Emergency maintenance and usage of Motorbike, Bee keeping, Paprika training, Provision of demonstration and training materials to Woreda and FTCs.

Most of the knowledge gained from the capacity building activities are linked with the commodity development component. For example, the visit to Debrezeit and training on diary triggered the OoARD with major effort done by IPMS to strengthen the Dairy Cooperative in Alamata woreda, to increase the demand for high yielding cows and to

change the feed in order to get more milk production. This new knowledge gained from the capacity development effort created a renewed interest from the concerned woreda experts. Similarly, after the visit to fruit nursery site in Mersa and Tahtay Maychew woreda with the training given on fruit for staff members of OoARD, creation of higher demand for fruit seedling and initiation of private fruit nursery was observed in the woreda.

The project also provides long term training at MSc and BSc level. Selection of 2 female candidates was done for MSc training in the area of Agricultural Marketing and Agricultural Extension and 2 experts for their BSc training.

Generally, due to the reason that the OoARD staffs are involved in problem identification, intervention design and farmers grouping together with the project, their knowledge has improved. The trainings capacitated both in approaches and methods of building their experience and knowledge through their practical involvement.

Increased knowledge, awareness, understanding and skills of farmers

With the need to manage the priority commodities, it was tried to give training in order to capacitate farmers to make them compete in managing the commodities. Trainings and field visits were given to farmers in collaboration with experts from research, university and other stockholders. The training tried to cover the production, input supply and marketing side depending on the priority commodity considered. The trainings which were taken by farmers include Dairy Management and Crop Residue Utilization, Paravet training of farmers on animal health management, Improved Vegetable production under drip and sprinkler irrigation, Improved Sesame Production, Begait Breeds Management for Dairy Purpose and Crop Residue Utilization, Seedling Management and Techniques of Propagation in Fruit production.

Moreover, the farmers were involved in the capacity building efforts of Emergency maintenance and usage of water pumps, Bee keeping, forage and feed management, Fruit,

Vegetable and spices production, Tropical Fruit Production and Cattle fattening and feed utilization. And also practical training of homestead gardening for women farmers was included.

This capacity development helps them to get practical experience and create demand for the new priority commodities. Efforts were also vested to change the capacity building trainings into practice through improvement in the supervision system of the woreda OoARD. The result can be seen in the number of trainees. An example could be the Strengthening of the dairy cooperatives through training on feed and breed selection in Temuga PA to improve the livelihood of farmers. Similarly, demand for fruit seedling is observed to be high. According to the document review done with DA's in Gerjele PA, the demand for fruit seedling by 250 farmers is found out to be 3600 (mango and avocado being the highest). Thus the fear is how to fulfill the high demand being created in the areas with the limited number of fruit seedling set for the woreda by the region.

Collaborative network arrangements between farmers, CBO's, public and private sector organizations developed.

Project awareness activities were conducted for the public staff (Woreda experts, supervisors and DAs) and farmers on different occasions. For the public staff, project awareness was conducted inline with every meetings and discussions. Nowadays, project awareness activities to the public staff are done more by the OoARD than the project staff. Project awareness among farmers was conducted on occasional events such as farmer field days, special public holiday meetings and training. For experts, private sector and NGO staffs, project awareness was broadcasted on different occasions using Wayne radio, ETV and local news papers.

Project awareness activities were also well spread through WALC/RALC members. RALC/WALC is the collaborative arrangements created by the project to share information among the different stockholders. WALC has been functional since the start of the project with a plan to meet every month. The members are from the different

sectors of OoARD, research, private sectors and heads of gender and HIV. Problems were observed in the first years, mainly due to the misunderstanding on the project objectives and strategies. However, in the second year of the projects life, the effectiveness of this learning committee improved due to more clear understanding of the projects objective. The meetings by these WALC members are meant to scale out successful technologies, share knowledge, give suggestions/feedback regularly and to make important decisions.

In relation to the linkage with research, Mekelle University is involved in students fellowship and supervision. The Alamata research center is planning to make intervention in PA's of Gerjele and Timuga swampy areas. They are planning to create awareness and adaptation of potential crops like rice, bamboo and forage crops. This takes into consideration the soil laboratory result that is being done in Mekelle research center and will incorporate other solutions.

The linkages done with private sectors include the relation with Abergele to provide feed for the fattening platform, where members include OoARD, Wereda Youth Affairs (WYA), TARI, IPMS-Alamata and Dedebit Micro-finance. After a long debate of the group in respect to selection of appropriate PAs and target group, an agreement was reached to initially start with 3 PAs (Gerjele, Laelay Dayu and Tao) to make a visit to the nearby site of Abergele PLC. As to target groups, farmers who are already enrolled in the fattening food security package and landless youths were identified. In addition, the need to find market for milk producers who are members of the diary cooperative is in process. And agreement is being done with Land O'Lakes in getting market for milk producers if they will be able to produce in large volume.

Remark on capacity building component

As described above the different capacity building efforts has brought change in the skill and understanding of farmers and staffs in public organizations by building their experience. The farmers can benefit more from the capacity building since they are very

close to the practical work. Generally, with respect to other Woreda's better linkage is seen in the capacity building efforts and specific actions.

However, some of the DA's have complained that they are not being invited to attend in some of the capacity building activities due to the more focus being given to farmers without their participation. In addition, they have commented the need to give attention to provide the accompanying reading materials for the given trainings to be left for the next DA or SMS when there is turnover to enable us increase the effort of spreading skill and understanding.

WALC members, farmers, SMS and some DA's appreciated the quality of the training being provided to them with a support of selected professionals. However, they have suggested the need to increase the time of training to help them train others who didn't participate in a more formal way than the informal way that they are following.

5.3 Commodity development

Establishment of the PLW

Alamata PLW is established and is strategically linked to the priorities of the Woreda and regional development plans. Analysis and diagnosis of annual work plan for the PLW is completed. The diagnosis identified the major bottlenecks and potential of the Woreda. The annual work plan is found to be well integrated with the priorities of the Woreda and regional development plan especially in the 2007 annual work plan.

Appropriate technologies, processes and institutional innovations identified and promoted.

Number of appropriate technologies and processes identified and promoted

- 1) Dairy management and Crop residue utilization
- 2) Paravet training of farmers on animal health management
- 3) Improved Vegetable production under drip and sprinkler irrigation
- 4) Improved Sesame Production

- 5) Begait Breeds Management for Dairy Purpose and Crop Residue Utilization
- 6) Seedling Management and Techniques of Propagation in Fruit production
- 7) Emergency maintenance and usage of Motorbike / water pumps
- 8) Bee keeping
- 9) Tropical fruit, Vegetable and spices production
- 10) Cattle fattening and feed utilization
- 11) Improved Forage Development and Utilization Training
- 12) Awareness creation and adaptation of potential crops (Bamboo, Rice, and forage crops.
- 13) Awareness creation on protecting open grazing in irrigated areas
- 14) Awareness creation on necessity of forage development in their farmyards to farmers

Number of institutional innovations identified and promoted (e.g. production, input supply, credit and marketing)

A number of production technologies, input supply system, marketing mechanisms and credit are made available.

Production technologies

- Introduction of forage seeds and planting materials from Werere and Sirinka research centers was undertaken to Ula Ula forage nursery site, FTCs and individual farmers where some intercrop it in their plot and some plant it in their homestead backyards. In addition, they brought six varieties of forage from ILRI. The nursery site was selected due to the availability of irrigation in the area. In the beginning, 0.5ha of land was given to reproduce the forage seed and got around 6-7 quintal. The produced seed was given to the woreda expert in the feed desk to be distributed to farmers.

Then it was distributed to four farmers where one is a woman. In the second phase, due to the positive output seen, the land has increased to two ha. They are now expecting to produce in bulk to be distributed to farmers through the responsible body in the woreda. The forage is mainly dominated by cow pea variety of forage.

- Begait breed varieties introduced. After the visit to Debrezeit, there was demand for cross breed cows which was impossible to provide it. Then the solution was to

select local cows and to cross breed it using AI service to make them high milk yielding cows. This increase demand for AI service since at the minimum two farmers will use AI service with in a day with one AI technician in the area. By using farmers as a convincing measure with the support of the trainings given (where women dominate) and increase in Begait heifers observed. Specifically, at the beginning 36 farmers demand 40 Begait. Then the Begait was supplied through the input supply department by credit. Now around 120 farmers are demanding for Begait breeds and others are still applying.

In addition, the visit to Debrezeit helps them to understand the benefit of using high yielding cows and be organized in a cooperative. For example in the case of Desta diary cooperative, members of the cooperative increased from about 20 in 2005 to around 150 in 2007 where 75% are women. And interview has been done with Sendayo Berehe to check on how the cooperative help them to change their life.

- Improved *agronomic* practices on vegetables (onion, paper and tomato) were introduced to improve the productivity of these commodities.
- Use of chopper to increase utilization of crop residue for fattening was initiated by IPMS but it isn't yet been operationalized due to inability to pay for the material.
- Adaptation trials in rice, sesame, Chickpea, cotton, sorghum and groundnut varieties. To acquire improved varieties of selected commodity crops and forage species from Werer Agricultural Research Center (WARC) that will be used for adaptation trial and demonstration in the FTCs as well as swampy areas of Timuga and Gerjele PAs.

Input supply

- Alamata woreda is the first in providing fruit seedling to the region. This being the case, the woreda wasn't using the potential it has. Latter on with visits done to Mersa and Tahtay Maichew, Alamata farmers started started to understand the benefit and took the whole seedling supplied for the region. Then the region has started to set a limited amount of seedling to be taken by the woreda. This also leads to the development of private fruit nursery sites. About 8 Farmers who

joined the Meresa study tour on fruit production were communicated and 4 farmers were selected to establish their private fruit tree nursery and become fruit seedlings suppliers in Alamata woreda. An example could be fruit plantation by Mohammed Habeto. After coming from his visit in Axum, he planted 100 mango, 80 avocado and 400 pappaya. He planted all the seedlings in one plot which was a plot for Teff. In the future he is planning to include vegetable and expand his plot for more fruit production. In addition, around the plot he prepared water lifting well based on what he learnt from his visit to be used for the plants in the dry spell period.

- They are planning to give training to four farmers which they think them to be private onion seed producers.
- Those individuals who got the chance to get forage seed and plant it in their homestead backyards are going to be provide forage seed to the market.

Marketing

- **Onion Marketing Intervention.** About 512 hectare of onion was planted in the past rain season on supplementary irrigated land in Alamata woreda. It was expected that more than 60, 000 Quintals of onion will be harvested and market was anticipated to be a challenge. IPMS Alamata found contact addresses of potential buyers in Mekelle, Adigrat and Shire and handled the addresses to Alamata OoARD and the Union. Alamata Union was involved in stabilizing the price and increasing the bargaining power of farmers on onion market by computing with assemblers and brokers. Currently farmers are selling their product at better price.
- Effort was done to link cotton producer farmers from Timuga and small scale buyers from the central part of Ethiopia. However, it was not successful due to reasons related with previous cotton price in the woreda.
- Facilitation and creation of linkages of farmers with input suppliers and buyers like Abergelle Livestock Development PLC in fattening.
- Facilitation of linkages of farmers who produce milk with buyer like Land O'Lakes PLC if they will be able to get it in volume.

Credit

- Waiting fund to buy cattle for fattening. The reason not to get into in action is the project proposal feasibility study says that cattle are expensive due to the increase in the price of cattle.
- Helped to provide Begait by input supply section on credit bases

Remark on commodity development

The concept of commodity development i.e. addressing issues of input supply, production technology and marketing of commodities was adequately dealt in the commodities that the yare giving attention. In addition, the commodity development activity in the woreda is also trying to change the activities that they consider into an action.

5.4 Research

This part mainly focuses on generating knowledge based on the studies and lessons learned in the PLW. Then it planned to be used by the project's learning structures like WKC, FTCs and by the institutional arrangement. An example could be the studies made on Gender and socio-economic analysis of priority marketable commodities, and risk and AIDs vulnerability impact assessment studies.

There are researches in progress with the contribution of MSC students and attachments. List of on-going research projects, their status and contribution to commodity development, capacity development or knowledge management are:

The two veterinary students from Mekelle University who were attached to Alamata PLW and conducted their attachment studies titled:

1-“Status of Artificial Insemination in Alamata Woreda” and will have an input to fattening in the PLW.

2-“Animal Disease Prevalence and Outbreaks in Alamata Woreda” and the report of the study have an input to dairy in the PLW.

Crosscutting Issues

Gender, HIV and Environmental issues are the cross cutting issues which are planned to be mainstreamed in the overall project activity. These issues in knowledge management are addressed by providing publication which deals on gender, HIV and environment. However, these publications are in the hands of IPMS and the concerned experts on the issues rather than being provided in the woreda knowledge center.

In relation to capacity building, Gender and HIV planning workshop was held on 2005 in Alamata PLW. And the output of IPMS Alamata gender and HIV/AIDS action plan developed in partnership with local stakeholders and other partners. In the long term training, the project gave 50-50 chance to men and women staff to participate in the trainings which was very much appreciated by the staff.

With regard to mainstreaming cross cutting issues in the projects commodity development component, the result obtained is significant. Their annual work plan was proposed with mainstreaming to each commodity development activity in the PLW. An example could be, in the case of visit to Debrezeit in the first round all the 40 participants were women, the high women participation as milk producers in cooperatives is observed (approximately 75% of the members) and also their participation in practical homestead gardening training. This might imply that participation of women in the commodities that are being developed is given attention in activities that they do.

Not much has been done in relation to environment as such. Environmental assessment and screening report: the intervention programme concerned consists of five inter-related technology packages to be adopted and disseminated under the IPMS. These are Wetlands reclamation, Development of irrigation potential of the PLW, Cultivation with agrochemicals, an improved animal feed programme, and Use of livestock veterinary drugs. In addition, they are also planning to consider the escalation of prosopis.

General information from the PA's where IPMS don't intervene.

The selection of PA's based on with and without IPMS intervention was impossible in the case of Alamata woreda. Rather the criterion was to choose those PA's with higher

level of IPMS intervention compared to PA's with the least intervention. The two PA's selected with the least IPMS involvement are Tao and Selene Weha.

The PA's with less intervention has got information about the activities done by the project in the other PA's. The difference in the level of intervention creates a difference in understanding and skills of the farmers. This will lead to a gap in the living condition of farmers.

General information from the interview done with the RALC members (representing for both Alamata and Atsbi).

RALC is one of the collaborative arrangements created by the project. Like WALC, RALC meetings are needed to scale out successful technologies, share knowledge, give suggestions/feedback regularly and to make important decisions. RALC as collaborative network arrangement was established when the project starts to operationalize. In Tigray, they meet on quarterly bases (2 or 3 times a year) to review the annual work plan with the RDO, RDA, RALC and all experts. However, beyond the formal meetings done frequent communication is done in an informal way among the members. Mostly representatives from microfinance (disagreement created with the project) and regional women affairs (due to shortage of manpower that they have) don't attend the meeting.

Interview has been done with eight of the RALC member regarding the activities being undertaken in Alamata and Atsbi. This includes the chairperson of RALC who is the head of BoARD, head of agricultural sector in BoARD, head of NRM, representatives for the regional women affair, with representative for TARI, rural women development desk in the BoARD, with the manager of Land O'lakes and representative from REST.

The RALC members indicate the significant role played by the regional technology exhibition which was triggered by IPMS as a means of knowledge sharing mechanism. They were also positive about the experience sharing done in the south (at regional level). Another appreciable work was done in relation to the linkage with research. IPMS assisted a specific specialized training in Mekelle for 70 researchers and were given

manual on how to develop project proposal in a way that they will be able to get fund for the research center. TARI presented nine research projects to be conducted in the two PLWs (5 from Alamata and 4 from Atsbi) with the help of the training given to them on how to write research proposal. The relationship with TARI in the PLW is also in the fattening platform. Though there is much efforts and push by the WALC/RALC members to bring TARI to play its role in market oriented developments, the results are not satisfactory so far.

The RALC members appreciated the activities that are being done in the two PLWs. And also indicate that the system is owned by the region (develop common understanding). However, the only complain is to the Federal steering committee which was planning to include another Woreda. But the region was unable to get additional PLW due to the decision made without their presence. From the interview with REST, the possibility of creating platform activity in Alamata PLW is observed if they set time to discuss on issues that can interest both side.

6 Astbi

6.1 Knowledge Management

Increased understanding and awareness of the knowledge requirement for managing new commodities (knowledge gap identification).

The initial diagnosis survey helped to become aware about the knowledge gaps of each priority commodity and what is required to address it. Inquiries by the community, DA's and frequency of interface between the different stakeholders show the increase in understanding and awareness about the knowledge requirements for managing the new commodities. Knowledge gaps were identified either by the BoARD, OoARD, IPMS, DA's, community or jointly during different meetings, discussions and field visits. For example the community and DA's emphasized that pulse diseases are not identified and the possible control measures are unknown. IPMS, BoARD and OoARD indicated gap in practicing improved vet services in addition to spices and vegetable seed supply shortages like garlic. This understanding of the gaps will help the project to be engaged in further capacity building by giving training.

Increased availability of knowledge in various forms

Knowledge is made available in various forms to the community, DA's and OoARD through different mechanisms. Knowledge asset on small ruminant fattening, post mortem skin and hide, poultry, beekeeping, forage development, vegetable and spice management, and improved diary management is given in the form of formal training participation. And also written form training materials for capacity development activities. In addition, the established Woreda Knowledge Center is serving as a ready access point to get information. It has about 105 books with their lists, newsletters, CDs, journals and computer manuals. Most of the books are on socio-economics which includes irrigation, agriculture, agro forestry, animal health etc. The computers are found to be distributed among three heads of natural resource, planning and budgeting, and the woreda agricultural sector

Enhanced knowledge sharing system established

Various knowledge sharing mechanisms were conducted in the region and at PLW. Mainly these include agricultural technology exhibition, study tour, field days and woreda knowledge center which are used to help the stakeholders in disseminating the available knowledge.

The agricultural technology exhibition was triggered by IPMS and conducted in collaboration with the regional BoARD in the year 2006. However, the second regional agricultural technology exhibition was conducted in Mekelle with full responsibility of the region. The exhibition occasion coincides with the farmer's festival and IPMS received a Certificate of Award for its outstanding contribution on market oriented agricultural development in the region.

Following the regional agricultural technology exhibition as a means of knowledge sharing, many Woredas conducted similar exhibition which include Atsbi-Womberta PLW with the collaboration and support of IPMS project. About 1080 people were participants and visited the exhibition. In addition to farmers, students and civil servants were among the visitors. The agricultural technology exhibition was also conducted in 16 PAs across the woreda on different dates from 01-05 April 2007. On average each PA is visited by about 300 farmers. In all the PLW exhibitions IPMS was collaborating with the OoARD and about 50% of the exhibition expense at Woreda level was covered by IPMS. The support of IPMS helps a lot of farmers to attend the exhibition. On the occasion of the agricultural technology exhibition, outstanding farmers were awarded and IPMS received a certificate award for its active participation in the exhibition.

Books and CD Rooms are collected from ILRI-IPMS and others is placed in the WKC. A twenty nine inch color TV and DVD player is also placed in the WKC which has been a year since it was started.. Some of the Woreda experts are trained on computer skills. The woreda experts are being giving training to experts, supervisors and DAs using computer aided power point. Woreda experts document agricultural activities using digital Camera and the picture loaded to the computer and uses it to train others. A computer operation

skill is tremendously improved and the staffs request us to give further training on computer and internet use. The records indicate many users (more than 100) were borrowed literature from the WKC which is approximately 5 or 6 people to borrow book with in a week. The books are in archive due to the space problem that they face and to help them make follow up in time of clearance.

The woreda opened an ICT center recently with a diploma holder ICT expert. IPMS planned to link the computer use and access to information to be linked to the ICT center. Besides, the woreda and IPMS agreed to place the WKC and the ICT center sides by side or if they manage to get enough space, they are planning to make it on the same room. Field visit was done in Abraha-Atsbha PA in Wukuro on 2006 to see rainwater harvesting and foothill horticultural development using ground water, and community forage development and utilization. About 48 farmers (2 were women), a DA and supervisor, five woreda experts and a chief woreda administrator were the participants.

Visit to see Forage development in Golgol Naele and Barka AdiSebha PAs was organized on 2007. Of the total 101 participants, 47 were farmers (1 woman), 20 DAs (2 women), three supervisor, 12 woreda experts (no woman), 1 regional BoARD (a women), 11 woreda cabinet (2 women), 2 from woreda culture and information office and five drivers were participants. After visiting the area closure forage intervention in Barka Adisebha (68 ha) and full intervention forage development in Golgol Naele (26 ha).The farmers decided to scale out the area closure across the 16 PAs.

The other mechanisms which help to enhance knowledge sharing include demonstration and platforms. One was done with on beekeeping with DIMMA. Training with the support of demonstration on skin and hide was done by SHEBBA TANNERY. Land O'Lakes helps them in giving training on small ruminant fattening.

In addition, meetings and discussion were conducted with woreda experts and DAs during the training of priority commodities. At the end of the training, there is a discussion or dialog about sharing knowledge on the specific commodity such as

vegetables, pulses, beekeeping and forage development. WALC and RALC meetings were also associated with knowledge sharing experiences during the general discussion at the end of the meeting. The RALC/WALC meeting was also associated field visit to share experience and knowledge in the spot.

Remark on knowledge management component

In the PLW the activities which have been implemented during the last two years has been acknowledged by OoARD, BoARD and other stakeholders. It has resulted the expected improvements in understanding and awareness of the knowledge requirement for managing new commodities, increase in availability of knowledge in various forms and enhanced knowledge sharing system established.

However, to strengthen these positive indications, it is good if the Woreda give a separate room for the Woreda Knowledge Center. This will help to organize the books, computers and other material so that the knowledge center can be used by anyone who interested. In addition, to develop the knowledge sharing mechanism in the form of platforms, follow ups should be done to strengthen the projects coordination with private sectors and other stakeholder to establish conducive institutional environment for commodity development. An example for lack of continues follow p is seen in relation with Shebba tannery and loss of reputation in DIMMA PLC due to the long time taken to repay back credit.

6.2 Capacity Building

To strengthen innovation capacity of farmers, pastoralists, community based, private and public sector organizations, various activities and developing of network arrangements have been done. The various results realized from the activities can be seen as follows.

Increased knowledge, awareness, understanding and skill of staff in public organizations

The various capacity development activities listed below have resulted in an increase in knowledge, awareness and understanding of public institutions. These changes are

observed in some SMS and DA's who got the chance to participate in study tours, forage development field visit and trainings. The short term trainings are those on improved dairy management (Adigrat), improved dairy management (Mekele-Wukro), vegetable production, computer training, pulse production, beekeeping, skin and hide management, onion and potato seed production.

Some of the knowledge gained from the capacity building activities are linked with the commodity development component. For example, after the visit to see forage development interventions in Golgol Naele and Barka AdiSebha PAs, the increase in the interest of the farmers in scaling out the area closure can be highly supported by woreda experts and help them to fulfill their demand. Similarly, the training on skin and hide management helped the woreda expert to develop his knowledge and transfer it to the skin and hide collectors. This leads to have an impact on the price of skin and hide for goat and sheep based on the quality (grade) of skin provided. Those poor quality once are being sold at cheaper price and vice versa.

The project also provides long term training for MSc and attachment students. During the selection of candidates 50 % chance is given to female students. In addition, due to the reason that the OoARD staffs are involved in problem identification, intervention design and farmers grouping and linking activities are done together with members of public sector organizations, their knowledge has improved. The trainings capacitated all in approaches and methods of building their experience and knowledge through practical involvement.

Increased knowledge, awareness, understanding and skills of farmers

With the need to manage the new priority commodities, it was tried to give training in order to capacitate farmers to make them compete in managing the new commodities. The trainings which were taken by farmers include improved dairy management (Adigrat), improved dairy management (Mekele-Wukro), vegetable and spice management, beekeeping, onion and potato seed production. In addition, tour and field days on forage development has been done by the farmers. This capacity development

helps them to get practical experience and make them demand the production of the new priority commodities. And also efforts were vested to translate the capacity building trainings taken into practice through improvement in the supervision system of the woreda OoARD. The result can be seen in the number of trainees. An example could be the forage development to improve their diary production. After visiting the area closure forage intervention in Barka Adisebha (68 ha) and full intervention forage development in Golgol Naele (26 ha), the farmers decided to scale out the area closure to 419 ha and that of full intervention forage development to 424 ha of land across the 16 PAs.

However, it is difficult to say that all the trainings have brought the intended change required. For example, some trainees in vegetable and spice management got interested to produce garlic but problem of getting seed supply limit them to do what they know from the training. In addition, in beekeeping, after getting training they couldn't get into an action due to problem of getting credit. There is also further demand of training on beekeeping to effectively manage their production. Generally, even though there are some insignificant things which aren't given attention, might curtail the operation of some activities.

Collaborative network arrangements between farmers, CBO's, public and private sector organizations developed.

In order to promote collaborative network arrangements the project developed different institutional arrangements. In this regard RALC, WALC, RARIs and different commodity linkages are the major ones.

Project awareness activities were conducted for the public staff (Woreda experts, supervisors and DAs) and farmers on different occasions. For the public staff, project awareness was conducted inline with every meetings and discussions. Nowadays, project awareness activities to the public staff are done more by the OoARD than the project staff. Project awareness among farmers was conducted on occasional events such as farmer field days, special public holiday meetings and training. For experts, private sector

and NGO staffs, project awareness was broadcasted on different occasions using Wayne radio, ETV and local news papers.

Project awareness activities were also well spread through WALC/RALC members. RALC/WALC is the collaborative arrangements created by the project. These forums have been functional since the start of the project. The meetings are needed to scale out successful technologies, share knowledge, to give suggestions/feedback regularly and to make important decisions. This arrangement has been active for most of the time.

In relation to the linkage with research, IPMS assisted a specific specialized training to the Mekelle Research Center to increase their research involvement in beekeeping research and development. Thus a beekeeping technician from TARI was trained on queen rearing in Holleta Bee Research Center with the support of IPMS. The relationship with TARI or its research centers relatively improved but not to the desired level. TARI presented nine research projects to be conducted in the two PLWs with the help of the training given to them on how to write research proposal. TARI is being conducting market chain analysis on vegetable production in Atsbi-Woberta PLW. Though there is much effort and push by the WALC/RALC members to bring TARI to play its role in market oriented developments, the results are not satisfactory so far. Relation with Mekelle University is only through student fellowship and supervision.

The linkages done with private sectors include the relation with DIMMA on beekeeping development, with Shabba tannery to help them give practical training on the quality of skin and hide, and with Land O'Lakes in the training for small ruminant fattening and diary production. Partnership with Small Scale Enterprise and Business were established to train interested youth group to facilitate honey and honey product market.

Remark on capacity building component

As described above the different capacity building efforts has brought change in the skill and understanding of farmers and staffs in public organizations by building their experience. The farmers can benefit more from the capacity building since they are very close to the practical work.

However, there are cases where capacity building efforts are not linked to specific action which is mainly due to credit problem like in Poultry, beekeeping and small ruminant fattening. In addition, attention should be given for accompanying reading materials for the capacity buildings given to be provided for newly recruited DA or SMS in FTC and WKC to increase the effort of developing skill and understanding.

6.3 Commodity development

Establishment of the PLW

Atsbi-Womberta PLW is established and is strategically linked to the priorities of the Woreda and regional development plans. Analysis and diagnosis of annual work plan for the PLW is completed. The diagnosis identified the major bottlenecks and potential of the Woreda. The annual work plan is found to be well integrated with the priorities of the Woreda and regional development plan.

Appropriate technologies, processes and institutional innovations identified and promoted.

Number of appropriate technologies and processes identified and promoted

1. Technical support on land preparation, supplemental watering and pest management practices for production of pulse crops.
2. Sources of true type basic seed supply has been identified and secured.
3. Technical support on pests and management practices for vegetable production in the field has been provided.
4. Napier grass cuttings were supplied to Hayelom PA irrigated sites and Adi Messanu gullies
5. *Phalaris* seeds have been collected and splits produced for scaling out the technology into various PAs in the Woreda
6. Efforts are being made to purchase crossbred dairy cows from the ILRI Debre Zeit Station and others sources.
7. Waiting for credit to buy 3 modern beehives to produce honey

8. House to house close supervision on the practical application of the previous beehive technical support has been undertaken in this PLW. But the supervision seems to be minimized.
9. IPMS in Atsbi linked honey producers with DIMMA Company. The company has purchased some amount of honey from producers.
10. Follow up of the trainees is also being done by IPMS staff in the PLW on quality and handling of skins and hides.
11. Demonstration of forage development schemes, oat and Napier grass introductions
12. Demonstration of improved faba bean varieties in farmer's field
13. Garlic seed distribution for demonstration in farmers' field
14. Women processing and marketing.
15. Drip irrigation

Number of institutional innovations identified and promoted (e.g production, input supply, credit and marketing).

Production technologies

1. Technical support for production of pulse crops.
2. Napier grass cuttings were supplied
3. *Phalaris* seeds have been collected and splits produced for scaling out the technology.
4. Technical support for vegetable production in the field on pests and management practices.
5. To buy modern beehives to produce honey
6. Addressing the target community through various knowledge sharing mechanisms (like demonstration).
7. House to house close supervision of on the practical application of the previous beehive technical support.
8. Small ruminant fattening and dairy production is on progress and there was technical support on the application of knowledge gained during the previous trainings

Input supply

1. Sources of true to type basic seed supply has been identified and secured for vegetable and pulses.
2. Efforts are being made to purchase crossbred dairy cows from the ILRI Debre Zeit Station and others sources.
3. IPMS purchased 150 kg of garlic planting materials from the local market in Wukro and distributed to volunteer farmers through the Woreda OoARD. But there is high demand for garlic seed which they are told that there is shortage.
4. Strengthening the supply of bee colonies & use of box hive accessories.
5. The introduction of cock were identified by the community but not yet materialized.

Credit

- Waiting fund for apiculture development and queen rearing by landless youth groups
- Credit has been given to in the time of giving training on beekeeping
- Waiting fund for sheep breeding (by women groups) and fattening by landless youth groups
- Waiting fund for poultry
- Waiting fund for women processing and marketing

Marketing

- IPMS in Atsbi linked honey producers with DIMMA Company. The company has purchased some amount of honey from producers.
- Training and close supervision on quality skin & hides is on progress which might create a good opportunity to get market.
- Interested youth group established and ready to get training on linkage to live animal marketing. Traditional milk and butter markets are doing fine and previously trained women were doing the business.

6.4 Research

In relation to research, this part presents the research progress and contributions by MSC students and attachments. List of on-going research projects, their status and contribution to commodity development, capacity development or knowledge management are:

1. Determinants of Adoption of Improved Box Hive in Atsbi-Womberta District of Eastern Zone, Tigray Region
2. Water resources assessment and sustainability of groundwater utilization in the Gergera watershed, Atsbi-Womberta
3. Institutional Analysis of Irrigation Water Management: the case of Astbi-Womberta and Ada'a Liben Woredas, Ethiopia
4. Analysis of vegetable production and marketing chains in Atsbi-Womberta
5. Livestock health status and interventions in Atsbi-Womberta PLW
6. Impact of beekeeping on household income and food security: The case of Atsbi-Womberta and Kilte Awlaelo Woredas of Eastern Tigray, Ethiopia

In addition, there are completed studies on the issue of Impact Assessment of Rainwater Harvesting Technologies, Gender and socio-economic analysis of priority marketable commodities, and risk and AIDs vulnerability impact.

In relation to promotional events, IPMS activities were promoted using radio Woyen, ETV and local news papers coverage. Finally, the relationship with TARI or its research centers relatively improved but not to the desired level. They have started to do some works together.

Crosscutting Issues

Gender, HIV and Environmental issues are the cross cutting issues which are planned to be mainstreamed in the overall project activity. These issues in knowledge management are addressed by providing publication which deals on gender, HIV and environment. In relation to capacity building, participation of concerned parties in workshops is observed. With regard to mainstreaming cross cutting issues in the projects commodity

development component, the result obtained is significant. Their annual work plan was proposed with mainstreaming to each commodity development activity in the PLW. The participation of women in the activities that the project is involved in reached around 43%. This implies the attention that is being given in activities that they do. Planning of gender and HIV/AIDS annual plan were proposed with mainstreaming to each commodity development activities of PLW.

Not much has been done in relation to environment as such. However, in relation to the commodity development by enclosing arid land they are able to rehabilitate the area in PA's of Hayelom and Golgol Neale. The forage development is playing a dual purpose as developing the environment and a means to develop fattening by developing forage.

General information from the PA's where IPMS don't intervene.

In the selection process of four PA's from the PLW, it was not possible to differentiate the PA's based on with and without IPMS intervention. Thus we were forced to use the case of least and highly intervened PA's. The two PA's selected with the least IPMS involvement are Adi Mesanu and Kalisha. In this case, in addition to the involvement of DA's through capacity building, some activities are done by the project. Thus, as much as possible it was tried not to incorporate farmers who has a link with IPMS project.

The assessment indicates that, as expected the benefit received by the highly intervened PA's is greater than the least intervened PA's. This is mainly captured through the increase in the skill and understanding of the farmers.

7 Meiso

7.1 KNOWLEDGE MANAGEMENT

The expected outputs of the project knowledge management component in year two are increased understanding and awareness of the knowledge requirement for managing the new commodities, increased availability of knowledge in various forms and enhanced knowledge sharing systems. These outputs together with other outputs expected to be achieved in year three and four will contribute to the expected outcome of knowledge management, which is to have functional and gender sensitive agricultural knowledge management system , interconnected and utilized at all levels, highlighting innovations and appropriate technologies. This section gives highlights of the status of the three outputs that contribute to the knowledge management component.

Knowledge Gap identification

The project has conducted various focused surveys to identify knowledge gaps around the priority commodities. Consequently, the existing knowledge gaps in production and marketing of dairy products, haricot bean, and Sesame were identified and documented. This created an increased understanding and awareness of the knowledge requirements for managing the new commodities. In addition, several assessments in the form of community consultations aimed at identifying knowledge gaps have been conducted. For instance, the project conducted goat production problem assessments and rapid goat flock appraisals in five PAs in collaboration with OoPRD. A rapid milk market survey and production problem assessment of three traditional milk market groups in three PAs were also conducted, the findings of which have served as the basis of subsequent interventions for the project's capacity building and commodity development efforts..

Increased Availability of Knowledge Assets and Improved Knowledge Sharing Mechanism

Following the knowledge gap identification various activities were conducted that increased the availability of knowledge assets in different forms and different knowledge

sharing mechanisms. In this regard human knowledge was directly made available through various trainings, farmers' and experts' group discussions workshops and meeting. As part of the knowledge management effort, a WKC was opened within OoPRD premises where books and electronic materials were made available to the staff. The following section highlights the increased availability of knowledge assets and the increased frequency of knowledge sharing events.

- The WKC has about 120 books and manuals which contain information about the different aspects of priority commodities and cross cutting issues.
- Apart from the WKC, the project has also increased availability of knowledge in written form at FTCs. For example at Tokuma FTC about 25 different written materials about priority commodities were made available. These materials include books about natural resources and posters on HIV/AIDS.
- The project, together with partner institutions and graduate students, also synthesized and captured knowledge about different aspects of the priority commodities, and prepared documents on the following topics:
 - Molasses as supplementary feed
 - Molasses input supply system
 - HIV/AIDS and gender Fact Sheet (in English and Amharic)
 - Livestock basic physiological parameters
 - Livestock feed assessment report
 - Livestock Marketing report
 - Para vet training manual
 - Commodity fact sheet for eight of the priority commodities
 - Leaflet on Carrot Production
- Newsletter as a means of communication and mode of transfer of knowledge was introduced, and a bi-monthly newsletter that contains information about production, input supply, and marketing issues of priority commodities is put in place. So far one issue has been published.

- The project has also increased the availability of electronic knowledge by availing 30 CDs which can be browsed through the three computers at the WKC.
- Training sessions and workshops were used to share knowledge among different actors. To this end, a number of trainings on different technical aspects of the priority commodities and cross cutting issues were organized. (See part of III for the types of trainings organized).
- Farmers' field day was another knowledge sharing mechanism promoted in the past two years. So far four farmer field days have been organized to promote peanut production , community grazing land enclosure, onion bulb production, and onion bulb and seed production. In these farmers' field days, farmers, DAs, SMSs and researchers were present, which has created a conducive ground for an increased frequency of knowledge sharing among all parties.
- A platform on goat marketing was created. This platform has brought together different stakeholders such as farmers, SMSs, traders, and local assemblers to discuss and solve problems related to goat marketing.
- Farmers-to-farmers exchange visit and study tours to places of institutional and technological innovation were also used as a knowledge sharing mechanism. For example, farmers, CBOs, and extension agents made a study tour to learn about seed cleaning, and goat producers visited export abattoirs at Methara.

7.2 Capacity Building

Outcome of the project's Capacity Development component is 'Strengthened innovation capacity of farmers /pastoralists, CBOs and private sector organizations and agriculture and natural resources management public organizations to support the development of small holder, market oriented agricultural production systems'. This section presents the status of outputs that are expected to contribute to the achievement of the capacity building outcome

Public Sector capacity building

Various capacity building efforts were undertaken to improve the capacity of SMSs and DAs through a series of workshops, trainings, and study tours. According to the

participants, the different workshops and trainings organized by the project helped them understand the principles of market-oriented agricultural development. These activities have increased the knowledge, awareness, understanding, and skills of participants and in some cases these changes are reflected in their day to day activities.

The technological innovations promoted through the capacity building activities of the project have helped OoPRD staff to integrate the new technologies into their own plan. Accordingly, SMSs and DAs are promoting the use MUB and other crop varieties. The capacity building was particularly useful to DAs working in the newly established FTCs. For example, DAs in Tokuma FTC reported that they use the knowledge and skill they got from the IPMS training in MUB, fruit and vegetable production, apiculture production etc. The trained extension staff has also started following up on farmers and giving technical assistance to producers. In one instance, the extension staff have already incorporated a provision in their activity plan to help *Jalela Itebas* market group fully focus on market-oriented beef production. Using the awareness they got from gender and HIV workshops, DAs have also started giving special emphasis to gender and considering HIV as a development issue, which is evident in the fact that DAs have made a deliberate effort to include females in trainings, give gender-disaggregated data in their reports, and raise the issue of HIV AIDS at any event that brings farmers together.

Furthermore, the capacity of OoPRD staff to deliver extension service has also improved due to the demonstration materials they got from IPMS. DAs in Tokuma FTC now teach preparation of MUB and urea treatment using the raw materials they got from the project. They are also using the Stover Chopper which is used to chop Sorghum and Maize Stover, and have planted different varieties of forage and fruits in the FTC compound which are being used to teach farmers. They also have given apiculture training, which is sponsored by IPMS, to farmers. The project also facilitated the purchase of weighing scales to help training of farmers on weighing goats. The project has also provided them with some books and manuals relevant to the priority commodities at FTCs. The following list summarizes activities undertaken to improve capacity and the topics addressed:

Focus areas of Public Staff Capacity Building

I: through training

- Agronomic practice of sesame, peanut and haricot bean
- Livestock production horticultural crop production
- Horticulture production and Fruit grafting
- Preparation of Molasses Urea Block
- Grape production
- Onion nursery management
- Basics of computer
- Water management
- Donkey Traction
- Environmental Assessment Impact
- Gender and HIV
- innovative extension approach
- input delivery system
- urea leak block
- urea treatment
- Fruit Nursery establishment and management
- churner demonstration
- manual Stover chopper
- Bull Management

II: Through Study Tour

- Dairy farm visit to Ada
- Export abattoir visit to Methara and Modjo
- Irrigation site visit to Arsi
- Modern fattening visit to Hirna
- Seed cleaning visit to Melkasa
- Cooperative visit to Zeway and Meki
- Sesame and peanut visit to MelkaWerer
- Input supplier visit to Nura Era, Wonji , Nazareth and Methara

Farmers Capacity Building

The awareness, knowledge, and understanding of farmers and other private sector organizations have also increased through the various capacity building efforts. Farmers' knowledge about the technical aspects of production of Sesame, Onion, and Peanut has improved as reflected in their day to day activity. Farmers now have new knowledge and skills about fruit and vegetable production and specific technical skills such as fruit grafting. They are well aware of agronomic practices of the different crops such as Sesame, Peanut, Haricot Bean and other fruits and vegetables. They also got knowledge about different alternatives to livestock feed and how to improve the palatability of Sorghum and Maize Stover through urea treatment. Similarly Para-vet and MUB producers have demonstrated the improved knowledge and skills in different technical

areas through the services they give to the community. The following list summarizes the topics addressed by the capacity development activities:

The focus areas of Farmers & Private Sector Capacity Building:

I: Through Training

- Fruit grafting
- preparation of Molases Urea Block
- grape production
- onion nursery management
- Donkey Traction
- *urea leak block*
- urea treatment
- Animal Health Training
- Fruit Nursery establishment and management
- churner demonstration
- manual stove chopper
- Bull Management

II: Through Study Tour

- dairy farm visit to Ada
- export abattoir visit to Methara and Modjo
- irrigation site visit to Arsi
- modern fattening visit to Hirna
- seed cleaning visit to Melkasa
- cooperative visit to Zeway and Meki
- Sesame and peanut visit to MelkaWerer
- Input supplier visit to Nura Era, wonji , Nazareth and Methara

The capacity building activities were also extended to include cooperatives and individual traders. One cooperative, *Jejela Ifeba*, was given advice and support to incorporate a market-oriented approach to beef production. Private MUB suppliers got adequate training and were linked with input suppliers in other areas, which enabled them to produce and sell with minimal support from DAs.

Collaborative Networks and linkages

In order to learn and build capacities of partners, different collaborative networks between farmers, pastoralists, CBOs, public and private sector organizations were created, a fact which has improved linkage among actors. The following section discusses these networks and the linkages that were facilitated by IPMS together with OoPRD.

WALC and RALC were formed since the start of the project. WALC members have met regularly to share best practices in technology and knowledge management and, just as importantly, to plan project activities. Its members are department heads of OoPRD, Woreda HAPCO and gender affairs of Meiso Woreda. WALC helped committee members to discuss mainly on issues pertaining to the project. Even though, WALC suffered frequent membership changes, it facilitated learning from the results of activities implemented by the project through its regular meetings and field visits. So far WALC has conducted meetings five times and members agree that this arrangement has improved the culture of working across sectors. RALC also formed at regional level mainly comprising representatives from BoARD and Research institutes. However, this committee hasn't served as effective learning forum. It hasn't conducted its regular meetings as well as its planned field visits.

A goat marketing platform, where different stakeholders in production, marketing, and extension meet to discuss and solve problems regarding goat marketing, has been created. Members of the platform are drawn from OoPRD, farmers, assemblers, and traders, and

through meetings conducted at different times, the platform has tried to link producers and assemblers with potential traders.

The project facilitated linkages with different public and private organizations. These efforts improved farmers, DAs, and SMS's linkages with research institutes, private input suppliers, local traders, and exporters.

- OoPRD has been linked with the following research institutes:
 - Adami Tulu Agricultural Research (ATARC) Center which is engaged in small ruminant research
 - Werer Agricultural Research Center (WARC), which is engaged in lowland oil crop research
 - Melkasa Agricultural Research Center (MARC), which is engaged in fruits and vegetables research and lowland pulse crop research

Following the linkages the OoPRD got five varieties of forage species from ATRC, four varieties of Sesame and Peanut from WARC and different varieties of fruits and vegetables and three varieties of haricot bean from MARC. Two livestock marketing groups formed by other NGOs were linked to Molasses suppliers and MUB producers were also linked to input suppliers.

7.3 Commodity Development

The work plan of the PLW is completed and it is well integrated with the priorities of the Woreda and Regional agricultural development plan. Based on the initial diagnosis of the PLW and the knowledge gaps identified, various production technologies, input supply systems, and marketing arrangements were introduced and promoted for different priority commodities. This was done in consultation with WALC and had the active participation of OoPRD staff.

Most of the production technologies and input supply systems introduced were new to the area and farmers were able to see the results by trying them out on their own farms.

Production Technologies

- Even though fattening was practiced before, after training and study tour was conducted, farmers interested in fattening started business-oriented fattening by applying the knowledge they got from the training. The new technologies got quick acceptance by the community. The farmers started selecting animals for fattening using the criteria they learned and started stall feeding. As innovative technology for animal feed supplement, MUB was introduced and Farmers started feeding MUB to animals they wanted to fatten. Farmers witnessed that the fattening period was shortened from the previous 8-12 months to a period of 4-5 months for large ruminants. Farmers who used this technology have benefited from increased income from better prices for their animals. In order to curb the problem of animal health, Para-vets were trained and started giving services to the community.
- Farmers who were trained in vegetable production also applied the training on producing onion. Two varieties of onion (Adama and Bombe), were introduced and farmers enjoyed an onion harvest for the first time. Five farmers also started producing onion seed to sell to the other farmers. In addition to the six farmers who participated in the first round, 11 additional farmers started producing onion with the support of the first six and from the DA who had learned about onion production from the project.
- Other crop varieties are also introduced:
 - Two varieties of banana (short Cavendish and Poyo),
 - Grape, avocado, papaya and three varieties of Mango,
 - Tomato and carrot,
 - Vernonia, peanut and four varieties sesame
 - Five varieties of haricot bean (for both local and export market)
 - Japan wheat/back wheat

- Eight cowpea species for forage were demonstrated on farmers field and farmers started selling the seeds to the OoPRD for further distribuion
- A local pepper variety was also promoted
- Various grass seeds and elephant grass cuttings were also distributed
- new varieties of sesame, haricot bean and peanut.

Input supply

Apart from introducing production technologies, different modes of input supply mechanisms were introduced and promoted. The private sector was specifically strengthened to supply inputs to crop and livestock sectors.

- Private supply of MUB (as supplementary animal feed) was facilitated and is functioning well. Three individuals have started producing and selling to farmers in three PAs. MUB is available in 200, 400 and 1000 gm. There is adequate demand for the product as farmers have learned its benefit.
- A private fruit nursery was also established. This nursery is intended to supply the newly introduced fruit varieties. Four farmers have signed a contract with OoPRD to supply fruit seedlings, but have not started delivery yet.
- Private Bull station is also being tried by six farmers to curb the shortage of improved breeds for dairy development. But it will be some time before the calves grow into bulls.
- In order to solve the problem of onion seed shortage, five farmers are being capacitated to produce and supply onion seeds.

Marketing:

- Upon the project's initiation the OoPRD has started to collect and disseminate livestock market information. Currently, one year's market information is collected and one person at OoPRD is assigned to disseminate this information on request.

- Primary livestock marketing cooperative has been formed in Hameroo Deeima PA. The idea came from farmers when the market failed to give them good prices. Even though the cooperative manages to keep two oxen and members still pay their dues, the cooperative is not yet functional, which is, according to members, mainly due to financial constraints and problem of getting land.
- Preliminary linkage has been created among the new onion producers and traders. Even though the output obtained in the first period is not much, the project in collaboration with DAs and SMSs has facilitated the market linkage which might come in handy in the future.
- Goat producers are now linked to export abattoirs and following the link-up , farmers have ensured that the goats were vaccinated against Pasterullosis and been given doses of Antihelminthics.

7.4 REASERCH

Research in this PLW is done by students, project staff, and other partner organizations. Some efforts were made to record problems encountered and lessons learned. Some students who are doing their Masters studies have conducted specific studies on different aspects of the priority commodities. However, even though it was envisaged to undertake specific studies on knowledge management, capacity building, and commodity development, not much has been done in this regard. The following list provides studies conducted in the PLW by project staff, students and other partner organizations:

- Dairy production system and market opportunities in Meiso Woreda
- HIV risk and AIDS vulnerability impact assessment studies

Crosscutting Issus

Mainstreaming gender in the project was undertaken across the different components of the project. In knowledge management different written materials that discuss gender and HIV/AIDS issues were provided. Gender and HIV fact sheets and posters were prepared and distributed to FTCs. In capacity building, the different trainings and workshops and study tours incorporated female participants. Two workshops in gender and HIV/AIDS were organized, which helped participants get a forum to discuss the issue. These activities allowed OoPRD staff to use the knowledge in their work. For example, IPMS

made DAs in one FTC to integrate the issue of HIV in their work plan in collaboration with HAPCO. Some DAs have started registering households headed by women to target intervention. However, the number of women who are actually using the new technologies is low. The project is closely working with the Woreda HAPCO in training farmers and DAs. Following the training DAs have worked to create awareness among the community. IPMS' approach introduced the concept of HIV as a development concern, not a health issue.

In order to address environmental concerns, the project organized workshops and trainings which raised participants' environmental understanding, and enabled SMSs working in NRM and understanding of the basic concepts.. In addition, an effort has been made to integrate environmental concerns into the commodity development effort. As part of its interest in dairy and beef production, the project tried to rehabilitate degraded grazing land, which was overgrown by different forage species. Moreover, in Harkoncha PA Elephant grass was given out to protect soil erosion around water harvesting ponds.

Remark:

The project showed positive results in its four components. The information collected at PA level indicated that the changes are significantly different than the non-intervention PAs. Farmers and DAs in non-intervention PAs didn't get the opportunity to participate in the training. Even though demonstration as a means of knowledge sharing was not new in non-intervention PAs, IPMS facilitated demonstration differs from the conventional one in that it involves farmers from all PAs and focus on innovative works of farmers. The WKC is established with some materials but it is not being used by staff of the OoARD, most of the materials are brought from few international research institutes

SMS and WALC member agree that the different capacity building efforts helped them to know and understand different things. However in order to take their knowledge to farmers they face problems of resource shortage and high staff turnover. The fact that the trainings involve practical sessions and study tours are appreciated by farmers and staff of OoPRD. Moreover, most of the formal trainings provided training materials to participants. These helped especially the DAs to further teach other farmers. Moreover, Good linkage is created with research centers in capacity building and introducing new technologies to farmers. However, the participation of research centers in providing knowledge assets to the newly established WKC is weak.

The efforts made towards improving the market condition hasn't worked. Farmers feel that their success in fattening depends on improved market conditions, alleviating the problem of animal health, and addressing the critical problem of livestock water supply.

8 Ada

8.1 Knowledge management

Increased understanding and awareness of the knowledge requirement for managing new commodities.

The initial diagnosis survey helped to become aware about the knowledge gaps of each priority commodity and what is required to address it. As a result of assessing, the current state and knowledge requirements at PLWs, Woreda and FTCs the level of understanding about the availability of knowledge and the required knowledge for managing the new commodities by the project staff has increased. However, since this is obtained as a result of informal assessment or without proper documentation the knowledge obtained in this area are not shared to other relevant stakeholders. According to WALC members and other OoARD staff members, the different capacity building programs of the project has increased their understanding and awareness of the knowledge requirement for managing the new commodities. This will put the project to be engaged in further capacity building activities.

Increased availability of knowledge in various forms

The number of knowledge assets in the Woreda has increased. Knowledge asset on apiculture, diary, fattening using straw treatment, fruit and vegetable, poultry, horticultural, sericulture and onion production by women farmers is given in the form of formal training participation. In addition, the woreda knowledge center was organized as a ready access point to get information. Books, CDs and training manuals relevant to the priority commodities are made available in the knowledge center. The nine training manuals produced by the trainings conducted by the project directly focus on institutional arrangements on technology transfer, input/credit supply schemes and marketing system of the priority commodities for the PLW. The major categories of the books available in the WKC are on soil and water conservation, agro-forestry, poultry, animal production and nutrition, crop production, and different research publication and socio economics. The CD's are on environment, straw treatment and urban agriculture. It provided mostly from FAO and international organizations like IFPRI. Information on gender, environment and HIV/AIDS are also included in the collection.

Enhanced knowledge sharing system established

Various knowledge sharing mechanisms were conducted at the PLW in order to disseminate the available knowledge. These includes training materials, WALC, Farmers field day, seminars (presentations), leaflets, newsletters, field tour, trainings and the woreda knowledge center.

One of the methods used to disseminate knowledge is to give training materials to trainees. So far nine training materials were distributed to farmers, DAs and SMS. All trainees said that the training materials received were of great help. For example, Ato Shume from Denkaka PA said, he often uses the training material when ever he encounters specific problems in his vegetable production.

WALC also used as a forum where members share and disseminate knowledge. WALC meets every three months. In addition, members from OoARD, Erer Union, Ada cooperative, micro finance, Genesis, Green star and DZ grain traders association are members of WALC. Having different stockholders will enable them to get more information.

Farmer's field day is another mechanism which farmers think as another enhanced knowledge sharing mechanism. Even though there has been farmers day organized by the research organizations, the Farmers Day organized by IPMS has a bit different approach. Unlike the farmers field day prepared by research, which focus only on model farmers who demonstrate new technology generated by the research, IPMS farmers day consider any innovative farmers who can serve as a best example to others regardless of whose technology they use. All DAs, farmers representing PA's in the woreda and SMS have participated in the farmer's field day.

The project also introduced a culture of information sharing by organizing presentations. In this regard two presentations were made to staff of the woreda on Forage seed supply and apiculture development. In addition, briefing of DAs about environmental impact

assessment (given in Dale) and alternative ways of extension approach (given in A.A by Debrezeit researchers) has been done using CD after the training given for SMS.

Leaflet on HIV/AIDS and gender has been prepared and distributed to woreda OoARD staff members and DAs. Leaflets seem to be useful especially for targeting, the busy OoARD staff, DA staff and some literate farmers.

Newsletters published at IPMS HQ reach the project site but other leaflets on the priority commodities are not yet prepared. Exhibitions has not yet been prepared but they are planning to do it in the year 2007.

The other encouraging institutional linkages that foster learning and knowledge sharing among different stakeholder were created by the different trainings provided by the project. Most of the training activities are given by experts drawn from research institutes, private sector, NGOs and Woreda level OoARDs. Field tour to fruit and vegetable in Melekasa and horticulture in Zeway organized for participants of trainings is also another mechanism for enhanced knowledge sharing mechanism.

Remark on knowledge management component

In the PLW the activities which have been implemented during the last two years has been acknowledged by OoARD, BoARD and other stakeholders to result the expected improvements in understanding and awareness of the knowledge requirement for managing new commodities, increase in availability of knowledge in various forms and enhanced knowledge sharing system established.

However, most of the books provided are found out to be out dated. Thus the need to consult experts in identifying, capturing and synthesizing knowledge related to the priority commodity will be needed.

8.2 Capacity Building

To strengthen innovation capacity of farmers, pastoralists, community based organizations, private and public sector organizations, various activities on capacity building and development of collaborative network arrangements have been done.

Increased knowledge, awareness, understanding and skill of staff in public organizations

The project has influenced the knowledge, skill and awareness of staff in public organizations through trainings and field tours. It followed a ToT approach in which the Woreda SMS and DAs received training which they used to assist farmers and community based organizations. Moreover, training materials were provided.

The short term trainings on capacity building activities were on Apiculture, Fruits and Vegetables, computer training, small scale milk production ,Sericulture, poultry production and livestock fattening, forage development and marketing vegetable, production ,disease and pest management, and capacity building in private marketing and input supply system, which include group formation for Woreda and DA's of the targeted PAs.

Some of the knowledge gained from the capacity building activities are linked with the commodity development component. For example, after the visit to Melekasa for fruit and vegetable, the start of private fruit nursery sites is observed in two farmers. And more focus is also being given by the woreda experts on the area. Fruit trainees said, they used to wait for 4-7 years to get fruit out of avocado tree. But now with the new improved and grafted variety introduced by IPMS they are able to see flower within a year.

The project also provides long term training for MSc and attachment students. During the selection of candidates 50 % chance is given to female students. Generally, the trainings capacitated both in approaches and methods of building their experience and knowledge through their practical involvement.

Increased knowledge, awareness, understanding and skills of farmers

A number of training activities conducted by the project has increased the knowledge, awareness and skills of farmers, private entrepreneurs, cooperatives, NGO's, associations and MFIs to improve marketing, input supply, credit, production technologies including natural resource management. These participatory trainings were conducted by the different stakeholders. Participation of NGO's in capacity building can be seen in the case of sericulture by JCCOD. The trainings which were taken by farmers were on sericulture, fruit and horticulture, vegetable production, diseases and pest management, Poultry production and livestock fattening, Beekeeping and straw treatment.

Moreover, 20 couples from Kurkura, Sirba, Denkaka and Ude PAs who have received improved dairy cattle but didn't get training in dairying, processing, forage development and marketing (training done with the participation of DZ researchers). Further more, urban women dairy training has been done. It was done in nine rounds by selecting 169 urban women dairy farmers who are members of Ada'a dairy cooperatives and 12 women organized in urban microfinance development. The training covered dairy animals feed and management, milk quality and infection, reproductive health, production of quality milk and milk product processing. Around 100 copies of books were also distributed.

Collaborative network arrangements between farmers, CBO's, public and private sector organizations developed.

In order to promote collaborative network arrangements the project developed different institutional arrangements. In this regard RALC, WALC and different commodity linkages or platforms are the major ones. The research center is not being used as a collaborative network arrangement due to the misunderstanding created at the federal level. However, there is a link with Melekasa research center in fruit and vegetable.

Project awareness activities were also well spread through WALC/RALC members. RALC/WALC is the collaborative arrangements created by the project to share information among the different stockholders. WALC has been functional since the start of the project. This learning committee has made three meetings. But members fully

agree that this arrangement is not functioning as expected. It has been active during the time when the project was established. However, as time goes by the project didn't consider the arrangement rather use individual experts to fulfill what they want to do. This has got negative implication on the objective of institutionalizing the activities that are being done by the project. During the preparation of the 2007 annual work plan the participation of WALC seem to be renewed to some extent. But still the members indicate the lack of transparency in the structure.

Platforms seem to play important role in the collaborative network arrangements. This includes the case of sericulture platform which aims to link women group with other partners, the link between trainees of dairy farmers and Ada'a cooperative as a milk collection center, the link between poultry and fattening farmers with input and output market, Chickpea producers with and effort made to link producers with union and private sector, and fattening platform. From the different platforms discussed above the diary platform found out to be more effective.

Remark on capacity building component

As described above the different capacity building efforts has brought change in the skill and understanding of farmers and staffs in public organizations by building their experience. The farmers can benefit more from the capacity building since they are very close to the practical work.

The focus to create different platforms is a good practice done by the PLW which creates the opportunity to working together with various stakeholders for one activity.

However, WALC as institutional arrangement is not strong. Thus focus should be given in integrating the project activity with the work plan of the OoARD. The integration will help us to develop institutionalization which is the main objective of the project.

8.3 Commodity Development

Establishment of the PLW

Ada's PLW is established and is strategically linked to the priorities of the Woreda and regional development plans. Analysis and diagnosis of annual work plan for the PLW is completed. The diagnosis identified the major bottlenecks and potential of the Woreda. The annual work plan is found to be well integrated with the priorities of the Woreda and regional development plan.

Appropriate technologies, processes and institutional innovations identified and promoted.

Number of appropriate technologies and processes identified and promoted

1. Sericulture production
2. fruit and horticulture
3. Vegetable production, diseases and pest management
4. Poultry production and livestock fattening,
5. Apiculture development
6. Straw treatment for fattening
7. Small scale milk production
8. Provision of improved diary cattle to motivate urban milk production
9. Brought soybean seed variety, chickpea variety
10. Onion production by women farmers being in group

Number of institutional innovations identified and promoted (e.g production, input supply, credit and marketing).

Production technologies

Attention is paid on production systems based on the demands of the market and assets of individuals. This included

- improvement of quality and post harvesting handling and processing
- Production methods which require rearrangement of production processes and schedules
- Breeding cycles/fattening periods and

- Strengthened or introduce new technology practices including natural resource management, soil and waters management, pest and disease management and feed /fodder production.

Input supply

In this regard effort has been made to strengthen the private sector in the supply of inputs and services.

- o In order to alleviate the crucial problem of improved genetic material, two individuals selected for providing bull service. Farmers said it was difficult for them to get bull service or AI, but now they are hopping to get such service from their neighbors. However, the person who owns the bull is complaining about feed shortage for the bull.
- o Two individuals also started fruit nursery. They are going to start grafting. The fruit seedlings include Avocado, Mango, banana, lemon, orange, and apple. Other farmers are happy that they will start farmers to farmer supply of fruit seedlings. For this to occur capacity building has been given to develop the technical skills for the production of inputs (fruit seedling).
- o Onion seed producers

Marketing

In order to strengthen the market position for small farmers as well as to alleviate the major bottleneck for a market oriented agricultural development farmers are clustered to increase their negotiation power and to strengthen the private sector in the supply of improved crop and livestock materials as well as the supply of other inputs. Farmers were organized to increase their negotiation power and access to market information. They have improved product quality, storage and processing.

- o Apiculture trainees organized and form four cooperatives. These cooperative has got legal status from the relevant government body. However, due to delay of the credit service the cooperative hasn't started to apply what they get from the training.
- o 10 female farmers are organized to produce onion.

- Similar concept of organizing women in group to link them with other partners also works in the case of sericulture
- Ten Milk producers in Denkaka were organized and linked with Ada Dairy Cooperative. Now these farmers do not have problem in product marketing. For it to occur capacity development efforts has been done on group formation and linkages with private sector.

Credit

- Credit facilities also introduced for a group formed for fattening.
- Due to the delay of the credit service the cooperative formed by apiculture trainees hasn't started to apply what they get from the training.

Remark on commodity development

The concept of commodity development i.e. addressing issues of input supply, production technology and marketing of commodities is considered in the commodities that they are giving attention.

8.4 Research

This part mainly focuses on generating knowledge based on the studies and lessons learned in the PLW. Then it planned to be used by the project's learning structures like WKC, FTCs and by the institutional arrangement. There are also researches in progress with the contribution of MSC and BSc students. Research studies are also done with international partners like ICRISA. For example, a study was completed on chickpea rapid market appraisal study in Ada'a. There is also an ongoing study on chickpea marketing chain analysis in Ada'a.

Studies were conducted on the issue of Gender and socio-economic analysis of priority marketable commodities, Rapid assessment of honey marketing, Rapid Assessment of Chickpea Marketing, Chickpea production system, HIV risk and AIDs vulnerability impact assessment studies.

Crosscutting Issues

Gender, HIV and Environmental issues are the cross cutting issues which are planned to be mainstreamed in the overall project activity. These issues in knowledge management are addressed by providing publication which deals on gender, HIV and environment. In relation to capacity building, one survey has been done on HIV and Gender, one gender mainstreaming workshop has been conducted which has increased the knowledge of DAs and woreda level staff. Moreover, training organized in Environmental Impact Assessment (EIA) has increased knowledge of one participant who took training in EIA. Then he prepared training to other members of the OoARD. The capacity building activities for technology innovations for the priority commodities are also sensitive in consider the gender aspect. In the long term training, the project gave 50-50 chance to men and women staff to participate in the trainings which was very much appreciated by the staff.

With regard to mainstreaming cross cutting issues in the projects commodity development component, the result obtained is significant. Their annual work plan was proposed with mainstreaming to each commodity development activity in the PLW. Generally, not much has been done in relation to environment as such rather most of the activities are included in the 2007 annual work plan.

General information from the PA's where IPMS don't intervene.

When we compare the results found in the IPMS intervention PA's with those without intervention. The result is that there is a big difference among the DA's when we talk of activities done on the ground.

However, the PA's where there is no intervention has got the information about what is going on in the other PA's with the support of the project. This might be mainly due to the participation of some DA's in the capacity building activities based on their area of specialization. The two PA's are Hidi and Bakajo. This can have a positive impact when we talk of scaling out to other PA's at least at an information level.

9 Alaba

9.1 Knowledge Management

The expected outputs of the project knowledge management component in year two are increased understanding and awareness of the knowledge requirement for managing the new commodities, increased availability of knowledge in various forms and enhanced knowledge sharing systems. These outputs together with other outputs expected to be achieved in year three and four will contribute to the expected outcome of knowledge management, which is to have functional and gender sensitive agricultural knowledge management system , interconnected and utilized at all levels, highlighting innovations and appropriate technologies. This section gives highlights of the status of the three outputs that contribute to the knowledge management component.

Knowledge Gap Identification

Agricultural information need of the OoARD and the existing sources of agricultural information had been assessed and documented. This helped the OoARD staff to identify the knowledge gap for each of the priority commodities. The initial diagnosis survey also helped to bring to light the knowledge gaps of each priority commodity and what is required to address them. This has increased understanding about the knowledge requirement for managing the new priority commodities among staff of the OoARD. The identification of knowledge gap and knowledge requirement led OoARD staff to enquire and seek information that will help the bridge the gap. Specifically, SMSs and WALC members asked the project to provide training and organize exchange visits about different aspects of the priority commodities. There are even cases, however insignificant in number, where farmers requested OoARD/IPMS for specific information about particular subjects. For instance, farmers in the apiculture group requested OoARD/project to share experience on modern apiculture management from other places.

Availability of Knowledge Assets and Knowledge Sharing Mechanisms

Understanding the existing knowledge gaps led the project to provide knowledge assets from different sources and in various forms. This effort has increased the availability of

human, structural, and technological knowledge assets to public organizations (mainly OoARD), and few private sector organizations and farmers using various knowledge sharing mechanisms. The following paragraphs present the increased availability of knowledge assets together with the different knowledge sharing mechanisms.

The availability of structural knowledge (codified knowledge in written form) has increased as a result of IPMS/OoARD efforts to collect, synthesize, and capture knowledge:

About 180 books, manuals and research papers were collected and made available at the Woreda Knowledge Center, SMSs working at Woreda level being the main target beneficiaries. Most of these materials are from international agricultural research institutes such as ILRI, and a few obtained from national agricultural institutes. Some documents prepared by the project (training manuals, pamphlets, posters, reports of diagnosis surveys) are also made available at WKC.

Agricultural information on different topics were distributed to supervisor DAs through a communication box which was constructed at OoARD to strengthen the culture of communication and enhance agricultural information flow.

Leaflets/pamphlets are used as a means of knowledge sharing. In order to provide summarized information about the priority commodities, leaflets that target farmers, DAs, and SMSs are distributed that address the following issues: CAHW, Teff thresher, haricot bean, pepper production, bio fertilizer, MUB, and urea treatment.

A bi-annual newsletter, which discusses different agricultural research and development issues, was introduced. A committee was formed from members drawn from different sections of OoARD. So far three newsletters have been issued that cover different aspect of the priority commodities.

In an effort to synthesize and capture knowledge the following documents were prepared: sources of agricultural information, past efforts of Paprika Pepper introduction in Alaba, technical report on Teff seed multiplication, indigenous apiculture in Alaba, and the

innovation history of Teff seed. To improve farmers' access to information in written form, a manual on seed multiplication was translated into Amharic and shared with farmers involved in Teff seed multiplication.

70 CDs about agricultural research and development as well as different statistical software and research databases were made available through the three computers at the WKC. The CDs are mainly from World Bank, ILRI and other CG centers. The WKC is now connected to internet, through which a number of electronic information can now be accessed. A DVD player and TV were also made available to be used for knowledge sharing.

Trainings and workshops are the most frequently used knowledge sharing mechanism in the PLW. Trainings which provided knowledge in various aspects of Priority commodities were organized for farmers, staff of OoARD, private sector, and other stakeholders. Workshops in crosscutting issues of gender and HIV/AIDS, agri-business, and agricultural extension were also organized. (see part III for types of trainings organized)

Farmers and staff of OoARD have also shared knowledge from others through the study tours/exchange visits organized. Study tours were organized for model farmers to southern agricultural exhibitions, WALC members also visited Ada PLW. PA to PA visit was organized twice on forage and fruit grafting. Experts have also visited Awasa, Dale, Zeway, Debre Zeit, and Holeta on different occasions.

Service promotion sessions focusing on market promotion for CAHW and forage seed shop were organized to allow sharing with the community new information and advantages of the aforementioned.

SMS at Woreda OoARD also shared knowledge through a series of seminars conducted by graduate students. So far nine thesis seminars have been organized on different subjects.

Farmer-to-farmer and expert-to-farmer discussion sessions were also used as alternative mechanisms of knowledge sharing, whereby farmer groups were made to meet at certain intervals to share knowledge and discuss on specific problems related to their commodities of interest. For example, apiculture group in two PAs meet fortnightly. Sheep and teff multiplication group members also meet on a regular basis to discuss emerging issues. Expert consultation sessions were also organized to learn from the community and share experts' knowledge with the community. In Alaba, expert consultation sessions were organized on haricot bean production, seed supply system, use of bio fertilizer, and pepper production.

Demonstration as a means of knowledge sharing has also been tried for knowledge sharing in urea treatment, Teff thresher, MUB, and use of bio fertilizer. Some of the demonstrations were conducted at market sites. The project has also organized the first SNNPRS regional technology exhibition and symposium.

The WKC is operational but it is not being used by OoARD staff mainly due to lack of reading habit. Heavy work load and lack of reading material of practical importance were also cited as factors inhabiting using the WKC. To alleviate these problems staff members suggested that the project use different techniques which promote the WKC and provide reading materials which can help staff get information they can apply to existing problems.

Availability of written materials at PA level is minimum. Other than leaflets and training materials used by a few farmers and DAs, no written material is at hand.. The role of the project in making available knowledge assets to FTC is very limited.

The research wing, which is the major source of knowledge, did not actively participate in providing written materials. The different research and educational institutions were not systematically linked to the project knowledge management system.

The increased availability of knowledge in written form at WKC doesn't satisfactorily reflect the gaps identified around the priority commodities. Most of the materials collected at the WKC came from a few international sources like ILRI, World Bank, and other CG centers.

One of the good results achieved in knowledge management is that the project helped and to some extent influenced those working in the OoARD understand about the importance of knowledge management. According to WALC members, apart from making human knowledge available through formal trainings, they learned the importance of participatory knowledge gap identification and different ways of knowledge sharing. As a result, staff of OoARD assumed a certain degree of responsibility in knowledge management activities and built a room for WKC, made financial contribution for farmers' study tours, and organized graduate seminars at their own initiative. But there are some knowledge sharing mechanisms which were introduced but are far from being considered as part of OoARD systems and procedures.

Except the knowledge gap identification, which has earned quite a significant involvement by the OoARD staff, the other areas like increasing the availability of knowledge through the WKC, communication box, and newsletter didn't get adequate involvement and ownership. Despite these shortcomings, OoARD staff have learned and recognized the importance of knowledge management in the overall market-oriented agricultural development strategy and have helped them deal with related issues explicitly.

9.2 Capacity Development

Outcome of the project's Capacity Development component is 'Strengthened innovation capacity of farmers /pastoralists, CBOs and private sector organizations and agriculture and natural resources management public organizations to support the development of small holder, market oriented agricultural production systems'. This section presents the status of outputs that are expected to contribute to the achievement of the capacity building outcome

In order to improve the innovation capacity of farmers, CBOs, private, and public sector organizations, various activities related to capacity building have been undertaken. Efforts were also made to develop networking among different stakeholders. All these activities have increased the knowledge, awareness, understanding, and skills of actors at different levels. Collaborative network arrangements were also formed and linkage with other partners has improved.

Increased knowledge, awareness, understanding and skill of staff in public organizations

The various capacity development activities have resulted in varying level of increase in knowledge, awareness, understanding of staff of public institutions about different technical aspects of the priority commodities (see box 1). These changes are observed in SMSs and supervisor DAs who participated in the different trainings, workshops and exchange visits. Interviewed SMSs reported that the trainings, workshops, exchange visits, and the various links created have brought improvements in knowledge and skills. Some of these changes are evident in the renewed interest of SMSs to take action in order to apply the new knowledge gained from the capacity building efforts. For example the trainings and visits organized for staff of OoARD in fruit production in Dale led OoARD together with IPMS to organize interested farmers to initiate a private fruit nursery. Similarly, after the training and exchange visits organized for SMSs in apiculture, they organized farmers and started a modern apiculture farm and brought a bee forage into the production system. However, not all capacity building efforts have paid off.. Even though a change in awareness and understanding were reported, there were cases where the capacity building efforts were not linked with the commodity development component. For example, the training in MUB may have changed the awareness of OoARD staff, but these changes were not yet reflected through actions taken to apply the new knowledge.

Focus Areas of the capacity building efforts

- Gender and HIV/AIDS (planning workshop)
- Innovative extension system
- teff multiplication (Visit to sites)

- Seed quality (visit)
- Bio pesticide/disease control
- Haricot bean production
- Market promotion
- Multipurpose forage trees
- TOT training methodology
- Tools and methods for sustainable land management
- Designing innovation extension system
- Agricultural supervision
- Paprika production
- Agronomic practice and marketing of Vernonia
- Computer Use

Increased knowledge, awareness, understanding and skill of farmers and private sector organizations

The knowledge awareness, understanding, and skills of farmers also improved by the different trainings, field visits, workshops etc. The project, in collaboration with research institutes, private sector organizations, and NGOs, has given a number of trainings about the production, input supply, credit, and marketing aspects of priority commodities. As the case of public sector staff, the level of change in awareness, knowledge, and skill vary across the different capacity building efforts. There are cases where farmers demonstrated in practice the level of change in their capacity. For example, farmers trained in apiculture started using modern beehive management, started to grow bee forage and multiply forage seeds. The change in capacity, awareness, and skill in the trainings could clearly be seen when farmers in the intervention PA are compared from those in non-intervention PAs. For example farmers in non-intervention PAs do not plant bee forage, nor do they manage their beehives in groups.

Again like the capacity building efforts of public sector organizations, there are plenty of cases where the capacity building efforts (at least for the time being) were limited to only a change in attitude about particular subjects. For example, even though farmers got training on urea treatment and Paprika production, not much is done with the knowledge obtained from the training.

Focus Areas of farmers capacity building

- Agronomic practice and marketing of Vernonia
- Urea Treatment
- Teff Seed Multiplication
- Multipurpose Forage Trees
- Beehive management
- Paprika agronomy
- Haricot bean seed multiplication
- Water harvesting utilization techniques
- Knapsack Sprayer
- Market Promotion
- Bio-pesticide/disease control technology
- Seed Quality /seed management
- multi crop threshing machine
- Dairy Production
- Sheep and goat production
- Poultry Production
- Improved forage seed multiplication

Collaborative Network Arrangements and Greater Linkage for farmers and staff

Apart from formal capacity building through trainings and exchange visits the project tried to improve institutional linkages and form collaborative network arrangements which could help strengthen capacities of actors. As part of collaborative network arrangements WALC was established since the beginning of the project to enhance collaboration and coordination among major stakeholders, and has conducted seven meetings to date. This institutional arrangement consists of members who are drawn from different sectors of the office of Agriculture and other offices such as Gender, HIV/AIDS, and Microfinance institutions. However, according to members these institutional arrangements were not effective. The major reason for its ineffectiveness, according to WALC members, is the 'highly centralized' decision making procedure of the project. According to them most of the activities planned at PLW level are rejected at higher level. Most of the problem around the effectiveness of WALC emanated from lack of proper understanding of the project objective and strategies by both WALC members and SMSs. They say they are still confused about the project aim and strategies and they couldn't see significant and tangible results from the project activity. WALC members

visited Debre Zeit area but they haven't yet visited project's activity at Woreda level and they are not learning from the achievement or failure of the project.

RALC as a collaborative network arrangement was established and had a few meetings which discussed implementation of the project. The RALC chairman received project reports as part of OoARD reports, and said that they have learned a lot from the last regional technology exhibition and they were looking forward to replicate the exhibition at Zonal, Woreda, and PA levels. WALC played a great role in planning and approving the 2007 project plan. As a learning platform it coordinated stakeholder analysis in which different actors' importance and significance were mapped.

The project has also improved research and development oriented linkage among different actors. Different governmental, non-governmental and private sector organizations have formed partnership with the OoARD as research and development partners who work closely on different issues. For example research linkage is created with higher learning institution through graduate students working in the Woreda Awasa Agricultural Research Center. An instructor in the Sodo ATVET and a number of graduate students of Hawasa University are conducting research in the PLW. NGOs like LIVA have strengthened the existing linkage by closely working in capacitating CAHW. CIAT together with EARO made a rapid assessment of haricot bean production system. The Office linkage with individual traders and private institutions has also improved. Examples are Ambasel trading and Mencheno Union. For example the demonstration of bio fertilizer is done together with Ambasel trading. Mencheno union has started providing farm input and also once bought haricot bean produced by farmers. A preliminary discussion was made with Beza Mar, a private honey producing company in Nazerth, to buy honey from apiculture cooperative in future. Linkage in research and capacity building was also created with international research institutes like CIAT, Africa highland initiatives, who have conducted research on different priority commodities. Apart from research, international research institutes like ILRI and World Bank are linked by providing CDs and books to the WKC. The capacity of private sector was also strengthened. MUB training is given to three animal feed suppliers.

Remark

- Farmers said their knowledge and awareness about different issues has increased as a result of the various trainings, workshops and field visits. But farmers in non-intervention PAs, even though they may have some basic knowledge about apiculture, forage etc, they didn't get the chance to learn techniques for market oriented production of the different priority commodities. Farmers who got training in intervention PAs said they haven't got conducive ground to practice most of what they have learned. For example, even though they have learned the benefit of MUB appropriate mechanisms for its supply are not arranged so that they engage in production or/and marketing.
- WALC members and SMS appreciate the level of emphasis given for capacity building. However they criticize the trainings as being very short, designed to raise awareness without clear thought on how to apply the knowledge in the extension system. They also complained that the long term trainings focused on upgrading bachelor degree holders to Masters Level, while the majority of OoARD staff were diploma holder. This according to them disregards the majority and widens the qualification gap among the staff. For the future WALC members suggested the capacity building efforts to be planned together with regard to the content and timing, and focus on areas where there are critical problems.
- Most of the trainings were given to supervisor DAs with the assumption that these DAs would further train other DAs who are directly involved with farmers. However, this hasn't happened and frontline DAs didn't get such trainings or knowledge assets from their supervisors.
- Even though IPMS undertook various capacity building efforts which helped participants improve their knowledge and understanding of different issues, most Woreda level experts couldn't take the knowledge to farmers as farmers want to be subsidized, a common practice by other NGOs in the Woreda.

9.3 Commodity Development

3.1 Appropriate technologies and processes identified & promoted.

A number of production technology, input supply systems, marketing mechanism and credit facilities were made available.

Production technologies promoted and on farm research/demonstration

- Three bee forage species from Holeta research were introduced for apiculture cooperative members. Farmers have sown the all-year-round flowering species and have started benefiting from it. Planting improved bee forage is new to the Woreda. Farmers have also started multiplying the seed for other farmers.
- Five apiculture groups were established in three PAs. IPMS/OoARD facilitated apiary site group management, in which the necessary cleaning and feeding activities are performed by group members in turn. This is also a new form of production, which enabled farmers to be efficient in managing their beehives.
- Queen excluder, bio-fertilizer, and soybean variety were also new technologies introduced in demonstration form. However, these technologies didn't go beyond the demonstration phase.
- Forage groups were organized in seven PAs and seven varieties of forage (for cattle and shot) were introduced. Out of the seven, three varieties are being multiplied by 43 farmers. However the activity is mainly geared towards sustaining the forage seed stock in the Woreda.
- Three pepper varieties were demonstrated. Despite better productivity than the local varieties, farmers are dissatisfied by the low market price which is mainly caused by its distinctive color. Therefore, only a few farmers were interested in using it during the next planting season.
- IPMS/OoARD facilitated for women shot group, previously formed by Woreda Rural Women Development Department to get a hectare of land

for forage development. Group members got training on managing grazing land and were given three forage species.

- Nine farmers are also going to start local poultry production.

Input supply system identified and promoted

- A private forage shop has started operation in the PLW, and has been in operation for the past eight months. The shop provides forage seeds mainly to public institutions, NGOs, and farmers
- Mencheno Union has started providing farm inputs. According to the Union Manger, this new approach to input supply helps farmers get input at the right time from their nearest primary cooperative and also helps them get quality products. Moreover, SMS agreed this effort would very much reduce OoARDs burden and free their time spent on distributing farm inputs.
- Farmers-based forage multiplication is started in 8 PAs, and 42 farmers are multiplying three of the seven forage seeds. Apiculture cooperative members are also multiplying seeds of bee forage so as to sell to other interested farmers. Farmers are also multiplying seeds of bee forage.
- Private fruit nursery is also being tried. Four farmers were selected and have planted Avocado and Mango, which will be distributed after grafting in October.

Market interventions identified and promoted

- In order to provide market information at different market places, a market billboard has been erected at Gulab market for collection and distribution of market intelligence. This intervention was done together with LIVA , an Italian NGO working in Alaba.
- In order to improve the accuracy of traders' weighing scales, pepper balances were calibrated for pepper traders in Alaba. The calibration was done in collaboration with the Southern Branch of the Quality and Standards Authority of Ethiopia (QSAE).

- Farmers who were initially grouped for honey production were later changed to a marketing cooperative, which has got legal status, mainly to increase their negotiation power during marketing.
- Preliminary linkage with Beza Mar was also created to sell honey produced by cooperative members.
- The project also tried to identify new market niches for producers. For example, to solve the market problem of haricot bean, the project facilitated linkage with Mencheno Union which bought the produce.

Credit was made available for innovative ideas

- Credit was made available to six CAHW for purchase of the necessary drugs
- In order to expand the new private forage seed and fruit seeding production and marketing, 10,000 birr was given in credit to private forage shop owner
- Mencheno Union was provided with a total of 100, 000 birr to establish an input shop.
- Apiculture cooperative members got credit for expansion of activities.

Even though traditional apiculture is not new to Alaba, promoting modern and business oriented apiculture was at its infant stage. Farmers were provided with modern beehives by EU but they were not using them mainly due to lack of knowledge about modern apiculture. After consultation sessions with farmers, IPMS/OoARD intervened in the sector by giving training to farmers and DAs. The training was practical and accompanied by field visits to share experience from other farmers and private companies within and outside the PLW. To facilitate knowledge sharing among farmers and ease management of the beehives, a system of group management was introduced. Five groups of six members each were formed in two PAs. Each group selected an apiary site and members put their beehive together. Management of the colony and developing the apiary site was done together. In order to overcome the shortage of forage, three new varieties of bee forage were introduced. Following these activities, a beehive cooperative was formed and got legal identity so that the farmers' bargaining power was consolidated. Apart from this they also established a link to a honey processing industry

in Nazareth and reached a preliminary agreement to supply honey in the future. In order to expand production farmers got credit amounting to 51,000 birr for the purchase of more beehives.

Even though apiculture or modern beehives are not new to the Woreda, group management of beehive, planting of bee forage, provision of supplementary food were new things introduced. In this effort of introducing market oriented apiculture development, the concept of approaching a commodity from input supply, production technology, marketing and credit is well reflected. Consequently, the SMSs who are working in the section are linked to HARC, the national research institute involved in apiculture research, and also preliminary linkage with honey processing industry has been created for future marketing. The marketing cooperative now plans to open a common honey shop in Alaba town.

Remark on commodity development

- Some of the technologies introduced such as forage crops, bee hives etc are also available in non-intervention PAs. But most of the institutional arrangements such as private input shops and creating market linkage is non-existent in non-intervention PAs.
- Except the apiculture intervention, the concept of commodity development, i.e. addressing issues of input supply, production techniques, and marketing of a commodity, was not adequately dealt with. Most of the activities were fragmented and touched few aspects of a commodity.
- WALC members and SMSs agree in that even though IPMS introduced new approaches to production and input supply, it works only with few farmers and doesn't subsidize farmers, a fact which makes learning difficult from a small scale operation. They believe that it's better to provide adequate support which would enable different actors to learn from the innovative approach introduced.

9.4 Research

Based on lessons learned in the PLW five documents were prepared on sources of agricultural information, past efforts of Paprika Pepper introduction in Alaba, technical report on Teff seed multiplication, indigenous apiculture in Alaba and the innovation history of Teff seed multiplication. Apart from this, students who are doing their MA studies have conducted a lot of studies about different aspects of the priority commodities. Accordingly, about four students sponsored by the project have completed their studies and presented their findings to OoARD staff. Other studies conducted by partners include:

- Rapid assessment of haricot bean production system in Alaba (CIAT)
- Impact of rainwater harvesting ponds (student)
- Pepper marketing in Alaba
- Gender and socio-economic analysis of priority marketable commodities
- HIV risk and AIDs vulnerability impact assessment studies HIV risk and AIDs vulnerability

Even though the regional research institute- SARI and one of its centers ARC have been made to be actively involved at the project's inception, they feel that their role during the project implementation has been limited. But recently after a few discussions, SARI has designed research projects together with IPMS and signed a MoU which clearly lays out the roles and responsibility of each party in active research.

Crosscutting Issues

Gender and HIV/AIDS are considered as cross cutting issues which are planned to be mainstreamed in the overall project activity. In this regard the project has tried to address these issues in its knowledge management activities by making available different publications on gender, HIV/AIDS, and environment at WKC. In terms of capacity building a planning workshop for mainstreaming gender which was conducted together with OoARD staff gave participants basic understanding about issues of gender mainstreaming. In the long term training, the project gave a 50-50 chance to male and female staff to participate in the trainings, which was very much appreciated by the staff. However, the capacity building opportunities given to farmers were in favor of male

farmers, and only 8 % of the participants were women. Environmental issues were also raised in capacity building efforts. For example a training which introduced different NRM tools was given to farmers and staff of OoARD. The uses of bio-fertilizer and bio-pesticide were also demonstrated to farmers.

However, when we come to mainstreaming gender, HIV/AIDS, and environment in the project's commodity development component, the result obtained is insignificant. Almost all the groups formed in apiculture and poultry are men. The other activities which target individual farmers and also dominated by male farmers. An exception is the recent introduction of forge for women group, organized by OoARD with the support from

10 Summary and Implication of Findings

The finding of Year 2 monitoring and evaluation showed that the project has achieved various levels of results with regards to the four pillars of the project and the cross cutting issues of gender/HIV-AIDS and environment. In Knowledge Management, the project identified knowledge gaps, increased the availability of knowledge assets and introduced different enhanced knowledge-sharing mechanisms across the different PLWs. The frequency of information-sharing events through farmers' field days, community/expert consultation sessions and seminars have increased, allowing different stakeholders to exchange knowledge. The Woreda Knowledge Centers which are established in all the PLWs have increased stakeholders' access to printed and electronic materials. However, in most cases the WKC's are not effectively being used. The main reason for this problem, according to intended users, is the fact that their reading habits were far from developed. Moreover, the number of printed materials may have increased, but the collections are not exactly relevant to the local needs. Most of the materials available are from international research institutes, and hardly any from domestic higher education and research institutes. This would not allow users to benefit from studies on problems and issues closer to home, and hence more focus is required on creating links with national higher educational and research institutes for continuous supply of printed/electronic materials that can be availed to intended users in the future. Moreover, unlike the commodity development component, the participation of OoARD staff is weak in activities such as identifying knowledge asset requirement, collection of materials and contributing to newsletters. The fact that the results achieved in knowledge management involved only few stakeholders puts sustainability in question, and therefore future activities need to be tailored so that they take the capacity of stakeholders into consideration, as that will be determinant in motivating involvement.

The introduction of new technological and institutional innovations was accompanied by intensive capacity building activities which benefited the public sector staff, farmers, and private sector institutions. These activities have increased the awareness, understanding, knowledge, and skills of the project partners. Farmers got training and the opportunity to

visit areas where they could share knowledge. Most of the trainings were practical and supported with study tours, and farmers from various Woredas including, on a smaller scale, the private sector have benefited from them and have gained valuable knowledge. In most cases farmers have started to apply the knowledge gained in their day-to-day agricultural activities. Similarly, SMSs and DAs have testified that they have been able to increase their knowledge, understanding, and skills on different issues due to the trainings. Other than the trainings, OoARD staffs now have more capacity to pass knowledge on to farmers due to the demonstration equipment provided by the project. While this being the overall picture of the capacity development component, there are specific issues that needs to be addressed. First, in some PLWs a series of trainings were given on different issues without much thought and planning on how to facilitate the use of the new knowledge gained. This problem is serious particularly in relation to the trainings given to SMSs and DAs in areas of extension method and mainstreaming gender and environmental issues. In farmers' trainings organized on technical issues, the project together with OoARD staff influenced farmers to start using the new knowledge and skill they got from trainings and gave them continuous support in facilitating input supply, marketing, and credit. However, trainings organized for public staff on issues like the ones mentioned above, there's no follow-up on the use of the new knowledge. As a result, even though the awareness and knowledge of public staff has on gender, HIV/AIDS, and environmental mainstreaming has improved, they are not applying what they have learned in their day-to-day activities. Therefore, the capacity building efforts in the future should be planned with provisions for proper mechanisms of ensuring the applicability of knowledge and subsequent follow-up.

The project's commodity development interventions, which focused on the priority commodities, have resulted in different outputs in terms of identifying and promoting innovative approaches guided by market demands to production, extension, input supply, credit, output marketing, and natural resource management. So far, new production technologies were availed to the farmers and tried in the field. In some cases crops new to the areas have been introduced, while in others improved varieties/breeds for existing crop and livestock types have been provided and tried by farmers. Other than the

provision of production technologies, efforts to involve the private sector in input supply are showing encouraging results. In input supply, establishing farmer-to-farmer seed and seedling supply system, facilitating for merchants and cooperatives to participate in input supply and private bull station set-up have also been realized in various Woredas. To mention a few, legally certified farmers' onion seed production in Fogera, farmer to farmer banana sucker supply in Metema, private bull station in Alamata, private MUB supplier in Meiso, Union engagement in farm input supply in Alaba are all good examples. From the marketing perspective, farmers' negotiation power has increased due to grouping of farmers for output marketing, forming marketing cooperatives, and provision of market information. A small number of farmers who wanted to engage in technological or institutional innovations have also benefited from the credit facility provided. The response to the different technological and institutional innovations mention above has been limited to a few farmers in some cases, while in others it was observed that a lot more farmers have benefited. A good example is Metema's and Alamata's newly introduced fruit varieties and Astbi's forage development, whose distribution is growing fast within and beyond PAs initially tested. However, in some cases the results are still at infant stage, have only impacted a small number of farmers, and there's no certainty that they are sustainable due to inadequate emphasis given to the production chain. For instance, there were cases where new technological innovations were introduced but farmers failed to continue using them due to lack of adequate technical knowledge, the necessary inputs, market, or credit facility. Therefore, the issue of addressing gaps in the production chain together with creating adequate capacity should be emphasized upon in future efforts towards commodity development.

In the research component a number of studies were conducted by the project staff, partner institutions, and graduate students on different aspects of the priority commodities. Even though there was some participation of regional and national research institutes especially in capacity building and providing new technologies, their involvement in research activities has been limited. Apart from that, the results obtained in conducting studies, documenting, and promoting in knowledge management, capacity building, and commodity development components of the project is so far weak.

Therefore, improving the recently started linkages with regional and national agricultural research institutes is an issue that needs attention.

The project has also improved linkages and collaboration among farmers, governmental institutions, and research institutes to a certain extent. Advisory and learning committees have been established at Region and Woreda levels to advise and learn from the project and expand lessons to other areas. The WALC and RALC have been established in all PLWs and in the four regions, but as far as them being a medium of learning is concerned, the results achieved have been variable across the different Woredas and Regions. Even though some of them are effective at their duties, others do not meet according to the set calendar, nor work as closely and hand-in-hand as desired. Therefore, facilitating conditions so that committee members actively participate in the project's activity for learning and scaling out is necessary.

Annex 1: Performance Indicators

Output	Performance Indicators
Increased understanding and awareness of the knowledge requirements for managing the new commodities of farming systems in the PLWs.	Number of new types of inquiries by women and men farmers about different options for production and marketing of the new commodities.
Increased availability of knowledge in various forms.	Number of knowledge assets (e.g., best practices, improved varieties and institutional innovations) made available to women and men farmers and to Woreda level organizations.
Enhanced knowledge sharing systems established.	Extent of dissemination of available knowledge.
	Frequency of knowledge sharing [e.g., at meetings, farmers' days, FTCs, Communities of Practices, exhibitions, conferences as well as amongst various Stakeholder organizations (e.g., NALCs, RALCs, WALCs and private sector organizations)].
Collaborative network arrangements between farmers, pastoralists, CBOs, public and private sector organizations developed to better respond to market demands on the use of demand-driven agricultural technologies and services.	Presence of functional institutional arrangements that promote collaboration and coordination amongst various actors.
	Extent to which these functional institutional arrangements promote collaboration and coordination amongst various actors in order to respond to and learn from market-oriented agricultural development.
Ten PLWs established in four (4) regions that are strategically linked to the priorities of the Woreda & Regional Development Plans.	Ten PLWs with analyses or diagnoses and Annual Work Plans completed.
	Extent to which PLWs' Annual Work Plans are integrated with the priorities of the Woreda and Regional Development Plans.
Approaches, methods, tools and processes for knowledge management developed, documented and promoted.	Number of completed studies on approaches, methods, tools and processes for knowledge management.
	Number of promotional events on knowledge management.
	Extent to which approaches, methods, tools and processes for knowledge management are relevant to Stakeholders.
Approaches, methods, tools and processes for capacity building developed, documented and promoted.	Number of completed studies on approaches, methods, tools and processes for capacity building.
	Number of promotional events on capacity building.
	Extent to which approaches, methods, tools and processes for capacity building are relevant to Stakeholders.

Approaches, methods and processes for market-oriented priority commodities including technologies and institutional arrangements developed, documented and promoted.	Number of completed studies on selected priority commodities.
	Number of promotional events on priority commodities.
	Extent to which completed studies on priority commodities are characterized for application outside of the PLWs.
The inter-relationships between the environment and agricultural productivity and production understood, documented and promoted.	Number of completed studies on the inter-relationships between the environment and agricultural productivity and production.
	Number of promotional events on the environment.
	Extent to which documented agri-ecological relationships are relevant to PLWs, TVETs and to FTCs
The inter-relationships between gender equality and/or HIV/AIDS and agricultural productivity and production understood, documented and promoted.	Number of completed studies on the inter-relationships between gender equality and/or HIV/AIDS and agricultural productivity and production.
	Number of promotional events on gender equality and/or HIV/AIDS.
	Extent to which documented gender equality and/or HIV/AIDS and Woreda or local level agricultural productivity and production relationships are relevant to PLWs and incorporated into the curriculum at TVETs and at FTCs.

Annex 2: List of individuals contacted

Fogera:

Name	Gender	Category/Responsibility	PA/Office
Agage Wubie	Male	Farmer	Rib-Gibriel (non- intervention)
Zemen Haile	Male	“	“
Abate Abelew	Male	“	“
Adeladlew Belete	Male	“	“
Bire Miherete	Male	“	“
Fenta Wube	Male	“	“
Mekonnen Tadesse	Male	“	“
Alem Sendek	Female	“	“
Alem Berihum	Male	“	“
Gashaw Fanta	Male	DA	“
Tezera Belay	Male	Farmer	Diba
Gobeze Mengist	“	“	“
Takele Alemayehu	“	“	“
Tekeba Akemew	“	“	“
Wagaw Bitew	“	“	“
Gobeze Bere	“	“	“
Molla Erke	“	“	“
Asseres Sintayehu	“	“	“
Gelaye Mare	“	“	“
Tarekenge Admas	“	“	“
Getu Berehan	“	“	“
Alamnew Belachew	“	“	“
Eyayewe Eshete	Male	DA	“
Muluye Tsegaye	Female	DA	“
Tdelew Amsalew	Male	Farmer	Worota Zuria
Worku Mengiste	“	“	“
Mule Bihonege	“	“	“
Endale Belay	“	“	“
Destaw Asmare	“	“	“
Dereje Admase	“	“	“
Abeje Mekonnet	“	“	“
Nigses Tiru	Female	“	“
Oumer Ahemed	Male	“	“
Bereded Jegene	Male	“	“
Tsedalu Fantahun	Female	“	“
Mekonnet Cherenet	Male	“	“
Abeje Kebed	Male	“	Alem Ber
Melkam Mariye	“	“	“
Mare Derso	“	“	“
Sale Fereje	“	“	“
Mariy Gobeze	“	“	“
Wendimagne Kassahun	“	“	“
Zewdu Endale	“	“	“

Worku Arage	“	“	“
Tsehay Gebre	“	“	“
Fasika Alemu	female	DA	“
Gethaneh Tefera	Male	Farmer	Nabega
Kasahune Abuye	“	“	“
Takele Berihan	“	“	“
Assefa Salew	“	“	“
Walelege Niguse	“	“	“
Getaneh Ayele	“	“	“
Dejene Biyadglene	“	“	“

Alamata

Name	Gender	Category/Responsibility	PA/Office
Shanta Durg (fruit)	M	Farmer	Selam Bekalsi
Zeweditu Wayu (diary/forage)	F	Farmer	Selam Bekalsi
Mengesha Asemare (fruit)	M	Farmer	Selam Bekalsi
Abreha Kiros (paravet)	M	Farmer	Selam Bekalsi
Yalega Demeke(diary/forage)	F	Farmer	Selam Bekalsi
Yegezawe Amebawe(fruit)	M	Farmer	Selam Bekalsi
Gemeja Mohammed(diary)	F	Farmer	Selam Bekalsi
Berhanu Reda (Paravet)	M	Farmer	Selam Bekalsi
Memo Sieide (diary)	M	Farmer	Selam Bekalsi
Belaye Beruhuge (diary/organizer of diary cooperative)	M	Farmer	Selam Bekalsi
Dese	M	DA's	Selam Bekalsi
Berehane	M	DA's	Selam Bekalsi
Kasaei Kidanu	M	Farmer	Temuga
Abebe Mola	M	Farmer	Temuga
Alemaze Meresa	F	Farmer	Temuga
Belaye Gethahun	M	Farmer	Temuga
Ale Belaye	M	Farmer	Temuga
Asefa Berehanu (no training)	M	DA's	Temuga
Azeb Admasu	F	DA's	Temuga
Degu yelema	M	Farmer	Selaneweha
Teweja merete	F	Farmer	Selaneweha
Eyasu Berehe	M	Farmer	Selaneweha
Gemeja Derebewe	F	Farmer	Selaneweha
Gumefere Seyum	M	Farmer	Selaneweha
Tesefawe Bimorewe	M	Farmer	Selaneweha
Muleta Arefe	M	Farmer	Selaneweha
Ali Iberahim	M	Farmer	Selaneweha
Mogus Zenabu	M	Farmer	Selaneweha
Delela Aleka	F	Farmer	Selaneweha
Meberate Zegeye	F	Farmer	Selaneweha
Sheshege Biyarego	M	Farmer	Selaneweha
Gethahun Teka	M	Farmer	Selaneweha

Mola Tefera	M	Farmer	Tao
Maraki Meresa	F	Farmer	Tao
Keshi Yemane Fantaye	M	Farmer	Tao
Hafetu Welede	M	Farmer	Tao
Redae Gedeye	M	Farmer	Tao
Tegaye Aserese	M	Farmer	Tao
Yemane Abreha	M	Farmer	Tao
Meresa Hadishe	M	Farmer	Tao
Baranta Kahesay	F	Farmer	Tao
Kahesay Hayelu	M	Farmer	Tao
Berehanu Yemane	M	Farmer	Tao
Solomon Derebew	M	Farmer	Tao
Ato Amare Belay	M	TARI	
Kebede Manjur	M	Alamata research	
Nebiyat Tesfaye	F	Woreda Knowledge Center	
Adugna Gesesse, chairman (office of agriculture and rural development)	M	WALC members	
Tesfay G/Egziabher (office of agriculture and rural development)	M	WALC members	
Gebreyesus Meles (agriculture)	M	WALC members	
Redae Birhanu(cooperatives)	M	WALC members	
Kebede Manjur(TARI-Alamata)	M	WALC members	
Terehase Meberatu(women affairs representative)	F	WALC members	
Aberegele International livestock enterprise (Teseфа Alem Embaye)	M	WALC members	
Belete Tafere(NRM)	M	RALC members	
G/egziabher G/yohanes (Land O'lakes)	M	RALC members	
Berhane Hailu (agriculture-BoARD)	M	RALC members	
Tirfnesh Yainu (BoARD)	F	RALC members	
Dagnev Menan(REST)	M	RALC members	
Ametemariam G/Micheal (women's affairs- Tsige Tekleab)	F	RALC members	
Amare Belay(TARI)	M	RALC members	
Berehe Fisseha (BoARD, chairman)	M	RALC members	
Solomon Ayalew	M	private fruit trader	
Lilaye Hayele	M	private diary trader	
FTC in Selam Bekalsi and Gerjele PA has been visited			
Visit has been done to Ula forage seed multiplication site			

Astbi

Name	Gender	Category/Responsibility	PA/Office
Lemelem Mehari	Female	Farmer	Golgol

			Naele
G/Medhin Shefare	Male	“	“
Girmay Areaya	“	“	“
Tehaye Mezegebu	Female	“	“
Haleka berehan mezegebu	Male	“	“
Meleakeseslam tesfaye embaye	“	“	“
berehe meuze	“	“	“
Askual Woldu	Female	“	“
Abreha Kefeye	Male	<i>DA</i>	“
Zufan Girmay	Female	Farmer	Hayelom
Eitaye T/Haymanot	Male	“	“
Haleka Yelema Gerase	“	“	“
Temenite tekelay	“	“	“
Tega berehe	“	“	“
Netanet gedeye	“	“	“
Meuze Hayelu	“	“	“
Ayenalem mehari	Female	“	“
Tesefaye G/egzere	Male	“	“
Mulu hagose-	Female	“	“
Tesefaye G/egzi-	Male	“	“
Geberemariam Assefa-	Male	“	“
Ebuye Kidane	Male	Da	“
Haleka Hayelemedhin berehu	“	Farmer	Adi Mesanu
Haleka mamo G/selase	“	“	“
W/z kidan atibeha	Female	“	“
Kahesay gebere	Male	“	“
Leule Solomon	“	“	“
Mulu gebere	Female	“	“
Amete athibeha	Female	“	“
Muleat girmay	Male	“	“
Gedeye geberu	Female	“	“

G/kiros teneseu	Male	“	“
Eitaye mehari	Female	“	“
Taeme feteyeyo	Male	“	“
Zenebe berehu	“	“	“
G/Thadeke Tesfaye	“	“	“
Kahsu G/tateose	“	“	Kalisha
W/z mulu kasa	Female	“	“
W/z aleganesh hadushe	“	“	“
Haileassefa berehe	“	“	“
W/z berehane tadele	Female	“	“
Geberu ashebre	Male	“	“
Kahesu berehanu	“	“	“
Neguse hafetu	“	DA	“
w/z Mana Abereha	Female	Woreda women affair	
Ato Amare Belay	Male	from TARI as a RALC member	
W/z Alemthehaye G/Michael	Female	WKC.	
Hailay Berhane	Male	WALC, head, chairman, OoARD	Astbi
Alemayehu Fikadu	“	WALC woreda agricultural sector head	“
Mana Abreha	“	WALC , Women affair	“
Tekelay Gebru	“	WALC	“
Ketsela fisseha	“	WALC extension team leader	“
Tewodros G/medhin	“	WALC	“
Yonas	“	WALC	“
Habtom Neguse	“	“	“
Gebreab G/Medhin	“	“	“
Girmay Gebru	“	“	“
Getachew	“	“	“
Mesfin	“	“	“
G/Hiwot H/Mariam	“	“	“
Belete Tafere	“	RALC	Mekele

G/egziabher G/yohanes	“	RALC, Land O'lakes	“
Berhane Hailu(“	RALC, BoARD	“
Tirfnesh Yainu	Female	“	“
Dagnew Menan	Male	RAIC, REST	“
Ametemariam G/Micheal	“	RALC, women's affairs	“
Amare Belay	“	RALC, TARI	“
Berhe Fisseha	“	RALC, BoARD	“
G/egziabhere G/Yohannes	“	Land O'Lakes	“
Daniel G/egziabhere	“	Dimma	“
Assefa Yohannes	“	Shebba Tannery	“

Meiso

Name	Gender	Category/Responsibility	Location
Kedija Seid	Female	Farmer	Husi Adami
Hassane Saidoo	Male	“	“
Haruun Muussaa	Male	“	“
Ahmed Siraji	Male	“	“
Usman Aliyi	Male	“	“
Tajir Abraham	Male	“	“
Ayub Mohammed Yusuf	Male	“	“
Juwar Abraham Salim	Male	“	“
Muktar Musa	Male	“	“
Abbas Musa	Male	“	“
Mohammed Shante	Male	“	<i>Hameyiti Mete Deyima</i>
Usman Mohammed	Male	“	“
Zeyeneba Abidi	Female	“	“
Ali Tuko Roba	Male	“	“
Abraham Adam Abdule	Male	“	“
Mamma Uso Ali	Male	“	“
Abduraheman Ame	Male	“	“
Ahmed Amin	Male	“	“
Adem mohammed Usman	Male	“	“
Musa Ahmed	Male	“	“
Mustefa Hassen	Male	“	“
Mohammed Abudelle	Male	“	“
Digo Uso Ali	Male	“	“
Abedella Adem Abdi	Male	“	“
Mustefa Hassen	Male	“	“
Abdela Uso	Male	“	“
Digo Uso	Male	“	“

Mohammed Amed Mumed	Male	“	Buryisa Tuka	“
Mohammed Adem elemo	Male	“	“	
Ahemed ali Yuya	Male	“	“	
Nuriya Abdula	Female	“	“	
Abdela Mumed	Male	“	“	
Awel Amed	Male	“	“	
Amed Umer Ware	Male	“	“	
Kedija Abdula	Female	“	“	
Juhar Abdula	Male	“	“	
Hawa Umer	Female	“	“	
Aliyi Mohammed Seid	Male	“	“	
Abdela Mohammed Dadi	Male	“	“	
Umer Aliye	Male	“	“	
Sani Adem	Male	“	Agamsa Chaliya	
Adem Bililo	Male	“	“	
Mohammed Tayir	Male	“	“	
Muzamil Saido	Male	“	“	
Mohammed Aliyi	Male	“	“	
Yusuf Wedayi	Male	“	“	
Saido Wedayi	Male	“	“	
Ali Nini	Male	“	“	
Amina Asebot(F)	Female	“	“	
Umar Bedeso	Male	“	“	
Roba Wedayi	Male	“	“	
Ibro Dadi	Male	“	“	
Husen Hasen	Male	“	“	
Mohammed Adem	Male	“	“	
Kedija Amede(F)	Female	“	“	
Husen Abdo	Male	“	“	
Muzamil Mohammed	Male	“	“	
Mohammed Adem	Male	“	“	
Adem Baye	Male	“	“	
Umer badajo	Male	“	“	
Useman Haji	Male	Input supplier (MUB)	Asebot	
Girma Alemayehu	Male	DA	Huse Adami	
Tesfaye Beyene	Male	“	Hameyiti Mete Deyima	
Abenete ketema	Male	“	Buryisa Tuka	
Aschalew Ayine	Male	“	Agamsa Chaliya	
Tesema Adimasu	Male	“	Agamsa Chaliya	
Zerihun Nakeye	Male	“	Tukkuma FTC	
Dereje Regasa	Male	“	Tukkuma FTC	
Girma Alemayehu	Male	“	Huse Adami	
Tesfaye Beyene	Male	“	Hameyiti Mete Deyima	
Abenete ketema	Male	“	Buryisa Tuka	
Ato Sufian Abdullah	“	WALC	Meiso	
Ato Foad Tabit	“	“	Meiso	
Kamil Mohammed	“	WALC, HAPCO	Meiso	
Ato Deresa Kassa	“	WALC, OoARD	Meiso	

Ayinalem Birhanu	Female	“	Meiso
Eyob Alemayehu	Male	“	Meiso
Ashenafi Alemu	“	“	Meiso
Elsa Shiferaw	Female	“	Meiso
Fatuma Adem, Gender Affair	Female	WALC, Gender Affair	Meiso
Abdurahemane Kebelo and Worku Wabelena	“	OoARD, WKC attendants	Meiso
Ato Mohammed Hassena.	“	ORARI	Addis Ababa
Ato Damenu	“	Head BoARD	Addis Ababa
Chimedo Anchalo	“	Melkasa Research Center	Melkasa

Alaba

Name	Sex	Category	Location
Mohamed Sani Abedel	Male	Farmer	Waja
Husina Gobana	“	“	“
Abiyu Hasen	“	“	“
Hasen Dadago	“	“	“
Mohamed Joffe	“	“	“
Mohammed Gobena	“	“	“
Rahemeto Jemal	“	“	“
Hairu Siraj	“	“	“
Alifti Abdurhaman	Female	“	Galeto
Amina Lariso	Female	“	“
Shumete Ahemed	Female	“	“
Asya Abduraheman	Female	“	“
Wrko Beyero	Female	“	“
Kedija Bahore	Female	“	“
Ayisha Ahemed	Female	“	“
Zede Sewuno	Female	“	“
Snete Husie	Female	“	“
Makeda Bamude	Female	“	“
Ramti Naser	Female	“	“
Blete Temesgen	Male	“	“
Jemal Ahemed	Male	“	“
Agonafir W/Tsedik	Male	“	“
Kerela Eisa ()	Female	“	Gedeba
Abedela Mehie	Male	“	“
Mendilo Kediri	“	“	“
Mohammed Negash	“	“	“
Fregi Negash	“	“	“
Tiya Siraj	“	“	“
Beyeda Mohammed	“	“	“
Bekura Negash	“	“	“

Nuriye Muze	Female	“	Hulegeba Kuke
Kemal Ahemed	“	“	“
Kurkula Mehammed	“	“	“
Lebesa Awel	“	“	“
Sirgafa Dawaro	“	“	“
Kedir Ahemed	“	“	“
Mesaria Kedir	“	“	“
Fatima Selto	“	“	“
Bontu Mohammed	“	“	“
Desale Feyisa	“	“	“
Ayisha Ahemed	“	“	“
Lalagie Mirkoro	“	“	“
Rebate Mohammed	Female	“	“
Mahamod Bamud	Male	WALC members	Alaba
Alemayhu Ouka	Male	WALC Chair	Alaba
Zenabu Mekuria	“	WALC Member	Alaba
Hayat Nasir	“	WALC Member	Alaba
Jemal Mohammed	“	WALC Member	Alaba
Habib Uregesa	“	Woreda Gender Affairs	Alaba
Tariko Elias	Female	DA	Alaba
Ato Mulugeta Fetene	Male	head, BoARD	Awassa
Dr. Daniel Dauro	“	SARI, head	“
Ato Mesekelle Ayele	“	cooperative promotion agency	“
Ato Matewos Rike	“	Rural finance service fund administration office	“
Ato Abraham Chosa	“	ARDB, head input section	“

Metema

Name	Sex	Category	Location
Aselef Lakew	Female	DA	Tumet
Shaka Adis	Male	Farmer	
Simachew Abaw	“	“	“
Abere Zeleke	“	“	“
Adugna Anteneh	“	“	“
Tadesse Geremew	“	“	“
Tsegaye Zemene	“	“	“
Aschalew G/Ananyia	“	“	“
Mohammed Ali	“	“	“
Zenebe mengisutu	Male	Farmer	Guba Jejebit
Alemu Kibret	“	“	“
Kahesay Ageze	“	“	“
Zemene Tigabu	“	“	“
Gebre Masresha	“	“	“
Endeshiw Gedamu	“	“	“

Enana Desalegne	“	“	“
Mekonenet Birehanu	“	“	“
Tesfahun Belete	“	“	“
Nigusie Abebe	“	“	“
Almenesh Abebe	Female	DA	“
Yusuf Ibrahim	Male	DA	“
Tarekeng Derje	male	(input supplier	“
Seied Guchu	“	Farmer	DAS
Ibrahim Hassen	“	“	
Alem Kebede	Female	“	
Asferi Shiferaw	“	“	
Minale Bimeta	“	“	
Tekelu G/Yohannes	“	“	
Abdela Husine	“	“	
Enat Abebe	Female	“	
Aschalleng Asnko	Male	“	Shasige
Deges Dires	“	“	“
Kinfu Alezie	“	“	“
Zemenu Kibret	“	“	“
Chane Bekele	“	“	“
Mesfin Yirdaw	“	“	“
Gebeya Asnake	Female	“	“
Tesfaye Mekuriyaw	Male	DA	“
Tesfaye Tamiru,	“	Head OoARD	Shehdi, Metema
Dange Balanbaras,	“	Head, Woreda Information Office	Shehedi, Metema
Fikirte Tigabu	Female	Head, Woreda Women Affair Office	“
Riste Ademe,	Male	SMS, irrigation	“
Nega Eshete,	“	SMS, credit	“
Getasew Agniche,	“	Horticulture	“
Gezat Anteneh,	“	Crop production	“
Bewket Amare,	“	Livestock	“
Daniel Tadese ,	“	Extension	“
Azanaw Aderajew	Male	DA	Das
Yisalemush Degu	Female	DA	Das
Temesgen Tsitaregew		Private large scale cotton farm owner	
Birhan Desalenge		“	
Destaw Mucheie		“	
Degesew Melak		Head, Zonal Agricultural and Rural Development Department, North Gonder	Gonder
Biruhalem Kassa		Socio Economics Department Head, Gonder Agricultural Research Center	Gonder

